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Re-inventing Hoodia: Patent Law, Epistemic Citizenship,
and the Making of Difference in South Africa

A dissertation submitted in partial satisfaction of the
requirements for the degree Doctor of Philosophy
in Women's Studies

by

Laura Ann Foster

2012

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ABSTRACT OF THE DISSERTATION

Re-inventing Hoodia:
Patent Law, Epistemic Citizenship, and
the Making of Difference in South Africa

by

Laura Ann Foster

Doctor of Philosophy in Women's Studies

University of California, Los Angeles, 2012

Professor Sandra Harding, Chair

This dissertation examines the patenting of biological materials derived from Indigenous San peoples' knowledge of *Hoodia gordonii* in Southern Africa. Contributing to feminist science studies, transnational feminisms, and feminist socio-legal studies, this research asks how differences of gender, race, and indigeneity shape and are shaped by struggles over patent ownership, access and benefit sharing, and commercial bioprospecting. In particular, it conducts an ethnographic account of how *Hoodia gordonii* circulates and changes meaning through colonial botanical sciences, patent law rules, ethno-pharmaceutical research, and benefit sharing. This produces understandings of how *Hoodia gordonii* and Indigenous San peoples' knowledge and identity are-co-produced, while new modes of citizenship are emerging.

It argues that Hoodia patent law struggles produce difference and inequality, while engendering potential pathways for Indigenous San economic and political recognition, through two inter-related processes. One is through the oscillation of elastic nature/culture binaries as

Hoodia (and San identities) are re-invented through various discursive formations. The nature/culture binary is an important conceptual analytic. Feminist scholars have shown how women, people of color, and Indigenous peoples have historically been constructed as closer to nature and thus excluded from culture. This project shows how individuals and groups making claims for rights (e.g., patent ownership, benefit sharing contracts, and bioprospecting permits) deploy, disrupt, and/or refigure nature/culture binaries through narratives of indigeneity, race, and gender.

Second is through the emergence of new expressions of what I call “epistemic citizenship.” This refers to the ways in which privileges and responsibilities are being granted in unequal ways based upon whose knowledge matters most to neoliberal economies. To be sure, citizenship has always been linked to knowledge and power. Yet, this research contends that lines of inclusion and exclusion within the nation-state are being drawn in new ways through the expanding regulation and control of knowledge.

This dissertation of Laura Ann Foster is approved.

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2012

DEDICATION PAGE

This dissertation is dedicated to the many San men and women who continue to struggle for rights of self-determination.

TABLE OF CONTENTS

LIST OF FIGURES	x
ACKNOWLEDGMENTS	xi
VITA.....	xiv
Introduction.....	1
I. Inquiry and Synopsis	3
II. Contextualizing Hoodia.....	6
III. Theoretical Interventions	8
A. Biopolitics	8
B. Difference.....	14
C. Citizenship.....	20
IV. Dissertation Overview	26
V. Locating the San.....	33
A. Practices of Naming.....	34
B. Colonial Representations.....	36
C. Apartheid Representations	40
D. San Governance	42
E. San Identity and Development	46
VI. Conclusion.....	48
Chapter One. Situating Feminisms, Patent Law, and the Public Domain	49
I. Conceptions of the Public Domain.....	57
A. Open Public Domain.....	60
B. Hybridized Public Domain.....	67
C. Protective Public Domain.....	82
D. Egalitarian Public Domains	94
II. Situated Public Domains.....	126
III. Conclusion	137

Chapter Two. Studying Hoodia: A Feminist Ethnographic Account of the Circulations of <i>Hoodia gordonii</i>	139
I. Multi-sited, Ethnographic Research of Circulations	144
A. Multi-sited Ethnographies and New Legal Realism	144
B. Personal and Professional Circulations	146
C. Tracing the Circulations of Hoodia.....	149
D. Challenges to Conventional Ethnographic, Socio-legal, and Science Studies Methods.....	150
II. Opening up the “Data”	166
A. Fracturing and Suturing Data through Coding Practices	167
B. Memo Writing, Reflexivity, and Ethnographic Fieldnotes	169
C. Situational Maps.....	173
III. Theoretical/Methodological Frameworks.....	176
A. Science and Technology Studies–Feminist Science Studies	177
B. Socio-legal Studies: Critical Race Theory and Feminist Legal Theory.....	182
IV. Conclusion	201
Chapter Three. Encountering Hoodia: The Historical Construction and Classification of <i>Hoodia gordonii</i> in Relation to the San	203
I. Encountering Hoodia.....	206
A. Producing Colonial Science	208
B. Co-producing Stapeliads and San Bushmen	212
C. Authoring, Discovering Hoodia	215
II. Classifying Hoodia.....	221
A. Recording the Hoodia Genus	225
B. Expanding the Hoodia Genus.....	229
III. Molecularizing Hoodia	236
A. Molecular Styles of Thought.....	237
B. Molecularization of Hoodia and the San.....	239
IV. Conclusion	247

Chapter Four. Owning Hoodia: Nature/Cultures and the Patenting of Hoodia Knowledge.....	249
I. Theorizing Nature/Culture Dichotomies in Patent Law	251
II. Constructing Legal and Scientific Expertise.....	256
A. Registering Patent Applications.....	256
B. Constructing Patent Law Experts and Legal Expertise.....	259
C. Fashioning Inventorship and Scientific Expertise.....	267
D. Militarizing Hoodia gordonii	273
E. Disclosing Hoodia gordonii.....	275
III. Patent Law Rules and the Making of Hoodia as Patented Invention.....	279
A. Hoodia as Invention (versus Discovery).....	279
B. Hoodia as Patentable Subject Matter (versus Product of Nature).....	282
C. Hoodia as Novel.....	285
D. Hoodia as Non-obvious.....	293
E. Hoodia as Useful	300
IV. Patent Law as Value System.....	303
V. Countering Patent Law with Hoodia as Hybrid.....	305
VI. Conclusion.....	308
Chapter Five. Commercializing Hoodia: The Making of Hoodia and Difference through Ethno-pharmaceutical Research and Contractual Benefit Sharing.....	311
I. Hoodia as Inspiration: Phytopharm and the Commercialization of <i>Hoodia gordonii</i>	318
II. Hoodia as Stolen Object: Bio-piracy and the “disappearance” of the San.....	328
A. Sharing Hoodia: Benefit Sharing, Indigenous Knowledge, and “doing the right thing”	336
B. Apportioning Hoodia: Ethics of Sharing and Containing in the CSIR-San Agreement.....	343
C. Naming Hoodia: Narrow Recognition of Hoodia and the San in the “Hoodia Factfile”	353
III: Hoodia as Scientifically Proven: Phytopharm, CSIR, and Pathways from “Farmer to Pharma”.....	362
IV. Conclusion.....	368

Chapter Six. Claiming Hoodia: Epistemic Citizenship and the Making of Difference and Inequality when Benefit Sharing Fails.....	371
I. Returning Hoodia: Termination and Transfer of <i>Hoodia Gordonii</i>	373
II. Managing Hoodia: Regulation of Hoodia gordonii Access and Benefit Sharing	378
III. Re-inventing Hoodia: Claiming Hoodia Knowledge through Narratives of Difference	381
A. Corporate Personhood and Hoodia as P57.....	383
B. San Indigeneity and Hoodia as Life	388
C. Farmers’ Rights and Hoodia as Cultivated	393
IV. Advertising Hoodia: The Branding of Hoodia and the San.....	406
V. Conclusion	417
Chapter Seven. Partial Conclusions: From Hoodia Re-inventions to Understanding Epistemic Citizenship	420
I. Review of Dissertation and Findings.....	420
A. Situating	421
B. Studying	422
C. Encountering	423
D. Owning.....	425
E. Commercializing	426
F. Claiming	428
II. Significance for Feminist Science Studies and Feminist Socio-Legal Studies.....	429
III. Implications for Indigenous San Peoples.....	434
Bibliography	442

LIST OF FIGURES

Figure 1. Digital image of <i>Stapelia Gordoni</i> drawing found in Francis Masson's <i>Stapeliae Novae</i>	207
Figure 2. Classification of <i>Hoodia</i> genus and <i>Hoodia gordonii</i> found in Robert Sweet's 1830 <i>Hortus Britannicus</i>	227
Figure 3. Chemical structure of patented <i>Hoodia gordonii</i> chemical composition	284
Figure 4. Text of speech by Mr. Kxao Moses, Chairperson of WIMSA, at the CSIR-San benefit sharing signing ceremony	339
Figure 5. Text of speech by Dr. Ben Ngubane, Minister of Arts Culture Science and Technology, at the CSIR-San benefit sharing signing ceremony	342
Figure 6. Hoodia/Pill amalgamation image found on www.phytopharm.com	353
Figure 7. Desert Burn web site home page at www.desertburn.com	409
Figure 8. Hoodoba Hoodia Gordonii Products web site home page at www.hoodia-dietpills.com	411
Figure 9. Scrolling Header Graphic of Bushmen Hoodia web site home page at www.hoodiabushman.com	414
Figure 10. Excerpt from San Research and Media Contract signed and agreed to by Laura Foster (on file with author)	436

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Introduction

Large bulldozers are destroying *Hoodia gordonii* plants in the Kalahari Desert. Sturdy green-grey stalks rise up from the fertile ground of the Orange River valley, blanketing South Africa's North Western Cape with pink flowers. In the shadow of steel blades, sharp spines are unable to protect Hoodia from destruction. It wasn't supposed to be this way. Hoodia was the "green gold" of the Kalahari, poised for a promising future as an ethnopharmaceutical. Scientists hailed the plant as a potential blockbuster drug for treating obesity. A reporter with CBS 60 Minutes stood in the Kalahari Desert eating Hoodia, professing its power to "fight fat." In a highly publicized ceremony, Indigenous San peoples negotiated a benefit sharing agreement with South African Hoodia patent owners, hanging their hopes on Hoodia's future. Small-scale South African farmers even got in on the Hoodia hype, growing and exporting plants to overseas herbal supplement markets.

But by the end of 2009, Hoodia hopes were fading. Unilever began terminating its research and development of *Hoodia gordonii*. Unilever scientists outside London stopped extracting, dissecting, and probing *Hoodia gordonii* for appetite-suppressant properties. They ended anti-obesity Hoodia clinical trials and severed relationships with large-scale *Hoodia gordonii* plantation farmers in South Africa. Additionally, Indigenous San peoples and environmental activists lamented the future of benefit sharing as a means towards Indigenous peoples' self-determination. *Hoodia gordonii*'s transformation into a profitable, global anti-obesity product had failed to take shape. To understand Hoodia's changing expectations one must know its histories and entanglements.

Hoodia gordonii or as the San refer to it, *!Xhoba*, is a succulent plant known for generations by the San peoples in Southern Africa for a variety of uses such as food, water, and

energy. The San have used the plant to suppress appetite during times of low food supply, while hunting, and when re-locating their homes. San women also report using the plant to treat gassiness in babies and ease breastfeeding.

But as it traveled through circuits of scientific expertise, regulatory systems, and market logics, Hoodia's properties became patented objects aimed at helping U.S. women in their self-disciplining efforts of weight control. In 1997, South Africa's Council for Scientific and Industrial Research ("CSIR") obtained patent rights to Hoodia's P57 compound. Then in 1998, CSIR granted an exclusive license to Phytopharm to develop *Hoodia gordonii* for global commercialization and sale as an anti-obesity product. Phytopharm, in cooperation with Pfizer and eventually Unilever, began to conduct final drug trials on the compound and expected to sell it as ethnopharmaceutical for millions of dollars profit.

However, the journey of Hoodia did not stop there. It also flowed through networks of Indigenous peoples' and non-governmental organizations grappling with patent ownership rights and benefit sharing. Traveling through these networks, Hoodia became an object of Indigenous self-determination, a site of symbolic and material struggle where San peoples could make moral and political claims for rights and recognition. For instance, in 2003 the South African San Council publicly condemned CSIR's patenting of *Hoodia gordonii* and eventually signed a benefit sharing agreement requiring CSIR to give 6 to 8% of their profits to a legal trust set up for San communities across Southern Africa.

Meanwhile, patents on Hoodia signaled its value, generating a profitable herbal supplement industry devoted to selling the plant for weight loss. Sold through the Internet, the botanical market for Hoodia employs stereotypical images of seemingly "modern" white western women bodies in relation to "traditional" San male hunters, while producing the invisibility of

San women. An emerging herbal supplement industry also gave rise to a second benefit sharing agreement in 2007 between the San and the Southern African Hoodia Growers Association.

I. Inquiry and Synopsis

Furthermore, the story of the San and Hoodia was now appearing in law books as a leading example of benefit sharing. Hoodia struggles were being described through a distinct language of law and economics celebrating contractual benefit sharing as a way to guarantee access to biodiverse resources and promote economic efficiency. More critical legal discussions were emerging, but their focus on expanding the public domain and debating intellectual property rights for Indigenous peoples were similarly narrow and devoid of critiques of power.

As an alternative to these narrow registers, this research develops a different inquiry. I am interested in asking, “How do Hoodia patent law struggles produce difference and inequality, while also engendering new pathways for economic participation and political recognition?” Contributing to the fields of feminist science studies, transnational feminisms, and socio-legal studies, what I find is that difference, inequality, and recognition are produced through two inter-related processes.

One is through the oscillation of elastic nature/culture binaries as Hoodia (and San identities) are re-invented through various discursive formations. The nature/culture binary is an important conceptual analytic. Feminist scholars have shown how women, people of color, and Indigenous peoples have historically been constructed as closer to nature and thus excluded from culture. In my project, I show how individuals and groups making claims for rights (e.g., patent ownership, benefit sharing contracts, and bioprospecting permits) deploy, disrupt, and/or refigure nature/culture binaries through gendered and ethno-racialized narratives.

Second is through the emergence of new expressions of what I call “epistemic citizenship.” I define epistemic citizenship as the ways in which privileges and responsibilities are being claimed and granted in unequal ways based upon whose knowledge matters most to neoliberal economies. Thus, I am using the concept of citizenship loosely to think through the relationship between economic participation and political recognition.

To be sure, citizenship has always been linked to knowledge and power. However, new legal and scientific regimes have expanded the scientific bioprospecting of biological and genetic materials, and their legal regulation. Most recently, the 1995 Agreement on Trade-related Aspects of Intellectual Property (TRIPs), the 2004 South African Biodiversity Act, and the 2010 Nagoya Protocol on Access and Benefit-sharing, coming out of the Convention on Biological Diversity, have all been enacted to strengthen legal regulation over scientific knowledge and its production. Despite a productive emphasis on environmental conservation, such laws reinforce unequal modes of citizenship.

For instance, scientists (and their corporate employers) who create commercialized inventions are deemed to be more worthy epistemic citizens. They are given stronger rights to participate in market economies through patent ownership monopolies, versus Indigenous peoples who receive weaker rights through access and benefit sharing. Such rights are inadequate because Indigenous peoples continue to lack control over scientific research processes and the promise of benefit sharing remains in the hands of patent owners. Yet, in making claims for benefit sharing as a pathway to political recognition, San peoples also contest and re-imagine meanings of citizenship.

Thus, I contend that lines of inclusion/exclusion within the nation-state and more globally are being increasingly structured through a politics of epistemic citizenship. A citizenship based

upon claims to and grants over knowledge. Hoodia patent law struggles therefore are not just about patent law and benefit sharing per se. Rather, they represent conflicts over nation-state futures increasingly designed around regulating knowledge and knowledge production. Hoodia patent law struggles help to elucidate the emergence of these new expressions of epistemic citizenship.

The proceeding discussion will elaborate on these findings by considering how my research makes a series of interventions into theoretical debates. I will also briefly contextualize Hoodia patent law struggles within the historical and political changes within post-apartheid South Africa. This helps focus the inquiry on how Hoodia has been re-invented through various legal, scientific, and market discourses, and how such re-characterizations have produced difference, inequality, and recognition.

Prior to such a discussion, I would like to offer a note on terminology. Terms such as indigenous knowledge, indigenous peoples, traditional knowledge, and local knowledge are contested. When referring to specific scholarly work, I employ the terminology used by the authors.

When conducting my own analysis, however, I do my best to use the terms “Indigenous peoples” (capitalized) and “indigenous traditional knowledge” to honor Indigenous peoples’ efforts to re-claim characterizations of “indigenous.” My use of the term also flows from The United Nations Permanent Forum on Indigenous Issues, led by self-identified members of indigenous communities. The Permanent Forum follows a flexible, working definition of “indigenous peoples” as people having a historical continuity with pre-invasion and pre-colonial societies who considered themselves a distinct group from others in society, are a non-dominant

sector of such society, and who are determined to preserve their cultural heritage and ancestral lands.

Another term is that of *Hoodia gordonii* and *!Xhoba*. When analyzing specific representations of the plant, I use the language being evoked by the authors. These terms are leaky though and often blur into one another. The plant has also taken on a more political and symbolic presence that escapes its botanical characterization. Thus, when referring to Hoodia patent law struggles more generally, I use the term “Hoodia” without italics.

My use of these terms, however, cannot escape the relations of power that structure them, so inevitably there is always an element of reification. I can only hope that my analysis does some work to disrupt such reifying processes, while acknowledging its limitations.

II. Contextualizing Hoodia

As I began my fieldwork in South Africa, expectations of a financial windfall to the San plummeted when Unilever issued a press release in late 2009 that they were dropping all plans to develop Hoodia products. Termination raised anxieties that benefit sharing had officially failed. Once a symbol of hope for San peoples, the Hoodia plant and its benefit sharing agreement were now foundering. Rumors began circulating that large bulldozers were terminating helpless Hoodia plants growing in the Kalahari on Unilever-sponsored plantation farms. So how did Hoodia expectations change? To strengthen claims for benefit sharing, Indigenous San peoples’ and their allies constructed Hoodia as a vulnerable plant that fell victim to corporate biopiracy. With the success of benefit sharing negotiations, Hoodia became a sign of hope for Indigenous peoples’ rights to self-determination. Termination of Hoodia research suddenly put the fate of benefit sharing on shaky ground. Hoodia stakeholders were now considering Hoodia as a fair trade object with the potential to lift the San into “sustainable livelihoods.” So how did Hoodia

change from a symbol of biopiracy to Indigenous self-determination and then to fair trade? How did its potentiality go from a future of promise to one of uncertainty? Meanwhile, as Hoodia research was ending, the regulation of benefit sharing was beginning.

Changes in Hoodia research corresponded with the emergence of new regulatory regimes within South Africa. The protection of traditional knowledge and intellectual property rights had become a nation-building project. South Africa and its Treatment Action Campaign had recently leveled a successful political battle against the United States and its patenting of HIV/AIDS drugs. Going forward, however, the government faced a double bind. One way to protect its knowledge and resources from outside commercialization was to encourage South African researchers to file their own patents. Thus, South Africa began to strengthen regulation over patent rights, bioprospecting permits, and benefit sharing. Yet, in doing so, South Africa ran the risks of promoting biopiracy against Indigenous peoples within its own borders and regionally. New laws requiring benefit sharing were meant to mitigate this, but, as I will show, unequal modes of citizenship were sustained.

New modes of regulation also led to a climate of legal and scientific uncertainty. Researchers were required to enter into benefit sharing with Indigenous peoples, but the process was now managed and standardized through the Department of Environmental Affairs and Tourism. In addition, all benefit sharing monies now went into a centralized government Trust. Implementation was still in process, so the formerly private San benefit sharing agreements with both CSIR and the Hoodia Growers were now contested, uncertain, and subject to governmental approval.

Given these new laws and the termination of Hoodia research, I became interested in how relevant social actors would articulate and give new meaning to Hoodia and Hoodia knowledge

now that the stakes had changed. For instance, the San were once again obligated to construct themselves and their knowledge of Hoodia as traditional knowledge by performing indigeneity in order to secure legal rights and entry into the market place. This required becoming complicit with the market-mediated inscription of Hoodia as an appetite suppressant historically used by San male hunters, which worked to obscure the gendered knowledge practices associated with the plant.

III. Theoretical Interventions

This research makes multiple interventions within science studies, women's studies, and law, as will be discussed below. It contests how concerns over human genetic research undergird the theorizing of a new biopolitical economy, while leaving molecular plant research and the transnational scope of biopolitics unexamined. Placing the Hoodia plant at the center of the analysis, it challenges how debates over patent law, bioprospecting, and indigenous knowledge fail to account for gendered social relations and the actual environmental resources being exploited. This research also expands and contests scholarly debates regarding the resurgence of race as biological, rather than socially or politically constructed. As San peoples in South Africa politically mobilize against the patenting of Hoodia knowledge, they work to contest their classification of Coloured under apartheid and establish themselves as collective Indigenous Peoples. Finally, this research shifts science studies regarding biological citizenship towards a consideration of epistemic citizenship. Scholars in each of these fields will find these sites of intervention informative as well as open for interdisciplinary contribution.

A. Biopolitics

An emerging field of science studies scholarship focuses on how the life sciences and capital economies merge to produce new conceptions of science and politics. The economic

futures of nation-states are increasingly intertwined with a burgeoning biotechnology industry centered on “life itself.” (Rose 2006) New biogenetic understandings of the human body are beginning to change what it means to be biological, to be human, and to be capital. (Landecker 2007; Sunder Rajan 2006) For instance, embryonic stem cell technology promises a “surplus of life” in the future through regenerative medicine. (Cooper 2008, 167) Technologies of genetic enhancement hope to optimize life by engineering the body at the molecular level to be stronger, faster, and have more memory. Genome sequencing promises to prolong life through personalized medicine. Pre-implantation genetic diagnosis (PGD) claims to produce more “normal” life by screening embryos for possible genetic diseases before being implanted into a woman’s body. (Franklin and Roberts 2006) The new biotechnologies not only hold promise for the production of bodily life, they also generate new channels for economic growth for the nation-state.

Biotechnologies represent new pathways for neoliberal, capitalist production. Life in the form of DNA, stem cells, sperm, eggs, and human tissue become “biocapital,” biological forms of life that can be designed, traded, and commercialized. (Sunder Rajan 2006) For example, personalized medicine promises individuals prescription drugs tailored to their genetic makeup, while offering pharmaceutical companies new streams of potential revenue. (Sunder Rajan 2006) Regenerative medicine assures profitable futures for biotechnology companies by engineering of human tissue into standardized medical devices for patients. (Cooper 2008, 124) Genetic screening of the unborn through PGD allows the fertility industry to expand its services to anxious couples while enlarging its revenue potential. (Franklin and Roberts 2006) Life science research is thus inexplicably tied to capital production. (Sunder Rajan 2006, 3)

As life science research and capital production become further co-constituted, conceptions of the body, science, and politics are shifting, thus creating new forms of biopolitical governance. Biopolitics offers a theoretical framework for understanding contemporary forms of governance within a neoliberal order. Foucault argued that, starting in the seventeenth century, mechanisms of power shifted from the sovereign authority to take a life towards the power to foster life. (Foucault 1988, 138) Power became directed at administering and regulating the biological existence of populations. Bodies became subject to “techniques of power” through diverse institutions such as schools, churches, hospitals, and the family, which were aimed at managing populations for the development of capitalist production. (Foucault 1988, 141) Power therefore, according to Foucault, transformed into a discursive power that “comes from everywhere.” (Foucault 1988, 93) Biopower and biopolitical forms of governance are shifting in new ways to manage populations and bodies for generating capital production.

Nikolas Rose suggests five ways in which a new biopolitics is emerging through contemporary biomedicine. (Rose 2006, 11-32) The first is “molecularization,” where science now sees life at the molecular level as opposed to the molar. Under this style of thought, life (e.g., human tissue and DNA) can be identified, isolated, and recombined through new practices of intervention. Second is “optimization,” where life science research remains directed at health and illness, but also promises to improve the human body beyond its normal parameters. The third characteristic is “subjectification.” This concerns the rise of “biosociality” and “biological/genetic citizenship,” where practices of citizenship involve individuals and groups collectively organizing in relation to their health, disease, and genetic susceptibilities in order to make claims for rights over their own “states of injury.” New political subjects are thus emerging and mobilizing around their individual biogenetic markers to make claims for rights to health

case and government support. Fourth is the rise of “somatic expertise,” where new forms of authority related to the body are emerging. These “experts of life itself,” Rose contends, are no longer confined to clinical doctors, but somatic expertise now extends to, for example, nurses, therapists, dieticians, and genetic counselors. And finally the fifth characteristic is an “economies of vitality,” where strong links have formed between the life sciences and economies to produce “bioeconomies.” Life has become amenable to being isolated, stored, manipulated, and extracted from its vital properties as “biovalue.” According to Rose, these characteristics of contemporary biomedicine within advanced liberal societies signal a new form of biopolitics, where bodies are governed in new ways through biotechnologies.

So how do Hoodia patent law struggles inform these debates? Relevant science studies scholarship has been focusing on biomedical technologies involving biological and genetic materials from human life. Attention is being placed on embryonic stem cells, human genetic sequences, and human tissue samples. These provide the raw material for new biogenetic research and its commercial applications.

I take issue with the fact that the theorizing of a new biopolitics generally flows out of the concerns and interests of a select group of nation-states and their elites who harness such research technology. How are new biomedical techniques transnational, obtaining their raw materials from the global south to produce scientific advances for those in the developed world? How do understandings of biopolitics shift when we consider the life of plants? How are forms of biopolitical governance functioning, not functioning, or mutating in different ways in the context of South Africa and Hoodia patent law struggles?

For instance, my research begins to show how Hoodia patent law struggles inform and challenge the above stated characterizations of the new biopolitics. Molecularization applies to

more contexts than just the patenting of human DNA sequences. Practices of plant ethnopharmacology similarly work to isolate and patent the molecular and chemical compounds of nature. Thus the interior spaces of plants are also being opened up and fragmented through processes of molecularization.

Additionally, Hoodia patent law struggles involve similar, but different, elements of biosociality and a biological/genetic citizenship. The San collectively organize around an injury to their culture and heritage in order to claim rights to benefit sharing from the patenting of their Indigenous knowledge. A sociality and citizenship are emerging, but it looks more like an “episociality” or “epistemic citizenship.” The collective is not organizing based upon the body and genetic research; it is mobilizing around knowledge and pharmacological research.

At the same time, the San mobilizing over injury to knowledge has everything to do with threats to their bodies, health, and well-being. Patenting plant properties derived from Indigenous San peoples’ knowledge has the potential to reduce San access to their own traditional medicines and food supplies. For instance, the patenting of Hoodia signaled its value and generated a profitable herbal supplement company. Demand for the plant increased and it was eventually included in Appendix II of the Convention on International Trade in Endangered Species. Appendix II protects species threatened with possible extinction because their trade is not closely controlled. San political organizing is therefore about injury to the body of the Hoodia plant and its potential to harm the health of San peoples’ bodies.

There is also the matter of the San political body. Certain San peoples consider Hoodia patent law struggles as a pathway towards formal recognition and participation in the National House of Traditional Leaders in South Africa. (Comaroff and Comaroff 2009, 89) Such

recognition would give the San more sovereignty and rights to self-determination to ensure the health and well-being of their land, bodies, knowledges, and heritage.

Hoodia patent law struggles also appear to involve new forms and contestations over what Rose calls “somatic expertise.” This involves the extension of medical expertise and authority to, for example, nurses, therapists, dieticians, and genetic counselors. New forms of scientific expertise and authority are also emerging, and being simultaneously contested, around the body of the Hoodia plant and its implications for human bodies.

CSIR scientists claim expertise over the isolated chemical properties of the plant and how it can be administered to obese individuals who are susceptible to diabetes and hypertension. The San claim to be authorities on the body of the plant itself and its range of gendered uses to suppress appetite, boost energy, and ease breastfeeding. Even South African farmers claim to be experts on how to cultivate the plant in precise ways to increase its potency. Hoodia patent law struggles seem to challenge notions of “somatic expertise” to consider how the bodies of plants, San peoples, CSIR scientists (and their lawyers), farmers, and potential consumers all work to contest and produce forms of expertise. They also give us pause to consider science studies debates more generally. Some may argue that the San lacked the “interactional” expertise to bring their knowledge of Hoodia into fruitful dialogue with scientists in order to gain meaningful recognition of San Hoodia knowledge. (Collins and Evans 2002) Yet, my research shows how the knowledges stemming from scientists, farmers, and the San are “not simply additive, they represent[] radically ‘other’ ways of understanding the world” as they seek to make legal claims. (Jasanoff 2003, 392)

Thus, my research is interested in how institutions of law constitute Hoodia knowledge, expertise, and authority. Drawing upon Jasanoff, it takes boundaries as an entry point into how

different claims of expertise come into being, and what the stakes are. (Jasanoff 2003, 398) Accounting for how Hoodia expertise itself is itself “invented” may open up new visions of science and democracy outside of neoliberal, biopolitical framings where bodies and selves can flourish.

And finally, Hoodia patent law struggles also inform a biopolitics characterized by an “economies of vitality.” Life as a plant from nature is isolated, stored, and manipulated to extract a chemical composition (i.e., biovalue) for commercialization as an anti-obesity pharmaceutical. Hoodia becomes directly implicated within neoliberal biopolitical concerns. A Hoodia-based ethnopharmaceutical is meant to engender techniques of self-care to regulate body size and ward off an “epidemic” of obesity that will burden the dissolving welfare state.

These biopolitical concerns however are transnational. South African and U.K. scientists isolate and patent Hoodia plant life with the hopes of managing U.S. populations of “fat bodies,” and in turn potentially strengthening their company profit shares and the economies of the U.K. and South Africa (and the San through benefit sharing). Phytopharm and Unilever aim to supply U.S. populations with Hoodia-based products to help individuals make better choices and take control of their obesity and its potential health risks. Hoodia as biovalue can potentially ride into U.S. markets with the help of neoliberal discourses of individual choice and responsibility that accompany reductions in government support for public health.

B. Difference

As life becomes biovalue for capital markets, difference is produced in novel ways. According to Comaroff and Comaroff, “difference, these days, takes shape at the intersection of culture, biology, the market, and intellectual property law.” (Comaroff and Comaroff 2009) In the case of Hoodia, a focus on difference opens up a flexible inquiry to address modes of

structural exclusion constructed around assemblages of gender, race, indigeneity, nation, and knowledge through co-constituted institutions of science, law, and markets.

Science studies and legal debates over patent law, bioprospecting, and indigenous knowledge historically asked whether or not Indigenous peoples should make ownership claims over their traditional knowledge and resources. (Brown 2003; Posey 1990; Brush 1993; Boyle 1996) Forgoing such claims would allow knowledge and resources to circulate freely in the “public domain” for scientists to use. Critical studies of patent law theorize the public domain as a conceptual analytic for understanding the relationship between patent law and civil society. (Rai and Eisenberg 2003; Boyle 2008) Ideas and materials within the public domain are free from property ownership. Scholars therefore argue for its expansion as a way to promote the open exchange and production of scientific knowledge. However, expanding the public domain contrasts with Indigenous peoples’ interests to protect their knowledge, culture, and heritage. An expansive public domain implies that Indigenous peoples should forgo their claims. Such tensions regarding the public domain will be further explored in the following chapter.

In another line of inquiry, scholars have engaged with benefit sharing as an alternative approach. (Greene 2004) Rather than make, contest, or forgo patent ownership claims, Indigenous peoples can sign contracts with scientists for a percentage of future revenue from the commercialized product. However, scholars have expertly shown how benefit sharing involves hierarchal power relations. For instance, in her book *When Nature Goes Public: The Making and Unmaking of Bioprospecting in Mexico*, Cori Hayden produces an ethnographic study of a bioprospecting agreement between the University of Arizona and Mexico’s National Autonomous University under the larger project of the U.S. government’s International Cooperative Biodiversity Groups program (ICBG). Hayden shows how scientists deliberately

collect plants from the side of the road to avoid giving benefits to Indigenous people who are sharing their knowledge and selling the same plants in local markets. (Hayden 2003) Benefit sharing also incites discussion over the commodification of difference.

Scholars contend with how Indigenous people become willing participants in the commodification of their cultural knowledge in order to make claims for rights and recognition. For instance, Shane Greene studies an ICBG bioprospecting agreement between Washington University, Serle/Monsanto, and the Arguan peoples of Peru. (Greene 2004) He argues that Indigenous peoples re-figure notions of ethnicity and indigeneity as they engage in “strategies of indigenous incorporation,” while making claims for benefit sharing in order to protect their culture and knowledge from pharmaceutical bioprospecting.

Beth A. Conklin observes a similar phenomenon as Indigenous peoples speak out against biopiracy through international indigenous rights movements. (Conklin 2002) Conklin contends that shamans in Brazil re-imagine notions of indigeneity within the nation-state as they make claims for protection of their “environmental knowledge.” The re-invention of indigeneity through capital modes of bioprospecting and benefit sharing is however situated within a double-bind, which expresses how claims for legal rights can offer limited liberatory potentials.

Such scholarship by Hayden and others produces valuable insights, but often fails to address questions of gender or the environmental resources themselves. Therefore, my research makes a significant contribution by placing a non-human actor, the Hoodia plant, at the center of my analysis. This enables me to investigate how gendered narratives and social relations may or may not be significant, while emphasizing the actual Hoodia plant itself. Through this methodological inquiry, Hoodia patent law struggles reveal how patent law privileges masculine notions of scientific knowledge. It demonstrates how the commercialization of Hoodia as an anti-

obesity product contributes to gendered discourses of obesity that compel women to “control” their weight and adhere to normative standards of feminine beauty. San claims for benefit sharing involve the construction of San Hoodia knowledge as masculine while obscuring its gendered dimensions. Furthermore, South African farmers make claims for rights through gendered narratives that construct knowledge of how to cultivate Hoodia in opposition to San women’s knowledge of the plant. Hoodia patent law struggles thus produce, reinforce, and contest notions gender as well as race and indigeneity.

According to Comaroff and Comaroff, the emergence of what they call “Ethnicity, Inc.” constitutes a double process involving the “incorporation” of identity (e.g., ethnicized populations as corporations) and the commodification of their cultural products and practices. (Comaroff and Comaroff 2009, 21) For instance, they contend that Hoodia patent law struggles render San peoples as a corporate entity with the legal formation of the South African San Council to negotiate on their behalf. At the same time, practices of “Ethnicity, Inc” involve the commodification of the San and their image to market the plant. Furthermore, such practices are contradictory; they simultaneously offer insurgent possibilities for promoting San rights to self-determination, while intensifying lines of inequality.

The re-invention of indigeneity also implies a challenge to historical racial and ethnic classifications. I would contend that benefit sharing allows Indigenous peoples to contest nation-state categories of racial and ethnic identity. In the case of Hoodia, the South African San use benefit sharing as a pathway towards rights and recognition, while simultaneously challenging their classification as Coloured under apartheid. As the San re-invent themselves as Indigenous peoples, they contest biological notions of race under apartheid. Race as biology dissolves and its social and political constructions are highlighted. This differs from current debates over new

forms of biological determinism where race is constructed as biological through race-based medicine and genetic ancestry testing.

Science studies scholars express concern that new biogenetic technologies are re-producing race and ethnicity as biological, rather than as social, cultural, or political. Research around the human genome, especially the Human Genome Diversity Project, ushered in new possibilities for genetic research that corresponded with notions of race and ethnicity. Researchers now focus on how genetic disorders might be linked to different racial and ethnic populations, which some argue presents a new form of “eugenics by the backdoor.” (Duster 2003) Scientists are also busy developing new pharmaceutical race-based drugs. For example, the use of patented and approved BiDil to treat heart disease in African-Americans. (Kahn 2004) Population geneticists have also turned to genetic ancestry testing (e.g., the Genographic Project) as a first step towards establishing disease susceptibility in different ethnic and racial groups. These new genetic technologies give rise to new notions of biological race and ethnicity, which were previously refuted by the 1950 UNESCO Statement on Race. (Reardon 2005)

Scholars fear that technologies of race-based medicine produce race as biological. At issue within these debates are racial categories and patent ownership. For instance, racial categories drive human subjects research aimed at determining the impact of drugs on particular racial and ethnic groups. If human subjects research shows that race is significant in determining the efficacy of a drug, then a new patent may be awarded on the invention of a “race-based drug.” (Kahn 2008) Thus, science and law appear to usher in a new form of biological determinism that enables ethics of choice and self-care within biopolitical economic concerns.

Scholars warn that scientists use racial and ethnic categories uncritically. Scientific findings are based upon human subjects research that deploys unstable categories of race and

ethnicity. (Bolnick, et al. 2007) Race emerges as a biological, fixed, and assignable variable that appears significant in determining how drugs can be personalized to particular racial populations. Race becomes naturalized. This implies that racial identities are themselves biologically determined. The re-figuring of race and ethnicity as biological threatens to unsettle notions of identity and minority legal protection, such as Native peoples' claims to land. (TallBear 2007) It is also particularly dangerous given contemporary politics. (Roberts 2011) Neoliberalism involves deep cuts to public health and social services for minority populations, while a post-racial rhetoric obscures the material realities of racism. This "fatal invention" of race as biological threatens to unsettle the social and political notions of race undergirding anti-racist politics. (Roberts 2011) Biotechnologies within neoliberal bioeconomies thus produce race in a manner that threatens to re-configure binaries of the biological and social in unsettling ways.

My research however shows how the production of race and ethnicity (and gender) is not confined to new biotechnologies of race-based medicine and genetic ancestry testing. I contend that novel practices of bioprospecting and benefit sharing around the patenting of Indigenous peoples' knowledge also involve questions of race and ethnicity, albeit in different ways. Hoodia patent law struggles do not involve human subjects research or patent ownership based on racial categories per se. Nevertheless, practices of bioprospecting and benefit sharing are about biology and determinism, the biological and the social, and processes of naturalization. Yet, an intermediary is involved—the biology of the plant. Researchers isolate and purify the plant down to its chemical compositions responsible for its appetite suppressant properties. The "invention" of its chemical parts is patented. Scientific knowledge of the plant in the lab is codified and thus valued under the law in contrast to San knowledge of the plant. Indigenous knowledge is constructed as "other." In turn, Indigenous San peoples are devalued through the marginalization

of their knowledge. Patent law, in this case, therefore produces and devalues Indigenous knowledge (and indigeneity) through exclusion. This differs from the patenting of race-based medicines that construct race as biological. Yet, these two instances link up.

The exclusion and devaluing of Indigenous knowledge through patent ownership gives rise to San political mobilization for benefit sharing. To strengthen their claims for benefit sharing, the San are compelled to adopt fixed, naturalized, and dehistoricized notions of indigeneity. San agency is obligated to construct indigeneity without agency and as determined. Yet, San claims for and grants of benefit sharing simultaneously work to challenge historical constructions of San peoples through biological based categories of race under apartheid. Racial categories are dissolved as the San re-invent notions of indigeneity as political and socially constructed. The strategic deployment of fixed, naturalized, and determined understandings of indigeneity simultaneously work to value San peoples and their knowledge. Biology, determinism, race, indigeneity, naturalization are all at work in different and important ways within new biotechnologies of race-based medicine, bioprospecting, benefit sharing, and patent ownership. Understanding the new biopolitics implores an examination of the mechanisms undergirding these biotechnologies and the divergences, convergences, and amalgamations across and within them.

C. Citizenship

Biopolitical concerns over new biotechnologies and the production of difference engender questions of citizenship. In her work on “civic epistemologies,” Jasanoff demonstrates how modes of citizenship find new expression in political contestations over science and knowledge. (Jasanoff 2005) As Jasanoff explains, citizenship within western political thought has been constructed around two basic principles. (Jasanoff 2004) One is the categorical

principle where citizenship is granted to all members of a society who are subject to its laws through the social contract. The second is the contingent principal where citizenship rights are only granted to those who are considered competent to participate within governance.

Jasanoff explains how these principles have been the subject of much critical scrutiny. For instance, contrary to the first principle, all democratic societies engage in some type of categorical exclusion of certain groups. Children, convicted felons, and the mentally infirm, for example, are not given equal rights to citizenship. Furthermore, in terms of the second principle, who is considered a competent citizen is contingent upon the dominant group in power and the historical context. For instance, certain groups were and continue to be excluded from full participation in governance, such as women, people of color, Indigenous peoples, gay and lesbians, and religious and ethnic minorities, and non-landowners.

According to Jasanoff, STS scholars are concerned over how the lines between exclusion and inclusion are drawn within norms and practices of citizenship involving debates over scientific and technological advances. (Jasanoff 2004, 91) Who is allowed to participate in such debates? Who is considered an expert? Whose ethical frameworks are valued? Who counts as a citizen in such debates? How are norms of citizenship themselves shaped through these debates?

Building upon and departing from Jasanoff, my research asks how modes of citizenship are constructed, contested, and re-configured through Hoodia patent law struggles over ownership, knowledge, and political recognition. In my research within post-apartheid South Africa, I find the emergence of new expressions of epistemic citizenship where individuals and groups make and are granted claims for inclusion into the market place based upon their ways of knowing or processes of knowledge production. Such claims are brought about and mediated through patent ownership and the making of new legal assemblages comprised of bioprospecting

permits, benefit sharing agreements, San research contracts, prior informed consent documents, and biocultural protocols. Through the production of these legal technologies, a new relationship with the state becomes visible. Novel expressions of epistemic citizenship for participation within global economies become constructed through how Hoodia and Hoodia knowledge is characterized by scientists, farmers and the San as, for instance, chemical compound, cultivated resource, or life/nature. In turn, characterizations of Hoodia are shaped by different assertions of expertise, authenticity, and origin. I also find that epistemic citizenship is not the same for everyone. Certain forms of knowledge production are more privileged under the law than others. In turn, certain bodies and their ways of knowing are excluded as full citizens and not afforded equal opportunities to participate in economic and political spheres.

The notion of epistemic citizenship itself is not new, but its expression within contemporary theories and processes of neoliberalism and globalization is. Scholars have thoroughly discussed the connections between bodies, knowledge, and citizenship. (Foucault 1973, 1988) Theorists such as Foucault have shown us that citizenship has also been tied to questions of knowledge, power, and bodies within biopolitical forms of governmentality. In the shift away from sovereign power, discourses of knowledge and expertise were dispersed through institutions, constructing meanings of sexuality to promote the self-disciplining of bodies. (Foucault 1988)

More recently, Adriana Petryna has been tracing the emergence of “biological citizenship” in the Ukraine through her work on the Chernobyl nuclear disaster. (Petryna 2002) She has shown how individuals have been making claims through new regulatory regimes for inclusion into the post-soviet welfare state based upon their bodily injury. Central to such claims is having access to what counts as knowledge for designating certain bodies as candidates for

citizenship in the form of governmental support. In this case, biological citizenship is only granted to those individuals who have acquired the appropriate medical certifications and paperwork documenting their injury. Thus, both questions of knowledge and the body are central to the construction of citizenship.

The degree to which they are important however changes within particular contexts. The emphasis on the “bio” and on “life” within science studies literature on biotechnologies can often obscure the entanglements of the body, knowledge, and power. As a result, struggles over indigenous knowledge and their role within the production of the biosciences become relegated to an issue of, for example, environmental politics. Scholars of society and genetics fail to take seriously the patenting of the genetic and biological materials derived from Indigenous peoples’ knowledge, culture, and heritage.

I contend however that much can be learned from such struggles as they greatly inform central debates around the biosciences regarding notions of difference, ownership, and citizenship within neoliberal knowledge economies. Hoodia patent law struggles, where ownership of knowledge is central, generates a focus more firmly on an epistemic citizenship, rather than biological. At issue are contestations over what counts as knowledge and what forms of knowledge should be given stronger legal rights for economic and political participation.

I do not contend that epistemic citizenship is entirely novel. What I do suggest is that its *expression* is new. Expansions and affiliations between biotechnologies, intellectual property laws, and neoliberal policies engender novel ways in which citizenship is structure by who can lay claim to knowledge. Despite broadening access to and democratization of knowledge, this research shows how lines of exclusion and inclusion are continually being drawn around whose knowledge counts and matters most. So how is this new?

Intellectual property rights have always been historically used to grant some groups more rights over others. In their earliest inception, patent law monopolies were granted to specific merchants to encourage industrial production in England. Legal protections for inventions, particularly in the 1800s, were carved out within a discursive rhetoric of masculinized hero worship and patriarchal birthing metaphors. (Halbert 2006, 240; Pollack 2006, 606-07; Pettitt 2004, 28) Ownership rights were meant to protect autonomous male inventors laboring alone in their labs, giving birth to their inventions. Such legal rights served to inscribe privileged value upon the male capacity to give birth to wisdom and knowledge, and devalue women's capacity to reproduce children.

Patent law was therefore embedded within debates over "theories of genius" and originality, themes which were central to the contemporaneous writings of Mary Shelley and her tragic story of the inventor Frankenstein. What is new, however, is the scope of patent law protection and its broad capture of discoveries within the life sciences. If Frankenstein were to invent his creature today, would he be able to patent it? An unlikely scenario, but he would probably have an easier time proving his case to the U.S. patent office.

This is because there have been significant expansions of intellectual property rights impacting science and technology over the last three decades. The 1980 U.S. Supreme Court decision in *Chakrabarty*, permitting patents on genetically modified organisms, opened the door for patents on human genetic sequences.¹ That same year the U.S. Bayh-Dohle Act encouraged universities to acquire patents on inventions derived from federally funded projects. Then in 1995 the World Trade Organization's Agreement on Trade Related Aspects of Intellectual Property ("TRIPs") required member countries to recognize the intellectual property rights of other members, or face possible trade sanctions. What resulted was an explosion in the global

¹ *Diamond v. Chakrabarty*, 447 U.S. 303 (1980).

biotechnology industry with a critical importance placed on intellectual property rights. (Sunder Rajan 2006)

To be sure, much of the advance in biotechnologies concerns the genetic. With the recent power to map human and plant genomes, researchers have turned to genetically modifying and optimizing plant, animal, and human bodies. In contrast, Hoodia patent law struggles are about the research, development, and ownership of *chemical* plant properties. The research and patenting of chemical plant compounds has been around for some time and is not new to the business of agriculture or ethnopharmacology. Yet, what is new is the pressure for university and commercial research scientists to patent their inventions, whether they involve chemical or genetic properties. Investors, now more than ever, require evidence of a patent before they will fund research. Patent ownership itself also generates income through royalties.

What is also new is the emphasis on stockpiling large portfolios of patents to generate revenue within a globalized economy where profit channels are narrowing in the face of increased competition. Thus, as nation-states seek to support new channels for profit within globalized economies, patent law has become an important transnational legal tool.

Epistemic citizenship is both a conceptual analytic and a process of inclusion/exclusion within the nation-state. Hoodia patent law struggles demonstrate how stronger rights of citizenship are being granted based upon whose knowledge matters most to neoliberal economies. Indigenous San knowledge of Hoodia may be recognized, but it is the knowledge of its chemical compounds that is most valuable for sustaining bioeconomies and techniques of self-care. The bodies of elite San men and women are being included in the research process. CSIR scientists consult them for their plant knowledge and some are asked to help grow Hoodia plants as research specimens. Yet, their knowledge is not real enough. It must be “scientifically

proven.”² Thus, the inclusion of their bodies into the research process does not bring full recognition of their knowledge or its associated ethical frameworks.

A lens of epistemic citizenship moves us closer to understanding how citizenship itself is becoming fractured in new and interesting ways. Lines of inclusion and exclusion are being drawn in networked ways through multiple spatial and temporal modes. Claims for and grants of economic and political participation (and government support) are increasingly based upon a web of new legal subjectivities around genetic markers, diseased bodies, and ways of knowing. (Petryna 2002; Rabinow 1999) Yet, the inequitable diffusion of citizenship along the genetic, biological, and epistemic is embedded within histories of racialized, gendered, and ethnic identities.

This research focuses on just one of those new legal subjectivities, claims based upon knowledge and ways of knowing. Its connections however to the body of the plant, the San, and the nation-state will become apparent. Thus, through examining the precise mechanisms of epistemic citizenship, this research brings us closer to understanding how citizenship itself is a matrix where lines of inclusion and exclusion are unequally drawn around new, yet familiar, legal subjectivities of genes, biologies, and knowledges.

IV. Dissertation Overview

I begin in Chapter One by locating and distancing my research from critical intellectual property scholarship around patent law and the public domain. The goal of this chapter is to open up space within the scholarly terrain to investigate patent law struggles through the lens of citizenship. Critical studies of patent law theorize the “public domain” as a way of understanding

² Department of Science and Technology, Republic of South Africa. “Technology for Sustainable Livelihoods.” The report contains no obvious date but appears to be written sometime after November 2005 and before 2008.

the relationship between patent law and civil society. Ideas and materials within the public domain are free from property ownership.

Some scholarship argues for the expansion of the public domain (and the shrinkage of patent ownership) as a way to promote the open exchange and production of scientific knowledge through notions of what I call an “open public domain.” Other scholarship expresses concern that an open public domain and free exchange of scientific knowledge would further incite the exploitation of Indigenous peoples’ knowledge and biodiverse resources. So they argue for a more “protective public domain” that would safeguard Indigenous traditional knowledge. Science studies scholarship also brings forth a third conception of the public domain, which could be considered a “hybridized public domain.” Focusing on how the relationship between the public domain and private patent law, such scholarship desires a public domain where new hybrid categories of nature/culture and social/biological are re-imagined to produce new possibilities for modernity. A fourth area of scholarship discusses issues of gender and desires for an “egalitarian public domain.” This body of scholarship analyzes how the relationship between the public domain and patent law shapes and is shaped by individual and structural social relations of gender. Intellectual property law struggles too often are only made intelligible through registers of the public domain. The result is that relations of power are left unexplored. Such scholarship centers upon a narrow vision of the “public” that is free from hierarchical power relations. Not everyone can access the public domain. Only certain forms of knowledge are relegated to the public domain and open for circulation. Not all knowledge is considered worthy of protection through patent ownership.

Thus, I argue for a broader theorizing of the public domain as “situated public domains.” This enables a consideration Indigenous knowledge and the emergence of new “publics” in

contestations over the patenting of biological and genetic material derived from Indigenous peoples' knowledge. For instance, in the case of Hoodia patent law struggles, new assemblages of people, laws, and plants emerge that work together to construct, contest, and re-configure notions of difference and inequality through the oscillation nature/culture binaries that structure epistemic citizenship. Thus, this chapter addresses the dominant framing of patent law through notions of the public domain, re-conceptualizes it, and then moves past it towards the lens of citizenship.

In Chapter Two, I outline my choice of methods and methodologies to develop a novel approach to the study of patent law by examining how a patented object circulates locally and globally. Specifically, my research conducts a multi-sited ethnography of how a patent object “travels” and changes over time through legal regulations, scientific practices, and market advertising. I also deploy constructivist grounded theory methods of qualitative data collection, enhanced by feminist sociologists Adele Clarke and Kathy Charmaz, as a guide for coding and interpreting the data. (Clarke 2005; Charmaz 2006) My project also incorporates transnational, indigenous, and post-colonial feminist methodologies to carefully examine gendered social relations as embedded within histories of sub-Saharan Africa, including tensions with “western” feminism. (Green 2007; Ouellette 2002; Smith 1999; Moreton-Robinson 2000; Nnaemeka 2003; Arnfred and Codesria 2004; Oyěwùmí 2005) Additionally, it deploys methods of “new legal realism” to analyze how legal and ethical norms circulate and change across transnational networks of laws, people, and organizations. (Merry 2006) Furthermore, this research design is guided by methodologies of “law from below” and “science from below.” (Rajagopal 2003; Rodríguez Garavito and Santos 2005; Harding 2008)

Thus, qualitative methods of interviews, observations, and document analysis are joined with additional historical, legal, cultural studies, and ethnographic methods to examine patent law, bioprospecting, and benefit sharing. Through these methods, I produce a biocartography of a patented object by critically mapping Hoodia's travels through various spatial and temporal modes such as colonial botanical travel journals, San women's kitchen gardens, Afrikaner farms, South African scientists' publications, company web advertisements, U.S. patent applications, NGO working papers, and benefit-sharing legislation.

In Chapter Three, I historicize *Hoodia gordonii* within discourses of botanical science. I begin by examining early colonial botanical accounts of the plant. I show how contestations over who first "discovered" the plant end up challenging notions of scientific authorship. I also demonstrate how colonial botanical travel journals related to *Hoodia gordonii* contribute to the construction of the San as savage and inferior, while reinforcing European whiteness. In the second part of the chapter, I draw upon Foucault's understandings of classification to examine the categorization of *Hoodia gordonii* within botanical texts from 1830 to 2005. I then show how taxonomies of the plant correspond in time with the classification of San Bushmen. While nature was being ordered, the San were being ranked as closer to nature and thus excluded as citizens. This chapter therefore examines the invention of *Hoodia gordonii* and the San as classified and characterized within hierarchical taxonomic schemes. Its purpose is to demonstrate how contemporary claims of epistemic citizenship over Hoodia are embedded within histories of racial science.

In Chapter Four, I examine how patent law transforms and structures *Hoodia gordonii* into a patented object. I introduce science studies scholarship around patent law and its relation to binaries of nature and culture. (Strathern 1996, 2001; Kang 2006) I then discuss the precise

mechanisms and practices within both South African and United States patent law that generate and sustain such dichotomies. In the first section, I study statutory requirements for how inventions must be disclosed to the public. I learn how the transformation of *Hoodia gordonii* depends upon and reinforces discourses of expertise (e.g., patent attorney and inventor scientist), which work to exclude Indigenous San peoples' knowledge. I then ask how these modes of expertise become further entrenched through precise legal rules requiring inventions to be novel, non-obvious, and have utility. I come to learn that patent law works as a boundary-making device separating nature from culture as *Hoodia gordonii* the plant is distinguished from its "invention" as an appetite-suppressant chemical composition known as P57. (Haraway 1997) Through this analysis, I argue that patent law acts as a value system, privileging certain forms of knowledge production over others. Scientific epistemologies of molecularization become valued over Indigenous and gendered knowledge practices related to Hoodia. In turn, inventor scientists (and their interests) are given stronger rights of epistemic citizenship in the form of patent law ownership, in contrast to Indigenous San peoples. In the final section of this chapter, drawing upon science studies scholarship, I re-cast the patenting of *Hoodia gordonii* into a "heterogeneous hybrid" by showing how the invention of P57 actually depends upon the mixing of both nature and culture. (Strathern 1996) By re-interpreting patent law as network and Hoodia's P57 compound as hybrid object, this is creates more just possibilities for valuing Indigenous knowledge as a significant and valuable source of scientific knowledge production. Thus, it works to counter inequitable modes of epistemic citizenship that assign weaker rights to San peoples.

Chapter Five moves on to examine the making of *Hoodia gordonii* and Indigenous knowledge through practices of ethnopharmacology and contractual benefit sharing. Analyzing

Phytopharm press releases and website content, I ask how the company articulates and gives meaning to the plant. I find that the making of *Hoodia gordonii* into a commercialized pharmaceutical object depends not upon binaries of nature and culture, but on their oscillation. Dichotomies of nature and culture move back and forth as they change over time within the Hoodia commercialization process. For example, I find that articulations of the plant, and of nature/cultures, begin to change in response to San political mobilizing against CSIR and Phytopharm. I show how, in the face of biopiracy allegations, Phytopharm describes the plant in new ways that acknowledge Indigenous San knowledge of the plant. In the next section, I examine the provisions of the CSIR-San benefit sharing contract and ask how San peoples reinforce or contest nature/culture binaries in their struggle for rights. I find that to be intelligible to the law, the San are compelled to make claims by reinforcing nature/culture binaries as they distinguish their knowledge of the plant from nature versus CSIR knowledge of *Hoodia gordonii* as invented P57. I find that, although San claims for benefit sharing reinforce a distinction between nature and culture, their claims work to disrupt broader histories of nature/culture binaries by asserting San peoples as participants in science and their knowledge as integral to modern practices of ethnopharmacology. In the final section, I investigate how *Hoodia gordonii* changes meaning after the signing of the benefit sharing agreement and the eventual termination of its commercialization by Unilever. Phytopharm and CSIR press releases and reports begin to construct *Hoodia gordonii* and Indigenous knowledge through discourses of conservation and sustainability, which are aimed at ensuring adequate supplies of the plant and reducing poverty. Processes of commercialization produce Indigenous knowledge in different ways over time as claims are made for epistemic citizenship through patent law and benefit sharing. This involves new incantations naturalization through flexible nature/culture binaries.

In Chapter Six, I show how the plant is re-invented and changes meaning as Unilever terminates Hoodia commercialization. As the future of Hoodia research (and benefits) becomes uncertain, I find that Unilever, the San, and Afrikaner Farmers make claims to Hoodia knowledge that works to reinforce nature/culture binaries while re-configuring meanings of indigeneity and Indigenous knowledge. This chapter therefore demonstrates how *Hoodia gordonii* and Indigenous San knowledge of the plant is continually re-invented, while producing difference (indigeneity, gender, and race) in new ways.

The conclusion summarizes how Hoodia patent law struggles construct difference and inequality, while producing new expressions of epistemic citizenship for San economic and political participation. How does the re-invention of indigeneity through oscillations and ruptures of nature/culture binaries challenge us to think in new ways about the production of difference and modes of inclusion/exclusion within norms and practices of citizenship? I also examine the ways in which social actors related to Hoodia patent struggle articulate new ways for doing benefit sharing and make possible suggestions for reform to patent law and scientific practice. This includes an analysis of San research contracts and models for prior informed consent.

My focus in this dissertation is on the *Hoodia gordonii* plant in order to fully understand the production of difference through new circulations of nature/culture binaries and forms of inequitable citizenship. Yet, this project is meant to produce knowledge that contributes to the work of the San peoples towards their rights of self-determination. It therefore becomes important to begin by positioning the San within the histories of colonialism and apartheid that shape Hoodia struggles and their importance to both San and South African futures.

V. Locating the San

This research project aims to disrupt normative understandings of patent law, bioprospecting, and benefit sharing as it relates to Indigenous peoples' knowledge, culture, and heritage. As noted, this also requires a challenge to conventional methods by placing Hoodia at the center of the analysis. Furthermore, a departure from established scholarly writing practices is also necessary. Thus, the introduction is not complete without placing histories of the San at the beginning of the manuscript. This history is intertwined within the remaining chapters, yet I find it important to give singular attention to San histories from the outset. My account demonstrates how the San have been represented over time, the violence enacted upon them, and the ways in which San agency and identity are emerging.

The San are known as some of the earliest inhabitants of Southern Africa. Archeological evidence indicates that the San are the direct descendents of humans living in the region over 20,000 years ago or longer. (le Roux and White 2004; Smith, et al. 2000) Comprised of 100,000 individuals, belonging to more than thirteen different language groups, the San continue to live in small communities across Southern Africa.³ The majority of San live in Botswana (46,000) and Namibia (38,000), while smaller numbers live in Angola (7,000) and South Africa (6,000). A few hundred San also live in Zambia and Zimbabwe. Historically, they are known for their hunter-gatherer way of life. The experiences and representations of the San, however, have changed overtime and are variable across different San communities. Hegemonic representations of the San have constructed them as ahistorical, homogenous, primitive, uncivilized, and savage. (Skotnes 1996) Such representations are fluid and changing in order to sustain hierarchal relations of power. (Chidester 1996) Researchers themselves have also contributed to such

³ <http://www.wimsanet.org/about-the-san> (last accessed 9/29/11)

representations and their violent consequences. (Moran 2009) As Linda Tuhiwai Smith points out, research has historically contributed to the colonizing of Indigenous peoples and the positioning of Western knowledge as superior. (Smith 1999) These representations, as will be further discussed, frame understandings, negotiations, and futures around the patenting of Hoodia and the re-configuring of San as Indigenous peoples, rather than racialized category.

A. Practices of Naming

Hegemonic representations of the San often begin with processes of naming. The name “San” comes from the Nama word “Sonqua” or “Soaqua, meaning “those who forage.” (le Roux and White 2004, 4) The Nama, an Indigenous peoples of Southern Africa also known as the Khoekhoe or Khoikhoi, historically herded cattle and were known as pastoralists. They represented the Sonqua as hunter-gatherers without cattle who stole their stock and were thus different from them. The San have also been historically referred to as “Bushmen” or “Bosjesmen.” When colonial Dutch settlers encountered the San in the 1600s they referred to them as low-status “people from the bush” who engaged in hunting and gathering. They distinguished the Bushmen from the Nama who were referred to as “Hottentots.” Additionally, the Tswana, primarily in Botswana, refer to the San by the Setswana term “Basarwa,” which means “those who have no cattle” (and thus no value). Another common term is “Khoisan.” This term is used to refer to both the Nama and the San together as the original peoples of Southern Africa.

Naming of the San involves a negative process that defines them as less than and “other.” It also homogenizes them and fails to recognize their variable experiences. According to the Working Group of Indigenous Minorities in Southern Africa (WIMSA), the San peoples formerly lived as hunters and gathers, surviving in the Kalahari with expert knowledge of local

flora and fauna. Living in bands of 10 to 40 people, they lived within discrete territories where they had access to water, plants, game, and other resources. They also referred to themselves by the names of their own individual groups, such as the Ju|'hoansi, Khwe, G|wi, Naro, !Xun, or ||Gana. A collective San identity did not exist. The only thing they shared was their hunter-gatherer way of life and a similar set of click sounds within their different languages. Practices of naming the San in a homogenous and negative manner obscure the different histories of the various San peoples living across Southern African and their ways of life today. They also complicate the practice of research and how to refer to the San in a respectful manner that adheres to their political goals.

The San continue to debate how to refer to themselves. Many members of the †Khomani San I spoke with prefer the term “Bushmen,” despite its negative connotations. One leader in the community said the name †Khomani San “bring us many problems” and that the term “Bushmen” would bring more recognition to them on an international and national level.⁴ When asked where the name “Bushmen” came from though, he explained, “this name it came from our forefathers, it is in our blood line.” Another †Khomani San youth told me, “we were always scared of saying we were Bushmen in the past” and that “people would laugh at you.”⁵ Yet, now people “are more used to Indigenous peoples” so he “feels free” to call himself a Bushmen. He also says he is comfortable with being called “San,” but not “Khoisan.” Another leader in the community tells me “I am not a Khoisan people. I am a Bushmen.”

I ask him if I should refer to them as Bushmen or San. I explain that if I use the term “Bushmen” it is considered very insulting. In response, he says that during a recent trip to New York he introduced himself as “from the Kalahari. I am Bushmen.” Recognizing that my usage

⁴ Personal interview with the author.

⁵ Personal interview with the author.

of the term may be perceived differently given my own positionality, he laughs and says, “but they do not like it if you say it.”⁶ We agree that, given my whiteness and location in the U.S., I should use the term “San” or “ǀKhomani San” when writing about Hoodia struggles. Yet, he makes it clear that I should address the powerful ways in which the ǀKhomani San are reclaiming the name “Bushmen” as they mobilize against the patenting of Hoodia and fight for benefit sharing. Careful attention to such practices of naming challenges the stereotypical ways in which the San are represented within contemporary popular culture, history, and science.

B. Colonial Representations

Representations of the San have figured prominently within the historical construction of modern western science and vice versa. The San have come to stand outside of and to help define the hierarchal orderings of Aristotle’s “great chain of being,” which ranks humans as below divine beings and above animals. Carl Linnaeus, an eighteenth century botanist, developed a way of classifying living creatures in a hierarchical taxonomy. Linnaeus deliberately excluded the San from the species *Homo sapiens*, choosing instead to categorize them *Homo monstrosus monorchidei*. (Smith, et al. 2000, 40) This positioned the San as nonhuman. Such constructions of the San as nonhuman both reflected and reinforced the colonial violence enacted upon the San during the eighteenth century by the English and Dutch. As colonial settlers expanded their territorial power, thousands of San hunter-gatherers were killed and others were enslaved as laborers. (Penn 1996, 81)

Scientific portrayals of the San also continued into the nineteenth century as European scientists became interested in determining racial systems of classification. This was during a period of great debate among scientists and philosophers about the origin of humankind and the development of European politics and science. This led to the study of San men and women as

⁶ Personal interview with the author.

the “original man.” (le Roux and White 2004, 56) Their bodies were displayed, dismembered, and dissected in furtherance of these scientific pursuits and were used to establish hierarchical racial and gendered typologies. (Skotnes 1996) Even young children were subjected to such violence. In 1851 two young San children were taken from the Gariep River to England. (le Roux and White 2004, 58) The young boy died, but the girl lived until the age of 22 and upon her death her body was dissected by the Royal College of Surgeons. Her remains are still kept in the British Museum of Natural History.

More recently, scientists studied a 35-year-old San woman while alive and then, upon her death, students in 1939 at the University of the Witwatersrand dissected her body. There was no explanation into how or why she was studied or if permission was granted. (le Roux and White 2004, 59-60) San men, women, and children were objects of scientific study and were also displayed publically as objects of curiosity. In 1852 a San woman named Flora was exhibited in London and later in America in Barnum’s American Museum. More recently, in 1925, the United States Denver Expedition to Namibia sought “to take captive” a San man and woman and “bring them back to civilization” for study in the United States. (le Roux and White 2004, 63-64) Dr. C.E. Cadle, the leader of the expedition compared the San to an extinct race and akin to exotic animals, while asking “Which is more animal? This creature the Bushman or the baboon...” (le Roux and White 2004, 64) Colonial and more contemporary practices of such racial science gave racism a biological justification that contributed to the construction of the San (and women and people of color more generally) as naturally inferior in comparison to men and whites.

In the more contemporary milieu of post-apartheid South Africa, legacies of scientific racism under colonialism and apartheid continue to produce anxieties over race, gender, and

indigeneity. The head skulls of San men and women remain the property of the London Natural History Museum because of their DNA value. (Skotnes 1996) At the same time, San DNA is being collected for pharmaco-genetic biobanks and genetic ancestry studies. (Tishkoff, et al. 2009) The San are therefore at the center of contemporary debates over the repatriation of Indigenous peoples' human remains and the use of Indigenous peoples' DNA in genomic research. While conducting research on this project, several members of the ǀKhomani San were participating in local festivities to celebrate Saartjie Baartman and the repatriation of her remains to South Africa in 2002. The San are also actively at the center of debates over the regulation of scientific research in terms of informed consent and the ethical design of research protocols.

Scientific constructions were also used to justify practices of genocide against the San and their exclusion from political economy. Racist scientific typologies did not work in isolation however. They reflected and reinforced discourses, for example, of religion, language, and law that co-constructed dualisms of humanity versus animality, which buttressed claims that the white, European colonial subject are more modern. Within these dichotomous schemes, the San were figured as closer to animals. Charles Dickens, in 1853, described the Bushman as a “noble savage” and a “wild animal.” (Smith, et al. 2000, 40) Nineteenth century linguistic studies by Wilhelm Bleek and Lucy Lloyd produced a valuable colonial archive, yet their representations of “primitive” Bushmen language and culture contributed to discursive formations of human/animal undergirding racial discrimination within South Africa and more broadly. (Moran 2009, 48-66) In addition to language as a marker of humanity, religious practice also signified man's higher capacity for social and political development. Early colonial encounters described the San as without religion and thus not fully human. (Chidester 1996, 54)

Discourses of science, religion, language, and law therefore constructed the San as outside of culture and in the realm of the animal. Such discursive enactments of humanity/animality served to justify practices of genocide, displacement, and the taking of San lands by colonial settlers. Boer trekkers as well as Khoekhoen pastoralists took over their lands and exploited the San as farm laborers. In response, the San were known to have also fiercely resisted these colonizing practices. (Lee 2003, 89) Yet, the San continued to be considered incapable of engaging in trade or cultivating land. Struggles between colonial settlers and the San became structured through discourses of property. Constructions of San men and women as incapable of reason (i.e., an empty mind) were used to justify the characterization of their lands as also empty and inert, thus open to taking through legal doctrines of *terra nullius*, meaning “land belonging to no one.” (Wilmsen 1996, 188) (188) Legal control over San lands and practices of genocide led to the increased containment of the San.

Discursive framings of the San began to shift with increased colonial control over them. For instance, the San were then represented as having traditional, religious beliefs traced back to a prehistorical time and place. Their spiritual life was only acknowledged once control over the San had been secured so as to justify needs for San labor. (Chidester 1996, 57) Constructions of the San as “savage” and as “wild animal” had to shift in order to incorporate desires for San labor. San practices of spirituality indicated their humanity, thus their capacity to assist farmers with the cultivation of lands previously stolen from San. Constructions of human/animal dualisms should therefore be understood as historically contingent and flexible to meet the demands of colonial power and its legacies within postcolonial neoliberalism. (Moran 2009) Characterizations of the San as animal gave way only slightly though as they were continually portrayed as ignorant and childlike. This continued to support the denial of their human rights to

life, land, and livestock, which were considered instruments of progress only capably used by those with higher intelligence. (Moran 2009, 54) The San were thus continually denied full humanity and excluded from political economy.

C. Apartheid Representations

Legacies of colonial science and their processes of naturalization also continued into the apartheid era from 1948 to 1993. Saul Dubow notes how scientific racial and gendered typologies were used to justify apartheid in South Africa. (Dubow 1995) A series of South African laws in the 1950s sought to classify persons within racial categories of Black, white, Coloured, and Asian. Those classified as non-whites were subjected to forced removals and pass laws restricting where they lived and worked. At the beginning of white minority rule, the San were considered to be extinct within South Africa and were thought to have assimilated into the broader population and likely classified as “Coloured.” (Lee 2003, 91)

There is little scholarship that focuses on the San in South Africa during times of apartheid because of a lack of archival data and practices of forced assimilation. The South African San generally identify themselves as members of three distinct, yet related, San communities. In the upper northwest corner of the country along the borders of Namibia and Botswana, in Andriesvale, live the †Khomani San. They played a major role in struggles over Hoodia, and are thus the main “informants” of my research. In the more central region of the country, in the town of Kimberly, a location best known for its history of diamond mining, live the !Xu and Khwe.

Given their variable histories and geographical locations, each community was impacted in different ways by apartheid rule. For instance, apartheid policies contributed to the continual displacement of the San from their land. This process began with the establishment of the 1931

Kalahari Gemsbok National Park in the northern Cape of South Africa. San peoples living within the boundaries of the park faced continual evictions from their land up until the mid-1970s. (Holden 2007, 59) Roger Chennells, a human rights lawyer working with the San and (WIMSA), however claims that the San had been entirely dispossessed of their land by 1956 and were spread out across the rural areas in South Africa.⁷ Those who were displaced generally worked on nearby white-owned farms doing menial labor. (Lee 2003, 91) San workers were subjected to violence at the hands of farm owners and San children, in particular young girls, were taken as servants or slaves.⁸ Legacies of colonial and apartheid violence continue to impact the San and their access to land. Yet, as will be discussed, with the end of formal apartheid came opportunities for the !Khomani San to make legal claims for the repatriation of their lands and heritage sites.

Also of significance was the apartheid regime's war from 1966 to 1989 to keep Namibia as a neocolony. The South African Defense Force ("SADF") recruited and militarized San members of the Nyae Nyae in Namibia and other San along the Angola border to fight against the South West Africa People's Organisation ("SWAPO"). (Lee 2003, 95) A United Nations peace agreement was eventually signed in 1990 between the SADF and SWAPO. After the conflict, most of the Nyae Nyae were permitted to resettle in Namibia. Yet, other San soldiers, primarily the !Xu and Khwe from Angola, were relocated to the Schmidtsdrift base in South Africa outside of Kimberly. The conditions of their resettlement are unclear and questions remain as to whether or not it was voluntary. According to Sharp and Douglas, the !Xu and Khwe have responded differently to resettlement. (Sharp and Douglas 1996) Constructed as "real

⁷ Roger Chennells, "The Land Claim of The !Khomani San of South Africa," (2004), 213. (on file with author)

⁸ Ibid. (on file with author)

bushmen,” but poor soldiers, the !Xu have more strongly asserted themselves as having a unique and cohesive “bushmen” identity. The Khwe, on the other hand, were historically constructed as good soldiers but “dubious bushmen.” This has meant that the Khwe remain less cohesive and less interested in asserting a unique Bushmen identity. Constructions of the various San have therefore differed and changed overtime as the SADF first portrayed them as having an “innate military prowess” and then as “harmless people.” (Sharp and Douglas 1996, 327)

Their status in South Africa became precarious though with the end of apartheid since they had worked as soldiers under the apartheid regime. Thus there were concerns during pre-1994 elections over whether or not the ANC government would be adverse to their interests. Sharp and Douglas report that the !Xu wanted to return to Namibia, whereas the Khwe did not. Post-apartheid, transformation South Africa however has opened up new possibilities for both the !Xu and Khwe to renegotiate their relationship with the government. This led to the creation of the !Xu and Khwe Trust in 1993, in anticipation of the new ANC government, to address the needs of 890 families living in Schmidtsdrift. (Robins, et al. 2001, 9) Problems however continue within the community. The militarization of !Xu and Khwe San men have contributed to a culture of violence against women and increased hierarchal gender relations. (Becker 2003, 13)

D. San Governance

With the end of apartheid came the emergence of a collective San identity through formal governance structures. According to Roger Chennells, the San began organizing in the early 1990s around issues of land and heritage.⁹ During this time, there were significant political changes impacting Indigenous peoples. At the international level, the United Nations General Assembly proclaimed the International Decade of the World’s Indigenous People commencing

⁹ Roger Chennells, interview with the author, February 4, 2009, Stellenbosch, South Africa.

on December 1994.¹⁰ This brought increased resources for activities, programs, and agencies working on issues related to indigenous peoples. Significant changes were also occurring within South Africa. Emerging from decades of apartheid rule, a new rule of law was enacted. A normative framework of law that, according to the 1994 South African Constitution, emphasized equality and dignity for all persons.¹¹ Property also became a constitutional right. Section 25 of the Constitution specified that individuals had the right not to be deprived of property.¹² This ushered in new land reform laws aimed at redressing the injustices of apartheid, promoting national reconciliation, underpinning economic development, and alleviating poverty. (Badenhorst, et al. 2006, 593)

Benefiting from these legal and social changes, the ǀKhomani San initiated a claim in 1995 for rights to land, which was eventually finalized in 2002 with the signing of the !Ae!Hai Kalahari Heritage Park Agreement.¹³ (Robins 2001) Roger Chennells notes that activities around the land claim necessitated the “institutionalizing of the San” and were considered the “first phase” in reclaiming their “lost” heritage in terms of their rock art, “stories, myths, songs, and images.”¹⁴ The “institutionalizing” of the San involved the creation of formal San governance structures serving San interests.

San governance structures have arisen through grassroots mobilizing and with the assistance of non-governmental organizations (“NGOs”) and their representatives. One of the

¹⁰ UN General Assembly, Forty-eighth Session, *International Decade of the World's Indigenous Peoples*, A/Res/48/163 (December 21, 1993). A second decade was also declared to begin in January 2005. UN General Assembly, Fifty-Ninth Session, *Second International Decade of the World's Indigenous Peoples*, A/Res/59/174 (February 24, 2005).

¹¹ *Constitution of the Republic of South Africa*, Bill of Rights, Ch. 2, Sec. 9 & 10 (1996).

¹² *Ibid.*, § 25.

¹³ !Ae!Hai Kalahari Heritage Park Agreement, May 29, 2002. (on file with author)

¹⁴ Roger Chennells, interview with the author, February 4, 2009, Stellenbosch, South Africa.

first groups to be formed was the Working Group of Indigenous Minorities in Southern Africa. WIMSA is a non-governmental organization that coordinates and represents the interests of the San across Southern Africa. After a decade of San meetings and consultations, WIMSA was established in 1996 with its secretariat office in Windhoek, Namibia. The organization acts as a regional council in charge of coordinating and representing the interests of San peoples throughout Southern Africa. Its membership is comprised of national San councils located within Namibia, Botswana, and South Africa. These local “San Councils” are meant to advocate for San communities at a state level, while working through indigenous rights networks at the regional and international level through WIMSA. In fact, the South African San Council was formed in 2001 in response to the Hoodia controversy. With the government of South Africa declaring ownership rights over properties of Hoodia, WIMSA gave a mandate to the South African San Council to negotiate with CSIR on behalf of WIMSA and all San peoples. The San also represent their interests through their Community Property Associations (“CPA”).

The Community Properties Association Act of 1996 was promulgated to provide a new form of juristic person to acquire, hold, and control property on behalf of certain communities.¹⁵ In order to make claims for land, the San were required to register as a CPA and meet the statutory provisions under the Act, which required drafting a constitution that defines who the members of the ǀKhomani San community are. The Act was also meant to broaden land ownership to members in the community, such as females, whose access to land was historically limited in comparison to males. (Badenhorst, et al. 2006, 620) The ǀKhomani San CPA was set up in order to negotiate for the !Ae!Hai Kalahari Heritage Park Agreement. The governing board of the CPA consists of 10 persons (5 females and 5 males) from the community. The community, through a process set forth in the constitution, elects the governing board. Yet, when I asked if

¹⁵ Community Property Association Act, Section 28 of 1996, Preamble to the Act.

the female members of the board are actively involved, one member of the CPA remarks that the women are “all busy with the primary school.” It is therefore unclear as to how and to what degree female CPA members participate. The CPA remains active in serving the interests of the †Khomani in regards to their access and rights to their land. The CPA is also responsible for electing the members that serve on the South African San Council.

The strengthening of San governance is simultaneously empowering, yet limited, in its capacity to serve San interests. The †Khomani San are defined as a community according to their CPA constitution. Roger Chennells asserts, “if you are a member of the CPA, you’re a member of the †Khomani.” †Khomani San identity is therefore defined through legal requirements of the Community Properties Association Act. This benefits the San as it gives them a voice with which to negotiate with the state and outside parties. However, one informant, a long time and current supporter of San interests who does not identify as San himself, explains that the San cannot survive in the current political conditions with a mode of decision-making where everyone in the community has a say.¹⁶ The San must adopt more efficient governance structures “to become more visible.” He describes the need for democratic governance structures, but warns against corruption where leaders are elected as part of a “payback system” so that resources can be distributed more generously to certain family clans. Strengthening San governance, he notes is a process, and the San “must learn leadership.”

Strengthening San governance has become a central site for intervention (and funding) from NGOs. Natural Justice is a locally-based NGO run by two environmental lawyers to assist with the creation of formal governance structures within indigenous communities. Natural Justice was engaged in meetings with the community to set up more formal decision-making procedures for how to negotiate benefit sharing agreements in accordance with new South

¹⁶ Personal interview with the author.

African laws and the Convention on Biological Diversity. According to one informant from Natural Justice, issues of gender and representation would often arise in consultation with the community. Some of the †Khomani San women would express concern to them regarding female representation on the CPA or on the South African San Council. Yet, he also noted, “I don’t think there is a real mobilization around it.” San governance therefore has been strengthened in order to meet the challenges of making legal claims against the taking of land and indigenous knowledge such as Hoodia.

E. San Identity and Development

According to WIMSA, a collective sense of San identity and future has only recently emerged. Structures of shared governance are partially responsible. A sense of San pride and identity has also grown through organizing around claims for land and Hoodia benefit sharing. (Felton and Becker 2001, 95) In more recent years, however, San identity has also emerged through participation within the economy. The San have begun to engage in what John and Jean Comaroff describe and name as practices of “Ethnicity, Inc.” (Comaroff and Comaroff 2009) Such practices involve the double process of the incorporation of identity and the commodification of cultural practices. (Comaroff and Comaroff 2009, 21) (21) Comaroff and Comaroff suggest that the incorporation of San identity, for instance, has been institutionalized through the creation of the South African San Council and its representation of a new “Bushmen” identity. Efforts to use the “Bushmen” image to sell Hoodia products also involve the commodification of San identity, culture, and knowledge. Practices of incorporation and commodification also arise within San ethno-tourist projects. For instance, the San participate in economic markets by selling of herbal medicines and arts/crafts to tourists. They also offer guided treks though the Kalahari to show tourists local plants, animals, and heritage sites. Group

performances of “traditional” songs and dances are also performed. The South African San Institute (“SASI”) helps to coordinate these ǀKhomani San development efforts. SASI is mainly run by members of the ǀKhomani San and is set up to receive outside monies from funding agencies. Community-based development efforts are therefore are being generated from the “bottom-up” by the San themselves. San agency is being asserted within local/global markets in order to generate monies.

It is unclear, however, whether or not these practices benefit all members of the community equally. According to a report by Windhoek Legal Assistance Centre in Namibia, the San have few opportunities for formal wage labor, education, and access to health care. (Felton and Becker 2001) Despite the romanticizing of San culture as non-hierarchical, San women and girls experience divisions of labor that contribute to increased gender inequality and gender-based violence. Such gendered inequalities also exist within San practices of ethno-tourism such as offering tourists “authentic Bushman” crafts, dances, music, and plant medicines. Although some community-based tourist activities may generate equitable benefits, Felton and Becker empirically find that young San men, rather than women, disproportionately benefit from these ethno-tourist activities. For instance, guided treks are one of the largest income generating activities and are mainly conducted by young San men. Money for group song/dance performances may also be collected by men and not distributed equally among participants, especially San women. An exception is the production of arts and crafts, which middle-age San women more regularly participate in. Felton and Becker conclude that more research is needed in order to understand how the benefits from community-based tourism models are being distributed. Struggles related to the patenting of Hoodia offers insights into how community-

based ethno-tourist activities are impacting indigenous communities and their efforts at self-determination.

VI. Conclusion

Hoodia patent law struggles are embedded with the historical construction of San peoples over time and their current strategies towards self-determination. Political mobilization against the patenting of *Hoodia gordonii* is a symbolic struggle against these histories and modes of subordination. This dissertation thus examines how the patenting and commercialization of the plant is related to the re-invention of Indigenous San peoples' identity, knowledge, and culture. I find that the invention of *Hoodia gordonii* into a P57 chemical compound works to devalue Indigenous San peoples' histories and knowledge related to the plant. I also find that as the invention is commercialized to become a pharmaceutical, Indigenous San knowledge of Hoodia is made both visible and invisible. In this dissertation, I chart a space new circulations of nature/culture and modes of producing difference are enacted, contested, and re-configured.

Chapter One

Situating Feminisms, Patent Law, and the Public Domain

Both critical intellectual property studies and feminist legal scholarship seldom address the gendered dimensions of patent law or its implications for women and women's rights. This lack of attention raises awareness of the need to broaden our approach to studies of patent law. While investigating Hoodia patent law struggles, I began to consider patent law as a feminist site of inquiry and to think through the difficulties of such an examination. †Khomani San women in the northern Cape express concerns over the patenting of biological and genetic materials derived from their indigenous traditional knowledge. Maintaining control over their knowledge and resources is important for feeding their families and safeguarding their intellectual histories and heritage as female plant gatherers. The †Khomani San peoples are currently engaged in political struggles against patent law and the ownership of their indigenous knowledge, but such organizing has not been explicitly gender-based. Although some †Khomani San women articulate patent law as a women's rights issue, other women in the community consider issues of patent law to be gender-neutral. Concerns arising from patent ownership of indigenous knowledge are also not the main priority.

†Khomani San women committed to gender-based political organizing explain the difficulties of mobilizing and educating indigenous San women in their communities. Political organizing takes money and resources, and San communities are spread out over great distances within South Africa, Botswana, and Namibia, making meetings difficult to arrange. Issues of patent law are also not as significant or pressing as the material conditions of domestic violence, substance abuse, and poverty facing San women and their families right now. Thus, †Khomani

San men and women are involved in struggles against patent law, yet their political work does not explicitly address the connections between patent ownership and gendered social relations.

Indigenous women elsewhere, however, have begun to address patent law from a gender-based perspective. The 1995 Beijing Declaration of Indigenous Women and the 2004 Manukan Declaration of the Indigenous Women's Biodiversity Network explicitly argue that intellectual property rights threaten indigenous women's lives.¹⁷ The Indigenous Peoples' Permanent Forum also highlights patent law as an issue of concern for indigenous women.¹⁸ Local women in India have taken up the issue through with the Diverse Women for Diversity Campaign in connection with Vandana Shiva.¹⁹ Patent law as a gender-based issue therefore emerges within some international forums, and may also circulate at the local level such as with Diverse Women.

On the other hand, as with the ꞤKhomani San, discourses of indigenous rights around patent law are seemingly framed in gender-neutral terms. Or are they? San struggles related to the patenting of Hoodia may appear gender-neutral as read through the narrow registers of liberal feminism. Yet, as will be further discussed, the masculinized discourses and gendered social relations at work within political struggles related to Hoodia become visible when scrutinized through a lens of transnational, indigenous, African feminisms.

Addressing the complex gender relations that shape and are shaped by patent ownership is a complex task. It requires careful consideration of the interactions, relationalities, and hierarchies within social relations of gender, indigeneity, ethnicity, race, and histories of

¹⁷ U.N. Fourth World Conference on Women, Huairou, Beijing, China, Sept. 4–15, 1995, NGO Forum, Beijing Declaration of Indigenous Women, *available at* http://www.ipcb.org/resolutions/htmls/dec_beijing.html [hereinafter Beijing Declaration]; Indigenous Women's Biodiversity Network, Mankun, Sabah, Malaysia, Feb. 4-5, 2004, Manukan Declaration, *available at* <http://www.ipcb.org/resolutions/htmls/manukan.html> [hereinafter Manukan Declaration].

¹⁸ *Permanent Forum on Indigenous Issues*, 3rd Sess., Supp. No. 23, at 12-14, U.N. Doc. E/C.19/2004/23

¹⁹ *Diverse Women for Diversity*, NAVDANYA, <http://www.navdanya.org/diverse-women-for-diversity> (last visited May 28, 2011)

colonialism. Legacies of liberal, western feminism must also be confronted and continually interrogated. Yet, I contend that studies of patent law struggles and complex gendered relations can help push the boundaries of critical intellectual property scholarship and feminist legal scholarship, by asking new questions and defining the fields in new ways. They may also lead to more robust practices of law and science that re-imagine conceptions of ownership and knowledge in ways that benefit less powerful groups.

In this chapter, I am interested in how one might begin to formulate a feminist analysis of intellectual property law that addresses indigenous women's interests and gendered social relations. Given the tenuous relationship between indigenous women and feminism, we may not even want to call it a "feminist" analysis. Liberal feminist ideals of autonomy, freedom, and choice often run counter to indigenous feminist politics and organizing that produce valuable critiques of these notions. Furthermore, as will be discussed, strategies against (or even in support of) intellectual property law are radically different among various individuals and groups of indigenous women, and in solidarity with indigenous men. Developing a feminist analysis of patent law therefore is a process that requires careful consideration of these histories.

This chapter therefore takes a modest first step in formulating a feminist analysis of patent law by scrutinizing conceptions of the public domain that tend to obscure a gendered analysis. The initial move therefore lies in breaking through the current scholarly discourse on patent law in order to make space for a feminist/gender investigation and to consider claiming a public domain of our own, one that allows for new publics and expressions of epistemic citizenship to become visible. This chapter cuts through the current critical scholarship on patent law in order to make room for research on Hoodia patent law struggles at the intersections of Life, Ltd. and Ethnicity, Inc.

Part I of this chapter examines scholarship theorizing conceptions of the public domain and its relationship to patent law. It identifies and critiques four public domains: (1) open public domain; (2) hybridized public domain; (3) protective public domain; (4) and egalitarian public domain.

Part I, Section A examines scholarship theorizing an *open public domain*.²⁰ This scholarship fears that expansive patent laws restrict the free and open sharing of scientific materials formerly in the public domain. Thus, an open public domain is desired where scientific ideas and materials are freely accessible to others. Unfortunately, this project is limited by its uncritical assumption of science as generating knowledge, practices, and outcomes benefiting all members of society equally.

Part I, Section B analyzes scholarship generating a *hybridized public domain*.²¹ These studies focus on how the relationship between the public domain and private patent law (“PD/IP relationship”) disrupts notions of nature/culture that are foundational to modern scientific knowledge production and scientific authorship. What this scholarship desires is a public domain where new hybrid categories of nature/culture and social/biological are re-imagined to produce

²⁰ See James Boyle, *The Public Domain: Enclosing the Commons of the Mind* (New Haven, C.T.: Yale University Press, 2008), xv; ———, "Foreward: The Opposite of Property?," *Law and Contemporary Problems* 66, no. 1 (2003); ———, "The Second Enclosure Movement and the Construction of the Public Domain," *Law and Contemporary Problems* 66, no. 1 (2003). [hereinafter ———, *The Public Domain*, xv; ———, "66 Law & Contemp. Probs 1."; ———, "66 Law & Contemp. Probs 33."(arguing that increasingly restrictive intellectual property policies have produced a second enclosure movement of the intangible commons, thus threatening the public domain); Arti K. Rai and Rebecca S. Eisenberg, "Bayh-Dole Reform and the Progress of Biomedicine," *Law and Contemporary Problems* 66, no. 1 & 2 (2003). (arguing that the Bayh-Dole Act should give greater discretion to funding agencies, rather than institutions, to determine when publicly-funded research should be dedicated to the public domain,

²¹ See Marilyn Strathern, "Cutting the Network," *The Journal of the Royal Anthropological Institute* 2, no. 3 (1996); ———, "The Patent and the Malanggan," *Theory, Culture & Society* 18, no. 4 (2001). [hereinafter Strathern, *The Patent and the Malanggan*]; Alain Pottage, "The Inscription of Life in Law: Genes, Patents, and Bio-Politics," *The Modern Law Review* 61, no. 5 (1998). (claiming that patent law is a site where anxieties over nature and culture are negotiated); Hyo Yoon Kang, "An Exploration into Law and Narratives: The Case of Intellectual Property Law of Biotechnology," *Law Critique* 17, no. 1 (2006). (producing a narrative analysis of patent law and its codification of notions of nature and culture); Donna J. Haraway, *Modest Witness@Second_Millennium.Femaleman_Meets_Oncomouse: Feminism and Technoscience* (New York: Routledge, 1997).

new possibilities for modernity. Its limitations reside though in its cursory attention to indigenous and gendered social relations or histories of colonialism and neo-liberal globalization.

Part I, Section C discusses scholarly work devoted to a *protective public domain*.²² Such scholarship examines the PD/IP relationship as embedded within historical processes of colonialism and neo-liberal globalization, impacting ethnic and racialized individuals and groups. A protective public domain safeguards indigenous traditional knowledge. Its scope of protection does not fully extend to women, as gendered social relations are not explicitly examined.

Part I, Section D addresses scholarship that directly examines gendered social relations and envisions *egalitarian public domains*.²³ This scholarship analyzes how the PD/IP relationship shapes and is shaped by individual and structural relations of gender. Theorizing around egalitarian public domains, however, is a site of contention. Scholars differ over conceptions of egalitarianism and whether women's equality is better reached by increasing their

²² Rosemary J. Coombe, "Fear, Hope, and Longing for the Future of Authorship and a Revitalized Public Domain in Global Regimes of Intellectual Property," *DePaul Law Review* 52, no. 4 (2003). Doris Estelle Long, *Traditional Knowledge and the Fight for the Public Domain*, 5 J. MARSHALL REV. OF INTELL. PROP. L. 317, 321 (2006) (suggests the need for more nuanced protection of traditional knowledge considered within the public domain).

²³ B. Zorina Khan, *Married Women's Property Laws and Female Commercial Activity: Evidence from United States Patent Records, 1790-1895*, 56 J. ECON. HIST. 356, 356 (1996) [hereinafter Khan, *Married Women's*] (assessment of how nineteenth-century married women's property laws encouraged greater female commercial activity as evidenced by women's rate of patenting inventions); Deborah J. Merritt, *Hypatia in the Patent Office: Women Inventors and the Law, 1865-1900*, 35 AM. J. LEGAL HIST. 235, 236 (1991) (investigating the role of women in the American patent system by exploring the achievements of female inventors who obtained patents from 1865 and 1900); Ann Bartow, *Women in the Web of Secondary Copyright Liability and Internet Filtering*, 33 N. KY. L. REV. 449, 487-94 (2005) (discussing copyright controls that contribute to hierarchal gender-based differences in communication through Internet technology); Sharmishta Barwa & Shirin M. Rai, *Knowledge and/as Power: A Feminist Critique of Trade Related Intellectual Property Rights*, 7 GENDER, TECHNOLOGY & DEV. 91, 92 (2003) (arguing that TRIPS is institutionalizing the historically exclusionary bounded definitions of what counts as knowledge, and thus challenging women to engage in the struggles over meanings of knowledge, invention, and property); Consuelo Quiroz, *Biodiversity, Indigenous Knowledge, Gender, and Intellectual Property Rights*, 2 INDIGENOUS KNOWLEDGE & DEV. MONITOR 12, 13-14 (1994) (discussing the connections between gender, intellectual property rights, and biodiverse resources); Vandana Shiva, *Bioprospecting as Sophisticated Biopiracy*, 32 SIGNS: J. WOMEN IN CULTURE & SOC'Y 307, 308 (2007) [hereinafter Shiva, *Bioprospecting*] (arguing that bioprospecting leads to the enclosure of the biological and intellectual commons because it converts indigenous peoples' resources and knowledge into commodities protected by intellectual property law).

right to own patents, or by fighting against patent ownership all together. Recognition of complex notions of gender and its intersections with other social relations such as racism and neo-colonialism also remains inadequate.

Part II then presents an alternative conception of the public domain as situated public domains. In doing so, it draws upon recent qualitative fieldwork in South Africa examining struggles related to the patenting of indigenous knowledge related to the Hoodia plant and the †Khomani San.²⁴ Part II thus does not offer suggestions for policy-making at this time. Robust patent law policies should be built from more nuanced examinations of the public domain. Rather, it offers a notion of situated public domains as a starting point for producing such complex accounts, which would also consider intersecting gendered social relations. Situated public domains provides a conceptual framework for beginning to develop new studies of patent

²⁴ The story of Hoodia involves a succulent plant known for generations by the San peoples in Southern Africa to suppress appetite when food supplies were low. See Rachel Wynberg, *Rhetoric, Realism and Benefit Sharing: Use of Traditional Knowledge of Hoodia Species in the Development of Appetite Suppressant*, 7 J. WORLD INTELL. PROP. 851, 851 (2004). The San live within heterogeneous communities across Southern Africa. They are indigenous peoples who have lived in the region prior to the migration of Bantu-speaking populations into Southern Africa and they share a common history as hunter-gatherers with similar click languages. See WILLEMEN LE ROUX & ALISON WHITE, VOICES OF THE SAN: LIVING IN SOUTHERN AFRICA TODAY 2 (2004). The San communities within South Africa consist of the †Khomani, !Xun, and Khwe, who have formed a volunteer governing board called the South African San Council. See Wynberg, at 860. In 1996, South Africa's Council for Scientific and Industrial Research ("CSIR") obtained patent rights to Hoodia's P57 compound and then in 1997 the CSIR granted an exclusive license to Phytopharm to develop Hoodia. See Saskia Vermeylen, *Contextualizing 'Fair' and 'Equitable': The San's Reflections on the Hoodia Benefit-Sharing Agreement*, 12 LOC. ENV'T 423, 428 (2007). Phytopharm in 1998 then entered into a sub-licensing agreement with Pfizer to globally commercialize Hoodia as an anti-obesity product. *Id.* The commercialization of Hoodia was estimated to bring millions in profit to Phytopharm and Pfizer. See Wynberg, at 867. Pfizer backed out of the agreement in 2004 and a new agreement was signed with Unilever that same year. See Vermeylen, at 428. Phytopharm, in cooperation with Unilever, then began to conduct final drug trials on the compound and expected to sell it as a food additive in Unilever products for millions in profit. See Wynberg, at 867. The story, however, took an interesting turn in 2003 when the South African San Council publicly condemned CSIR's patenting of Hoodia and eventually signed a benefit sharing agreement requiring CSIR to give eight percent of the milestone payments (i.e., payments made at specific milestones in the research and development of Hoodia by CSIR) and six percent of their royalties received by Phytopharm to a legal Trust set up for San communities across Southern Africa. See Vermeylen, at 428. Thus, the promise of Hoodia is now tied to San peoples' expectations for increased symbolic capital and material wealth. Hopes for Hoodia, however, were dashed in late 2008 when Unilever announced that after five years they were stopping all Hoodia research and began to bulldoze over their Hoodia plantations. See Phytopharm, LLC, Press Release, *Unilever Returns Rights to Hoodia Extract*, (December 12, 2008) (on file with author). Thus, the story of Hoodia begins to illuminate the socio-legal and cultural complexities of patent law that a law and economics approach, although extremely valuable, cannot capture. Hoodia is also joined by other similar stories of patenting traditional knowledge such as the turmeric plant, neem tree, and basmati rice. See Shubha Ghosh, *Globalization, Patents, and Traditional Knowledge*, 17 COLUM. J. ASIAN L. 73, 90-108 (2003).

law that can produce better understandings of how patent law impacts society and, in particular, indigenous women, men, their families, and communities.

Four concepts of the public domain, which circulate within critical intellectual property projects, are identified and discussed by the chapter. This is to create space for a feminist analysis, but it also tries to make sense of critical intellectual property projects that share common critiques against expansive patents laws, yet remain unintelligible to each other.²⁵ Not all critical IP projects are the same and, in fact, can often be opposed to each other. Scientists concerned about DNA patents do not share the same assumptions and concerns as Indigenous peoples who want to protect their own DNA from being patented, even though they are both against gene patents. Feminist organizing to increase patent ownership for female scientists runs counter to Indigenous feminist critiques of norms of patent ownership, and fails to account for how patent law reinforces dichotomies of nature/culture, which undergird binaries of male/female, self/other, and white/non-white. I contend that one reason why all these valuable critical IP projects continue to talk past each other is because they hold different conceptions of the public domain.

This chapter therefore provides a more detailed analysis of these four concepts of the public domain, while demonstrating the importance of each of their central values or desires. An open public domain with less restrictive patent laws is important for bringing medicines to marginalized communities that lack access to patented medicines. A hybridized public domain, where binary categories are contested, offers new possibilities for modernities in which

²⁵ These goals are both furthered and limited by my approach in classifying the public domain into four conceptions. Typologies are a useful way of understanding how critical IP projects are similar, different, and ambivalent. Such classification though can also be rigid and constraining. This typology therefore should be read as a flexible device that is open to critique and whose categories blur into one another. My classification of public domains acts as a beginning step towards understanding the current terrain of critical IP projects and moving towards a robust feminist theorizing of patent law. It is therefore a starting point and partial bridge within a complex process of theorizing, organizing, and acting.

disempowering discourses of naturalization that construct persons as closer to nature or more “traditional” become disrupted. In addition, a protective public domain can safeguard the scientific and cultural inventions of those previously excluded from authorial rights, such as indigenous peoples, while bringing them valuable recognition and control. Furthermore, egalitarian public domains can better ensure that patent law policymakers recognize individual and structural systems of subordination that disproportionately distribute the benefits of patent law to only certain privileged groups.

Each of these concepts of the public domain alone is not enough for a truly progressive critical intellectual property or feminist legal project that addresses difference, inequality, and citizenship. Struggles related to patent policy vary across different geo-political locations. What is needed is a flexible concept of the public domain that incorporates values of openness, protection, egalitarianism, and hybridization in ways that are specific to the struggle at hand. Thus, this article suggests the notion of situated public domains as a more nuanced analytic for studying patent law, and one that has significant policy implications. This analytic enables scholars and activists to situate notions of the public domain within constellations of inequitable modalities of colonialism, globalization, neoliberalism and variegated social relations of gender, race, ethnicity, indigeneity, and class that are converging in and against intellectual property rights. This would facilitate a more just approach to intellectual property policy-making that can address differential histories and structural inequalities that take into account complex gendered social relations and indigenous women’s multiple interests.

Furthermore, critical IP projects can be better served by recognizing how their visions of the public domain might differ, and how a more nuanced conception of the public domain may enable more collaborative exchanges and interdisciplinary conversations. This might also open

up possibilities for a more robust politics that draws upon strategic collectives of organizing in order to resist unjust patent law policies.

I. Conceptions of the Public Domain

Studies of intellectual property law, historically generated by legal scholars, typically focus on its doctrinal workings and economic logics. Legal scholars engage in valuable analysis and provide insight into nuances of statutory language, the shifting of judicial interpretations, and the progress of patents as incentives for innovation. Through such work, patent law as a tool to stimulate scientific innovation comes into focus. Such scholarly analysis is often described as a law and economics approach.²⁶ Patent law, though, has significance beyond questions of engendering economically efficient innovation. It is also a site of political contestation involving struggles over patent law, indigenous knowledge, and biotechnology.

These struggles over patent law are, in part, due to significant expansions of intellectual property rights impacting science and technology. The 1980 United States Supreme Court decision in *Diamond v. Chakrabarty*,²⁷ permitting patents on genetically modified organisms, opened the door for a surge in biotechnology companies and research.²⁸ That same year, the United States Bayh-Dole Act pressured universities to acquire patents on inventions derived from federally funded projects.²⁹ What resulted was an explosion in the United States

²⁶ See WILLIAM M. LANDES & RICHARD A. POSNER, *THE ECONOMIC STRUCTURE OF INTELLECTUAL PROPERTY LAW* (2003).

²⁷ *Diamond v. Chakrabarty*, 447 U.S. 303 (1980) (ruling that a genetically engineered bacteria organism was patentable subject matter as a composition of matter).

²⁸ See KAUSHIK SUNDER RAJAN, *BIOCAPITAL: THE CONSTITUTION OF POSTGENOMIC LIFE* 6 (2006) (arguing that biotechnologies must be understood within the market frameworks in which they emerge, such as the United States and India).

²⁹ See Rai & Eisenberg, *supra* note 20. Similar laws are now being enacted in other countries. For example, South Africa recently approved the Publicly Financed Research and Development Act in December of 2008. See *Intellectual Property Rights from Publicly Financed Research and Development Act*, GOVERNMENT GAZETTE, REPUBLIC OF SOUTH AFRICA, Vol. 522, No. 31745 (Dec 22, 2008).

biotechnology industry that stretched globally.³⁰ The World Trade Organization's Agreement on Trade Related Aspects of Intellectual Property ("TRIPs") boosted the biotechnology industry further in 1994 by requiring member states to enforce the patent rights of other member states.³¹

These expansions of intellectual property rights give rise to different concerns and fears. Scientists fear the privatization of their research tools.³² Computer programmers worry about controls over software code.³³ Developing countries protest against the patenting of HIV/AIDS medications.³⁴ And indigenous peoples fight against the commodification of life, destruction of resources, and threats to their cultural heritage.³⁵ Unfortunately, despite its valuable contributions, a law and economics approach is unable to fully address patent law's impact on society.³⁶

³⁰ See generally Sally Smith Hughes, *Making Dollars out of DNA: The First Major Patent in Biotechnology and the Commercialization of Molecular Biology, 1974-1980*, 92 *ISIS* 541 (2001) (discussing patent law as turning point in commercialization of molecular biology); David C. Mowery, *University Patents and Patent Policy Debates in the USA, 1925-1980*, 10 *INDUS. & CORP. CHANGE* 781 (2001) (noting the impact of U.S. university patent policies on the historical development of the biotechnology industry).

³¹ Agreement on Trade Related Aspects of International Property Rights, Art. 3, Apr. 15 1994, 33 *I.L.M.* 81 [hereinafter TRIPs]. See generally CHRISTOPHER MAY & SUSAN K. SELL, *INTELLECTUAL PROPERTY RIGHTS: A CRITICAL HISTORY* (2006) (providing a critical history of intellectual property rights from the nineteenth century to the twenty-first century with the signing of TRIPs).

³² See Rai & Eisenberg, *supra* note 20.

³³ See CHRISTOPHER M. KELTY, *TWO BITS: THE CULTURAL SIGNIFICANCE OF FREE SOFTWARE* (2008) (introducing the concept of a "recursive public" to understand concerns over the maintenance and modification of open source software).

³⁴ See David Barnard, *In the High Court of South Africa, Case No. 4138/98: The Global Politics of Access to Low-Cost AIDS Drugs in Poor Countries*, 12 *KENNEDY INST. ETHICS J.* 159 (2002) (discussing a 1998 United States lawsuit against the government of South Africa to prevent a law designed to loosen patent laws restricting access to low-cost AIDS drugs).

³⁵ See VANDARA SHIVA, *BIOPIRACY: THE PLUNDER OF NATURE AND KNOWLEDGE* 7-18 (1997) [hereinafter SHIVA, *BIOPIRACY*] (arguing that intellectual property rights work to colonize the interior spaces of women, plants and animals, represent an epistemological crisis of "monocultures" of the mind, and produce a narrow vision of innovation based on privatization and profit).

³⁶ See Madhavi Sunder, *IP3*, 59 *STAN. L. REV.* 257, 312 (2006) (arguing for a cultural analysis of intellectual property law in order to fully capture struggles over intellectual property rights).

To better address these concerns, legal scholars have turned to discussions of the “public domain” to examine intellectual property policy.³⁷ Theorizing about the public domain focuses around developing a conceptual analytic for understanding the relationship between modes of scientific/cultural production and intellectual property law. Such an analytic serves as a potential tool for thinking through relationships between civil society and patent law. However, research in this area is in its infancy, and uncertainty remains over the contours of the public domain and its relationship to patent law.

The goal of this chapter is to examine various conceptions of the public domain in order to build a more robust theoretical toolkit for investigating patent law struggles over genetic and biological material in the global south and how produce difference, inequality, citizenship through racialized, gendered, and indigenous narratives and social relations.³⁸ It also seeks to

³⁷ See Tyler T. Ochoa, *Origins and Meanings of the Public Domain*, 28 DAYTON L. REV. 215, 216 (2002). (giving an historical account of the conception of the public domain). See also Yochai Benkler, *Through the Looking Glass: Alice and the Constitutional Foundations of the Public Domain*, 66 LAW & CONTEMP. PROBS. 173, 175 (2003). (providing a history of constitutional and judicial interpretations of the public domain).

³⁸ Such terms as “indigenous knowledge,” “traditional knowledge,” and “indigenous peoples” are also used variably across the scholarship. So when referring to specific scholarly work, this Chapter employs the terminology used by the authors. When conducting my own analysis, however, I do my best to use the terms “indigenous peoples” and “indigenous traditional knowledge” to honor their efforts at re-claiming characterizations of “indigenous.” The phrase “indigenous knowledge” is often used synonymously with “traditional knowledge” and “local knowledge” within relevant literature. These terms are related, but they have different meanings and political stakes. One must pay careful attention to how and when these terms are employed and by whom. Evoking the more broad term of “local knowledge” can be useful when one is discussing knowledge of biodiverse resources held by multiple population groups within a given region. This term can be inadequate though as it projects neutrality, failing to account more specifically for marginalized groups whose knowledge practices has been subordinated. See generally STEPHEN B. BRUSH & DOREEN STABINSKY, *VALUING LOCAL KNOWLEDGE: INDIGENOUS PEOPLE AND INTELLECTUAL PROPERTY RIGHTS* (1996). Using the term “traditional knowledge” is also helpful when referring to such regional knowledge, yet its reference to “tradition” raises the important question of “whose tradition?” See generally GRAHAM DUTFIELD, *INTELLECTUAL PROPERTY, BIOGENETIC RESOURCES, AND TRADITIONAL KNOWLEDGE* (2004). Furthermore, through the discursive power of its circulation through international and national policy documents and forums, the term “traditional knowledge” often relates to the nation-state. Peoples’ knowledge practices within a given region or nation-state can also be described as “indigenous knowledge.” This term is more productive though when referring to the knowledge of indigenous peoples themselves such as “Native Nations” in the United States or “First Nations” in Canada. See generally JULIAN KUNNIE & NOMALUNGELO I. GODUKA, *INDIGENOUS PEOPLES’ WISDOM AND POWER: AFFIRMING OUR KNOWLEDGE THROUGH NARRATIVES* (2006). References to “indigenous knowledge,” however, raise the difficult question of “who is indigenous?” and evoke political contestations over origin, which reveals the tensions between post-coloniality and indigeneity. This term also homogenizes indigenous peoples themselves because some groups may prefer to use local terms such as “American Indian” or refer to their

make sense of how these various critical intellectual property projects continue to speak past each other, partially because they hold different conceptions of the public domain.

A. Open Public Domain

Recent attention in critical intellectual property scholarship has focused on the public domain.³⁹ The public domain has been theorized as “outside” of property law or “property’s opposite.”⁴⁰ According to this characterization, creative works in the public domain are not controlled by intellectual property rights and are accessible to all.⁴¹ This is distinguishable from a “commons.” Creative works in a “commons” are controlled by intellectual property rights, but still remain accessible to all because owners freely license their inventions.⁴² A dichotomy thus exists between the public domain and the private domain of IP rights. This is not to say that there

tribal affiliations. The United Nations Permanent Forum on Indigenous Issues, led by self-identified members of indigenous communities, follows a flexible, working definition of “indigenous peoples” as people having a historical continuity with pre-invasion and pre-colonial societies who considered themselves a distinct group from others in society, are a non-dominant sector of such society, and who are determined to preserve their cultural heritage and ancestral lands. See SECRETARIAT OF THE UNITED NATIONS PERMANENT FORUM ON INDIGENOUS ISSUES, RESOURCE KIT ON INDIGENOUS PEOPLES’ ISSUES, (2008), available at http://www.un.org/esa/socdev/unpfii/documents/resource_kit_indigenous_2008.pdf.

³⁹ This initial turn to the public domain is often attributed to a 1981 essay by David Lange in which he calls for recognition of the public domain. See David Lange, *Recognizing the Public Domain*, 44 LAW & CONTEMP. PROBS. 147, 147 (1981) (arguing for courts to balance the need for new IP rights with the individual and collective rights of the public domain). A deeper theorizing of the public domain eventually came with the work of Jessica Litman. See Jessica Litman, *The Public Domain*, 39 EMORY L.J. 965, 967–69 (1990) (arguing that that Romantic notions of an individual author who produces something entirely new discounts the raw material found in the public domain and that the public domain is a space for promoting and nurturing authorship). More recently, Benkler articulates the public domain as a space for preserving ideals of democracy and autonomy. See Benkler., *supra* note 37. Explicit theorizing of the public domain is also attributable to the work of James Boyle. See BOYLE, PUBLIC DOMAIN, *supra* note 20; Boyle, *Second Enclosure*, *supra* note 20.

⁴⁰ BOYLE, THE PUBLIC DOMAIN, *supra* note 20, at xiv.

⁴¹ *Id.* at 38.

⁴² *Id.* at 39.

is just one public domain. On the contrary, the public domain is theorized as multiple and varied.⁴³

A central tenant within this scholarship is a commitment to values of openness. Information in the public domain or a commons should remain freely accessible to all. In particular, what is desired is an open public domain of science where researchers can share their ideas freely without constraints from overreaching patent ownership rights.⁴⁴ Expansionist patent laws and the United States Bayh-Dole Act are seen as obstructing the flow of basic scientific ideas and practices.⁴⁵ This threatens not only the ideas and materials of science, but also the fundamental practice of “open science.”⁴⁶ Universities engaged in publicly funded research own patents on basic inputs to scientific knowledge production such as DNA sequences.⁴⁷ Such ownership slows down the pursuit of biomedical research. Scientists must now negotiate licensing fees, material transfer contracts, and database access agreements before they can use patented ideas and objects that were formerly public domain material.⁴⁸ Some scientists, however, refuse to patent their single nucleotide polymorphisms (“SNPs”) discoveries.⁴⁹ In the spirit of open science, they make their inventions available in the public domain through Internet databases that others can

⁴³ Boyle, *Second Enclosure*, *supra* note 20, at 62. Others also acknowledge the presence of multiple public domains. Pamela Samuelson identifies thirteen different notions of the public domain. *See* Pamela Samuelson, *Enriching Discourse on Public Domains*, 55 DUKE L.J. 783, 785 (2006).

⁴⁴ Rai & Eisenberg, *supra* note 20, at 291.

⁴⁵ *Id.* at 290.

⁴⁶ *See id.* at 289.

⁴⁷ *See id.* at 291.

⁴⁸ *See id.* at 297.

⁴⁹ Rai & Eisenberg, *supra* note 20, at 298.

access.⁵⁰ Likewise, scholars suggest reforming Bayh-Dole to give funding agencies discretion in promoting open science by requiring publicly funded research to be placed in the public domain.⁵¹ Thus, an open public domain is associated with desires for materials and ideas to be freely open and accessible in the public domain, which would further the progress of scientific discovery and maintain the culture of “open science.”

An open public domain is also considered essential for maintaining basic scientific research or “big science.”⁵² Stricter patent laws and database restrictions have curtailed the ethics of open access and sharing within scientific practice.⁵³ In response, some scholars propose contractual agreements to set up “science commons” where research findings will be accessible in the public domain.⁵⁴ Models for a science commons are proposed out of a desire for a vibrant public domain where values of openness and sharing proliferate. There is also a desire to maintain a culture of experimentation.⁵⁵ Patent laws have locked up research ideas and materials even for basic experimental purposes.⁵⁶ For example, if scientists want to use patented BRAC1 genes in their research to determine other causes of breast cancer besides the BRAC1 gene, they still have to negotiate licensing fees with the patent owner.⁵⁷ This means that scientists have

⁵⁰ *See id.*

⁵¹ *See id.* at 310–13.

⁵² J.H. Reichman & Paul F. Uhler, *A Contractually Reconstructed Research Commons for Scientific Data in a Highly Protectionist Intellectual Property Environment*, 66 LAW & CONTEMP. PROBS. 315, 315 (2003) (discussing basic scientific research and stressing the importance of the public domain and the difficulty of identifying its boundaries, operations, and legal infrastructure).

⁵³ *Id.* at 332.

⁵⁴ *Id.* at 416.

⁵⁵ Rochelle Dreyfuss, *Protecting the Public Domain of Science: Has the Time for an Experimental Use Defense Arrived?*, 46 ARIZ. L. REV. 457, 461 (2004).

⁵⁶ *See id.* at 459.

⁵⁷ *See id.*

limited access to even the materials already in the public domain to conduct their experiments. Access to public domain information is curtailed and the fundamental ethos of science is threatened.⁵⁸

What is needed is an open public domain committed to “a system of open science, where results are shared, criticized and, ultimately, utilized to push forward the frontiers of knowledge.”⁵⁹ Legal changes are one step towards encouraging an open public domain. For instance, university researchers should be allowed to use patented materials for experimental use if they sign a waiver agreeing to promptly publish their findings and not patent their discoveries.⁶⁰ Again, this scholarship shares common desires for a public domain where values of openness and sharing can flourish and be free from expansive patent laws. However, not everyone shares the view that expansive patent laws automatically curtail open science.

Some scholars are equally concerned about expanding patent laws, but consider the public domain to be a vibrant and dynamic space where new forms of openness and sharing are emerging through a culture of disclaiming.⁶¹ As patent law advances, the public domain shifts and stretches in response. Patent laws do not necessarily threaten the ethos of open science, but rather engender new models for sharing information. For instance, the Merck partnership with Washington University in Saint Louis creates a public database of gene sequences for researchers to access.⁶² In addition, Creative Commons makes open source software publicly

⁵⁸ *See id.* at 464–65.

⁵⁹ *Id.* at 464.

⁶⁰ *See id.* at 471.

⁶¹ Robert P. Merges, *A New Dynamism in the Public Domain*, 71 U. CHI. L. REV. 183, 197 (2004).

⁶² *See id.* at 188.

available.⁶³ These are examples of an active movement to publicly disclaim property rights and expand the public domain.⁶⁴ There is increasing value in disclaiming and waiving patents, or, as others have called it, giving a gift to the public domain.⁶⁵ For example, if a party who already holds a patent or has a strong potential to patent decides to disclaim ownership rights, then the value of that waiver is even larger.⁶⁶ Some scholars have even gone so far as to suggest labels on products explicitly advertising “intent not to patent.”⁶⁷ Value in this case comes from not patenting. Recognition of incentives to *not patent* implies a more dynamic vision of the scientific public domain. Thus, scientific cultures of open sharing are strong and the public domain will find new ways to promote the flow of information. In essence, the sharing ethos of science is so strong that it will overcome restrictive patent laws by creating an open public domain where practices of disclaiming patent rights are encouraged.

The scholarship in Part I contributes valuable insights into how patent law curtails the flow of scientific information. The values of openness are important; a culture of openness and sharing facilitates exciting scientific discoveries. An ethic of openness within patent law and the public domain also supports the free flow of scientific information to marginalized communities. In other words, values of openness facilitate access. Patent laws can be relaxed to make medicines open and freely accessible to the poor globally.⁶⁸ Scholarship in this area though is limited. One shortcoming comes from the constraints of law itself, as jurisprudential concepts of

⁶³ *See id.* at 197–200.

⁶⁴ *See id.* at 197.

⁶⁵ *See id.* at 199.

⁶⁶ *See id.*

⁶⁷ Merges, *supra* note 61, at 201.

⁶⁸ Barnard, *supra* note 34.

the public domain stem from legal cases.⁶⁹ A more alarming limitation, however, is its unwillingness to thoroughly recognize systems of power and inequality.

Scholarship in this area assumes a nonhierarchical public domain and culture of science where an ethos of sharing and openness extends to all. On the contrary, feminist science studies scholars have produced valuable work challenging science by examining gendered power relations embedded within science and scientific knowledge production. For instance, scientific practices of sharing and collaboration have not always been extended to or benefited women, particularly women of color and lesbian women.⁷⁰ Female scientists have been denied access to the scientific professions.⁷¹ Science has violently exploited indigenous peoples, their knowledge, and their lands.⁷² And scientific method itself is grounded within masculine theories of

⁶⁹ To be sure, legal scholarship in this area is constrained by the judicial interpretations of the public domain. Theorizing of the public domain is often generated from articulations of the public domain found in court cases. *Graham v. John Deere Co.*, 383 U.S. 1 (1966) made it clear that any enlargement of patent law monopolies must regard the possible impact on the public domain. As is common in legal liberalism there is a balancing test. Increased patent law rights must be balanced against the ideals of free access to materials in the public domain. The problem is that the balancing test never seems to fully account for social inequalities. In his earlier work, James Boyle was more explicit in his attention to inequality and power. In *Shamans, Software, and Spleens*, Boyle discusses notions of equality and how they are employed within distinctions of the public and private. JAMES BOYLE, *SHAMANS, SOFTWARE AND SPLEENS: LAW AND THE CONSTRUCTION OF THE INFORMATION SOCIETY* (1996). As informed by Karl Marx's essay, *On the Jewish Question*, Boyle notes that liberal democracy depends upon a tension between the public and the private. *Id.* at 25. Citizens are only equal as citizens in a public domain. *See id.* at 26. In contrast, differences in social class, education, and occupation manifest themselves in the private sphere of civil society where the institution of private property takes hold. *Id.* Boyle argues there is no "intelligible geography" to map the public and private, thus decisions over the control information should turn on "the relative powerlessness of the group seeking information access or protection." *Id.* at 28. Boyle thus makes valuable connections between the control of information and liberal democracy in his earlier work.

⁷⁰ See H. Patricia Hynes, *Toward a Laboratory of One's Own: Lesbians in Science*, 28 *WOMEN'S STUD. Q.* 158 (2000) (discussing issues confronting lesbians in science as generated from a study group of lesbian students at University of Massachusetts Amherst); Banu Subramaniam, *Snow Brown and the Seven Detergents: A Metanarrative on Science and the Scientific Method*, 28 *WOMEN'S STUD. Q.* 296 (2000) (narrative critique of science and scientific method and its relationship to women of color).

⁷¹ HARRIET ZUCKERMAN, *The Careers of Men and Women Scientists: Gender Differences in Career Attainment*, in *WOMEN, SCIENCE, AND TECHNOLOGY: A READER IN FEMINIST SCIENCE STUDIES* (Mary Wyer ed., 2001) (arguing that women scientists experience more obstacles than men in their careers).

⁷² LONDA L. SCHIEBINGER, *PLANTS AND EMPIRE: COLONIAL BIOPROSPECTING IN THE ATLANTIC WORLD* (2004) (discussing colonial bioprospecting in the New World as an act of empire; in particular, the nontransfer of knowledge regarding the peacock flower and its use as an abortifacient).

objectivity and rationality.⁷³ In other words, values of sharing and openness within science have not benefited everyone equally.

One may argue that an ethic of open access that shapes an open public domain relates directly to relational feminism because it challenges liberal ideals of property and creativity by enabling collaboration and relationship.⁷⁴ This may apply to the context of copyright more easily than with patent law. With a feminist post-colonial reading in mind, I contend that open access models (e.g., creative science commons) present a narrow challenge to liberal notions of property and inventorship. Such models might incite collaboration and the sharing of scientific data by placing scientific materials in the public domain. Yet, they are meant to encourage a particular type of scientific and technological creativity, which is grounded in epistemologies of western science. Commercial scientists, university researchers, and do-it-yourself biologists may now be able to access scientific materials more freely, but the sharing of information fails to produce new visions of collaboration or what a more just science might look like.

The ethics of openness and sharing that are deployed are not strong enough to ask how might scientific information be shared more broadly with the public, Indigenous peoples, and marginalized groups who might benefit from it? How could such sharing and broader collaborations generate new methods of scientific knowledge production for producing better and more sustainable scientific practices so that more people could flourish? Theorizing of an

⁷³ DONNA JEANNE HARAWAY, *SIMIAN, CYBORGS, AND WOMEN: THE REINVENTION OF NATURE* (1991) (arguing that scientific discourses on nature work to naturalize social relations of race, class, and gender); SANDRA G. HARDING, *WHOSE SCIENCE? WHOSE KNOWLEDGE?: THINKING FROM WOMEN'S LIVES* (1991) [hereinafter HARDING, *WHOSE SCIENCE? WHOSE KNOWLEDGE?*] (arguing against masculine modes of scientific knowledge production and in favor of starting off scientific research from women's experiences).

⁷⁴ Some authors have recently argued that open access movements in copyright law are directly related to theories of relational feminism. Carys J. Craig, Joseph F. Turcotte, and Rosemary Coombe, *What's Feminist about Open Access: A Relational Approach to Copyright in the Academy*, 1 *FEMINISTS@LAW* 1, 26 (2011) (arguing that open access movements in copyright law coincide with tenants of relational feminism). Relational feminism provides a stronger theory of autonomy than liberalism by understanding it in relational, not individualist terms. *Id.* at 27-28. Although their analysis is directed at copyright law and not patent law, it raises question as to how relational feminism might be linked to open access movements in patent law.

open public domain fails to deliver on its challenge to inventorship and property because it reinforces models of western scientific knowledge production. More people might be able to access and share scientific information and materials, but the same narrow regimes of science are being produced. Thus, an open public domain might appear at first glance to disrupt norms of property and inventorship, but a post-colonial feminist reading reveals its limited scope. Theorizing an open public domain, without addressing norms of western science and the structural inequalities preventing access to scientific knowledge, produces a narrow analytic that only benefits those who already have the power to access public domain information. One must turn to a protective or egalitarian public domain for attention to inequalities. First though, attention is due to the notion of a hybridized public domain, where the public domain is imagined as a hybrid space where conceptual binary categories come undone and new visions for modernity are imagined.

B. Hybridized Public Domain

Theorizing of the public domain is related to scholarship focused on critiques of the “products of nature” doctrine in patent law.⁷⁵ This legal doctrine states that patent rights are not granted to products of nature, they only apply to man-made cultural objects.⁷⁶ To obtain patent

⁷⁵ See generally ROBERT P. MERGES & JOHN FITZGERALD DUFFY, *PATENT LAW AND POLICY: CASES AND MATERIALS* (2007).

⁷⁶ Patent Act, 35 U.S.C. § 101 (2010) (stating “whoever invents or discovers any new or useful process, machine, manufacture or composition of matter, or any new and useful improvement thereof, may obtain a patent therefore, subject to the conditions and requirements of this title”). The common law doctrine around the products of nature doctrine was initially set forth in *Parke-Davis & Co. v. H.K. Mulford & Co.*, 189 F. 95 (S.D.N.Y. 1911). The court found that a purified form of adrenaline, a naturally occurring hormone, was patentable subject matter. The doctrine was then affirmed in *Funk Bros. Seed Co. v. Kalo Inoculant Co.*, 333 U.S. 127, 130 (1948) (“[h]e who discovers a hitherto unknown phenomenon of nature has no claim to a monopoly of it which the law recognizes. If there is to be invention from such a discovery, it must come from the application of the law of nature to a new and useful end.”). The Court also asserted the doctrine in *Diamond v. Chakrabarty*, 447 U.S. 303, 313 (1980) (Section 101 patentability is based upon the distinction “between products of nature, whether living or not, and human-made inventions”). The reason for excluding products of nature from patentability is because “too much patent protection can impede rather than ‘promote the Progress of Science and Useful Arts,’ the constitutional objective of patent and copyright protection.” *Lab Corp. of Am. Holdings v. Metabolite Labs, Inc.*, 548 U.S. 124, 126–27 (2006).

rights, an inventor must “isolate and purify” a product from nature.⁷⁷ This means turning a plant or animal organism into a man-made cultural invention such as genetically modified bacteria. Patent rights only extend to the isolated and purified element of the plant, and not the plant itself. Scholarship in this section suggests that the products of nature doctrine implies a separation between nature and culture under the law. As will be discussed, such scholarship critiques this practice of isolation and purification by re-classifying it. Counter to patent law’s characterization of nature and culture as separate dichotomous categories, these are shown to be socially and historically constructed categories that are co-constituting. The products of nature doctrine is thus re-figured through critique as a hybrid form where nature is actually mixed with culture. Challenging patent law in this manner disrupts its power to maintain nature and culture as separate categories. This section will address these specific critiques in more detail after a brief introduction of the main points and tensions within this scholarship regarding patent law.

By deconstructing patent law as a hybrid form, scholarship in this area opens up a broader conception of the public domain. In one way it questions the incompatibility of patent law with notions of scientific authorship and creativity within a nonproprietary public domain.⁷⁸ It also asks how patent law constructs notions of nature and culture in different ways, while linking patent law to larger questions of modernity and Euro-American epistemologies. In the previous section regarding an open public domain, theorizing of public domain was based on assumptions of a culture of science where values of openness and sharing were emphasized. Nature in the

⁷⁷ See USPTO, *Utility Examination Guidelines*, 66 Fed. Reg. 1092, 1093 (Jan. 5, 2001), available at www.uspto.gov/web/offices/com/sol/notices/utilexmguide.pdf; see also *Chakrabarty*, 447 U.S. 303.

⁷⁸ See Mario Biagioli & Peter Louis Galison, *SCIENTIFIC AUTHORSHIP: CREDIT AND INTELLECTUAL PROPERTY IN SCIENCE* (Routledge 2003); Mario Biagioli, *The Instability of Authorship: Credit and Responsibility in Contemporary Biomedicine*, 12 FASEB J. 3, 4 (1998).

previous scholarship is assumed to be freely accessible as public domain material, whereas the private domain of property involves only man-made cultural artifacts purified from nature.

Scholarship theorizing a *hybridized public domain*, however, does not assume a scientific culture devoid of social relations. Rather, science is historically and socially contingent and co-constituted with society.⁷⁹ A different concept of scientific knowledge production within a nonproprietary public domain thus emerges, one that assumes scientific practice to be historically changing and categories of nature/culture and social/biological to be hybrid, co-constituted categories, rather than separate and dichotomous. What materializes is a relationship between the public domain and patent law where a more robust science is possible precisely because it takes the social, political, and economic into account. Nature is recognized not as the opposite of culture; rather, nature (and culture) is socially constructed itself.

The relationship between the public domain and patent law, therefore, comes into view as a network where nature and culture merge in new ways. Likewise, the dichotomy between the public domain and patent law also becomes more fluid. The public domain appears less as the opposite of property and more as deeply connected to property. The discrete categories of the public domain and private property are better understood as a hybridized public/private domain. Embracing a public/private domain where hybrid categories of nature/culture (and their kin of female/male and self/other) opens up new possibilities for recognizing epistemological and ontological ways of knowing and being not based upon Euro-American dichotomous ways of thinking. Yet, limitations in this scholarship do surface.

⁷⁹ See generally SHEILA JASANOFF, STATES OF KNOWLEDGE: THE CO-PRODUCTION OF SCIENCE AND SOCIAL ORDER (Routledge 2004) (edited volume demonstrating how scientific knowledge constructs and is constructed by institutions, identities, and discourses); JENNY REARDON, RACE TO THE FINISH: IDENTITY AND GOVERNANCE IN AN AGE OF GENOMICS (2005) (discussing the Human Diversity Project within the framework of co-production).

Within its critique of the products of nature doctrine's mechanisms of "isolate and purify," this scholarship fails to clarify what could be considered multiple layers of purification. Several questions can be posed that get at these multiple layers. How do notions of the public domain and patent law reveal internalized assumptions of the purity of science (i.e., science as devoid of hierarchal social relations)? How does the product of nature doctrine construct and reinforce the "pure" or dichotomous separation of the categories of nature and culture? And how does the requirement to "isolate and purify" nature reinforce the purity of scientific practice by scientists in the lab (i.e., practices of science devoid of race or gender discrimination or masculinized discourses)? In other words, the law assumes a purification of scientific culture itself, of the categories nature/culture that science depends upon, and of scientific experimental method where nature is purified in the lab. Scholarship in this area provides valuable insights into how patent law is a hybrid form, yet it could benefit from addressing how multiple functions of purification exist within patent law as a hybrid network. Re-figuring patent law as a hybrid form is valuable, but attention to how law sustains modern binary categories and an ahistorical scientific culture must persist.

Scholarship desiring a hybridized public domain also tends to lean more toward the theoretical. Material conditions are considered, but such analysis is limited. Several works explicitly address indigenous peoples' struggles over patent law. Yet, a more complex examination of colonial and neo-liberal histories shaping indigenous patent law struggles is not taken up. In addition, there is no analysis of gendered social relations and/or any attempt to link discussions of nature/culture to the historical construction of women as closer to nature. The contributions of this work, however, do offer new ways to think about the public domain and its

relationship to patent law through valuing a hybridized relationship between the public domain and private property.

Certain works within this scholarship produce insights into how the dynamic between the public domain and patent law produces new understandings of nature and culture that challenge Euro-American modes of thinking.⁸⁰ Much of this scholarship employs the work of Bruno Latour, a professor of science studies at Universités à Sciences Po, on hybrids as a rhetorical device to critique the pure form of the patented object.⁸¹ A brief remark on Latour's work will thus be useful for understanding scholarship in this section.

According to Latour, being modern depends upon two related practices. One is a practice of "translation" where new mixtures are created between beings—"hybrids of nature and culture."⁸² The other practice is one of "purification" whereby distinct zones are fashioned between beings such as human and non-human or nature and culture.⁸³ For example, dichotomous relationships are constructed whereby humans are placed in contention with, and hierarchically ordered as superior to, animals. Latour notes that we are modern so long as we consider these practices separately.⁸⁴ However, once we begin to consider how these practices work together, we stop becoming wholly modern and new possibilities for our futures emerge.⁸⁵ Latour's work goes on to explore the connections between these two practices. He argues that practices of purification depend upon the invisibility of hybrids, but the more hybrids are

⁸⁰ See Strathern, *Cutting the Network*, *supra* note 21; Strathern, *The Patent and the Malanggan*, *supra* note 21.

⁸¹ BRUNO LATOUR, *WE HAVE NEVER BEEN MODERN* (1993).

⁸² *Id.* at 10.

⁸³ *Id.*

⁸⁴ *Id.* at 11.

⁸⁵ *See id.*

concealed the more they interbreed and proliferate.⁸⁶ These practices keep Westerners distant from other “premodern” cultures and reduce their ability to recognize hybrid forms and to see, for example, that Boyle’s air pump is no less strange than Arapesh spirit houses.⁸⁷

Through a critique of the products of nature doctrine, scholarship in this section suggests that patented inventions are “heterogeneous hybrids.”⁸⁸ The products of nature doctrine affirms that objects found in nature cannot be patented; only man-made objects that have been isolated and purified from nature can become property possessions.⁸⁹ Scholars assert that this legal doctrine reinforces a dichotomy between objects discovered in nature and those invented in the lab, whereby value is placed upon scientific/cultural inventions in the form of ownership rights.⁹⁰ Patent law thus depends upon a legal logic that separates nature from culture in order to award property rights. To counter this logic, scholars assert that patented objects actually involve the mixing of nature with culture.

For example, feminist anthropologist Marilyn Strathern points to the case of *Moore v. Regents of the University of California*.⁹¹ John Moore brought a legal claim arguing that physicians at UCLA hospital unlawfully obtained an ownership interest in his cells, without his permission, when they removed them from his body after surgery. The court found against Moore, stating he did not have rights to his bodily tissue because of the logic behind the products

⁸⁶ *Id.*

⁸⁷ *See id.* at 115.

⁸⁸ Strathern, *Cutting the Network*, *supra* note 21.

⁸⁹ Strathern, *The Patent and the Malanggan*, *supra* note 21, at 8–10.

⁹⁰ Strathern, *Cutting the Network*, *supra* note 21, at 525.

⁹¹ *Id.*; *John Moore v. The Regents of the Univ. of Cal.*, 51 Cal. 3d. 120 (1990).

of nature doctrine.⁹² The doctrine treated his tissue sample (“nature”) separately from the invention of the unique cell lines in the lab by UCLA scientists (“culture”) in order to award rights to the scientists. Countering this legal logic, scholars point out that the invention of the cell lines actually involved mixing the “raw material” of Moore’s tissue sample with the scientific practices of the scientists. The “invented” cell lines could not have been developed without the raw material of Moore’s tissue sample. Thus, the patented cell line was not an “isolated and purified” object from nature, but rather a heterogeneous hybrid involving the mixing of both nature and culture.⁹³

By bringing attention to patented objects as heterogeneous hybrids, this scholarship counters the legal logic of the products of nature doctrine, where nature is considered to be the opposite of culture. By extension it also disrupts the logic of the public domain as “outside” of property law. Privatization of Moore’s cell lines by the scientists was possible because his bodily tissue was considered to be within the public domain. This dichotomy between nature in the public domain and the cultural inventions of private property law ensures the availability of raw material for scientific experiment. Understanding patented objects as hybrids breaks down this distinction, and enables critique of the separation between nature/culture and public/private under the law. This scholarship thus implies a desire for a hybridized relationship between the public domain and private property law, where value is placed upon ways of knowing and being that embrace hybrid forms, rather than dichotomous categories. This mode of thinking thus encourages theorizing of the public domain and private patent law as fused together, not separate.

⁹²The court ruled against Moore stating that he did not have a conversion claim that his cells were unlawfully taken from his body because the patent for the cell line was proof that the cells were an invention and not the same as the cells in his body. *See id.*

⁹³ *Moore*, 51 Cal. 3d 120.

Scholarship in this area also examines political struggles over patent law and articulates how such political movements end up reinforcing dichotomies between nature and culture. As noted, patent law codifies the Euro-American distinction between nature and culture, imparting this dichotomy with normative power.⁹⁴ Political resistance against biotechnology patents emerges at the nexus of discursive negotiations over nature and culture.⁹⁵ For instance, critics of bio-colonialism argue against biotechnology patents as commodification of “life itself.”⁹⁶ Patents are considered to be a threat to understandings of personhood as separate from property.⁹⁷ For instance, modern conceptions of slavery as morally wrong are grounded upon a clear delineation between persons and things.⁹⁸ Critics therefore perceive biotechnology patents as blurring the boundaries between persons and things (i.e., nature and culture) and upsetting the moral foundations against slavery.⁹⁹ Thus, they are uneasy about the conjoining of nature and culture, preferring to keep them separate.

Policy responses to such critiques similarly operate within a discursive logic that reinforces a dichotomy between nature and culture. For example, scientists and lawmakers attempt to clear up “misunderstandings” made by critics by re-asserting the products of nature doctrine and its legal rule that patent law does not apply to the patenting of nature or life.¹⁰⁰ This

⁹⁴ See Pottage, *supra* note 21, at 743.

⁹⁵ See generally, *id.*

⁹⁶ *Id.*

⁹⁷ *Id.* at 745.

⁹⁸ See *id.*

⁹⁹ See *id.* at 744.

¹⁰⁰ Pottage, *supra* note 21, at 749–51.

policy response, however, unrealistically assumes that making the legal distinction between nature and culture firmer will dampen critics' fears.¹⁰¹

Thus, both critics of biocolonialism and patent law policy-makers subscribe to a clear boundary between nature and culture.¹⁰² Conceptions of nature and culture are thus maintained as static categories and their historical and contingent construction is obscured.¹⁰³ Political struggles regarding patent law fail to recognize patent law as a hybrid entity based upon historically and socially constructed forms of nature/culture. But how does his work inform conceptions of the public domain?

This scholarship demonstrates how distinctions between nature/culture and public domain/private domain are vital to Euro-American modes of rationality within modernity. As constructed under the law, public domain materials are delineated from privatized cultural inventions. This dichotomy ensures the availability of raw material for scientific investigation and patenting. Negotiations over patent law, and its demarcation between public and private as well as nature and culture, however, signal something more is going on. At stake are fissures within Euro-American epistemologies undergirding modernity, which depend upon clear separations between public and private as well as nature and culture. This scholarship reminds us that even modes of resistance, such as discourses of bio-colonialism, are implicated within the project of modernity when they reassert the nature and culture binary. Rather, value should be placed on embracing hybrid notions of nature/culture and public/private. Yet, one could argue that this scholarship fails to afford agency to critics of biocolonialism. Indigenous peoples who

¹⁰¹ *Id.* at 749.

¹⁰² *Id.* at 753.

¹⁰³ *See id.*

criticize patent law under discourses of biocolonialism or biopiracy are re-fashioning the nature/culture binary in new ways, rather than reifying the binary.¹⁰⁴ Even with these limitations, this scholarship contributes insights that inform conceptions of the public domain and its relationship with patent law. This work implies a hybridized relationship between the public domain and private property where Euro-American dichotomous epistemologies become unstable and more hybrid forms emerge as new sources for scientific and cultural production.

These insights are further supported through the work of similar scholarship concerned with patent law narratives. Tracing legal narratives reveals why some narratives are held out as more plausible than others.¹⁰⁵ Legal narratives are given power through their processes of codification. The act of codification freezes a text into a socially acceptable form and, in turn, gives its particular social acceptability further legitimacy.¹⁰⁶ The codification process thus fixes meanings of acceptable social practice, while also reflecting those practices back.¹⁰⁷ It is argued that the dominant narrative or epistemology in patent law is one of law and economics.¹⁰⁸ This involves understandings of scientific knowledge as devoid of social relations, which works to

¹⁰⁴ See Beth A Conklin, *Shamans versus Pirates in the Amazonian Treasure Chest*, 104 AM. ANTHROPOLOGIST 1050 (2002) (discussing how shamans have become political representatives in Brazil and their role in speaking out against biopiracy); Shane Greene, *Indigenous People Incorporated? Culture as Politics, Culture as Property in Pharmaceutical Bioprospecting*, 45 CURRENT ANTHROPOLOGY 211 (2004) (discussing strategies of the Aguaruna people of the Peruvian Amazon to claim agency over their own economic aspirations while representing their own interests and negotiating for a benefit sharing agreement with ICBB and Serle with Monsanto, while arguing that discussions around biopiracy need to include a more subtle understanding of the dynamics involved between the social actors).

¹⁰⁵ See Kang, *supra* note 21.

¹⁰⁶ *Id.* at 243.

¹⁰⁷ See *id.* at 244.

¹⁰⁸ This does not mean alternative narratives are foreclosed entirely. Rather, as Kang notes, the codification processes allows other moral, social or cultural forms of rationality to dissent so long they stay within the acceptable parameters drawn by the legal liberalism that undergirds law and economics. Kang, *supra* note 21, at 245.

maintain the myth of pure, objective science.¹⁰⁹ Through this ahistorical notion of science, the law is able to hang on to the illusion of a “true” science where nature is discovered and systematized through scientific rationality.¹¹⁰ This narrative persists despite science and technology scholarship asserting science as historically and socially constructed. To disrupt this dominant narrative, scholarship in this area suggests patent law as a hybrid network involving dynamic movement from the social to the natural to the social.¹¹¹ Scientific knowledge related to biotechnologies is *socially* constructed knowledge; it is not free from social relations. This socially constructed knowledge then enters the patent network and it becomes *natural* because the knowledge produced is considered a part of nature and bodies. Then as natural information is patented, it becomes *social/cultural* artifact and is publically disclosed. This important point may be further emphasized through a return to the example of John Moore.

Patented cells lines are not separate from the social relations of John Moore as a patient, or from UCLA as a medical center in the business of research. Thus, scientific knowledge related to the cell lines is socially constructed prior to entering the patent network. As these cell lines enter the patent network from the public domain they are constructed under the law as “natural” raw material taken from John Moore’s body. The law then fashions these cell lines into a patented invention. A new social/cultural artifact is constructed as the raw material of cell lines is mixed with the labor of scientists to produce a propertied object.

Nature and culture emerge, therefore, in relation to each other, not as discrete categories. Rather, as this scholarship points out, patent law depends upon the construction of a continually

¹⁰⁹ *Id.* at 246.

¹¹⁰ *Id.* at 248.

¹¹¹ *Id.* at 250.

shifting nature/culture. In recognizing/disrupting patent law as a hybrid network, this scholarship stresses that patent law must admit its uncertainty.¹¹² This means acknowledging the multiple layers of interests and entities that go into scientific knowledge production and presenting a self-reflective justification of why one narrative is more valuable than another.¹¹³ Acknowledging multiple layers and interests means recognizing a hybridized relationship between the public domain and private patent law. It means admitting to the presence of epistemologies that are different from Euro-American ones.

Finally, there is scholarship in this area that actually addresses these multiple layers. In her critical work on the patented OncoMouse for cancer research, Donna Haraway reads patent law as a hybrid network.¹¹⁴ Her work differs from others in this section, as she more explicitly interrogates relations of power. She asserts that patent law reconfigures an organism into a human invention by mixing nature and culture.¹¹⁵ So long as nature is mixed with human labor, it becomes a cultural artifact worthy of patent status.¹¹⁶ Haraway thus situates OncoMouse as a *hybridized object*. She understands the patented object as an instance where nature merges into the artificial or cultural, yet she also finds problems in how patent ownership blocks nonproprietary and nontechnical meanings while foreclosing broader visions of scientific practice and the public interest. According to Haraway, patents are technoscientific objects and should be analyzed by considering “all the meanings, identities, materialities, and

¹¹² *Id.* at 264.

¹¹³ *See id.*

¹¹⁴ *See* HARAWAY, *MODEST WITNESS*, *supra* note 21. The OncoMouse was invented by scientists at Harvard University. The genetically modified mouse carries a specific gene making it more susceptible to cancer, thus a valuable laboratory mouse. DuPont owns the trademark and patent rights to the invention.

¹¹⁵ *See id.* at 83.

¹¹⁶ *See id.* at 82.

accountabilities of the subjects and objects in play.”¹¹⁷ Her study of OncoMouse goes on to examine the relevant multiple subjects ranging from Dupont (the owner), to the Harvard inventors, and then finally to the breast cancer patients awaiting a cure.¹¹⁸ In doing so, she tacks back and forth, generating a hybrid kinship between private patent law and its supposed other—the public domain—by working through fluid notions of authorship and nature.

Through a study of OncoMouse one begins to understand that “the author of life is a writer of patentable (or copyrightable) code.”¹¹⁹ Authors are *not just scientists*, but are also the objects they study. The genome itself can be considered the master designer/author of organisms. Authorship is also about “status” because biotechnology patents “establish who gets to count as nature’s author.”¹²⁰ In Haraway’s work, authorship moves away from Enlightenment notions of an individual inventor to become a hybridized form of authorship where dichotomies of individual/collective and human/non-human, which signal authorial rights, begin to merge. Furthermore, multiple notions of nature are also employed within her analysis. Haraway critiques nature as a source of raw material for human innovation.¹²¹ She also criticizes nature as a moralizing discourse for appropriate social norms and actions.¹²² For example, such discourses are used to “naturalize” science as certain, legitimate, and objective.¹²³ They are also employed

¹¹⁷ *Id.*

¹¹⁸ *Id.* at 97–108.

¹¹⁹ *Id.* at 97.

¹²⁰ HARAWAY, MODEST WITNESS, *supra* note 21, at 100.

¹²¹ *Id.* at 102.

¹²² *Id.*

¹²³ *See id.* at 103.

to question those that behave “unnaturally.”¹²⁴ Finally as market logic, such naturalizing” discourses support “free enterprise as natural acts” and discourses of choice.¹²⁵

Haraway’s complex examination of “nature” thus places importance on values of hybridity that disrupt naturalizing discourses. She also offers new ways of analyzing the relationship between the public domain and patent law. One can begin to understand how the divide between the public domain and patent law, with its emphasis on separating nature and culture, connects to discourses of naturalization that are used to subordinate marginalized groups.

In sum, as patent law strains scientific practice, the scholarship in this section examines how interactions between modes of scientific/cultural production within the public domain and the regulatory techniques of patent law produce new notions of nature and culture. More is at stake than just threats to the circulation of raw scientific material. Relationships between the public domain and patent law challenge Euro-American epistemologies and ideologies of neo-liberalism, which depend upon separating nature/culture to define who is or is not considered fully human within liberal democracy and to allocate resources accordingly. The hybridized relationship between the public domain and patent law is unlike the open public domain mentioned above. Borders become more fluid, and there is oscillation between the public domain and patent law. Scholarship in this area recognizes legal borders fencing off nature from culture by disallowing patents on products of nature. But it critiques those borders by re-characterizing patents as hybrid forms. Biotechnology patents involve inventions where nature is mixed with culture. The scholarship thus turns the gaze back upon Euro-American practices of purification within legal codification processes by re-characterizing patented objects as hybrids. This essentially disrupts the dichotomy between patent ownership rights and the public domain.

¹²⁴ *Id.* at 102.

¹²⁵ *Id.* at 105.

By showing that the dichotomy between nature/culture within the patenting process is actually hybrid, it also goes farther to contest the distinction of the public domain as property law's "opposite." Patent law rights are defined in relation to the public domain. Creativity in the public domain is that which is not patentable. Patent law privileges patented inventions by devaluing forms of creativity in the public domain not eligible for patenting. Scholarship in this section contests this distinction by showing patented objects themselves as hybrid forms. Creativity that is patented is privileged because it is supposedly pure and isolated from nature. But this scholarship shows that patented objects are not "pure," rather they are hybrids of social-nature-social, which are not divorced from nature or other social relations. Such critiques disrupt the privileging of patented knowledge over knowledge in the public domain. Those who desire a hybridized public domain therefore value a public domain that is not distinct from private property at all. A hybridized public domain is one in which the public domain oscillates with private property so that one is not valued over the other. It is a public domain no longer defined as private property's Other where the extraction of resources takes place. Limitations though are present within this scholarship.

Some attention is paid to indigenous peoples, but a more nuanced analysis is needed. How does recognizing patented objects as hybrid forms make us think differently about epistemologies of indigenous knowledge where amalgamations proliferate as cultural artifacts are linked to lands and resources? Analysis of gendered social relations is also left undone. The exception is Donna Haraway's work, which provides an insightful feminist critique of patent law, but its object of inquiry around OncoMouse limits its discussion to certain gendered social relations. Thus important questions regarding gender are left unexamined. For example, does patent law's conceptions of nature/culture as hybrid offer a site of liberation, ambivalence, or

further subordination for women whose bodies and labor have been subordinated by being considered closer to nature and biology? The hybridized public domain offers broader conceptions of the public domain, but questions of inequality and power remain, for the most part, unanswered. Such inquiries are taken up, however, by scholarship focusing on a protective public domain that addresses histories and relations of imperialism and colonialism.

C. Protective Public Domain

Existing scholarship also examines the public domain as embedded within ethno-racialized histories of colonialism and imperialism against local and indigenous peoples. In acknowledging these histories, the public domain is recognized as a concept of violence against indigenous peoples, but is also re-figured as a space of possible protection and recognition. It is re-imagined as space of security and empowerment, while being flexible enough to account for the different geo-political locations and interests of indigenous peoples. Such scholarship provides insights into how and why traditional knowledge is considered to be in the public domain.

Particular attention is paid to practices of bioprospecting. For instance, when researchers intentionally collect plants from public markets and roadsides, they take advantage of an open public domain where raw materials are deemed unattached from authorship rights and freely accessible to all.¹²⁶ Benefit-sharing agreements are also debated. Such agreements, theoretically, encourage researchers to provide “benefits” to indigenous peoples in exchange for their knowledge and resources. In doing so, they attempt to protect the public domain and indigenous peoples. Scholars disagree, however, as to whether or not benefit sharing provides protection for

¹²⁶ See CORI HAYDEN, WHEN NATURE GOES PUBLIC: THE MAKING AND UNMAKING OF BIOPROSPECTING IN MEXICO 137 (2003).

indigenous peoples or simply ensures continued access to indigenous knowledge located in the public domain.¹²⁷

Concepts of the public domain in this section revolve around an *ethic of protection*. How can the public domain be structured to protect indigenous peoples? How can benefit sharing be used to protect a vibrant public domain, while also safeguarding indigenous peoples? These questions shape many of discussions within this scholarship. Unfortunately, the level of protection this public domain might offer is limited because it fails to consider complex gendered social relations. A protective public domain for indigenous peoples is likely to fall short if individual and structural relations of gender subordination within indigenous communities are not recognized. This point will be expanded upon after a brief discussion of some of the scholarship focused on a protective public domain.

According to some scholars the public domain should be open to a broader understanding of authorship and be formulated through frameworks of human rights and social justice.¹²⁸ This conception of the public domain differs from a “cultural public domain” as envisioned by North American legal scholarship, which desires open access to materials and “creative commons” models.¹²⁹ A cultural (or what I call *open*) public domain often conflicts with indigenous peoples’ interests as it facilitates appropriation of indigenous knowledge. To create a public domain that better protects indigenous peoples, this scholarship argues for more robust notions of authorship.

¹²⁷ See generally, Greene, *supra* note 104. But see MICHAEL F. BROWN, WHO OWNS NATIVE CULTURE? (2003) (discussing indigenous peoples efforts to protect their cultural heritage from control through intellectual property rights and arguing against their strategies to claim ownership rights over their heritage).

¹²⁸ See Coombe, *Fear, Hope, and Longing supra* note 22.

¹²⁹ *Id.* at 1181.

The concept of authorship should be considered not only as a status for claiming patent law rights, but also as a set of responsibilities.¹³⁰ Authorship is a political accomplishment peoples struggle to achieve, and a status promising recognition for the traditionally excluded.¹³¹ This vision of authorship offers an alternative to Enlightenment understandings of an individual author who makes unique contributions to human progress.¹³² Such normative notions of authorship deny authorial status to indigenous peoples, thus ensuring their knowledge, resources, and heritage remain in the public domain. A broader notion of authorship enables a more robust conception of the public domain, allowing for indigenous peoples to protect their cultural heritage. Scholarship in this area focuses on expanding the public domain by limiting IP rights and requiring compulsory licensing.¹³³ However, it insists on exceptions for those that have been traditionally excluded from asserting authorial rights.¹³⁴ The public domain should not be expanded at the expense of indigenous peoples. Attention should also be paid to histories of colonialism and imperialism that contribute to conceptions of the public domain and its capture of traditional knowledge.¹³⁵ By stretching notions of authorship and taking into account histories of colonialism and imperialism, a robust public domain emerges for protecting indigenous peoples' cultural heritage.

A protective public domain would also address inequalities. The public domain is often dangerously romanticized within United States legal scholarship as a space of freely circulating

¹³⁰ *Id.* at 1171.

¹³¹ *Id.* at 1172.

¹³² *Id.*

¹³³ *Id.* at 1184.

¹³⁴ See Coombe, *Fear, Hope, and Longing*, *supra* note 22.

¹³⁵ See *id.*

ideas and materials for all to use.¹³⁶ Such romantic tropes are typically taken up by theories of law and economics as well as critical IP scholarship advocating creative commons models.¹³⁷ The romanticizing of the public domain is criticized for failing to consider distributional consequences and inequalities.¹³⁸ As Chander and Sunder assert, “differing circumstances—including knowledge, wealth, power, and ability—render some better able than others to exploit a commons.”¹³⁹ Thus, individual and structural social relations shape whether or not information in the public domain is truly open and accessible.

There are also contradictions in this romantic notion of the public domain.¹⁴⁰ On the one hand, it supports marginalized groups in the global South through its emphasis on opening access to medicines and information by re-characterizing them as public domain material. On the other hand, it obscures poor peoples’ knowledge as raw material, rather than as its own form of intellectual property that is a “modern, dynamic, *scientific, and cultural invention.*”¹⁴¹ Scholars are therefore encouraged to theorize a public domain that recognizes the *inventiveness* of traditional knowledge.¹⁴² A strong public domain is desired, but one that flexibly takes into account inequalities and protects the dynamic cultural heritage of marginalized groups.

¹³⁶ See Chander & Sunder, *supra* note 22.

¹³⁷ *Id.* at 1334–36.

¹³⁸ *Id.* at 1354. Chander and Sunder call for attention to distributional consequences because, in actuality, cultural production in the public domain is not free moving and open for all to participate in. See *id.* at 1355. For example, they point out even though the United States based GenBank offers freely accessible DNA sequence information through an Internet database, only one percent of downloads are attributed to persons in Africa. See *id.* at 1341–43.

¹³⁹ *Id.* at 1341.

¹⁴⁰ Madhavi Sunder, *The Invention of Traditional Knowledge*, 70 LAW & CONTEMP. PROBS. 97, 100 (2007).

¹⁴¹ *Id.* at 100.

¹⁴² *Id.* at 110–12.

Furthermore, scholarship calls for a discussion of the public domain and intellectual property that “may enhance the *capacity* for participating in the *processes* of knowledge creation.”¹⁴³ Thus, the public domain should not only be a space for protection, but one of recognition and empowerment.

The protective public domain is also characterized as a flexible concept. This scholarship argues for a more elastic notion of the public domain to protect traditional knowledge.¹⁴⁴ When the notion of the public domain is applied to different locations, the concept can lose its meaning.¹⁴⁵ Thus, notions of the public domain must be pliant because, for example, protecting folk art differs from safeguarding folk medicines.¹⁴⁶ Each form of traditional knowledge and expression might require a different conception of the public domain to ensure a proper balance between protection and access.¹⁴⁷ A more flexible notion offers an alternative to understandings of the public domain that are often based on the mistaken belief that traditional knowledge is in the past and never changes.¹⁴⁸ On the contrary, traditional knowledge is a dynamic living concept that changes in response to culture and environment.¹⁴⁹ Thus, a more elastic concept of the public domain can provide more nuanced protection of traditional knowledge as a dynamic invention.

¹⁴³ *Id.* at 123.

¹⁴⁴ *See* Long, *supra* note 22.

¹⁴⁵ *Id.* at 320.

¹⁴⁶ *Id.*

¹⁴⁷ *See id.*

¹⁴⁸ *Id.* at 321.

¹⁴⁹ *Id.*

This scholarship also provides insights into how and why traditional knowledge is constructed as public domain material. Such studies help to explain why indigenous traditional knowledge is unintelligible to the law, and thus relegated to the public domain. Such scholarship critically engages with how to protect indigenous traditional knowledge in the public domain through such strategies as benefit sharing. Research in this area is expansive, so only a limited discussion is taken up here. What becomes clear, however, is that this scholarship provides critical insights informing a protective public domain for indigenous peoples.

Such scholarship points to how and why traditional knowledge is relegated to the public domain. One reason is because traditional knowledge conflicts with Western forms of intellectual property law and inventorship.¹⁵⁰ Indigenous peoples generally hold knowledge and resources in common as a collective.¹⁵¹ Individual inventors or their corporate assignees, in contrast, hold resources as individual entities in the private domain of patent law.¹⁵² Another reason is practices of bioprospecting actively shape and are being shaped by discourses of the public domain.

In her book, *When Nature Goes Public*, Cori Hayden, a professor of Anthropology at University of California, Berkeley, produces an ethnographic study of a bioprospecting agreement between the United States and Mexico.¹⁵³ Hayden finds that researchers search for

¹⁵⁰ See generally, Greene *supra* note 104; Brown, *supra* note 127; ROSEMARY J. COOMBE, *THE CULTURAL LIFE OF INTELLECTUAL PROPERTIES: AUTHORSHIP, APPROPRIATION, AND THE LAW* (1998) [hereinafter COOMBE, *THE CULTURAL LIFE OF INTELLECTUAL PROPERTIES*]; Darrell Posey, *Intellectual Property Rights: And Just Compensation for Indigenous Knowledge*, 6 *ANTHROPOLOGY TODAY* 13 (1990); Stephen B. Brush, *Indigenous Knowledge of Biological Resources and Intellectual Property Rights: The Role of Anthropology*, 95 *AM. ANTHROPOLOGIST* 653 (1993).

¹⁵¹ See Greene, *supra* note 104, at 213–14.

¹⁵² *Id.*

¹⁵³ HAYDEN, *supra* note 126. The agreement at the center of Hayden's book is between University of Arizona and Mexico's National Autonomous University under the larger project of the United States government's International Cooperative Biodiversity Groups program (ICBG).

ethnobotanical information by speaking with sellers in public markets or by collecting plants along the side of the road.¹⁵⁴ By gathering plants and information in this manner, Hayden claims that these scientists are able to deliberately avoid developing partnerships with indigenous communities through bioprospecting and benefit-sharing contracts.¹⁵⁵ She also notes the symbolic link between these practices and the colonial voyages of “wild” lands.¹⁵⁶ The importance of Hayden’s research is to show one way in which the public domain is historically and socially constructed in practice. Scientists collect raw material from the public domain (i.e., public markets and roadsides) because it is free of private property ownership, thus openly accessible. Yet, as Hayden notes, it is also free from political interests and inventor’s rights.¹⁵⁷ Taking advantage of the public domain, researchers remain detached from engaging with indigenous peoples. An absence of claims to inventorship also allows researchers to maintain control over who is or is not a potential beneficiary for future benefit-sharing agreements.

Hayden’s work thus shows how the public domain is drawn and re-drawn through specific scientific practices. Her work also greatly informs the remaining chapters of this research. However, whereas Hayden is interested in how nature goes public, I am interested in how nature is re-invented. My research looks at what happens when nature goes public and how it is re-invented over time at the intersections of patent law and bioprospecting, while simultaneously producing difference, inequality, and recognition. To be sure, Hayden is likewise interested in re-invention as she accounts the “making and making of bioprospecting.” My project differs though as it examines the making and unmaking of Hoodia itself, and how such

¹⁵⁴ *Id.* at 125–90.

¹⁵⁵ *Id.* at 145.

¹⁵⁶ *Id.* at 162–74.

¹⁵⁷ *Id.* at 44–47.

processes produce new notions of indigeneity and epistemic citizenship. To continue, scholarship in this area is also interested in questions of benefit sharing as a way to alleviate the violence justified through an open public domain.

Scholars debate the merits of benefit-sharing agreements for indigenous peoples. Although such agreements are lauded as a form of protection for indigenous peoples, their primary goal is ensuring access to biological and genetic materials derived from indigenous people's knowledge and resources. In other words, benefit-sharing agreements work to maintain a vibrant public domain where information remains open and accessible. Scholars, however, are at odds as to whether or not such agreements truly benefit indigenous communities. Some express concern over the capitalist goals of benefit sharing agreements.¹⁵⁸ Brush states that benefit sharing agreements are intended to give indigenous peoples control over genetic resources only in so far as that control comports with free trade capitalism.¹⁵⁹ Scholars also argue that such agreements force indigenous peoples to legally define who is and who is not indigenous, which results in reifying indigenous peoples as a fixed, static, and homogenous group.¹⁶⁰ Proponents of benefit sharing disagree.

Despite the limitations of benefit sharing agreements, other scholars argue that such contractual arrangements are a way for indigenous peoples to strategically represent their interests. Indigenous peoples are engaged in an “emergent global politics of representation,” which compels them to continually redefine their identities to themselves and others in order to

¹⁵⁸ See generally BROWN, *supra* note 127; Stephen B. Brush, *Bioprospecting the Public Domain*, 22 CULTURAL ANTHROPOLOGY 244 (1999) [hereinafter Brush, *Bioprospecting the Public Domain*].

¹⁵⁹ Brush, *Bioprospecting the Public Domain*, *supra* note 158.

¹⁶⁰ See generally BROWN, *supra* note 127; Brush, *Bioprospecting the Public Domain*, *supra* note 158.

claim rights.¹⁶¹ Benefit sharing should be interpreted not as a dangerous process of reification, but as the simultaneous adoption and transformation of “the logic of their Western counterparts.”¹⁶² Similarly, scholars argue that such strategies enable indigenous peoples to engage in a “doubled voiced rhetoric” whereby they “employ the tropes of a dominant language, simultaneously engaging and subverting these metaphors.”¹⁶³ They also point out that activist and academic critiques of the reification of indigenous peoples actually become complicit in maintaining indigenous peoples’ roles as the traditional “ecologically Noble Savage.”¹⁶⁴

In sum, benefit-sharing sharing is interpreted not as a process of reification, but as a strategy for indigenous peoples to negotiate and re-negotiate their identities in ways that disrupt constructions of themselves as “traditional”, thereby destabilizing dichotomies of modern versus traditional that undergird modernity. To promote these understandings, scholars offer suggestions for further research. Coombe calls for an “ethics of contingency” that recognizes the contradictory terrain indigenous peoples must walk along when dealing with intellectual property law structures, which compels them to simultaneously employ and refigure legal categories.¹⁶⁵ Others insist upon the production of more research focusing on specific indigenous communities and realistic understandings of indigenous identities.¹⁶⁶

This scholarship contributes insights into concepts of a protective public domain, while also demonstrating the tensions between all three of these notions of the public domain. A more

¹⁶¹ Greene, *supra* note 104, at 222.

¹⁶² *Id.* at 223.

¹⁶³ COOMBE, THE CULTURAL LIFE OF INTELLECTUAL PROPERTIES, *supra* note 150, at 243.

¹⁶⁴ Beth A. Conklin & Laura R. Graham, *The Shifting Middle Ground: Amazonian Indians and Eco-Politics*, 97 AM. ANTHROPOLOGIST 695, 697 (1995).

¹⁶⁵ COOMBE, THE CULTURAL LIFE OF INTELLECTUAL PROPERTIES, *supra* note 150, at 297–99.

¹⁶⁶ Greene, *supra* note 104, at 214; Conklin & Graham, *supra* note 164, at 701.

open public domain, securing access to genetic and biological materials derived from indigenous peoples, implicitly encourages researchers to collect within public spaces and to avoid partnerships or agreements with indigenous communities. An alternative is a protective public domain. Yet, this option, where benefit sharing is encouraged, might reify indigenous cultures and redefine them within capitalist logics. On the other hand, a more protective public domain may engender fissures within modernity as indigenous peoples find new ways to define their identities and role within neo-liberal capitalism through benefit sharing agreements. In this case, a protective public domain that also embraces elements of a hybridized public domain where indigenous peoples are recognized for exploding categories of modernity/tradition might be even more productive.

In sum, all the scholarship discussed up to this point reveals the importance of each concept of the public domain for marginalized groups. An open public domain might benefit vulnerable groups by supporting their access to medicines deliberately reclassified as public domain material. A protective public domain might enable them to safeguard their cultural heritage, while gaining recognition for their scientific and cultural achievements previously excluded as traditional. And a hybridized public domain can encourage new possibilities for re-defining modernity by dismantling binary categories of nature/culture and modernity/tradition. Bringing these elements together enables a much richer conceptualization of the public domain. However, a larger void remains.

All three public domains fail to account for complex gendered social relations. Considerations of individual and structural systems of gender subordination bring into focus the limitations of these public domains. How will an open public domain bring medicines to women and girls who have less access to health care because of histories of gender subordination? How

will a hybridized public domain encourage possibilities for re-imagining binary categories in ways that liberate women from being subordinated as closer to nature and/or stuck in tradition? How will a protective public domain bring recognition to indigenous women who might have fewer opportunities due to the encroachment of patriarchal models of family and governance into their communities from histories of colonialism and new demands of neo-liberal globalization?

One might argue that a protective public domain is sufficient for protecting the rights of indigenous women because it is meant to empower indigenous communities as a whole. I agree that the theorizing of a protective public domain has gone far in offering a conceptual and political framework for protecting and recognizing the needs of indigenous peoples. In particular, Rosemary Coombe's suggestion for an "ethics of contingency" opens the door for a more robust theorizing of the protective public domain because it recognizes that "protection" might mean different things to different groups.¹⁶⁷ Yet, scholarship in this area has not explicitly addressed gendered social relations; thus theorizing of the protective public domain remains inadequate. It remains unclear how a protective public domain would go about safeguarding different women differently.

Some might argue that such gendered theorizing has not occurred because indigenous communities embrace non-hierarchical gender relations. They might also claim that incorporating a gender analysis would mean imposing western feminist hegemonies upon indigenous communities. Others may argue that addressing the links between women and indigenous knowledge may expose indigenous women as potential targets for bioprospecting practices aimed at accessing their knowledge. Theorizing of a protective public domain, therefore, remains gender neutral out of consideration for the beliefs of indigenous communities themselves. I

¹⁶⁷ COOMBE, THE CULTURAL LIFE OF INTELLECTUAL PROPERTIES, *supra* note 150, at 297–99.

respectfully recognize such concerns. Western feminist hegemonies have been used in destructive ways to reinforce indigenous peoples as Other.¹⁶⁸

Scholars note that Native American women activists do not consider themselves feminists because feminism has been closely aligned with the colonizing process.¹⁶⁹ Native American feminist scholar, Andrea Smith, points out though that debate over whether or not Native women claim feminism ends up simplifying Native women's activism aimed at addressing sexism and indigenous sovereignty at the same time.¹⁷⁰ She reminds us that colonization and loss of land were enacted through complex processes of patriarchy and sexism.¹⁷¹ Therefore, decolonization will not automatically result in the elimination of sexism, but must be directly addressed.¹⁷²

Likewise, I would argue that theorizing of the public domain must explicitly address gendered social relations, sexism, and patriarchy. A protective public domain functions as a tool within anti-colonial and decolonization struggles. It assists indigenous communities with reclaiming rights to land, culture, and resources. However, as it is being currently theorized, conceptions of the protective public domain remain inadequate. Work related to the protective public domain offers the most potentially liberating space right now for indigenous peoples, but more work is yet to be done. One must begin to consider how values of protectiveness can

¹⁶⁸ AILEEN MORETON-ROBINSON, TALKIN' UP TO THE WHITE WOMAN: INDIGENOUS WOMEN AND WHITE FEMINISM (2000); GRACE JOSEPHINE MILDRED WUTTUNEE OUELLETTE, THE FOURTH WORLD: AN INDIGENOUS PERSPECTIVE ON FEMINISM AND ABORIGINAL WOMEN'S ACTIVISM (2002); JOYCE GREEN, MAKING SPACE FOR INDIGENOUS FEMINISM (2007).

¹⁶⁹ M. Annette Jaimes & Theresa Halsey, *American Indian Women: At the Center of Indigenous Resistance in Contemporary North America*, in DANGEROUS LIAISONS: GENDER, NATION, AND POSTCOLONIAL PERSPECTIVES 298 (1997).

¹⁷⁰ Andrea Smith, *Native American Feminism, Sovereignty and Social Change*, in MAKING SPACE FOR INDIGENOUS FEMINISM 95 (2007).

¹⁷¹ *Id.* at 98.

¹⁷² *Id.* at 97.

coincide with conflicting desires for gender egalitarianism in order to ensure the needs and concerns of indigenous women are also being addressed within struggles over patent law. Caution must be taken with such an analysis as the risk of co-optation may occur. It is important to remain continually aware and vigilant of how the language of a feminist analysis may be used to target indigenous women in unjust ways for access to their knowledge.

To facilitate a more robust theorizing of the public domain, the following section introduces emerging scholarship devoted to a gendered analysis of intellectual property law. This next section implies desire for a notion of egalitarian public domains in order to protect women from patterns of discrimination within the public domain and from encroaching private intellectual property laws. Values of protection are addressed, but with a focus on how egalitarianism might benefit different individual and groups of women.

D. Egalitarian Public Domains

Emerging scholarship contributing to the field of women's studies examines the relationship between intellectual property and gender. Scholars from a range of disciplines ask how intellectual property law relates to gendered social relations. Historians analyze nineteenth century patent activity in the United States to show how female patent ownership increased when laws of coverture were abolished.¹⁷³ Sociologists provide empirical evidence that female life scientists hold fewer United States patents than their male colleagues and are less likely to disclose inventions to their university technology transfer office.¹⁷⁴ In addition, legal scholars question the epistemological foundations of intellectual property law grounded in Enlightenment

¹⁷³ See Khan, *Married Women's*, *supra* note 23; Merritt, *supra* note 23.

¹⁷⁴ See Kjersten Burker Whittington & Laurel Smith-Doerr, *Gender and Commercial Women's Patenting in the Life Sciences*, 30 J. TECH. TRANSFER 355, 358 (2005); Jerry G. Thursby & Marie C. Thursby, *Gender Patterns of Research and Licensing Activity of Science and Engineering Faculty*, 30 J. TECH. TRANSFER 343, 344 (2005).

notions of an individual inventor creating and molding through faculties of disembodied reasoning and objectivity associated with conceptions of masculinity.¹⁷⁵ Legal scholars also warn that patent law can threaten women's health care, for example, in the case of breast cancer gene patents.¹⁷⁶ This is exciting and important work. Intellectual property has become a site for feminist inquiry. An aim of this section is to discuss and analyze this emerging scholarship further in order to bring it firmly into critical intellectual property scholarship.

A key feature of women's studies scholarship around patent law is how it informs notions of the public domain. Writings in this section can be coalesced around a central desire for an egalitarian public domain. However, this does not mean there is one vision of an egalitarian public domain that emerges. Just as feminists vary widely in their theoretical and political approaches, so too does their desire for an egalitarian public domain. Such desires therefore should be read as a struggle and contestation over different visions of egalitarianism. Thus there is no universalizing egalitarian public domain, hence why the heading of this section refers to "public domains" in the plural. Scholarship in this section should be understood as a partial theorizing of the public domain where multiple visions of an egalitarian public domain are allowed to emerge and conflict.

Egalitarianism for female life scientists in the United States might mean ensuring equal access to public domain materials useful for scientific research in order to facilitate claims to

¹⁷⁵ See Debora J. Halbert, *Feminist Interpretations of Intellectual Property*, 14 AM. U. J. GENDER & SOC. POL'Y & L. 431, 449 (2006); Dan Burk, *Feminism and Dualism in Intellectual Property*, 15 AM. U. J. GENDER & SOC. POL'Y & L. 183, 191 (2007).

¹⁷⁶ See Eileen Kane, *Molecules and Conflict: Cancer, Patents, and Women's Health*, 15 AM. U. J. GENDER & SOC. POL'Y & L. 305, 328–33 (2007); see also, Ass'n for Molecular Pathology, et al. v. USPTO, et al., 702 F.Supp. 2d 181 (S.D.N.Y., 2010). The District Court of the Southern District of New York issued a recent opinion overturning patents on the isolated BRCA1 and BRCA2 genes. The court ruled that the patented genes were not "markedly different" than the native DNA found in the body, thus the invention was not patentable subject matter under Section 101. See *id.* at 135. The patent owners, Myriad Genetics, are currently appealing the decision. Therefore, there is still uncertainty as to how the patenting of BRCA1 and BRCA2 genes will impact genetic testing for breast cancer susceptibility.

patent ownership, while egalitarianism for certain indigenous women might entail the abolition of patent rights all together. The scholarship to be discussed below around ownership and inventorship tends to imply an egalitarian public domain where patterns of discrimination are addressed in order to facilitate women's access to patent law ownership. In contrast, the scholarship related to indigenous women's social movements and feminist science studies implies an egalitarian public domain where patterns of discrimination are recognized, but the desire is generally to limit or abolish patent rights. Becoming patent owners may not be the desired route for some indigenous women. Substantive equality for certain indigenous women might require an expansion of the public domain and limitation of property rights. This too is contested though as some indigenous women do desire to obtain intellectual property rights to their creative works. Before discussing how different desires for egalitarianism are expressed within this scholarship, there are some key points on how to reconcile notions of the public domain as related to IP rights, with the extensive feminist critique of the public and private dichotomy.

Feminist scholars have shown that women's caretaking work has historically been relegated to the domestic/private sphere in order to ensure the exploitation of their labor within the public sphere of the marketplace.¹⁷⁷ This public/private divide means that women overwhelmingly perform the invisible labor of cooking, cleaning, and childrearing in the home, which enables men to more fully participate in public life. Women's uncompensated caretaking work performs a crucial service not only to the individuals they care for, but to the entire

¹⁷⁷ JEAN BETHKE ELSHTAIN, *PUBLIC MAN, PRIVATE WOMAN: WOMEN IN SOCIAL AND POLITICAL THOUGHT* 12 (1993); SUSAN MOLLER OKIN, *Gender, The Public and the Private*, in *FEMINISM AND POLITICS* 118 (Anne Phillips ed., 1998).

society.¹⁷⁸ So long as women perform the familial “love” of caretaking, the welfare state is further absolved from providing governmental support and subsidies to women and their families.¹⁷⁹ The devaluation of women’s work within the domestic sphere also contributes to the “feminization” of labor in the public sphere. Caretaking work is devalued as unskilled labor associated with the body, in contrast to the more “skilled” labor of the mind. Thus, unskilled manual labor performed within the public sphere is likewise undervalued and exploited.

A key feature of globalization is the flexible and strategic employment of large pools of female labor willing to work for low wages at monotonous tasks.¹⁸⁰ Scholars argue that globalization entails a global feminization of labor that shifts all labor to conditions of dependent labor as jobs become increasingly insecure and poorly paid.¹⁸¹ Thus men and women alike join the forces of low-wage workers with little job security.¹⁸² This public/private divide and feminization of labor is important to a discussion of patent law.

In the context of examining gender and intellectual property, the conceptual analytic of the public/private divide is employed in a slightly different way. Discourses of feminization shape what counts as valuable knowledge worthy of promoting and protecting through private property ownership, versus knowledge that should be relegated to the public domain as raw material open to exploitation by others. The public domain connotes forms of creativity and

¹⁷⁸ Martha Fineman, *Cracking the Foundational Myths: Independence, Autonomy, and Self-Sufficiency*, 8 AM. U. J. GENDER & SOC. POL'Y & L. 13, 19 (2000).

¹⁷⁹ *Id.* at 23.

¹⁸⁰ Aihwa Ong, *SPIRITS OF RESISTANCE AND CAPITALIST DISCIPLINE: FACTORY WOMEN IN MALAYSIA* (1987).

¹⁸¹ Drucilla K. Barker, *Beyond Women and Economics: Rereading "Women's Work"*, 30 SIGNS: J. WOMEN IN CULTURE & SOC'Y 2189, 2202 (2005).

¹⁸² *Id.*

innovation that are excluded from the protection of the private domain of intellectual property rights.

To illustrate this point more broadly and its connection to the theorizing of the public/private divide, it is useful to consider examples from both copyright and patent law. For instance, gendered forms of labor and creativity in the form of fashion apparel and recipes are considered to be in the public domain and traditionally excluded from copyright protection.¹⁸³ One reason is because clothing and cooking have historically been considered a craft and function of homemaking.¹⁸⁴ Design patents for clothing are also unlikely to be granted. Proving novelty or non-obviousness in regards to a clothing invention is difficult because it is considered more functional rather than innovative.¹⁸⁵ Patents on recipes are also theoretically possible, but hard to obtain and defend because the innovation can often be anticipated by an ordinary person skilled in the art.¹⁸⁶ Furthermore, patent protection is more difficult to obtain than copyright protection.¹⁸⁷ It is expensive, takes a long time to apply for with the U.S. Patent and Trademark

¹⁸³ A “mere listing of ingredients or contents” is considered to be material not subject to copyright protection. 37. C.F.R. 202.1 (a) (2010); *see also*, Doris Estelle Long, *Dissonant Harmonization: Limitations on Cash n’ Carry Creativity*, 70 ALB. L. REV. 1163, 1200 (2007) (arguing that a harmonization of copyright laws requires further study into what types of authorial right encourage aesthetic creativity). In regards to fashion apparel, copyright protection would apply to a design sketch but not to the garment produced from that sketch because the garment is a “useful article.” Designs found on clothing are only copyrightable if they are separable from the utilitarian function of the clothing. *See Galiano v. Harrah’s Operating Co.*, 416 F.3d 411, 422 (5th Cir. 2005) (ruling that casino uniforms were unprotected from copyright law because “there was no showing that its designs are marketable independently of their utilitarian function as casino uniforms”).

¹⁸⁴ Susanna Monseau, *European Design Rights: A Model for the Protection of All Designers from Piracy*, 48 AM. BUS. L.J. 27, 32 (2011).

¹⁸⁵ *Id.* at 47.

¹⁸⁶ *Procter & Gamble Co. v. Nabisco Brands, Inc.*, 711 F.Supp. 759, 774 (D. Del. 1989) (granting summary judgment on issue of invalidity of product patent claims regarding a cookie recipe, and denying summary judgment on issue of invalidity of process patent regarding a cookie recipe).

¹⁸⁷ Ann Bartow, *Fair Use and the Fairer Sex: Gender, Feminism, and Copyright Law*, 14 AM. U. J. GENDER SOC. POL’Y & L 551, 572 (2006) (identifying gendered aspects of copyright law and arguing for low protectionism within intellectual property regimes).

Office, and inventions (particularly on clothing and cooking) are not always easy to enforce.¹⁸⁸ Such difficulties mean that knowledge related to cooking and clothing most often remains available for use by others as public domain material.

Similarly, the collectively managed works of indigenous peoples are also generally relegated to the public domain and not protected through property rights.¹⁸⁹ Indigenous knowledge is often collectively held by a group of individuals and determination of individual named inventors is hard to do given the intergenerational transmission of knowledge.¹⁹⁰ Additionally, their form of knowledge, for example, of medicinal plant material would not be considered patentable subject matter because it is not in a “purified” form that is “markedly different” from what is found in nature.¹⁹¹ Thus, gendered and indigenous forms of creativity are generally relegated to the public domain, which ensures their continual exploitation as “raw material.”

Intellectual property rights are meant to encourage and stimulate creativity and innovation.¹⁹² Yet, not all forms of creativity are considered valuable enough to be worth promoting. Creativity that is considered new, novel, and industrial is what is prized. More “traditional” forms of gendered and indigenous labor such as cooking, making clothing, and producing indigenous plant medicines do not count as new, novel, and industrial. Thus, these forms of creativity are deemed less valuable and remain in the public domain. Mechanisms of

¹⁸⁸ *Id.*

¹⁸⁹ Long, *supra* note 183, at 1200.

¹⁹⁰ Stephen B. Brush, *Indigenous Knowledge of Biological Resources and Intellectual Property Rights: The Role of Anthropology*, 95 AM. ANTHROPOLOGIST 653, 663 (1993) (identifying three approaches to finding intellectual property protection for indigenous knowledge).

¹⁹¹ *Diamond v. Chakrabarty*, 447 U.S. 303, 313 (1980).

¹⁹² U.S. CONST. art. I, § 8, cl. 8

globalization in fact depend upon the location of gendered and indigenous forms of creativity within the public domain. It ensures that access to indigenous knowledge and resources remains open for appropriation and possible commercialization by others. It also ensures that gendered forms of creativity related to homemaking also remain devalued, thus reinforcing discourses of feminization that contribute to keeping labor costs low.

Scholars in this section envision egalitarian public domains where gendered social relations are taken into account. Women's relationship to patent law is problematized through recognizing the individual and structural systems of subordination that shape their lives. Critique is leveled against patent law as resulting in unfair practices against women. What emerges are egalitarian public domains where patterns of discrimination are taken into account. This is where the public sphere meets the public domain. Feminist theorizing of the public sphere and its exclusion of female labor becomes a useful tool for examining conceptions of the public domain. Better understandings of the public domain come into view and what emerges is a sense of how certain forms of creativity are included in the public domain (and hence unprotected) in inequitable, discriminatory ways that bring fewer benefits to marginalized groups.

A desire for egalitarian public domains therefore emerges, and relations of power are considered. The public domain and its inclusion of certain forms of creativity over others are critically taken into account. Different values of egalitarianism, however, emerge. Equality for some women might mean a reduction of the public domain and expansion of patent law to include more women's scientific work. Yet, equality for others might entail an expansion of the public domain and limitation of patent law to protect the creative work of women who do not desire to become IP owners. Visions of egalitarian public domains therefore differ from the other conceptions of the public domain discussed thus far.

Theorizing around an open public domain suggests that stronger intellectual property rights protections are not necessary to stimulate innovation. The public domain should be expanded and creativity should be encouraged to flourish through other incentives besides intellectual property rights. A protective public domain also argues that intellectual property rights are too expansive, but that the public domain should be constructed to protect indigenous knowledge from being privatized. Such protection is advanced by calls for a growing regulatory environment related to genetic and biological material in the form of prior informed consent agreements, access and benefit sharing contracts, bioprospecting permits and the like.

In contrast, as will be discussed, scholars in this section embrace egalitarian public domains with similar values of openness and protectiveness. However, they structure such values differently by considering gendered social relations. An egalitarian public domain might embrace values of openness and seek alternative “commons” arrangements to facilitate creativity, but acknowledge that such arrangements may need to be configured differently. Patterns of discrimination must be taken into account in order to encourage the production of historically devalued forms of creativity.

Another version of the egalitarian public domain may look to regulatory regimes such as benefit sharing agreements to protect indigenous communities by giving them legal tools to demand compensation when their cultural resources are privatized. Benefit sharing agreements must also address the needs and concerns of indigenous women explicitly.

Although this emerging scholarship makes important contributions, it also has its limitations. In what could be called a liberal feminist approach, this scholarship often highlights gendered social relations without considering their dynamic interaction with other social relations such as race, ethnicity, indigeneity, and class. Can feminist intellectual property law

scholarship truly benefit women if it fails to address gendered social relations in a more complex manner? This section will briefly introduce some of this emerging scholarship and demonstrate how it informs concepts of the public domain and its relationship with patent law.

1. Patent Ownership and Gendered Social Relations

Historical studies of female patent owners shed light upon obstacles and inequalities to creativity within the public sphere. Economic historian Zorian B. Khan, investigating nineteenth-century laws and United States patent records, concludes that laws of coverture, preventing married women from owning property, hindered their commercial activity as inventors.¹⁹³ Once the laws were abolished, however, there was an increase in the number of United States patents issued to female inventors.¹⁹⁴ Nineteenth-century United States women though were still issued far fewer patents than men.¹⁹⁵ Their inventions were also more domestic in nature and were aimed at reducing their responsibilities within the private/domestic sphere of the home.¹⁹⁶ This caused tension within the suffragist movement. For example, suffragist leaders at World's Columbian Exposition of 1893 expressed concerns that promoting certain female inventions might unjustly reinforce women's role in the domestic sphere.¹⁹⁷ Khan's work on historical legal structures sheds light on why women held fewer patents than men. Resources in the public sphere were not available to married women who were prohibited from owning property under

¹⁹³ Khan, *Married Women's*, *supra* note 23.

¹⁹⁴ *See id.* at 359.

¹⁹⁵ B. Zorina Khan, "Not for Ornament:" *Patenting Activity by Nineteenth-Century Women Inventors*, J. INTERDISCIPLINARY HIST. 159, 164 (2000).

¹⁹⁶ *See id.* at 176.

¹⁹⁷ *See id.* at 162.

laws of coverture.¹⁹⁸ An inability to own property meant that women did not have the capital necessary to secure financing or investment in their projects.¹⁹⁹ Despite these obstacles, many women invented a wide range of patented objects.²⁰⁰

Legal historian Deborah J. Merritt examines female patent activity from 1865 to 1900 to show that women contributed a range of patented inventions across a variety of fields including transportation, manufacturing, mining, construction, and electronics.²⁰¹ Middle-class white women, however, represent the majority of female inventors of patented inventions.²⁰² Merritt notes that at least four Black women patented inventions during 1865 and 1900.²⁰³ Their inventions included a piece of furniture by Miriam E. Benjamin, a writing desk by Sarah E. Goode, and an ironing board by Sarah Boone.²⁰⁴ A fourth invention in 1891 was a new clothes wringer patented by an anonymous Black woman who assigned her rights instead of marketing the invention herself.²⁰⁵ In a published interview with the anonymous inventor, she explained, “if it were known that a negro woman patented the invention, white ladies would not buy the wringer.”²⁰⁶

¹⁹⁸ See Khan, *Married Women's*, *supra* note 23, at 357.

¹⁹⁹ See *id.*

²⁰⁰ See Merritt, *supra* note 23, at 245–87.

²⁰¹ See *Id.* at 237.

²⁰² See *id.* at 304.

²⁰³ *Id.*

²⁰⁴ See *id.* at 272 & 277.

²⁰⁵ See *id.* at 305.

²⁰⁶ Merritt, *supra* note 23, at 305.

Merritt similarly points to married women's property laws as being obstacles to female patent activity. She also claims that additional barriers included Victorian ideals of domesticity, bias in the patent office, and Reconstruction era laws that prevented men and women of color from changing jobs, owning property, and pursuing certain occupations.²⁰⁷ Victorian ideals of domesticity supported cultural attitudes against women's participation in commercial activities and patenting.²⁰⁸ There is also evidence of unconscious bias in the United States Patent Office against women's patent applications.²⁰⁹ Merritt points to the example of a female inventor who applied for a patent on a sanitary napkin belt who was then ridiculed and denied patent ownership.²¹⁰ During the same period, however, male inventors were awarded monopoly protection over highly praised inventions such as male suspenders and undergarments.²¹¹

Both Khan and Merritt show that non-proprietary materials in the public domain and resources in the public sphere were not freely open and accessible to all. Legal regulations, cultures of domesticity, and gender bias partially explain why women, particularly Black women, were disproportionately denied access to the resources necessary for creating and patenting inventions. The agency of women as patent owners, however, is strongly asserted in this scholarship. Women, despite these obstacles, invented a wide range of objects and obtained patent ownership.²¹² Overcoming such barriers demonstrates the importance of an egalitarian public sphere where women are individually and institutionally supported to become patent

²⁰⁷ *Id.* at 295–305.

²⁰⁸ *See id.* at 295–98.

²⁰⁹ *See id.* at 300.

²¹⁰ *Id.*

²¹¹ *See id.* at 301.

²¹² Merritt, *supra* note 23, at 245–87.

holders. A more egalitarian public sphere, where gendered hierarchies are addressed, facilitates a more robust conception of the public domain. It enables a similar theorizing of egalitarian public domains, which can bring attention to relations of power and inequitable access to (or protection of) public domain materials. Unfortunately, women today continue to patent fewer inventions than men.²¹³

Economics professors, Jerry Thursby and Marie Thursby, published an empirical study in 2005 of over 4500 science and engineering faculty at eleven major research universities.²¹⁴ They concluded that women were less likely to disclose inventions to their university technology transfer office than their male colleagues from a period of 1983 to 1999.²¹⁵ Disclosure indicates that the faculty member is working on an invention that might have commercial potential for the university and should be considered for potential patenting and licensing.²¹⁶ The gap between male and female disclosure rates was diminishing, however, in the 1990s, especially among younger female faculty members.²¹⁷ In addition, Kjersten Whittington and Laurel Smith-Doerr, sociologists, published a related study in 1995 concluding that female scientists held fewer patents than male scientists in both the academic and commercial sectors.²¹⁸ The study tracked the patent activity of 2820 individuals with Ph.D.s in the sciences through United States Patent Office records from 1975 to 1999.²¹⁹ It finds that 30% of males patented their work as opposed

²¹³ Kjersten Burkner Whittington & Laurel Smith-Doerr, *supra* note 174, at 355.

²¹⁴ Thursby & Thursby, *supra* note 174.

²¹⁵ *Id.* at 343.

²¹⁶ *See id.* at 344.

²¹⁷ *See id.* at 348.

²¹⁸ Whittington & Smith-Doerr, *supra* note 174, at 355.

²¹⁹ *See id.* at 357.

to 14% of female scientists and that this disparity held true over time.²²⁰ Their study, however, shows that the quality and impact of patented inventions by female scientists is similar to or substantially better than male scientists who patented their research.²²¹

Each of these studies demonstrates that men have historically been and currently remain the predominant inventors and owners of patented inventions. In other words, materials and resources in the public sphere are not open to women in the same way as men. These studies indicate the continued presence of individual and institutional structures of gender subordination within the sciences. What is also implied though is a desire for a more egalitarian public domain where female scientists are supported equally in their efforts to patent their inventions. Feminist legal scholarship further informs these historical and empirical studies by highlighting how notions of authorship under the law impact women.

2. Authorship, Inventorship and Gendered Knowledge Production

Feminist legal scholarship examines Enlightenment notions of an individual author/inventor within intellectual property law and how they work to obscure and exclude gendered forms of labor and knowledge production. The legal regimes of copyright and patent law are technically distinct, yet assumptions undergirding authorship and inventorship have been historically tied to one another.²²² Both are historically and discursively constructed through Enlightenment ideals of an individual, author/inventor endowed with heroic genius.²²³ Casting the individual author/inventor as heroic genius, particularly in the early to mid-1800s, was an

²²⁰ *See id.* at 358.

²²¹ *Id.* at 366.

²²² Clare Pettitt, PATENT INVENTIONS: INTELLECTUAL PROPERTY AND THE VICTORIAN NOVEL 5 (2004).

²²³ *See id.* at 114.

attempt to acknowledge and resist emerging technological changes threatening to displace the worker.²²⁴

Clare Pettitt, a Professor of Nineteenth-Century Literature at King's College London, points out that debate over intellectual property reform in England constructed patent law as analogous to copyright.²²⁵ A Lockean approach was taken up that centered on the poor, struggling working class inventor who deserved patent law rights over the fruits of his labor. A natural rights discourse was also used to justify patent law rights for inventors.²²⁶ Invention was characterized as a more "sacred" and "higher" intellectual labor than that of mere "bodily labor" of the lower classes, thus the inventor had a natural right to a patent monopoly.²²⁷ Both these approaches produced a discursive rhetoric that worked to construct a double split between the working classes and the industrialists, and the proletariat who were engaged in bodily labor versus intellectual labor.

Pettitt notes that this rhetoric of "higher" intellectual labor is classed.²²⁸ Yet, it is also raced and gendered as it obscures the fact that many of those engaged in "bodily labor" at the time were slaves who were recently emancipated, and women involved in primarily domestic work. Debates in the U.S. also emphasized patent law as a way to "democratize invention" by rewarding working class inventors.²²⁹ In contrast, B. Zorina Khan, a professor of Economics at Bowdoin College, argues that the rhetoric of hero-inventor was less visible in the U.S. and that

²²⁴ *See id.* at 5.

²²⁵ *See id.* at 127.

²²⁶ *See id.* at 128–29

²²⁷ *Id.* at 129.

²²⁸ Pettitt, *supra* note 222, at 129.

²²⁹ B. Zorina Khan. THE DEMOCRATIZATION OF INVENTION: PATENTS AND COPYRIGHTS IN AMERICAN ECONOMIC DEVELOPMENT, 1790-1920 2 (2005)

“innovators of all classes were universally celebrated.”²³⁰ Khan however does not address the particular intersections of class with racialized and gendered forms of labor production. Discursive constructions of patent law therefore were centered on a working class subject in various ways. Furthermore, feminist scholars note that such discursive framings were also gendered.

Feminist scholars bring our attention to the use of masculine metaphors within the historical debates over intellectual property protection. Debora Halbert, a U.S. feminist political scientist, analyzes how notions of authorship within copyright law privilege the mind and the “rational and abstract” author.²³¹ She traces this to historical metaphors within copyright law debates to protect male creativity. Such metaphors exhibited patriarchal values where male creativity was described as “birthing original ideas.”²³² Similarly, Malla Pollack, a U.S. feminist legal scholar, claims that these metaphors of men giving birth to wisdom and knowledge elevated masculine knowledge production, in contrast to the mere bodily capacity of women’s reproductive power.²³³

Such metaphors reveal that notions of authorship within copyright law were initially constructed through explicit gendered discourses privileging the mind as associated with men, over the body as linked to women. Pettit also notes that historical debates over patent law

²³⁰ *Id.*

²³¹ Debora J. Halbert, *supra* note 175, at 431.

²³² *Id.* at 449. Daniel Defoe, who linked piracy to the stealing of a child, first articulated the paternity metaphor in 1710. See MARILYN STRATHERN, *Emergent Relations*, in SCIENTIFIC AUTHORSHIP: CREDIT AND INTELLECTUAL PROPERTY IN SCIENCE 165 (Mario Biagioli & Peter Louis Galison eds., 2003).

²³³ Malla Pollack, *Towards a Feminist Theory of the Public Domain, or Rejecting the Gendered Scope of United States Copyrightable and Patentable Subject Matter*, 12 WM & MARY J. WOMEN & L. 603, 606–07 (2006).

similarly framed invention as masculine.²³⁴ Historical, discursive constructions of both authorship and inventorship worked to reinforce a masculinized, racialized, and classed dichotomy between intellectual and bodily labor.²³⁵ This mind/body split remains embedded within contemporary patent law doctrine.

Feminist legal scholar Dan Burk similarly addresses the mind/body split, but shifts the focus away from metaphors to legal doctrine.²³⁶ Burk argues that there is an implied mind/body dualism within intellectual property law itself because of the intangible/tangible dichotomy that constructs IP as different from property law.²³⁷ A key concept of intellectual property is that it protects intangible/incorporeal property (e.g., ideas), in contrast to property law, which governs tangible/corporeal property (e.g., land).²³⁸ Burk explains that this distinction means IP is fundamentally about protecting the original idea of the author and inventor.²³⁹

This dualism is also expressed within patent law doctrine more specifically. For instance, Burk explains, “a patent right is defined by the ‘conception’ of an invention in the mind of the inventor, rather than by the physical construction of ‘reduction to practice’ of the invention.”²⁴⁰

²³⁴ See Pettitt, *supra* note 222, at 28.

²³⁵ Discursive justification around patent law, however, began to shift in the 1850s when the focus moved away from the individual inventor and on to collective interest. See Pettitt, *supra* note 222, at 133. Moral claims for rewarding individual authors were replaced with arguments for patents as economic incentive to promote invention. See *id.* at 136. Such claims were used to challenge opponents of patent law who argued that patent monopolies would get in the way of the distributive justice of the invisible hand in the free market economy. See *id.* at 135. Yet, I would similarly claim that the shift away from the individual inventor, and towards an economic justification equally obscures racialized, classed, and gendered conditions of labor, forms of knowledge, and access to public domain materials.

²³⁶ Burk, *supra* note 175.

²³⁷ *Id.* at 186.

²³⁸ See *id.*

²³⁹ *Id.* at 190.

²⁴⁰ *Id.* at 186.

What counts is not the building of the invention (“reduction to practice”), but the mental effort involved.²⁴¹ The emphasis on mental effort, rather than physical effort is what reinforces this dualism of mind/body. The language of “conception” also acts as a similar birthing metaphor. Patent law therefore reinforces a hierarchy of reason and rationality, over the body (and its emotions and passions).

Burk notes that such hierarchies have historically been used to subordinate the labor of women as invisible.²⁴² He concludes that hierarchies of mind/body are occurring in both new and old ways through intellectual property law, thereby excluding and constructing the knowledge of women and marginalized groups as invisible.²⁴³ The importance of Burk’s work is that it begins to shift the discussion of authorship/inventorship towards a valuable critique of legal doctrine itself in terms of the split between tangible and intangible property.

Scholarship in this area informs an egalitarian public domain by demonstrating how intellectual property law has been historically constructed to obscure and exclude gendered and indigenous forms of knowledge production, and how such discursive framings are embedded within patent law doctrine. This implies a desire for a more equitable intellectual property law that values different forms of knowledge production. The relationship between the public domain and patent law can be structured in a way that honors multiple forms of knowledge production. This would include epistemological modes where reason is not separate from emotion, and tangible objects are not divorced from the intangible. Conceptions of an egalitarian public domain thus become more radical as informed by this scholarship. A more egalitarian public domain would involve a disruption of normative Euro-American modes of thinking, which have

²⁴¹ *See id.*

²⁴² Burk, *supra* note 175, at 192–93.

²⁴³ *Id.* at 193.

historically subordinated women and women's labor. The mind/body split within patent law serves to relegate practices of "bodily labor" to the public domain. Indigenous peoples' practices related to medicinal plant knowledge, for example, become positioned within the public domain and are thus made available for privatization by others who can satisfy the requirements of novelty, non-obviousness, and utility. How could the public domain be re-imagined in order to disrupt this dualism? Would a broader understanding of "inventorship" be a place to start?

Some insights may be gleaned from discussions over authorship in copyright law. Responding to the Enlightenment notions of individual authorship, some legal scholars concerned about gendered social relations suggest more robust notions of authorship. In her examination of slash fan fiction, Sonia Katyal, a U.S. legal scholar, argues for recognizing creative works as dynamic authorial performances where normative narratives within a text are coded and re-coded.²⁴⁴ This would open up possibilities for female authorship to offer alternative readings of a text by interrogating normative gender categories.²⁴⁵ Additionally, Carys Craig, a Canadian legal scholar, re-imagines the author as participant and citizen, rather than origin or source of a creative work.²⁴⁶ She argues for notions of authorship emphasizing formation of identity as connected to both self and community.²⁴⁷ According to Craig, copyright law should embrace a notion of authorship that encourages creativity, exchange, and relations with others.²⁴⁸

²⁴⁴ Sonia K. Katyal, *Performance, Property, and the Slashing of Gender in Fan Fiction*, 14 AM. U. J. GENDER & SOC. POL'Y & L. 461, 468 (2006).

²⁴⁵ *See id.* at 479.

²⁴⁶ Carys Craig, *Reconstructing the Author-Self: Some Feminist Lessons for Copyright Law*, 13 AM. U. J. GENDER & SOC. POL'Y & L. 207, 234 (2007).

²⁴⁷ *Id.*

²⁴⁸ *Id.*

These more fluid notions of authorship are also appealing for rethinking inventorship and crafting a broader notion of the public domain. Moving away from inventorship as the original moment of conception would help justify demands for more fluid exchange of ideas in the public domain and less restrictive IP policies to enable such cultural borrowings. Broader conceptions of inventorship also open up possibilities for recognizing multiple forms of knowledge production. When inventorship is valued as dynamic, collaborative, and linked to community, it generates space for new forms of knowledge production to be recognized and valued. This would entail going beyond naming indigenous peoples as “joint inventors.”²⁴⁹

One might argue that patent law already values dynamic and collaborative knowledge production because it requires all inventors who contributed to the conception of the invention to be listed.²⁵⁰ This includes joint inventors and collaborators who even contributed to some, but not all, of the patented claims.²⁵¹ Couldn’t scientist inventors just include indigenous peoples as “joint inventors?”²⁵² This would give indigenous peoples recognition for contributing to the conception of the invention. Although in theory this is possible, in application the scope of collaboration is not generally extended to indigenous peoples who contribute their knowledge to the making of invention. Patent law struggles over indigenous knowledge exposes the limitations of what is considered “collaboration” under patent law and raises numerous questions. One could list a specific member of an indigenous community to be named as a joint inventor, but given the intergenerational dissemination of indigenous knowledge, what person would you name? Even if

²⁴⁹ 35 U.S.C. §116(3) (2010).

²⁵⁰ *See Sewall v. Walters*, 21 F.3d 411, 415 (Fed Cir. 1994) (explaining that “[d]etermining ‘inventorship’ is nothing more than determining who conceived the subject matter at issue” and that conception has occurred when “a definite and permanent idea of an operative invention, including every feature of the subject matter sought to be patented, is known”).

²⁵¹ 35 U.S.C. §116(3) (2010).

²⁵² *See id.*

a member of the indigenous community could be named, would listing them as joint inventor disrupt the mind/body split? What if the patent was assigned to a non-profit organization or legal trust in order to represent the interests of the indigenous community? Would such assignment bring recognition to the knowledge and labor of indigenous peoples and challenge the mind/body split? Naming and recognizing indigenous peoples as joint inventors would not change the fact that legal notions of the public domain structured indigenous peoples' knowledge and labor as open for use by scientists to purify and patent in the first place. Control also would remain with the scientists to decide whether or not to name some members of the indigenous community as joint inventors. Scholarship in this section elicits these types of questions and implies the need for a re-imagining of inventorship, its relationship to the public domain, and how to address the mind/body split reinforced by patent law.

In sum, scholarship regarding histories of female patent owners and notions of authorship/inventorship provide valuable insights on intellectual property policy and gendered social relations. It brings attention to historical and contemporary modes of individual and structural gender subordination relevant to IP policy discussions. It also demonstrates how conceptual notions of authorship/inventorship within IP law limit possibilities for recognizing multiple modes of knowledge production generated by indigenous peoples and women. Through these insights a more egalitarian public domain emerges. A concept of the public domain that opens up possibilities for patent law policy to ensure women's equal access to resources, opportunities for patent ownership, and recognition of multiple epistemologies.

Scholarship in this area though does have its limitations. Although it provides an important examination of gendered social relations, its attention to other social relations is inadequate. The majority of scholarship in this area unwittingly falls into the trap of gender

essentialism or an “add gender and stir” approach. Intellectual property law and related practices of bioprospecting have also been historically unrecognized as a site of feminist inquiry.²⁵³ Women’s studies departments and feminist activist organizations, with the exception of indigenous women’s social movements, have yet to significantly address issues of intellectual property.²⁵⁴ Yet, as intellectual property law grows in importance in regulating flows of knowledge and resources within a growing information society, feminist scholars must develop studies of intellectual property law that examine gender in relation to race, class, ethnicity, and indigeneity as well as histories of colonialism and current effects of neo-liberalism within globalization.

Considering gender in a more complex manner prompts the need for theorizing of multiple egalitarian public domains. Patent law policy, based on concepts of an egalitarian public domain, might promote greater opportunities for patent ownership for some women, but not all women. Racial and class barriers may continue to inhibit many women from owning their inventions. Opening up new avenues for patent ownership might also promote greater harms to some indigenous women who may desire a more protective public domain, which would enable them to control their community resources and knowledge. There are notable exceptions, however, among legal scholars. These scholars examine relations between women, cultural production, and intellectual property as a matter of intersecting social relations of race, class, ethnicity, and indigeneity.²⁵⁵ Yet, much more work needs to be done. Moving towards more

²⁵³ See Victoria Tauli-Corpuz, *Is Biopiracy an Issue for Feminists in the Phillippines?*, 32 SIGNS: J. WOMEN & CULTURE IN SOC'Y 332, 334–35 (2007).

²⁵⁴ See *id.*

²⁵⁵ See COOMBE, THE CULTURAL LIFE OF INTELLECTUAL PROPERTIES, *supra* note 150; Boatema Boateng, *Walking the Tradition-Modernity Tightrope: Gender Contradiction in Textile Production and Intellectual Property Law in Ghana*, 15 AM. U. J. GENDER & SOC. POL'Y & L. 341, 345 (2007) (arguing that the relationship between gender, cultural production, and IP law must also consider class relations); Victoria Phillips, *Commodification,*

robust egalitarian public domains requires examining gendered social relations in a more complex, intersectional manner.

In furtherance of such an approach, the next section briefly introduces women's studies scholarship regarding patent law as developed through indigenous women's social movements and feminist science studies literature. These critical IP projects signal a different conception of the egalitarian public domain. Patterns of gender discrimination within the public domain as related to patent law are similarly addressed, but the emphasis is not placed on enabling women to become patent owners. In contrast, value is generally placed on increasing the public domain and restricting patent law rights, so as to protect indigenous women from having their resources and knowledges appropriated through IP rights.

3. Indigenous Women's Social Movements

Indigenous women's social movements present a valuable introduction into indigenous peoples' struggles over patent law. They assert strong critiques of patent law, arguing that patent ownership devalues indigenous forms of knowledge production and threatens community resources and heritage; in particular, knowledge produced and protected by women.²⁵⁶ Their work reveals complex notions of how patent law interacts with gender in relation to race, class, ethnicity, and indigeneity as well as histories of colonialism and emerging practices of neoliberal globalization.

For example, the 1995 Beijing Declaration of Indigenous Women ("Beijing Declaration") criticizes intellectual property law as an instrument of the "New World Order" used to

Intellectual Property and the Quilters of Gee's Bend, 15 AM. U. J. GENDER & SOC. POL'Y & L. 359, 360–63 (2007) (arguing for a more nuanced approach to understanding intellectual property law by discussing the quilters of Gee's Bend); Madhavi Sunder, *Intellectual Property and Identity Politics: Playing with Fire*, 4 J. GENDER RACE & JUST. 69, 89 (2000) (arguing against intellectual property rights in culture).

²⁵⁶ See SHIVA, *BIOPIRACY* *supra* note 35; Barwa & Rai, *supra* note 23.

appropriate and privatize indigenous peoples' biological, cultural, and intellectual resources.²⁵⁷ It condemns patent law as facilitating and legitimizing practices of bioprospecting pirating indigenous peoples' knowledge and recolonizing their lands and natural resources.²⁵⁸ The Beijing Declaration demands that western concepts of patent law not be applied to indigenous peoples' knowledge and resources, while calling for an end to the patenting and commodification of life forms.²⁵⁹ The 2004 Manukan Declaration of the Indigenous Women's Biodiversity Network articulates similar criticisms against intellectual property rights.²⁶⁰ Indigenous women's social movements, through these declarations, assert patent law as an important political concern for indigenous women's rights.

This is not to say that indigenous women do not have other concerns associated with the law. Each of these declarations also criticizes law's failure to protect indigenous women against sexual violence, militarization, environmental destruction, health disparities, and the taking of their lands. Intellectual property rights are just one of the many concerns of indigenous women, but nevertheless can be a source of harm, and thus an important political issue. Through these declarations indigenous women claim authority to speak against intellectual property law not just as members of indigenous communities, but also as indigenous women. They make ethical and moral claims based on symbolic gendered discourses articulating their close connection to nature as the "daughters of Mother Earth" who are the "manifestation of Mother Earth in human form."²⁶¹ They also claim authority as individual gendered subjects by declaring themselves as

²⁵⁷ See Beijing Declaration, *supra* note 17.

²⁵⁸ See *id.* at 8.

²⁵⁹ *Id.* at 39 & 40.

²⁶⁰ See Manukan Declaration, *supra* note 17.

²⁶¹ Beijing Declaration, *supra* note 17, at 1.

historical “holders of indigenous knowledge” who have “primary responsibility to protect and perpetuate this knowledge” and to “ensure the health of [their] Peoples and environments.”²⁶² These indigenous women make similar critiques against intellectual property law as others within anti-globalization movements, but their ethical claims flow specifically from their experiences with “multiple oppressions: as indigenous peoples, as citizens of colonized and neo-colonial countries, as women, and as members of the poorer classes of society.”²⁶³ Thus, indigenous women’s social movements, as evidenced by these declarations, work towards rights of self-determination for their respective indigenous communities, but their actions and claims uniquely flow from their complex lives as indigenous women.

Given problematic histories between western feminism and indigenous communities, one must be cautious against characterizing these movements as feminist. In fact, such characterization may not be necessary or even worthwhile. Rather a more critical question is, how do the claims of indigenous women’s social movements begin to illuminate the inadequacy and limitations of the public domain and its relationship to patent law? Writing by members of indigenous women’s social movements is important to theorizing the public domain because it produces robust socio-legal critiques of patent law addressing both its structural mechanisms of power and its impact “below” on marginalized communities. These writings offer sophisticated understandings of how to examine patent law through a social justice perspective. This work underscores the need for limits on patent rights as well as calls for the strengthening of the public domain such that indigenous women’s knowledge is protected. Enabling indigenous women to

²⁶² Manukan Declaration, *supra* note 1, at preamble.

²⁶³ Beijing Declaration, *supra* note 1, at 5.

patent their own knowledge, in this case, would not further equality. Thus, competing visions of an egalitarian domain and its relationship to patent law begin to emerge within this scholarship.

4. Feminist Science Studies

Scholar/activists writing in what could loosely be characterized as feminist development studies and/or science studies are also producing some exciting work. They highlight women's contributions to indigenous knowledge production and warn against patent law policy. Flowing from their own activist participation within indigenous women's social movements, their work makes powerful contributions.

A central point within this scholarship is that indigenous women play a large role in cultivating and disseminating indigenous knowledge regarding genetic and biological materials.²⁶⁴ Thus, issues regarding patent law become central concerns for indigenous women. For example, Suman Sahai, a feminist scholar and geneticist working with Gene Campaign in India, argues that patent law restricts women's access to their own seeds, which is necessary for them to ensure the health and nutrition of their families.²⁶⁵ Writings in this section also shift understandings of an egalitarian public domain to consider how patent law policy impacts indigenous women. What results is a deeper recognition of how values of openness, protectiveness, hybridity, and egalitarianism are all important within conceptions of the public domain. Scholarship in this area suggests the need for a more robust concept of situated public domains that would embrace each of these values as necessary for understanding particular patent law struggles.

²⁶⁴ See generally HELEN APPLETON, et al., *Claiming and Using Indigenous Knowledge*, in MISSING LINKS (United Nations Commission Science Technology Development Gender Working Group ed., 1995); HELEN ZWEIFEL, *The Gendered Nature of Biodiversity Conservation*, in THE GENDER AND SCIENCE READER (Muriel Lederman & Ingrid Bartsch eds., 2001); Susan Hawthorne, *Land, Bodies, and Knowledge: Biocolonialism of Plants, Indigenous Peoples, Women, and People with Disabilities*, 32 SIGNS: J. WOMEN IN CULTURE & SOC'Y (2007).

²⁶⁵ Suman Sahai, *TRIPS and Biodiversity: A Gender Perspective*, 12 GENDER & DEV. 58, 260 (2004).

The section, however, is limited to a discussion of three key concerns within the literature. These include patent law's risks to women's health, threats to the cultural diversities that sustain them, and the marginalization of women in patent law governance.

Feminist political scientists, Sharmishta Barwa and Shirin M. Rai and Indian physicist and eco-feminist activist Vandana Shiva argue that patent law has the effect of blocking women's right to medical treatment.²⁶⁶ They claim that patent law facilitates a shift in research priorities towards more profitable medical treatments aimed at developed countries, and away from medical care benefiting larger populations and women in developing countries.²⁶⁷ Shiva notes that patent law encourages research for profit and not for social need, while reinforcing reductionist forms of science historically used to dominate women and non-Western peoples.²⁶⁸ Barwa and Rai also assert that patent law supports scientific research that is "typically skewed towards the needs of Northern trade and commerce rather than towards the needs of the poor of the south, and towards sustainability of life."²⁶⁹

Eileen Kane, a feminist legal scholar, calls attention to how patent law hinders genetic testing for breast cancer susceptibility. Kane notes that the patenting of the BRCA 1 and BRCA 2 genes by Myriad Corporation restricts breast cancer research and affordable access to breast cancer screening for women.²⁷⁰ Identification of BRCA1 and BRCA 2 genes indicates susceptibility for breast or ovarian cancer. By patenting the genes, Myriad effectively controls genetic screening tests for breast cancer. Their control, however, was recently limited by a

²⁶⁶ SHIVA, *BIOPIRACY supra* note 35; Barwa & Rai, *supra* note 7.

²⁶⁷ SHIVA, *BIOPIRACY supra* note 35, at 24–26; Barwa & Rai, *supra* note 7, at 100.

²⁶⁸ SHIVA, *BIOPIRACY supra* note 35, at 24–26.

²⁶⁹ Barwa & Rai, *supra* note 7, at 100.

²⁷⁰ Kane, *supra* note 176.

district court decision ruling their patents to be invalid.²⁷¹ The effect of Myriad's patents on women's health is now in flux as Myriad appeals the decision.²⁷²

This scholarship takes issue with cultures of openness and sharing within science and asks who benefits. Patent law policy based on an open public domain would benefit indigenous women and women of color in some ways by providing easier access to patented medications, such as the case of HIV/AIDS medications in South Africa.²⁷³ Yet, it would not fully address how patent law reinforces modes of scientific research that only benefit elites.

Another concern is that patent law, in threatening biodiversity, also erodes cultural diversity. In a United Nations Environment Programme ("UNEP") report, Leonor Zalabata Torres of the Arhuaco people of Sierra Nevada de Santa Maria, Colombia, states: "To the extent that we are losing our cultural values, we lose indigenous women's values. To recover our cultural values is to recover women's values."²⁷⁴ Consuelo Quiroz, National Coordinator for the Centre for Tropical Alternative Agriculture and Sustainable Development at the University of The Andes, along with Vandana Shiva, argues that cultural diversity and biological diversity mutually shape each other.²⁷⁵ Victoria Tauli-Corpuz, a Philippine, indigenous activist with the Indigenous Peoples' International Centre for Policy and Research and Education, further notes that indigenous peoples do not separate biological diversity from cultural diversity and that indigenous peoples are "a part of nature."²⁷⁶

²⁷¹ See *Ass'n for Molecular Pathology, et. al. v. USPTO, et. al.*, 702 F.Supp. 2d 181 (S.D.N.Y., 2010)

²⁷² Andrew Pollack, *Patent Protection Breached*, N.Y. TIMES, Nov. 2, 2010, at B1.

²⁷³ See PREGS GOVENDER, *LOVE AND COURAGE: A STORY OF INSUBORDINATION* (2007).

²⁷⁴ UNEP, *Women and Biodiversity: The Core of Existence*, in *WOMEN AND THE ENVIRONMENT* 17 (2004).

²⁷⁵ See Quiroz, *supra* note 23; Shiva, *Bioprospecting*, *supra* note 23.

²⁷⁶ Tauli-Corpuz, *supra* note 253, at 336.

Each of these authors raises important links between biological and cultural diversity. Feminist scholars, however, have argued that by aligning women as closer to nature it assumes that women and the environment are biologically rather than socially constructed.²⁷⁷ Yet, as Braidotti et al. point out, women from the global South believe their connection to nature to be an important basis for their struggles because their reproductive and productive power has been their source of empowerment within their community.²⁷⁸ This differs from Northern feminist movements that often consider women's reproductive and productive power to be a reason for women's subordination.²⁷⁹ Thus, these connections between biological and cultural diversity become an important basis for critiques of patent law made by women in the global South.

This scholarship also informs conceptions of a hybridized public domain. Counter to Euro-American epistemologies that separate nature and culture, indigenous peoples embrace hybrid forms of knowledge production where nature merges with culture. A hybridized public domain then becomes valuable for its potential in recognizing indigenous knowledge systems, in particular indigenous women's knowledge.

Feminist science studies scholarship also takes up a decidedly liberal feminist strategy in calling for women's increased role within intellectual property policy making. It differs, though, as its trajectory flows out of concerns regarding the individual and institutional barriers faced by indigenous women and women of color. Quiroz claims that women's marginalized status means that their interests are not fully represented at local, regional, and national institutions of

²⁷⁷ R. BRAIDOTTI, ET AL., *Women, the Environment and Sustainable Development*, in THE WOMEN, GENDER, AND DEVELOPMENT READER 60 (Nalini Visvanathan, et al. eds., 1997).

²⁷⁸ *Id.*

²⁷⁹ *See id.*

governance where decisions regarding intellectual property rights are made.²⁸⁰ She argues that women should be given the “opportunity and the means to develop their capacities and obtain control (empowerment) of the decisions regarding their knowledge, innovations and practice. . .

»281

Scholarship in this area also critiques the Convention for Biological Diversity (“CBD”). The CBD affirmed the need for the “full participation of women at all levels of policy-making and implementation for biological diversity conservation.”²⁸² However, scholars argue that this recognition has not materialized.²⁸³ For example, Fatima Alvarez-Castillo, Professor of Social Sciences, University of Philippines, and Dafna Feinholz, Executive Director, National Commission of Bioethics, Mexico assert that the CBD offers no guidance on how to bring about women’s increased participation in policy making.²⁸⁴ Expanding the role of women in IP policy may increase the likelihood that the concerns of indigenous women and women of color are more fully addressed.

This scholarship also informs discussions of an egalitarian public domain. It acknowledges the individual and institutional barriers in the public sphere that indigenous women and women of color face in representing their concerns within local, national, and global governance structures. A more robust theorizing of an egalitarian public domain would address these constrains within the public sphere and could facilitate representation of indigenous women

²⁸⁰ Quiroz, *supra* note 23, at 13.

²⁸¹ *Id.*

²⁸² Convention on Biological Diversity, preamble, June 5, 1992, 1760 U.N.T.S. 79.

²⁸³ See Quiroz, *supra* note 23; Paola Deda & Renata Rubian, *Women and Biodiversity: The Long Journey from Users to Policy-makers*, 28 NATURAL RESOURCES FORUM 201, 201 (2004).

²⁸⁴ Fatima Alvarez-Castillo & Dafna Feinholz, *Women in Developing Countries and Benefit-Sharing*, 6 DEVELOPING WORLD BIOETHICS 113, 114 (2006).

and women of color within governance structures. This might provide greater opportunities for patent law policy reforms that benefit diverse groups of women.

In conclusion, scholarship in this section as a whole demonstrates how the current dichotomy between the public domain and private intellectual property rights can subordinate certain groups of women. Much of the scholarship herein discusses patent law and gendered social relations. *Historical studies* of patent law ownership show how the presence of gendered inequalities in the public sphere means that women's creative work is considered public domain material, thus excluding women from obtaining patent law ownership. *Sociological studies* demonstrate that female life scientists' inventive work also remains relegated to the public domain as they are less likely to patent their inventions than their male colleagues. Theoretically female scientists can transform their work from being in the public domain to being a privatized patented object. Yet patterns of discrimination within the public sphere of the workplace hinder them from being able to patent their inventions to a similar degree.

In raising this critique, this scholarship implies egalitarian public domains where patterns of discrimination are exposed in order to facilitate women's access to patent rights. This scholarship also focuses on how conceptions of authorship/inventorship within intellectual property law work to obscure and exclude collaborative forms of gendered and/or indigenous knowledge production and to reinforce a mind/body split. In part, what is needed is a more complex understanding of inventorship that effectively recognizes historically excluded forms of creativity by way of awarding patent rights. A more robust notion of inventorship therefore would enable more egalitarian public domains where formerly excluded creative works become recognized as valuable, potential private property rights rather than raw material. Therefore this scholarship theorizes an egalitarian public domain that is not defined as the opposite of or as less

valuable than private intellectual property rights. Rather, the egalitarian public domain is where patterns of discrimination are addressed and formerly excluded male and female inventors are encouraged to obtain patent rights. A degree of protection is therefore desired. An egalitarian public domain would protect inventors by considering differential access to resources caused by discrimination and would open up avenues towards securing patent rights for historically marginalized groups. Thus critique is leveled against patent law as having discriminatory modes, but the implied goal is more patent rights for more people. There is no criticism of how expansive patent law can also restrict creativity in the public domain and harm others.

This differs, in contrast, with the work of certain indigenous women's social movements and scholarship within feminist science studies. This literature claims that patent law subordinates indigenous women because it commodifies nature and exploits indigenous women's knowledge. Thus, their critique suggests an egalitarian public domain where patterns of discrimination are addressed not to encourage women to obtain patent rights, but to abolish the patenting of genetic and biological material derived from indigenous peoples all together. This implies an expansion of the public domain and a reduction of private property rights. The goal would be to strengthen the public domain by limiting patent rights. This is a very different value of egalitarianism. Equality for indigenous women more likely means freedom from encroaching patent laws that commodify their culture. Yet, this too is contested. Some Ghanaian women, for example, desire intellectual property rights for themselves.²⁸⁵

This scholarship, therefore, stretches concepts of the public domain to consider individual and structural relations of gender. Patent ownership has eluded women due to systems of gender subordination. Legal regulations, cultures of domesticity, and bias in the science professions

²⁸⁵ See Boateng, *supra* note 255.

make it more difficult for them to obtain patent ownership. Notions of individual inventorship obscure collaborative knowledge production and sustain a dichotomous mind/body split, which continues to justify the subordination of women and indigenous peoples as closer to nature and less rational. This scholarship provides valuable insights, but is limited in its approach to gendered social relations. Indigenous women's social movements and feminist science studies scholarship provide more complex accounts of gender as shaped by race, indigeneity, class, and neo-liberalism. According to this work, patent law threatens women's access to biodiverse resources and health care, while at the same time eroding cultural diversity. It also notes that policy-making around patent law excludes women from representing their interests.

However, this scholarship also has its limitations. For example, it fails to afford indigenous women and women of color agency in claiming their own rights to patent ownership. Patent rights may actually benefit some women who seek recognition for their inventions or bargaining power in negotiating benefit-sharing agreements.²⁸⁶

Despite these limitations, scholarship in this area signals the need for a more complex approach to the public domain. It indicates that, unless carefully constructed, an egalitarian public domain might not fully serve the interests of indigenous women or women of color. Thus, multiple visions of an egalitarian public domain emerge. For instance, campaigns to increase women's patent ownership will likely only benefit women who already have resources to invent patentable objects, and may result in harm to indigenous women and women of color, particularly in the global South, by threatening their resources and knowledges. Thus values of protection and hybridity might also need to be incorporated within considerations of an egalitarian public domain. Thus, a more nuanced and complex account of the public domain is needed to ensure more socially just patent law.

²⁸⁶ *Id.*

II. Situated Public Domains

This chapter has examined several visions of the public domain formulated by various critical IP projects. Each one offers important values for shaping patent law policy. Desires for openness, protectiveness, hybridity, and egalitarianism are productive in formulating conceptions of the public domain. Each one has usefulness in guiding patent law policy. Their productive power though differs depending upon the particular patent law struggle. For example, values of openness support scientists' arguments against DNA sequence patents and desires for the free and open exchange of scientific materials and ideas. Openness also undergirds claims by certain women in South Africa yearning for increased access to patented medicines such as HIV/AIDS drugs. Yet, an open public domain in which resources are freely open and available might harm indigenous peoples and people of color whose resources and cultures are being threatened. In that case, a more protective public domain might be needed to safeguard their resources. A hybridized public domain might also be useful in recognizing the valuable input of indigenous knowledge systems, which maintain insightful notions of nature/culture and environment. An egalitarian public domain with an intersectional approach to gender can also bring recognition to indigenous women who may be disproportionately impacted by patent law or even desire patent rights for themselves. Each of these values is important. Acknowledging how they converge, compete, and oscillate, in relation to a particular patent law struggle, enables a more productive understanding of how knowledge production is structured by private property.

Thus, I suggest an analytic for understanding the public domain as situated public domains. My suggestion flows directly from Donna Haraway's work on "situated knowledges."²⁸⁷ Haraway developed the concept of situated knowledges within the context of

²⁸⁷ Donna Haraway, *Situated Knowledges: The Science Question in Feminism and the Privilege of Partial Perspective*, 14 FEMINIST STUD. 575 (1988) [hereinafter Haraway, *Situated Knowledges*].

feminist debates over objectivity, which contested assumptions of value neutrality and objectivity within scientific method.²⁸⁸ Key points within these debates were also taken up by feminist legal scholars to challenge values of objectivity embedded in the law.²⁸⁹ According to Haraway, understanding knowledge and knowledge production as situated provides an alternative to the rational, neutral and universalizing vision of masculine objectivity within the sciences, which fails to account for social relations and histories.²⁹⁰ In contrast, situated knowledge is an epistemology that produces complex, contradictory, heterogeneous, partial, and socially located ways of knowing.²⁹¹ It is a “view from a body,” versus a disembodied, masculine gaze from above.²⁹² Thus, it produces knowledge “from below” to bring attention to subjugated ontologies and epistemologies.²⁹³ It is, however, not relativist.²⁹⁴

²⁸⁸ For feminist debates around objectivity see DONNA J. HARAWAY, *SIMIANS, CYBORGS, AND WOMEN: THE REINVENTION OF NATURE* (1991); SANDRA G. HARDING, *THE SCIENCE QUESTION IN FEMINISM* (1986); EVELYN FOX KELLER, *REFLECTIONS ON GENDER AND SCIENCE* (1985). For a discussion of how feminist debates over objectivity relate to standpoint theory and critiques of standpoint methodology, see SANDRA G. HARDING, *THE FEMINIST STANDPOINT THEORY READER: INTELLECTUAL AND POLITICAL CONTROVERSIES* (Routledge 2004).

²⁸⁹ See Catharine A. MacKinnon, *Feminism, Marxism, Method and the State: Toward Feminist Jurisprudence*, 8 SIGNS: J. WOMEN IN CULTURE & SOC'Y 635, 636 (1983).

²⁹⁰ Haraway, *Situated Knowledges*, *supra* note 287, at 578.

²⁹¹ *See Id.* at 589.

²⁹² *Id.*

²⁹³ See SANDRA G. HARDING, *SCIENCES FROM BELOW: FEMINISMS, POSTCOLONIALITIES, AND MODERNITIES* (2008).

²⁹⁴ Haraway is clear that the position of situated knowledges and a view from below does not promote relativism. Haraway, *Situated Knowledges*, *supra* note 287. “Such preferred positioning is as hostile to various forms of relativism as to the most explicitly totalizing versions of claims to scientific authority. But the alternative to relativism is not totalization and single vision, which is always finally the unmarked category whose power depends on systematic narrowing and obscuring. The alternative to relativism is partial, locatable, critical knowledges sustaining the possibility of webs of connections called solidarity in politics and shared conversations in epistemology. Relativism is a way of being nowhere while claiming to be everywhere equally. The ‘equality’ of positioning is a denial of responsibility and critical inquiry. Relativism is the perfect mirror twin of totalization in the ideologies of objectivity; both deny the stakes in location, embodiment, and partial perspective; both make it impossible to see well. Relativism and totalization are both ‘god tricks’ promising vision from everywhere and nowhere equally and fully, common myths in rhetorics surrounding Science. But it is precisely in the politics and epistemology of partial perspectives that the possibility of sustained, rational, objective inquiry rests.” *Id.* at 584.

Situated knowledge is therefore both a way of understanding knowledge production and a methodology for producing knowledge. Science (and law) should proceed based upon an assumption that all knowledge is already situated, rather than thinking that knowledge is value neutral and objective. According to Harding, situated knowledge is produced through a stronger notion of objectivity that is socially situated and partial.²⁹⁵ Situated knowledge is rational knowledge that conducts an ongoing critique through processes of coding and decoding, while paying attention to systems of power.²⁹⁶ Its aim is not a “Truth” or a final closing narrative, but continual contestation over meanings and futures.²⁹⁷ Thus, the situatedness of knowledge and knowledge production is dynamic and continually changing. I suggest applying this way of understanding and producing knowledge to the public domain.

An understanding of public domains as situated enables scholars to consider how various conceptions of the public domain are at work within particular patent law struggles and critical IP projects. Thus it enables values of openness, protectiveness, hybridity, and egalitarianism to be taken seriously simultaneously and in various forms. A notion of situated public domains facilitates a vision of the public domain that is an alternative to the neutral and objective judicial interpretations of the public domain as outside or opposite of intellectual property law. It takes into account social relations and histories that include complex notions of gender, race, indigeneity and neoliberalism as they are embedded within the scientific/cultural knowledge production. It also enables scholars to consider how values of openness, protectiveness, hybridity and egalitarianism can shape patent law policy in different ways for different groups. An analytic

²⁹⁵ HARDING, WHOSE SCIENCE? WHOSE KNOWLEDGE?, *supra* note 88.

²⁹⁶ Haraway, *Situated Knowledges*, *supra* note 287.

²⁹⁷ *See id.* at 584–85.

of situated public domains also opens up sites of contradiction as a source for producing better knowledge claims. For instance, an egalitarian public domain evokes contradictions between groups of women, thus values of protection and hybridity become necessary to consider.

The main point is that situated public domains allow for multiple heterogeneous constructions of the public domain that are contingent and partial. Opening up space to recognize and promote partial theorizing of the public domain is critical for developing better understandings of patent law and policy. As socio-political conditions change and new assemblages of actors emerge, new conceptions of the public domain will be necessary. A situated public domain recognizes relations of power and addresses the interests of socially located marginalized groups, including women, and how difference, inequality, and recognition are produced.

One may argue that a situated public domain would create uncertainty under patent law because the legitimacy of patent law requires a more stable notion of the public domain. On the contrary, a notion of situated public domains can promote greater certainty under the law. It can engender a more flexible legal environment where all the facts of a particular patent law struggle can be considered. It can also help build a more robust patent law system where other legal frameworks such as human rights law can be incorporated in interpreting the effects of patent law.²⁹⁸ Thus, the notion of situated public domains provides scholars with a more robust analytic for considering how the relationship between the public domain and patent law impacts society

²⁹⁸ See Laurence R. Helfer, *Toward a Human Rights Framework for Intellectual Property*, 40 U.C. DAVIS L. REV. 971, 1020 (2007) (arguing that international human rights law is increasingly intertwined with and relevant to intellectual property law and policy); Peter K. Yu, *Reconceptualizing Intellectual Property Interests in a Human Rights Framework*, 40 U.C. DAVIS L. REV. 1039, 1045 (2007) (arguing that the protection of non-human rights aspects of intellectual property policy should be subordinated to human rights obligations as specified under the principle of human rights primacy).

and cultural/scientific knowledge production. This allows for broader understandings of patent law struggles in particular as linked to questions of difference, inequality, and citizenship.

The notion of situated public domains also opens up space to examine and recognize indigenous women's knowledge production within the public domain and its relationship to patent law. It enables one to understand how knowledge production is situated and how values of the public domain must be applied appropriately in order to take this into account. To better illustrate this point, a brief discussion of a particular patent law struggle is useful. For example, take the case of the patenting of Indigenous San knowledge regarding the Hoodia plant.²⁹⁹ What certain †Khomani San women know about the Hoodia plant is informed by structural histories of migration, genocide, colonialism, apartheid, and neocolonialism that are shaped by their experiences as indigenous women marked as racially and ethnically “other” within South Africa.³⁰⁰ Their knowledge is highly complex and based on generations of dissemination, and it is also heterogeneous and even contradictory as they may know different things about the same plant given their various levels of education, employment, age, and status in the community.³⁰¹ †Khomani San women's knowledge may even be partial. Important pieces of information may have been lost due to histories of dislocation, and they generally lack the capital equipment to investigate the properties of Hoodia further.³⁰² Their knowledge about Hoodia is also different from the men in their communities, as it flows from their reproductive capacities or gendered

²⁹⁹ See *supra* note 24 and accompanying text.

³⁰⁰ See generally Heike Becker, *The Least Sexist Society? Perspectives on Gender, Change and Violence among southern African San*, 29 J. OF S. AFR. STUD. 5 (2003) [hereinafter Becker, *The Least Sexist Society?*]; HEIKE BECKER, TOWARDS A SASI GENDER STRATEGY: ANALYSIS AND RECOMMENDATIONS (2001).

³⁰¹ Interviews with †Khomani San women and men, in Andriesvale and Upington, S. Afr. (March 3–11, 2009) [hereinafter †Khomani San Interviews].

³⁰² See generally LE ROUX & WHITE, *supra* note 24.

social roles in caring for their families, educating children, and/or politically representing their communities.³⁰³ For example, †Khomani San women learned over time that the plant could be used to ease breastfeeding and to reduce gassiness in babies.³⁰⁴ However, their knowledge about the plant is also similar in some respects to that of †Khomani San men.³⁰⁵ For example, they both articulate using Hoodia to suppress appetite or quench thirst.³⁰⁶ Considering additional layers, †Khomani San women’s knowledge likely differs from the knowledge about Hoodia held by other San women in Namibia, Botswana, and South Africa and local farmers, scientists, and scholars.³⁰⁷ Thus, how these women are “situated” shapes what knowledge they know and produce.

This understanding enables scholars to produce accounts of Hoodia patent law struggles that recognize †Khomani San women’s knowledge in relation to the men in their communities without reinforcing gendered hierarchies or creating new ones. It can facilitate accounts of cultural knowledge production that are complex, contradictory, heterogeneous, partial, and socially located. This includes recognizing the bodies of †Khomani San women and how their knowledge flows from their material realities as women in the community in different or similar ways to the men in their communities. It also entails remaining open to changing meanings as †Khomani San women and their communities continually contest the patenting of their Indigenous knowledge and heritage through various different strategies overtime. A conceptual analytic of situated public domains thus involves examining and producing accounts of cultural

³⁰³ †Khomani San Interviews, *supra* note 301.

³⁰⁴ *Id.*

³⁰⁵ †Khomani San Interviews, *supra* note 301. *See generally* Becker, *The Least Sexist Society?*, *supra* note 300.

³⁰⁶ †Khomani San Interviews, *supra* note 301.

³⁰⁷ *See generally* Vermeylen, *supra* note 24.

knowledge production as situated. As knowledge itself is situated, values related to the public domain can and must be understood accordingly.

Values of, and desires for, openness, protectiveness, hybridity, and egalitarianism will likely benefit different †Khomani San differently. Therefore, such desires and their corresponding policy arguments will yield varying strategies. By taking this into account, a more just relationship between the public domain and private patent ownership is more likely to emerge. For instance, an open public domain can help support arguments against the patenting of †Khomani San knowledge. Drawing upon the Beijing and Manukan Declarations and their positions as “daughters of Mother Earth,” †Khomani San women could argue against the patenting of biological and genetic materials derived from indigenous peoples.³⁰⁸ In fact, in interviews with some †Khomani San women, they articulated that biological and genetic materials such as Hoodia should not be owned or controlled through patent law.³⁰⁹ Such a “no patenting on life” argument, however, may leave the †Khomani San open for exploitation. Companies have become increasingly engaged in bioprospecting to meet the demands of a global, neoliberal marketplace. Researchers are collecting indigenous plant knowledge in the hopes that it may lead to the next big pharmaceutical drug. Therefore, a protective public domain might benefit †Khomani San women more.

Protecting †Khomani San knowledge and resources would likely help †Khomani San women continue to use their knowledge to care for their families and children. Rather than leave their knowledge freely open and accessible in the public domain, some protection is needed. Yet, what degree of protection is necessary? Would such means of protection benefit †Khomani San men and women in the same way? Recognition of gendered social relations would help

³⁰⁸ See discussion *infra* Part I.D.3.

³⁰⁹ †Khomani San Interviews, *supra* note 301.

strengthen protocols of prior informed consent and negotiations for benefit sharing. †Khomani San women may also benefit from stressing values of hybridity. This may facilitate recognition of indigenous knowledge as containing hybrid notions of nature/culture, notions which indigenous women claim they embody given their positions as closer to nature.³¹⁰ On the other hand, †Khomani San women may want to promote an egalitarian public domain that embraces an intersectional approach to gender, thus allowing for different strategies against the patenting of their knowledge. For example, some †Khomani San women might want to claim patent rights to Hoodia for themselves in order to recognize their historical role as gatherers of plant knowledge within their communities. Others might want to design strategies for equality that aim at prohibiting the patenting of indigenous knowledge all together. Furthermore, some †Khomani San women might want to focus on increasing their role in community governance to more fully participate in negotiations regarding benefit sharing.

The point is that different †Khomani San women will likely embrace multiple values of the public domain and likewise design variegated strategies against patent law. The values they embrace may also overlap and contradict each other. Values of openness, hybridity, protectiveness, and egalitarianism should not be understood as discrete desires. Their interplay, as demonstrated, is often messy. Scientists can embrace values of openness to justify arguments against the patenting of DNA sequences to promote a continual open exchange of scientific information and culture of sharing.³¹¹ Indigenous peoples can also point to values of openness and the “common heritage of mankind” to argue for prohibiting the biological and genetic

³¹⁰ *See id.*

³¹¹ *See generally* Rai & Eisenberg, *supra* note 20.

materials derived from indigenous peoples.³¹² Furthermore, legal scholars can point to values of openness and free exchange of information within the public domain in arguing for a commons approach that essentially *protects* creators and producers of knowledge.³¹³ This level of protection, however, would not benefit indigenous peoples who are producers of knowledge. Thus, indigenous peoples must argue for a different scope and value of protection of the public domain.

What becomes clear is that even the desire for an open public domain and how “openness” is perceived and constructed as a value is situated and will likely change overtime. Thus, †Khomani San women are likely to embrace similar values, but to a different degree or scope. They also might express different visions of the public domain that at times contradict one another. Whatever values they express or strategies they design against the patenting of their knowledge, they would share a common focus. They would share a similar desire to construct a relationship between the public domain and patent law that benefits both †Khomani San men and women by furthering their rights to self-determination.

A conceptual analytic of situated public domains therefore takes into account how values of the public domain may function differently within a particular community and produce multiple, often conflicting benefits. It enables us to see how individuals and groups are theorizing the public domain as partial and contradictory. Such theorizing differs from the universal theorizing that undergirds other notions of the public domain. Scholars articulating an open public domain, for example, suggest a vision of the public domain that is universally open in order to promote creativity. This universalizing assumption, however, works to promote only certain forms of creativity. A vision of an open public domain that does not address inequalities

³¹² See SHIVA, *BIOPIRACY* *supra* note 35.

³¹³ See BOYLE, *THE PUBLIC DOMAIN*, *supra* note 20.

and complex gendered relations only serves to promote forms of creativity that are already privileged within the public domain. Even a protective public domain at times can fall into the trap of a universalizing logic. Strategies driven by desires for a protective public domain entail limiting intellectual property rights, but at the same time increasing other regulatory legal regimes in order to mitigate the power of intellectual property rights. Attention is placed on such legal technologies as access and benefit-sharing agreements and prior informed consent documents. These technologies themselves can promote their own forms of universalizing logic, forcing indigenous communities to conform to western legal models of contract and consent. Indigenous communities often desire different levels of protection and even members within indigenous groups, particularly indigenous women, may want to pursue radically diverging strategies.

Thus, a protective public domain must be flexible and attentive in order to avoid the traps of universalism under the law. Not all scholar/activists working through such protective public domain models fall into this trap, however. Some, for example, are striving to provide more flexible benefit sharing and informed consent models based upon a vision of a traditional knowledge commons.³¹⁴ Those working through values for a protective public domain, however, would still benefit from a notion of situated public domains and find it helpful in their efforts to further stretch its possibilities for benefiting indigenous communities.

Situated public domains engage in partial theorizing, which can avoid the traps of universalizing logics.³¹⁵ Such an understanding is extremely important for structuring policy

³¹⁴ Elan Abrell, Kabir S. Bavikatte, Gino Cocchiario & Johanna von Braun, *Imagining a Traditional Knowledge Commons: A Community Approach to Ensuring the Local Integrity of Environmental Law and Policy* (Mar., 2010) (unpublished manuscript) (on file with the author).

³¹⁵ Haraway claims that “only partial perspective promises objectivity” as opposed to theorizing that makes conclusions based upon universals and “Truth.” See Haraway, *Situated Knowledges*, *supra* note 287, at 583.

related to patent law and indigenous knowledge. Technologies of benefit-sharing and prior informed consent, developed through an understanding of situated public domains, can become better. Such legal technologies can be designed in a more flexible and contingent manner in order to protect and advance substantive equality for indigenous communities, including indigenous women. By this I do not mean to suggest that policy should be based on the individual wants and desires of those whose knowledge may be open to exploitation. Attention to group rights and collective rights should remain a central concern within such policymaking. What I am suggesting though is a process in which individual indigenous communities are left to decide for themselves what benefit sharing and prior informed consent should look like. This process should be one in which the sovereignty of indigenous communities is respected and they are allowed to negotiate among themselves and in consultation with indigenous networks and trusted non-governmental organizations as to how to protect their knowledge in a way that furthers substantive equality. The fact that this process of policymaking involves consultation is important. Indigenous communities are not static; they participate, albeit to different degrees, within global networks of policy organizations and other indigenous communities. A context-specific consideration of gendered social relations and gender equality, therefore, can emerge within policymaking through these negotiations, consultations, and networks.

For instance, in later chapters, I suggest that the direction of policy-making be shifted. For example, benefit-sharing agreements are often designed to encourage education and training for indigenous communities. A laudable project, but it is flawed. Such models of education and training continue to reinforce modes of modernity where it is the indigenous communities who are perceived as in need of educating and civilizing. A better model of benefit sharing might also demand training for the scientists and companies engaged in the bioprospecting and patenting of

indigenous knowledge. What would benefit sharing look like if it prescribed training for scientists on the historical harms of colonial science and anthropology? What would prior informed consent look like if it demanded that scientists, researchers, and IRB officials take training and agree to the ethical frameworks of indigenous communities themselves?

A conceptual understanding and theorizing of situated public domains engenders these more socially just ways of policymaking. Thus, a conceptual analytic of situated public domains supports a social justice approach to patent law policy by enabling scholars to produce examinations of the public domain that are nuanced and that take into account complex gendered social relations, while enabling more flexible and responsive patent law policy.

III. Conclusion

This chapter promotes a conceptual analytic for examining the public domain. If we are to take seriously the need expressed by James Boyle for a “legal realism of the public domain,” then it is crucial to set forth a foundational ethic for studying public domains as situated.³¹⁶ Cultural/scientific knowledge production in the public domain can be contradictory and varied. Values of openness, protectiveness, hybridity, and egalitarianism are all important values to consider. Political and legal strategies against encroaching intellectual property laws must flow from an understanding of how these values emerge, converge, and conflict in any given geopolitical context. My suggestion for a situated public domain is not meant therefore to replace other conceptions of the public domain; rather, it is offered as a way of producing better theorizing and policy around these desires. It is meant to push scholarship around the open domain to acknowledge inequalities within the public domain and to recognize that gendered and indigenous forms of creativity do not fully benefit from current theorizing around the public

³¹⁶ Boyle, *Foreword: The Opposite of Propety?*, *supra* note 20, at 30–31.

domain. It is meant to enhance notions of a hybridized public domain and protective public domain to explicitly account for complex gendered social relations.

In so doing, this chapter does not propose explicit policy solutions at this time. This is because robust policy solutions can only come from a more nuanced understanding of cultural/scientific knowledge production within the public domain and its relationship to patent law. This includes an examination of the public domain that takes into account complex, intersectional gender relations. Situated public domains are one possible starting point: they form a conceptual framework for building socio-legal studies of the public domain that can inform more just policy decisions. A socio-legal study of the public domain and its relationship to patent law would require new strategies for research design and techniques for gathering and analyzing data. It would also engender a different type of legal realism of the public domain from what Boyle likely envisions. Such studies, however, would enable the production of complex accounts of how patent law impacts society, in particular indigenous women and their families, which are essential for crafting legal reforms.

A situated public domain, however, is not the subject of the remaining chapters. Rather, it is a foundational assumption that undergirds an ethnographical account of how constructions of Hoodia and the San change overtime in relation to each other. In other words, it is crucial for a study of how nature and difference are simultaneously co-produced and re-invented. The analytic of situated public domains thus acts as a theoretical method within this research, and accompanies the methodologies as outlined in the next chapter.

Chapter Two

Studying Hoodia: A Feminist Ethnographic Account of the Circulations of *Hoodia gordonii*

Hoodia gordonii as scientific, legal, and cultural object engages in its own form of border crossing. It moves across various temporal and geographical spaces from the Unilever bioprospecting lab, to the U.S. patent specification, and to the San woman's kitchen garden. Its shifting positions are neither linear nor progressive. Hoodia comes into being within and through a constellation of related, yet distinctive temporal and spatial sites. Hoodia emerges in variable forms such as a "wild" plant in the Kalahari, P57 chemical compound in the lab, cultivated crop in the Afrikaner farm, herbal diet pill in the drug store, and potted plant on the terrace. As it comes forth in these multiple material forms, Hoodia represents various epistemologies and ontologies. It comes to embody competing claims over scientific ways of producing knowledge, economic modes of capital production, and legal notions of property and personhood. For instance, it stands in for the confluence of western science and neoliberal capitalism as it becomes the isolated P57 compound in bioprospecting lab and patent application. Yet, Hoodia also symbolizes the rich cultural and scientific knowledge of the Indigenous San peoples through its articulation by the San as their collective knowledge and as "Hoodia is life." Furthermore, it embodies the paradoxical position of South Africa as it struggles to compete within the new global economy by embracing western scientific innovation and strengthening its patent laws, while also asserting the protection of traditional knowledge as a strategy for rebuilding the post-colonial, post-apartheid nation-state.

Framing the public domain as situated public domains provides the necessary opening for considering these socio-legal and cultural significances of patent law through a qualitative study of Hoodia's circulations, movement, and border crossings. Conceptions of an open public domain confine an analysis to, for example, only the scientists and biotechnology firms that depend upon free and open access to Hoodia as raw material. At the same time, it limits the discussion to forms of creativity that are "inventive" under the law as new, novel, and industrial or have the potential to be. A hybridized public domain critiques patented objects as hybrids where notions of nature/culture and social/biological merge. Such critiques contest the privileging of protected patented knowledge over unprotected gendered and Indigenous forms of creativity within the public domain. Yet, the hybridized public domain moves us too quickly towards critique, without first analyzing the precise mechanisms within struggles over Hoodia and the inequalities that are produced. As Kaplan points out, "[b]oundaries or asymmetrical differences continue to exist despite the celebration of contradiction or theoretical affirmations of hybridity." (Kaplan 1994, 150) In addition, notions of the protective public domain facilitate an examination of such boundaries and asymmetrical differences by paying attention to histories of colonialism, apartheid, and current conditions of neo-liberal globalization as they relate to the patenting of Hoodia. Yet, a protective public domain would pay shallow attention to the gendered forms of Indigenous knowledge around Hoodia and gendered social inequalities within the San community. In contrast, situated public domains enables an investigation of the relationship between the public domain and patent law that addresses each of these values of openness, hybridity, protectiveness, and egalitarianism. More importantly, it enables a critical analysis of different forms of creativity implied within each of these conceptions of the public domain. It therefore supplies us with a more robust theoretical toolkit to examine the circulations

of Hoodia and its related forms of creativity as embodied in its material semblances and associated epistemologies. Thus, the notion of situated public domains shifts debates around patent law in order to open up space to consider citizenship, the oscillations between nature/culture binaries, and the production of difference and inequality through Hoodia patent law struggles. Yet, now that space is more open, how does one study the circulations of Hoodia?

In this chapter, I offer a “feminist critical cartography of circulations” for examining the transnational movement of global capital and its accompanying representations, meanings, ethical/legal norms, and modes of power. In particular, I present a research design for conducting an ethnographic, multi-sited study of circulations of a patented object (i.e., Hoodia) through various spatial and temporal geographies. The design converges research methodologies from across the disciplines. It draws upon anthropology and science studies methodologies that trace mechanisms of knowledge/power by examining how scientific/regulatory objects travel through a “multi-sited” approach. (Marcus 1995) It also incorporates recent “new legal realism” scholarship, which analyzes how legal norms circulate through transnational networks of laws, people, and organizations. (Merry 2006) This research design also employs methodologies articulated as “law from below” and “science from below.” (Harding 2008; Rajagopal 2003; Rodríguez Garavito and Santos 2005) Brought together, these methodologies, in distinct yet similar ways, encourage researchers to explore how law is used as a counter-hegemonic tool by social movements and marginalized communities to contest and re-configure legal subjectivities and rights discourses as well as scientific practice itself.

This chapter then further discusses the application of this research design to the study of Hoodia. It shows how I employ qualitative research techniques (e.g., interviews, observations, document review) to conduct fieldwork in South Africa and collect data from various spatial and

temporal sites such as colonial botanical travel journals, San women's kitchen gardens, Afrikaner farms, South African scientists' publications, company web advertisements, U.S. patent applications, NGO working papers, and benefit-sharing legislation. Furthermore, to guide in the collection and analysis of such data, this chapter shows how I use post-modern/constructivist grounded theory techniques of assigning codes and writing memos, and how this approach incorporates feminist methodologies. (Charmaz 2006; Clarke 2005) Finally, particular theoretical frameworks always shape and are shaped by a selection of research design and methodology. However, they don't just provide a theoretical framework, they also offer methodological insights that help guide my analysis. In this case, this chapter will review how my research methodology is informed by and contributes to critical feminist theory related to the fields of science and technology studies and socio-legal studies, which includes feminist science studies, feminist legal theory, critical race theory, post-colonial feminisms, transnational feminisms, African feminisms, and Indigenous feminisms. These theoretical frameworks offer methodological insights that help to strengthen a critique of patent law, while assisting in the theorizing of nature/cultures, difference, and inequality within new conditions of biopolitics.

This feminist critical cartography of circulations should be interpreted as interdisciplinary, not multi-disciplinary. Debates within women's studies have expressed concern over the current crisis of interdisciplinarity and methodology within the field, particularly as scholars are now earning doctoral degrees within the institutional structures of women's studies departments. Such debates warn against the "impossibility" of women's studies graduate education and its "methodological rootlessness." (Brown 1997; Friedman 1998) Scholarship also questions the (inter)disciplinarity of women's studies as programs departmentalize and students

struggle in developing interdisciplinary projects. (Allen and Kitch 1998; Boxer 2000; Buker 2003; May 2002; Romero 2000; Wiegman 2001).

Meanwhile, scholars attempt to characterize approaches to interdisciplinary feminist methodology. (Allen and Kitch 1998; Kitch 2003; Pryse 2000) Drawing upon the work of Yuval-Davis, Pryse argues for a “transversal methodology.” (Pryse 2000, 112) This methodology requires scholars to "shift and pivot," while remaining grounded in a "latticework of identities and research methodologies" with the goal of developing tolerance for each other's disciplinary ways of thinking. Allen and Kitch also argue that interdisciplinarity does not mean using more than one discipline to analyze an issue. (Allen and Kitch 1998, 277) Rather, it involves the "integration" of disciplines to create new epistemologies, organizing concepts, methodologies, and skills. Interdisciplinarity is not about borrowing from each discipline, but about a fusion and synthesis of approaches into a new knowledge area. Thus, Allen and Kitch claim that interdisciplinarity requires a "discipline-transcendent" command of knowledges that shapes understandings of women, gender, and sexuality.

These debates provide valuable insight into the institutional and methodological struggles within women's studies and its new pursuit in the training of doctoral students. However, for a women's studies PhD student developing a doctoral dissertation these debates provide little if any prescriptive guidance on what exactly an interdisciplinary research methodology and design might look like.

This chapter therefore contributes a research design for how to engage in interdisciplinary feminist research. It offers a path for how to conduct an interdisciplinary research project whereby various theories and methods are sutured together in order to produce a new feminist knowledge of patent law, biotechnologies, and Indigenous knowledge. This approach is not

meant to be normative, as it merely provides one possibility for engaging in interdisciplinary feminist research. Furthermore, it speaks more to social science scholars by offering a qualitative research design focused on transnational phenomena. Therefore, its scope remains partial and limited; yet it provides a starting point for interdisciplinary trained feminist scholars as they increasingly work towards developing a range of interdisciplinary feminist research approaches.

I. Multi-sited, Ethnographic Research of Circulations

As employed in this project, a feminist critical cartography of circulations involves an ethnographic, multi-sited study of the movement of a patented object. The research is designed to trace Hoodia through various spatial and temporal geographies. This design enables an examination of articulations of gendered, ethno-racialized, and indigenous narratives regarding struggles over Hoodia. These articulations signal the individual and structural relations of power relevant to the patenting of genetic and biological material derived from Indigenous knowledge in South Africa. Such structural relations of power include an assemblage of legal technologies related to patent law (e.g., prior informed consent agreements, benefit sharing contracts, and bioprospecting regulations) and transnational modes of production related to the commercialization of biotechnologies. The patented object of Hoodia is therefore examined more as a subject imbued with various meanings and values embedded within and acting upon multiple social relations.

A. Multi-sited Ethnographies and New Legal Realism

In his seminal 1995 essay, *Ethnography in/of the World System: The Emergence of Multi-sited Ethnography*, George E. Marcus surveys the emergence of new methodological approaches to ethnography. (Marcus 1995) Marcus notes a trend where ethnographic studies were moving away from single-sited locations towards multiple sites of observation and participation. Multi-

sited ethnographies examine the "circulation of cultural meanings, objects, and identities in diffuse time-space." (Marcus 1995, 96) Drawing upon insights from postmodernism, the ethnographer "become[s] mobile" to follow the connections, associations, and relationships of particular objects. (Marcus 1995, 97-99) Marcus states that one technique within multi-sited ethnography is to "follow the thing." (Marcus 1995, 106-07) This involves an ethnographer tracing the circulations of a material object through different contexts. This approach is similarly taken up within socio-legal studies in the form of new legal realism.

New legal realism draws upon twentieth century legal realism whose proponents employed empirical studies of legal systems to argue that law was inseparable from the realities of social life, its politics, cultures, and economics. (Vago 2006, 68) This understanding also became a foundational principle for the critical legal studies movement in the 1960s and related movements of feminist legal theory and critical race theory. (Vago 2006, 67-74) In more recent years, a new legal realism has emerged that is more attentive to how the law is embedded within social realities that are increasingly transnational.

In her 2006 essay, *New Legal Realism and the Study of Transnational Law*, Sally Merry describes three key features of the new legalism approach and its departure from earlier empirical studies under legal realism. (Merry 2006) One is its methodological focus on multi-sited ethnographic research that "tracks the flows of people, ideas, laws, and institutions across national boundaries and examines particular nodes and sites within this field of transnational circulation." (Merry 2006, 976) In an earlier essay, Merry names this methodology a "deterritorialized ethnography" where qualitative methods move away from traditional "field sites" to a more multi-sited legal ethnography engaging with such modes of inquiry as Internet portals and conferences. (Merry 2000, 130) A second feature is its engagement with previously

unexamined spheres of law, for example, international law and human rights law. This involves developing new legal frameworks of legal pluralism to address the complex interactions and hierarchies within a transnational legal system. A third component is its expansion of the dimensions of legality. In studying emerging legal technologies such as the propertization of body parts and the management of legal files, Merry suggests that new legal realism brings attention to technologies and knowledge systems within law through a knowledge/power framework. (Merry 2006, 977) It is this multi-sited or deterritorialized approach that I use in studying the transnational circulations of Hoodia. Examining the movement of Hoodia, however, first begins from my own personal and professional circulations.

B. Personal and Professional Circulations

My research on Hoodia builds upon over a decade of experiences working within the law and women's studies. These experiences proved invaluable for conducting this research and gaining "legitimacy" with research subjects. My background is also a primary source for reflexivity on my own my position as white, female, heterosexual, middle-class, U.S. researcher in South Africa. Thus, it becomes important to articulate my background from the beginning as it shapes the production of this research project. This personal narrative around my positionality as researcher should be read as open to contestation and critique. I offer this narrative not merely as an exercise in legitimating my ability to do research in South Africa. Rather, it serves as a gesture of being upfront about my engagement as a researcher, its limitations, and of demonstrating a willingness to be critiqued by others. It is only through taking such risks that I can grow as a feminist scholar.

Thus, my most relevant circulations began after my first year of law school, in the summer of 1998, when Unity Dow, the first female High Court Justice of Botswana, invited me

to be a human rights law clerk at her Metlhaetsile Women's Centre in Mochudi, Botswana. I was given the chance to conduct research and write legislation against domestic violence and the sexual assault of girls in school. Through this experience, I gained insights into legal systems within Southern Africa and recognition of the links between sexual violence and socio-economic rights. I also engaged in difficult conversations with local women's rights activists who directly challenged my understanding of the law, and taught me firsthand how legal norms do not always travel or translate in productive ways. To them, I am forever grateful. Upon returning from Botswana, I thus shifted my legal training towards understanding how law structures and is structured by socio-economic rights and hierarchies. This new interest (and the need to pay off law school loans) led me in the direction of practicing corporate law with a large multi-national financial firm, and later a regional legal firm, in order to understand how power truly functions.

However, during law school and into my first years of legal practice, I was also consumed with helping my mother care for my father, who was terminally diagnosed with early on-set Alzheimer's disease at age 50. This experience, although extremely difficult, led directly to my interest in genetic technologies. Given my personal connection to Alzheimer's disease, I was invited to join the Cincinnati Alzheimer's Association. As a Board Member I was placed in charge of the public policy committee and asked to communicate the latest research on the genetics of Alzheimer's research to Ohio congressional members. I was also asked numerous times if I myself would be a research participant in scientific studies to find the genetic link to the disease. Thus, upon entering UCLA, I brought with me a background of circulating within spaces of human rights, corporate law, science, and Southern Africa and with the people occupying those sites. Given this background, when I learned about the patenting of Hoodia, I immediately wanted to tell its story. But, was it mine to tell?

To answer this question, I engaged in further work within graduate school. For example, I took a yearlong course through American Indian studies where I began to learn about histories of Native peoples, how to ethically conduct research with Native communities, and how to design a research project that “gave back” to the community. I also volunteered with a non-profit organization, led by two self-identified Native feminist women, dedicated to fighting against the patenting of Indigenous knowledge. While doing volunteer research with them I was given critical and constructive feedback on my dissertation research design on Hoodia. Although American Indian communities share similar histories and concerns with other Indigenous communities globally such as the San, their experiences and strategies are quite different. Thus, it also became important for me to do a pilot project in South Africa in 2007 for three months in Cape Town, South Africa. This gave me the chance to meet with representatives of the San community and ask them how I might design my project in an ethical manner, so that it would contribute to their community and to the work already being conducted by scholar/activists in South Africa around Hoodia. In the meantime, I also developed a strong relationship with the UCLA Center for Society and Genetics (CSG) where I participated in difficult conversations with disciplinary trained lawyers, geneticists, historians, and anthropologists who were often skeptical of feminist science studies and critical race theory. My time at CSG, however, provided me with a strong background in science and technology studies, and gave me the training on how to communicate my work to those not familiar with feminist theory or methodology. Thus, I took feminist and Indigenous methodologies seriously and put them into practice during the initial design of the project and in my own academic preparation.

Through my engagement with Native communities and my pilot project in South Africa, I became confident that I could build upon my unique training in law, science, and women’s rights

to write about Hoodia in a manner that made a needed and desired contribution, despite its inevitable partiality. I further developed this engagement during the course of my research while conducting fieldwork from July 2008 to July 2009, which included four months in South Africa. It is these personal and professional circulations that shape my positionality as a researcher and the production of this project. I can only hope that my training and collaboration with others helped guide my analysis within the difficult intersections of bodies, knowledges, property rights, and indigeneity and mitigated any mistakes that I knowingly or unknowingly made.

C. Tracing the Circulations of Hoodia

In designing my research to understand how a patented object circulates within transnational flows of capital and legal regulation, I choose not to study Hoodia from the location of a single site. For instance, I do not exclusively conduct participant observation with such groups as the ǀKhomani San, or a non-profit organization representing the San, or even a bioprospecting lab of the South African CSIR. Although I do engage with members of each of these groups, I do not focus on them solely. Rather, this research project is designed to “follow the thing,” or in this case, the patented object of Hoodia. In other words, I become “mobile” to follow Hoodia’s travels to understand the connections, associations, and relationships that Hoodia produces, reflects, and contests. This enables me to produce a “biocartography” of the Hoodia plant examining its circulations through multiple sites varying in time and space.

Thus, I follow Hoodia by visiting South Africa and speaking face to face with activists and lawyers in Cape Town as well as members of the ǀKhomani San in Andriesvale and Upington. I also speak to scientists in London, governmental officials in Pretoria, and activists in Germany through the power of Skype Internet phone service. I also visit Hoodia in the Bolus Herbarium Library archives at the University of Cape Town where colonial botanists from

London's Kew gardens produced the first written accounts of the plant. My travels also take me to the !Khwatla San Culture & Education Centre in Yzerfontein, South Africa where the story of Hoodia is publicly exhibited as a symbol of hope and promise for San peoples and their rights to self-determination. I also travel into the Karoo desert to visit an South African farmer who grows Hoodia for sale to international indigenous plant markets. Following Hoodia also takes me to the South African San Institute in Upington, where San community leaders continue to protect their knowledge about the plant and restrict access to information. Finally, I follow Hoodia as it comes via the Internet to my computer in Los Angeles through website content and online documents. I witness its fragmentation in patent specification documents from the United States Patent and Trademark Office, its importance as a model case study in documents from the World Intellectual Property Office and Convention on Biological Diversity, its signification as a treasured South African indigenous resource in bioprospecting legislation from South Africa, its future as a medical treatment for obesity in statements from Phytopharm and Unilever, its hope as an exotic cure for weight-loss in advertisements from herbal supplement companies, and its declining promise as a salvation for San peoples as stakeholders discuss the latest developments over Hoodia benefit-sharing and strategize new directions in the form of fair trade farming of the plant. My travels following Hoodia are thus extensive. My research design also involves directly challenging conventional forms of ethnographical, socio-legal, and science studies methods.

D. Challenges to Conventional Ethnographic, Socio-legal, and Science Studies Methods

1. Contesting Objective Truth Claims and Thick Description in Ethnography

In his essay, Marcus states that multi-sited ethnography challenges conventional ethnographic methods because it involves an element of construction. This is in contrast to understandings of ethnography as discovering some natural or objective "truth." In studying the

object, a multi-sited ethnographer simultaneously constructs meanings and relationships through her selection of particular sites and the associations and connections she suggests. (Marcus 1995, 96) This element of construction, however, sits comfortably within the insights of postmodernism that recognize the role of the ethnographer in producing meaning and working within institutional, financial, and cultural restraints. (Marcus 1995, 99)

In selecting sites for the investigation of Hoodia, I restricted myself to examining sites of inquiry that were accessible to my location in the Western Cape and Northern Cape of South Africa. This enabled me to produce a rich account of Hoodia centered upon the ǀKhomani San community in Upington and lawyers, farmers, and activists in Cape Town working on their behalf. I also focused on sites that were accessible to me via the Internet from my location in Los Angeles such as legal documents, company websites, and major newspaper accounts. I selected sites that were most connected to my own expertise, interests, and political alliances and took into account family and financial constraints that restricted my ability to live in South Africa for an extended period.

Thus I chose not to conduct detailed observations of the bioprospecting labs in Pretoria or in London. This would have been futile anyway since at the moment of my arrival in South Africa, Unilever terminated in Hoodia lab research. My engagement with Hoodia in those spaces is restricted to phone interviews with officials in those labs, their writings, and their public statements in websites and newspapers. I also chose not to visit the South African Companies and Intellectual Property Office in Pretoria due to lack of funds. I limited my examination of Hoodia and its relationship to patent law by electronically ordering the Hoodia patent documents from both the U.S. and South Africa via the Internet or through a legal document service. I also chose not to travel to Namibia or Botswana to interview other members of San communities.

Rather, I restricted my research to speaking with members of the †Khomani San who were the strongest leaders in negotiating the Hoodia benefit sharing agreement. This is perhaps the biggest limitation of my research. It fails to capture a fuller picture of how other San communities gave meaning to Hoodia in different ways. The emphasis is placed on the Hoodia plant itself in order to understand how Indigenous knowledge and indigeneity are excluded, devalued, contested, and re-imagined by multiple actors and institutions. The drawback is the exclusion of San communities other than the †Khomani San. I give a nuanced account of the †Khomani San, but by attention on the †Khomani San should not be interpreted as saying other San communities were not involved in Hoodia negotiations. These inclusions and exclusions of sites were my way of bounding the project to a manageable size and they reveal some of the project's limitations. Excluding some sites, however, has the benefit of leaving room for others (or myself) in the future to provide more robust accounts of the circulations of Hoodia by engaging with other San communities or with more scientists in bioprospecting labs working in derivative Hoodia research.

Marcus also warns that multi-sited ethnographies challenge conventional modes of ethnographical inquiry. Such approaches run counter to conventional modes of ethnography where researchers become embedded in a local community. (Marcus 1995, 99) They also contest the emphasis on producing “thick descriptions” of phenomenon within those local communities, as advanced by sociologist Clifford Geertz. (Marcus 1998) My project participates in this contestation by not exclusively focusing on a particular San community and their relationship with Hoodia. Rather, I become embedded in following Hoodia through multiple spatial and temporal geographies and produce descriptions of its travels that are rich, but likely not interpreted as “thick” by conventional ethnographic standards.

Multi-sited ethnographies also challenge conventional ethnographic privileging of the subaltern by shifting the focus of attention to other domains. (Marcus 1995, 102) Marcus notes that a multi-sited ethnography does not merely add to subaltern perspectives or “study up,” rather it examines a new object and its corresponding narratives. (Marcus 1995, 101-02) My study shifts the focus of attention to other domains such as patent specification documents and biotechnology companies in a way that disrupts ethnographic privileging of the subaltern. Yet, the project is designed and conducted in a way that continually foregrounds the concerns of the †Khomani San, so there is some element of “privileging” that does occur. It is, however, my focus on the emergence of Hoodia as a new object of symbolic capital and material wealth and its attachments to gendered and ethno-racialized and indigenous narratives that is at the heart of this project. In addition, Marcus notes that multi-sited ethnographies are not a conventional comparison because they do not operate on a linear plane. (Marcus 1995, 102) Rather, a multi-sited ethnography develops by tracing movement along fractured planes as the ethnographer maps an object of study and posits logics of relationship between the various spatial and temporal sites within which it travels. (Marcus 1995, 102) Earlier in this project I contemplated a comparative study with the patenting of the taro plant in Hawaii. However, mapping the Hoodia plant through various spaces and comparing its associated narratives across those spaces seemed a valuable project on its own in order to get at the detailed mechanisms of power involved. My hope is that this project will serve as a methodological and theoretical model for scholars to engage in such a comparative of project of how multiple patented objects circulate within diffuse time and space.

2. Stretching “Top-down, Bottom-up” Methods within Socio-legal Studies

My project also challenges conventional forms of socio-legal scholarship by stretching what is considered a “top-down, bottom-up” approach. Such an approach examines law on the books (i.e., top) and how local groups interact and perceive such laws (i.e., the bottom). (Nader 1980) It has also been used to valuably show how local groups in a post-colonial context negotiate a legal pluralism involving multiple normative orders of customary, nation-state, and colonial law. (Comaroff and Roberts 1981) Socio-legal scholars have been concerned that this approach continues to view international, national, and local law as static spheres that are discrete from one another. Boaventura de Sousa Santos argues against “the legal pluralism of traditional legal anthropology in which the different legal orders are conceived as separate entities co-existing” and calls for “an intersection of different legal orders.” (Santos 2002) Santos, however, does not abandon the need for a top-down, bottom-up approach. In fact, Santos calls for an approach that engages with “law from below,” which will be discussed shortly.

My project therefore responds to these concerns by studying how a patented object circulates. This enables an examination of how legal norms at the international, national, and local levels intersect, travel, and inform each other. I move away from a root metaphor of vertical arrows pointing up and down, and embrace a figure of movement and circulations. In tracing the circulations of Hoodia, I am able to examine an assemblage of legal orders ranging from †Khomani San customary norms, †Khomani San prior informed consent rules, South African bioprospecting legislation, U.S. patent law, and other relevant international laws from the World Intellectual Property Office, Convention on Biological Diversity, and World Trade Organization. This research therefore engages in a modified top-down, bottom-up approach by examining how †Khomani San communities interact with patent law and international access and

benefit sharing legislation. However, by mapping Hoodia's travels, this research engages with these legal orders not as discrete categories, but as circulating legal norms that continually converge and shift, producing new legal assemblages in response to various social needs and structures of power. This is aided by an emphasis on the study of law (and science) from below.

A methodology of law from below encourages researchers to explore how law is used as a counter-hegemonic tool by social movements and marginalized communities. This then enables scholars to “study-up” by examining legal and regulatory norms and institutions. Santos and Rodríguez-Garavito claim that law and society studies, despite attention to the use of law by social movements, have failed to take into account the populations most harmed by hegemonic globalization. (Rodríguez Garavito and Santos 2005, 3) There is a need for examining growing grassroots social movements and how they are forming alternative legal frameworks in their contestations against neoliberal institutions. Their “bottom-up” approach to studying law and counter-hegemonic globalization is called a “subaltern cosmopolitan legality.” (Rodríguez Garavito and Santos 2005, 5) It entails inquiring into how groups employ legal, illegal, and non-legal strategies in advancing their claims. It also pays attention to how marginalized communities generate “rights-centered strategies” that move away from individual, autonomous conceptions of rights towards understandings of entitlement claims based in notions of collectivity and solidarity. Such strategies are also furthered through sustained political mobilization to bring about legal change. Finally, this approach examines how these strategies are operationalized across scales of state and non-state legal orders within an increasingly plural legal landscape. As conceived by Rodríguez Garavito and Santos, a subaltern cosmopolitan legality is a socio-legal approach, but it also explains the legality itself that is embraced by grassroots social movements and marginalized communities in their efforts against globalization.

Rajagopal similarly argues for and conducts a bottom-up approach to the study of law. (Rajagopal 2003) His particular project shows how the architecture of international law has shaped and been shaped by the resistance strategies of Third World social movements. His study counters normative conceptions of international law as constituted by key states or institutional actors. By “writing Third World resistance into international law,” Rajagopal seeks to enable international law to better recognize subaltern voices. (Rajagopal 2003, 45) His work is a good example of studying up as he examines Third world social movements in order to change understandings of international law. In the case of Hoodia, a law from below approach enables me to investigate how the story of Hoodia involves counter-hegemonic strategies against neo-liberal globalization and international patent law regimes. For instance, I ask how are San communities using legal strategies such as benefit sharing to resist patent law? I also ask how are those involved in resisting the patenting Hoodia (e.g., San communities and small farmers) re-imagining citizenship through alternative legal models? In addition, I question how has patent law itself shaped and been shaped by recent demands of globalization that require gendered and Indigenous knowledges to remain freely accessible as “raw material?” Thus, I similarly engage in a study of law from below that involves studying up.

I somewhat differ, however, from these authors and how they envision law from below. Their projects and theorizing come out of their focus on social movements such as the World Social Forum and the Working Women’s Forum in India. These large-scale grassroots movements against globalization and unfair working conditions involve hundreds of thousands of people and a complex institutional structure supporting it. My project however does not study a grassroots social movement. Rather, it examines one particular local/global struggle against patent law. Struggles over Hoodia though are connected to larger Indigenous social movements

against patent law, as some members of the †Khomani San participate in international forums and conferences that sustain such movements. Given their lack of resources, however, their connection to such larger movements and institutions can be limited. Thus, my project employs a law from below approach, by examining one particular slice, one specific struggle within a constellation of grassroots campaigns against patent law. It also differs in that it focuses on circulations. My project seeks to understand counter-hegemonic strategies against patent law by tracing the movement of the patented object and how it is constructed over time. This enables me to see relationships between modes of power in nuanced ways and shift away from models of hegemonic v. counter-hegemonic towards an understanding of hegemonies as “scattered.” (Grewal and Kaplan 1994)

3. Challenging Modernity’s Science in Science and Technology Studies

This project contributes to science and technology studies by using and stretching a “sciences from below” methodology. Sandra Harding claims that the field of science and technology studies fails to take into account post-colonial and feminist politics, and the multiple modernities that they reveal. (Harding 2008) Critical science studies projects do not consider male supremacy and Eurocentricism/colonialism/imperialism as shapers of science. (Harding 2008, 94) Thus, Harding argues that in order to create knowledge that meets the interests and needs of women, scholars should “start off research from women’s lives in households,” rather than the conceptual frameworks of the disciplines. (Harding 2008, 225) Such a project is meant to “identify, explain, and transform the conceptual and material practices of power of the dominant institutions, including research disciplines, in ways that benefit those who are least advantaged by such institutions.” (Harding 2008, 225) This means thinking about modernization, tradition, and political economy, for example, from the standpoint of women’s activities related

to households as “sites of production for exchange and sites for the organization of community political and social life more generally.” (Harding 2008, 228) For example, Harding asks how might research on nuclear fission or the ozone layer account for the effects of these scientific projects on households and those responsible for them? In the case of Hoodia, however, the question becomes how might research on the bioprospecting and commercialization of genetic and biological material derived from Indigenous knowledge account for the effect of these science projects on women’s lives in households?

My project employs this “science from below” approach by starting off research of patent law from women’s lives in households, as opposed to the dominant scripts of patent law coming from law and economics. This does not mean that I investigate patent law from the “perspective” of women. A standpoint is not a perspective, but a political achievement. (Harding 2004) Rather, my research flows from political struggles around patent law articulating its consequences for women in households.

Thus, I start off thinking about patent law from the articulations of Indigenous women’s social movements as referenced in Chapter One. Declarations by such social movements argue that patent law devalues Indigenous knowledge and threatens Indigenous resources and heritage, particularly those knowledges produced by women.³¹⁷ They assert that patent law becomes a tool for furthering and legitimating practices of bioprospecting. Furthermore, these declarations make their claims through symbolic gendered discourses, evoking the authority to speak against patent law as women who are “daughters of Mother Earth” who are responsible “for the health of [their]

³¹⁷ "Beijing Declaration of Indigenous Women," ed. United Nations Fourth World Conference on Women NGO Forum (Beijing, China1995), 7. http://www.ipcb.org/resolutions/htmls/dec_beijing.html (accessed December 23, 2009)

Peoples and environment.”³¹⁸ In other words, Indigenous women’s social movements draw upon their experiences and responsibilities for households in order to claim authority and politically organize against patent law.

Thus, I start my research by questioning how scientific practices of bioprospecting, as enabled by patent law, devalue and threaten Indigenous knowledges, resources, and heritage. In particular, I ask how the patenting and commercialization of Hoodia obscures San women’s knowledge of the plant and endangers their use of the plant. In interviews with members of the ꞤKhomani San, therefore, I ask how knowledge of the plant is gendered and how members of the community articulate different uses of the plant. This is just a starting point though.

In my investigations of Hoodia, I begin to move away from the work of Indigenous women’s social movements and their common articulations of a “no patents on life” position. My project shifts to consider how the San and their representatives simultaneously embrace a “no patents on life” position, while also becoming stakeholders in the success of the Hoodia patent as it ensures them money through their benefit sharing agreement with CSIR. I also begin to examine how the Indigenous San have also used patent law as a counter-hegemonic tool to contest science itself by asserting Indigenous knowledge as valuable scientific knowledge and by re-envisioning scientific practices to encourage more ethical partnerships between scientists and Indigenous communities. I continue to think through these relationships with a critical focus on complex, gendered social relations.

Yet, my starting point emerging from Indigenous women’s social movements soon becomes more complicated and nuanced. Starting off research from these standpoints reveals more illuminating critical questions to investigate patent law, producing a less partial and

³¹⁸ "The Manukan Declaration," ed. Indigenous Women's Biodiversity Network (Manukan, Malaysia 2004). <http://www.ipcb.org/resolutions/htmls/manukan.html> (accessed December 23, 2009).

distorted account of patent ownership that is more objective. (Harding 2004) A “sciences from below” approach enables this project to develop a critical insight towards dominant frames of patent law arising from law and economics and its incentive theories. Standpoint theory, however, is also limited. It has been criticized as essentialist, particularly by women of color, who have asked whether or not women have access to better knowledge given their marginal positions and if so who can speak for whom? (Fonow and Cook 2005) In response, I start off research not from an essentialist position of “Indigenous woman,” but rather through the political struggles of Indigenous women’s social movements who have collectively worked to achieve a political standpoint against patent law as evidenced in their writings and political work. Yet, again, this is just a starting point. My research into struggles over Hoodia produces accounts that actually bring complexity around the “no patents on life” positions taken by some Indigenous San women’s social movements and indicate how such movements themselves contain contradictory interests and positions related to patent law and benefit sharing.

4. Inclusion of African and Indigenous Feminist Methodologies

A feminist critical cartography of circulations involves a multi-sited, ethnographic study of the movement of scientific/regulatory objects such as Hoodia. Its emphasis on movement challenges conventional ethnographic methods centered on developing objective truth claims through producing thick descriptions of phenomena. It also contests socio-legal studies and science studies by studying patent law from below. This is in order to critique institutions and modes of power such as patent law and bioprospecting. It is also decidedly feminist. It draws its strength as a method from feminist methodologies. In the case of Hoodia, the most relevant of those are Indigenous and African feminist methodologies. The inclusion of feminist methodologies challenges conventional forms of research by bringing in a gender-based and/or

feminist approach to the study of patent law, which ensures complex, gendered social relations will be taken into account. Incorporating Indigenous and African feminisms also serves to challenge certain approaches within feminist research as well.

Indigenous and African feminisms provide similar, yet different, tools for examining Hoodia. (Arnfred and Codesria 2004; Green 2007; Moreton-Robinson 2000; Nnaemeka 2003; Ouellette 2002; Oyěwù mí 2005; Smith 1999) Such feminisms are by no means homogenous. Tensions and contradictions exist within this scholarship. Yet, through various heterogeneous approaches, each provides critiques of western feminism for its tendencies to universalize categories of gender, exclude men from analyses, and inadequately address how western women benefit from the appropriation of resources from the “Third World” and “Fourth World.” Oyěwù mí points out that western feminism has been primarily concerned with how gender hierarchies have been shaped through a mind/body dualism undergirding western rational thought. (Oyěwù mí 2005, 5) She notes that gender hierarchies are not always grounded in such “body-reasoning.” For example, certain societies in Africa such as Yoruba culture exhibit social roles based on seniority and age, rather than on gender. Oyěwù mí argues “that discussions of social categories should be defined and grounded in the local milieu, rather than based on ‘universal’ findings made in the West.” (Oyěwù mí 2005, 15) Moreton-Robinson similarly argues that feminist theorizing around the politics of difference “continues to be underpinned by a deracialized but gendered universal subject” that obscures gender relations within Aboriginal societies. (Moreton-Robinson 2000, xviii) Whiteness is left unexamined as a source of inequality and oppression. (Moreton-Robinson 2000, 58)

Scholars also go on to criticize the exclusion of men from feminist analysis. Jaimes and Halsey note that Euro-American feminism fails to recognize, for instance, non-hierachal

relationships between American Indian men and women. (Jaimes and Halsey 1997, 304) Oyěwùmí also claims that the tendency within Western feminist discourse to single out women implies that African societies are male-dominated and anti-women. (Oyěwùmí 2003, 33) Furthermore, scholarship in this area shares similar concerns that western feminist research leaves white women's privilege unexamined. Steady notes that gender research in Africa should recognize that white women can become primary oppressors of African women. (Steady 2005, 319) Moreton-Robinson argues that feminism must recognize that all white women benefit from the colonialization of Aboriginal peoples in Australia. (Moreton-Robinson 2000, xxv)

As these criticisms demonstrate, African and Indigenous feminisms share some common critiques of western feminist theory and research. These critiques are important to consider when researching patent law struggles related to Hoodia. This project therefore considers how gendered social relations and discourses differ in the local milieu of South Africa and the !Khomani San community. As a researcher, I also take account of my own subject-position as white and from the U.S. through various strategies while conducting interviews and analyzing the data.

Indigenous and African feminisms are also quite divergent from each other. Given variegated histories of colonialism and neo-liberalism, Indigenous and African feminisms differ, for example, around conceptions of "self-determination" and "sovereignty." Such delineations generate disparate strategies for political and legal action. These terms are used in different ways in different contexts, and are by no means the same. They are central to theorizing within Indigenous feminisms, whereas African feminisms seldom emphasize these concepts. In the context of American Indian struggles, Vine Deloria explains that the term self-determination was adopted during the 1960s in campaigns against the Bureau of Indian Affairs. (Deloria Jr. 1998,

26) It was used in Indian policy discussions and deliberately chosen in order to make comparisons between Indian Nations and those African and Middle Eastern nations given self-determination in the mandates after World War I. (Deloria Jr. 1998, 26) On the other hand, Vine Deloria notes that sovereignty refers to powers of authority possessed by tribes that can be asserted against another sovereign authority such as the U.S. government. (Deloria Jr. 1998, 26) In other words, acting like a sovereign against another sovereign might get you some rights of self-determination. Thus, self-determination is closely connected to sovereignty. Although one can distinguish these two terms, scholars often use them interchangeably. Smith writes that what is at the heart of Native struggles for sovereignty is control over land and resources, while transforming the neo-colonial relationship between the United States and Native peoples. (Smith 2007, 103) Smith conceptualizes claims for Native sovereignty as a larger project also benefiting people of color and Third World countries because it goes towards changing the model of the nation-state, based on domination and coercion, to a nationhood based on interrelatedness and responsibility. (Smith 2007, 104-05) In terms of self-determination, La Rocque envisions it as extended to collectives and individuals, while involving the power to make choices and have intellectual freedom. (LaRocque 2007, 60-61) These are just some conceptions of these terms and what they mean in particular to American Indian communities.

Emphasis on sovereignty and self-determination are not as central to and are often absent from African feminist writings. Questions of sovereignty, if expressed, are in reference to the nation-state. Self-determination may also be stressed, but it is often divorced from issues regarding sovereignty. These terms are thus used more loosely within African feminisms. Indigeneity is also evoked within some African feminist writings to connote a non-western, pre-colonial theorizing and identity. Indigeneity is referenced therefore more in connection to the

local. (Nfah-Abbenyi 2005, 262-63; Steady 2005, 316) As tools for feminist theorizing, Indigenous feminisms and African feminisms offer much insight for generating knowledge around the patenting of Hoodia. Delineations around sovereignty, self-determination, and indigeneity, however, lead to variable strategies for claiming rights. Scholars from Indigenous communities with more established forms of governance and legal protections such as American Indians, Canadian First Peoples, Australian Aboriginals, and New Zealand Maori produce much of the scholarship characterized and currently circulating as Indigenous feminisms. In petitioning for rights and entitlements, much of this writing speaks out against the nation-state and emphasizes, rather, Native Nations' own tribal laws as sources of governance. (Smith 2007) Tribal law is considered the primary source of law, in contrast to, the western, colonizing laws of the nation-state. Tensions though exist over the usefulness of Indigenous or customary law within African feminisms.

Whereas Indigenous feminisms generally look towards tribal law as a source of rights for women, some African feminists are hesitant regarding customary law. Under the new South African Constitution, courts are now required to apply customary law so long as it is applicable to the legal issue at hand, is compatible with the Constitution, and consistent with any legislation specifically dealing with customary law. (Bennett 2004) Customary law can be a source of inequality for women in South Africa, for example, in terms of marriage and inheritance of property. (Mbatha et al. 2007, 161) Extensive debates regarding customary law occurred between women's groups and traditional leaders at the time of the Constitution's drafting. (Mbatha et al. 2007, 161) Thus, customary law is recognized and applied, but it must be compatible with the Constitution's Bill of Rights requiring equality and human dignity. This ensures that customary law will not be used to subordinate women. Difficulties continue to

persist though for Muslim women in South Africa. Muslim Personal Law (“MPL”) is not recognized as customary law and must be incorporated through statute, so it is more difficult to challenge sexist provisions within MPL. (Mbatha et al. 2007, 158) Customary law, therefore, is not always considered the primary source of law to protect women’s rights. These tensions inform a study of the patenting of Hoodia.

Although considered to be Indigenous peoples of South Africa, South African courts are rarely faced with making decisions regarding the customary law of San society. Issues of customary law generally flow from tribal laws and courts established within six of South Africa’s new provinces making up the National House of Traditional Leaders.³¹⁹ (Bennett 2004, 115) Houses of Traditional Leaders were not set up in the Northern Cape or Western Cape where San authorities are emerging and could provide evidence and testimony of San customary law to the courts. In theory, the courts could apply San customary law, but because they are not represented within the official institutional structures facilitating customary law, South African San communities would find it difficult to assert their customary law as a primary source of governance. Recognition of customary law also does not mean that Indigenous communities are treated as sovereign Nations within South Africa. Conditions of indigeneity therefore manifest themselves very differently. Peoples governed by customary law under the National House may claim indigeneity in ways that radically differ from San communities. Indigeneity also functions differently than it does in the U.S. with American Indian populations who have the authority to assert themselves as sovereign territories (although this authority is fragile). The complexity of indigeneity in South Africa and, in particular, how it relates to San communities requires caution when drawing upon Indigenous feminisms and African feminisms, which may be grounded in

³¹⁹ The six provinces include Free State, KwaZulu-Natal, North West, Limpopo, Eastern Cape, and Mpumalanga.

very different assumptions of sovereignty, self-determination, and indigeneity. Nonetheless, Indigenous feminisms and African feminisms provide important methodological considerations for helping me think through this research project. A feminist critical cartography requires researchers to engage with feminist methodologies most relevant to their object of inquiry. In the case of Hoodia, Indigenous feminisms and African feminisms provide some of the most valuable insights for researching and writing this project.

II. Opening up the “Data”

A multi-sited ethnography of the circulations of a patented object requires nuanced techniques and strategies for understanding and examining the data collected. In the above section, I explained the various temporal and spatial sites from which I did and did not collect data regarding the Hoodia plant. I now turn to elucidate my approach for interpreting such data. This project employs a postmodern/constructivist grounded theory approach, supplemented by situational analysis, as developed individually by feminist sociologists Adele Clarke and Kathy Charmaz. (Charmaz 2006; Clarke 2005) This approach is valuable because it offers principles and practices for qualitative research informed by postmodern and post-structuralist critiques of knowledge/power.

In brief, I use strategies of grounded theory coding to define what is happening in the data and what meanings are produced. (Charmaz 2006, 46) Codes are further analyzed and compared for central themes through processes of memo writing as I analyze each text and image gathered both individually and collectively. I then analyze the data more deeply and relationally by producing maps to examine the patented object within the situation of inquiry itself. (Clarke 2005, 83-144) These maps help me to articulate how knowledge regarding Hoodia and the producers of such knowledge, including myself, are “situated” within various individual

and structural social relations. Furthermore, I use Atlas.ti, a qualitative software package, to aid me in organizing the collected data, generate the codes, and write memos onto my computer. Opening up the data in this manner enables me to produce a partial theorizing, rather than a grand theory or truth, related to the circulations of Hoodia. This section will continue to further explain how this project employs this approach.

A. Fracturing and Suturing Data through Coding Practices

This project employs techniques of grounded theory coding and memo writing as articulated by feminist sociologist Kathy Charmaz. (Charmaz 2006) Traditional grounded theory coding methods were first developed by Glaser and Strauss, and then taken in different directions by Strauss and Corbin. (Corbin and Strauss 2008; Glaser and Strauss 1967) The conceptualization of data through coding is the key to producing classic grounded theory. (Holton 2007, 266) Coding enables the researcher to fracture the data and begin to conceptualize underlying patterns, which eventually reveal a theoretical explanation for the phenomena. (Holton 2007, 266) However, Charmaz takes a different approach to coding. She articulates a process of coding that is not meant to “discover” a theoretical explanation for the phenomena; rather, it enables the researcher to “construct” partial grounded theories through interaction with the data and the research process as a whole. (Charmaz 2006, 10, 2000) Thus, she uses the coding practices of classic grounded theory, but emphasizes a different way to move through and approach the coding process.

Coding enables the researcher to make the link between the data collected and emergent theories to explain the data. (Charmaz 2006, 46) Codes are assigned in a manner that emphasizes the actions and processes going on in the data. (Charmaz 2006, 46) The coding process therefore involves four of the following phases: (1) initial coding; (2) focused coding; (3) axial coding;

and (4) theoretical coding. Initial coding is conducted in an open manner and looks closely at the actions within the data. (Charmaz 2006, 47-48) Charmaz notes that researchers should keep an open mind while coding data, but she disagrees with classic grounded theorists who stress that initial coding should be done without any preconceived concepts in mind. (Charmaz 2006, 48) Charmaz acknowledges and finds it useful that researchers come to the coding process with prior ideas and skills concerning theoretical literatures and research settings as well as their own positionality. (Charmaz 2006, 48)

In my own case, I engage in the coding process already having read theoretical literature related to the topic. I am also reflexive, but admit to a tendency to develop codes that “bring it back to the law.” I try however to stay open minded and stick closely to the data as much as possible. Initial coding also involves the process of developing special *in vivo* codes. These are codes adopted directly from participants’ own language and are used to problematize participant’s implicit meanings regarding Hoodia. For example, I develop the *in vivo* code “Hoodia is life” directly from interviews with members of the †Khomani San and problematize the implicit meanings of “life” that they are referring to.

The second phase is focused coding where the researcher categorizes data by choosing the most significant or frequent codes developed from the initial coding process. (Charmaz 2006, 57) This allows the researcher to begin making comparisons across data. (Charmaz 2006, 59) I choose “Hoodia is life” as a frequent code arising from interviews with the †Khomani San and I compare it with how other participants are describing Hoodia.

Axial coding is the third phase and involves relating categories and subcategories of codes in order to reassemble the fractured data and give it some coherence. (Charmaz 2006, 60) Axial coding enables a researcher to examine the broader context and relationship between codes and

ask “when, where, why, who, how, and with what consequences.” (Charmaz 2006, 60) For example, in analyzing how participants describe the Hoodia plant, I develop codes that try to explain how the action of describing the Hoodia plant is situated within the historical, political, legal, cultural, and socio-economic. This helps me to further explain why the †Khomani San refer to the plant as “life” whereas other participants and discourses describe it as “appetite suppressant” or “P57 compound.”

The final phase is theoretical coding. This is where the researcher develops codes that specify specific relationships between substantive categories of codes and that move the analysis towards a theoretical direction. (Charmaz 2006, 63) Charmaz cautions though about the development of theoretical codes that “give an aura of objectivity.” (Charmaz 2006, 66) Clarke also offers an alternative to this theory building stage of coding. She asserts that the process of grounded theorizing is sufficient. (Clarke 2005, 28) Rather than developing a definitive theoretical concept, Clarke suggests the use of *sensitizing concepts*. (Clarke 2005, 28) Sensitizing concepts avoids prescription and “merely suggests directions which to look.” (Clarke 2005, 28) For instance, three of my primary sensitizing concepts were nature/cultures, difference, and re-invention. In conducting the final phase of coding, I therefore develop codes that move my examination towards sensitizing concepts, analytics, and theorizing, which offers an analysis of Hoodia that is robust not despite of its partiality and openness, but because of it. Writing memos becomes the link between assigning codes and developing sensitizing concepts.

B. Memo Writing, Reflexivity, and Ethnographic Fieldnotes

A postmodern/constructivist grounded theory approach also involves writing memos throughout the data collection and coding process in order to further analyze what is going on in the data. Memo writing is the crucial link between the coding process and writing up papers.

(Charmaz, 72) It can also be considered the analytic location and narrative record where the researcher is in conversation with the data and finds their own voice. (Lempert, 247) In the early stages, memos are written to record what is happening in the data and to elaborate codes. (Charmaz, 80) In the later stages more advanced memos are written to describe how categories of codes change, to make comparisons across your data, and to move the analysis towards sensitizing concepts. (Charmaz, 80; Clarke 28-29)

A postmodern/constructivist grounded theory approach adopts memo-writing techniques from classic grounded theory, but differs somewhat in its emphasis. Analytic techniques of memo writing in classical grounded theory pay inadequate attention to the need for researcher reflexivity or the incorporation of prior experience and knowledge. (Clarke 2005, 12-15; Corbin and Strauss 2008, 117-41; Lempert 2007, 254-55) A postmodern/constructivist approach, however, encourages researchers to write memos engaging in reflexivity about their own researcher positionality and the power relations among themselves and the research subjects. (Clarke 2005, 12-15; Lempert 2007, 248) Memo writing also allows the researcher to reflect upon how prior experiences and prior knowledge of scholarly literature factor into the research process. (Lempert 2007, 254-55) Memos thus become the location where insights from feminist methodologies can be analytically worked through and written down.

In researching Hoodia, I use memos to critically analyze the data, but to also to reflect on how my personal and professional experiences impact my interactions with research subjects and my analysis of the topic. How does my positionality as a female, white, feminist researcher from the United States create, reinforce, or contest power imbalances between my research subjects and myself? How does my volunteer work with the Indigenous Peoples Council on Biocolonialism and legal experience as both a human rights and corporate attorney give me

access to multiple spaces with varying degrees of power (e.g., †Khomani San, Unilever, Natural Justice), but also give rise to suspicion about my political commitments? Reflecting on these and other questions, I draw upon and make connections to feminist methodology literature, in particular, Indigenous and African feminist research methodologies, as discussed above. Memo writing therefore allows me to reflect throughout the research process on how my research on Hoodia contributes to “decolonizing methodologies.” (Smith 1999)

Memo writing also becomes a location where the links between ethnographic research and grounded theory become clearer. Grounded theory techniques of coding and analyzing data have been used to advance ethnographic research practice. (Timmermans and Tavory 2007) This research project conducts a multi-sited, ethnographic study of the circulations of Hoodia. As noted previous, this type of ethnographic research challenges conventional forms of ethnography and its emphasis on “thick description.” It does however employ some classic research techniques of ethnography such as the writing of fieldnotes. (Emerson et al. 1995; Hammersley and Atkinson 1995, 175-86) Fieldnotes are considered “inscriptions of social life and social discourse.” (Emerson et al. 1995, 8) Ethnographic researchers collect data while participating in the social settings of their informants. While observing data in the field, an ethnographic researcher uses fieldnotes to record observations within particular social contexts. (Hammersley and Atkinson 1995, 175) Fieldnotes allow the researcher to jot down notes about their initial impressions, key events or incidents, and how informants invoke meanings through specific relations and interactions. (Emerson et al. 1995, 26-28) In conducting fieldwork in South Africa, I observe Hoodia in a variety of social contexts and produce fieldnotes to record my observations. For example, I participate in the social settings of Hoodia by observing how it exists in the wild, in †Khomani San kitchen gardens, and on South African plant farms. I also

record fieldnotes on how Unilever and Phytopharm use the Internet to depict it as a “functional food” and how various botanical supplement companies represent it as a weight loss aid. Fieldnotes are also recorded during interviews to capture the social setting of the interviewee and their interactions with others. In participating in these social worlds, I thus use fieldnotes to describe the interactions of Hoodia across multiple spatial and temporal geographies and attend to when, where, and whom. (Emerson et al. 1995, 28)

Fieldnotes thus become important pieces of data in which I assign codes and analyze through memo writing. Fieldnotes are therefore different than memos. Grounded theory distinguishes fieldnotes as jottings produced in the field that may or may not contain some conceptualization or analytic remarks. (Corbin and Strauss 2008, 123-24) Memos on the other hand involve more in-depth analysis and are written in conceptual form after leaving the field. (Corbin and Strauss 2008, 124) Memo writing thus allows me to elaborate further on my fieldnotes and to move towards developing sensitizing concepts and analytics regarding Hoodia’s circulations.

This distinction between fieldnotes and memos is not exclusive to grounded theory. Instructive accounts of ethnography similarly align with grounded theory. For example, Emerson et al. comparably suggest the use of fieldnotes as data that should be coded through a process of open and focused coding that includes memo writing to analytically work through codes towards theory. (Emerson et al. 1995, 142-68) Grounded theory techniques of coding and memo writing thus should not be understood as counter to ethnographic research practice, but rather as a set of research practices and principles that enhance ethnography, including multi-sited ethnography. (Timmermans and Tavory 2007)

C. Situational Maps

A final technique to open up the data is the production of situational maps within a postmodern/constructivist grounded theory framework. Clarke suggests the use of situational maps and analysis as a way for “bringing grounded theory around the postmodern turn.” (Clarke 2005, 29) These techniques are used to analyze a situation of interest as embedded within particular social, cultural, economic, political, and legal contexts. (Clarke 2005, 29) Clarke takes the importance of addressing “context” further by arguing that the “contextual elements are actually inside the situation itself. They are constitutive of it, including structural and power elements...” (Clarke 2005, 30) Situational maps and analysis are used to produce cartographies of how a situation of inquiry is embedded within co-constituting relations of power. Thus in the case of Hoodia, I use such techniques in a study of Hoodia to examine how gendered, indigenous, and ethno-racialized narratives and relations of power are enacted through and embedded within new mechanisms of co-constituted legal, scientific, and market technologies within current conditions of neo-liberal globalization.

There are three types of situational maps and analysis in which to produce. These include the following: (1) situational maps; (2) social worlds/arenas maps; (3) and positional maps. Situational maps are used to articulate the elements within a situation and the relations among them. (Clarke 2005, 86) Producing this map involves charting all the human and nonhuman elements involved in the situation of inquiry, including the “ideas, concepts, discourses, symbols, sites of debate, and cultural stuff” that matter to the situation. (Clarke 2005, 88) These also get at the symbolic meanings/discursive constructions within the research and look for “sites of silence” within the data. (Clarke 2005, 85) In making situational maps of Hoodia, I chart elements such as the key individuals involved in negotiating the benefit sharing agreements, the

collective organizations such as the South African San Council, the nonhuman elements such as the Hoodia plant and its accompanying technologies within the CSIR laboratories, and the related historical and visual discourses such as the representation of the San within practices of colonial science to the 1980 U.S. film, *The Gods Must be Crazy*. Once I complete the situational map, I start asking questions and looking for relations among the elements, while recording my analysis through writing memos.

The second type is a social worlds/arenas map, which charts “collective commitments, relations and sites of action.” (Clarke 2005, 86) These maps plot the level of social/symbolic interaction where individuals become ever-changing social beings through their commitments and participations within social worlds. (Clarke 2005, 110) The point of these maps is to make collective sense out of the situation of inquiry. (Clarke 2005, 110) Their key task is to identify the key social worlds and to specify variations within and between worlds. (Clarke 2005, 111) In my research on Hoodia, I produce such maps by first identifying the “Hoodia struggle arena” and then distinguishing the key social worlds within that arena. For example, such social worlds include, but are not limited to, the Convention on Biological Diversity, US Patent and Trademark Office, South African CSIR, Natural Justice, and the Working Group on Indigenous Minorities in Southern Africa. After finishing the map, I write memos that describe each major social world, its activities, and make comparisons between them. The goal is to understand how each social world establishes and maintains boundaries in order to gain social legitimization and to make particular claims. (Clarke 2005, 113)

Positional maps are the third type of map/analysis and are used to plot articulated and non-articulated positions in discourses. (Clarke 2005, 86) These maps lay out the “major positions *taken in the data* on major discursive issues.” (Clarke 2005, 126) Drawing upon post-

modern theory, positions should be charted on their own and independent from associations with individuals or groups. (Clarke 2005, 126) Positional maps are therefore charting “positions in discourses,” including positions not taken. (Clarke 2005, 127) Clarke argues that this technique enables the researcher to see situated positions more clearly by stepping outside of the politics of representation/identity and analytically focusing on the space in between actors to freshly analyze positions and their emerging qualities. (Clarke 2005, 127) This map is particularly important to this research project given its focus on circulations. In charting positions taken in the data on their own terms, I get a better sense of how Hoodia is discursively constituted in ways that are continually mutating, converging, diverging, and contradictory. Positional maps enable me to chart the articulation and non-articulation of discursive positions along transnational axis of power.

In sum, techniques of postmodern/constructivist grounded theory are employed to open up and analyze the data. The principles and practices of this qualitative research approach are highly conducive to examining data collected through a multi-sited, ethnographic research strategy. More importantly, it is an approach that emerges out of post-modern feminist theorizing and provides practices of coding, memo writing, and mapping meant to advance feminist knowledge production. The discussion thus far has outlined a research design employing a multi-sited ethnographic research strategy advanced by postmodern/constructivist grounded theory techniques. A multi-sited, ethnographic research strategy is necessary for examining the circulations of Hoodia within transnationalism.

Techniques of postmodern/constructivist grounded theory are important for opening up the data in a manner that furthers feminist theorizing. My extensive discussion of these research strategies and techniques is deliberate and meant to offer a *feminist research design* for

conducting an intersectional analysis within conditions of transnational neoliberalism. My selection of this research design, however, is always and already informed by particular theoretical frameworks that provide methodological insights. In this case, it is informed by critical feminist theory generated within the fields of science and technology studies and socio-legal studies, which also make up the field of women's studies. In particular, feminist science studies, feminist legal theory, critical race theory, transnational feminisms, African feminisms, and Indigenous feminisms. I would also argue that selection of the research inquiry itself is also co-constituted by theory and research design. My interest in the political struggle of Hoodia flows out of my background in law and critical race feminisms. Likewise, my selection of research design shapes and is shaped by the political struggle of Hoodia itself and the theoretical frameworks of which I am familiar.

Feminist research design therefore is co-constituted by theoretical/methodological frameworks as well as the struggles it seeks to examine and find political "solutions" for. Thus, I now turn to a discussion of the theoretical/methodological frameworks that inform my choice of topic, selection of research design, and analysis throughout the research process. An introduction of theoretical/methodological frameworks could come in the beginning of the chapter or at the end because of the co-constituting manner of theory, research design, and research topic. Thus, its placement at the end of this chapter should not be interpreted linearly.

III. Theoretical/Methodological Frameworks

This research project draws upon two main fields of study in its analysis of patent law, which include science and technology studies and socio-legal studies. Each of these scholarly fields has produced valuable insights for critical studies of science and law. Such scholarship though does not always pay critical attention to complex gendered social relations embedded

within process of post-colonialism or neo-liberalism. Therefore, this research project draws upon feminist scholarship within these fields of study. In particular, it utilizes feminist and post-colonial science studies, feminist legal theory, critical race theory, African feminisms, and transnational feminisms focused on globalization. This section begins to frame this research project within these scholarly fields by briefly introducing some of their key contributions that provide important methodological insights for this project.

This is by no means a complete review of each, rather it is meant to introduce the historical trajectory of each field and some of the key themes that inform my analysis. It thus differs from the theoretical debates as previously mentioned in the Introduction and Chapter One. Science studies and legal debates over biopolitics, difference, citizenship, and public domain are those sites in which my research is directly drawing upon, challenging, and contributing to. In contrast, this section discusses more generally how the insights from the fields of feminist science studies, critical race theory, and feminist legal theory offer key theoretical/methodological insights for conducting my research and analysis of Hoodia patent law struggles. In doing so, I provide a “roadmap of translation” for scholars in these fields to make future interventions.

A. Science and Technology Studies–Feminist Science Studies

The historical beginnings of science and technology studies might be traced to 1962 with Thomas Kuhn’s *Structure of Scientific Revolutions*. (Kuhn 1962; Sismondo 2008) Kuhn’s work opened up new critical approaches to the study of science as a social activity that must be historicized. (Sismondo 2008, 14) Prior to Kuhn’s work, philosophers of science associated with the Vienna Circle espoused logical positivism or logical empiricism. (Hess 1997, 8) Their understanding of science held that statements are only meaningful if verifiable through a rational

and logical series of observations. (Hess 1997, 9) Positivism thus held that scientists induce theories of laws through observations. This understanding of science also supported the “unity of science” thesis. Positivists believed that theories across different disciplines are not contradictory, and that philosophies of science in one discipline can be transported to another. (Hess 1997, 15) Thus, positivists viewed science as located outside of history or culture. (Hess 1997, 13)

Not all positivists, however, asserted theories of science as inductive. Karl Popper argued that scientists establish a hypothesis first, and then use observations to refute it. Scientific statements are generated through a deductive process of falsification where theories are confirmed by failing to refute them. (Hess 1997, 20) Despite Popper’s refusal to adopt popular understandings of scientific method as an inductive process, his work remained similar to positivists. For example, he still understood science as a logical and rational process located outside of history, culture, or the social. Positivist understandings of science dominated philosophies of science from early 1900s through the 1960s and begin to shift with the emergence of Kuhn’s work.

Kuhn understood science as produced within a historical and social context. According to Kuhn, scientific statements are generated from within communities of scientists. (Kuhn 1962) Science is not unified in belief or method; rather it shifts according to particular historical and cultural conditions. (Kuhn 1962) Science is an intellectual project, but theories are not induced or deduced from logical series of value-neutral observations because those observations themselves are already theory-laden. (Kuhn 1962) The work of Kuhn paved the way for the articulation of the “strong program” in STS as the field turned to social studies of knowledge in the mid-1970s. (Sismondo 2008, 14) Attention was paid to how scientific claims were shaped by

the interests of scientists. (Hess 1997, 90) Scientific knowledge was the product not of passively observing scientists, but by groups of scientists engaged in particular activities shaped by the interests and values of society at a particular historical time. (Barnes 1977, 2)

The study of how interests shape science within STS then turned to how science shapes interests. Scholarship around actor-network theory (“ANT”) explains science and technology as a flowing along ever increasing networks of human and non-human actants. As networks expand, scientific knowledge claims become more accepted and social structures change. (Hess 1997, 108) Technoscience itself produces new interests and social structures as new conceptions of human/non-human boundaries emerge. (Haraway 1989) Much of this work in ANT was accomplished by laboratory studies in the 1990s that ethnographically examined the micro-processes of science as work in the laboratory. (Hess 1997, 100-06) These studies demonstrated how scientific claims are constructed, for example, through gendered assumptions and social relations. (Traweek 1988)

Another key theme in STS is the notion of co-production, in which historically situated relationships between science and society co-produce new forms of knowledge production and understandings of the social order. (Jasanoff 2004; Reardon 2005; Shapin and Schaffer 1985) Hess characterizes much of this later work as signaling a “cultural turn” in STS. In his review of science studies, David Hess characterizes this cultural turn in STS as associated with critical and cultural studies of science. (Hess 1997, 112-59) According to Hess, this includes the critical theory of such authors as Marx, Foucault, and Bourdieu and the feminist/anti-racist work of, for example, Haraway, Harding, and Traweek. (Hess 1997, 112-59) Feminist science studies, therefore, plays a large role in shaping recent directions in the field of science and technology studies.

In a recent essay, Banu Subramaniam takes on the difficult task of reviewing the field of feminist science and technology studies (FSTS), which is often cited as beginning in 1970 with Carolyn Merchant's *The Death of Nature*. (Subramaniam 2009, 951) She cautions that FSTS is a continually changing field produced by a range of scholars, yet it remains "moored" to particular ideas, frameworks, and critiques. (Subramaniam 2009, 953) One important site of mooring is to examine women *in* the sciences. (Subramaniam 2009, 954) This early work analyzing women's experiences in the sciences paved the way for contemporary FSTS focusing on women/gender *and* science. (Subramaniam 2009, 955)

More contemporary feminist critiques of science, according to Subramaniam, tend to revolve around six themes. The first includes critiques of the presumed biological determinism, scientific objectivity, and value neutrality of science in its production of knowledge regarding men and women. (Subramaniam 2009, 955) This includes work demonstrating how scientific understandings of biological sex differences are in fact produced and influenced by social, cultural, and historical assumptions of gender. (Fausto-Sterling 1985) FSTS has also demonstrated how biological race differences have also been similarly constructed. (Harding 1993) A second theme is a concern over the reduction of women's bodies to their reproductive capacities. (Subramaniam 2009, 957-58) This includes debates over whether or not women's reproductive labor is the source of their oppression or power, and the more recent critiques of reproductive technologies where new practices around race, class, and gender emerge. (Franklin and Roberts 2006; Subramaniam 2009, 957) A third theme is a critique of how gendered images, metaphors, and language shape science. (Subramaniam 2009, 958) In addition, a fourth theme is the examination of science's construction of nature and environment, and its relationship to women. (Subramaniam 2009, 958) This work critiques dichotomous constructions of nature and

culture that re-imagine systems of nature/culture. A fifth site of mooring is the tracing of how science is embedded in markets, capital, and the economy. (Subramaniam 2009, 959) FSTS scholarship in this area examines the flows of global science as tied to industry by addressing, for instance, the circulation of biocapital, appropriation of indigenous knowledge, and practices of bioprospecting. (Hayden 2003; Schiebinger 2004; Sunder Rajan 2006) A sixth theme involves feminist philosophers of science contesting the value-free methodologies and epistemologies of science, while producing new modes of scientific knowledge production. (Subramaniam 2009, 960) Such new formulations include “situated knowledges” and “strong objectivity.” (Haraway 1988; Harding 1991)

The work of women/gender in science is also joined by feminist critiques of the culture of science. Anthropological studies of laboratory life show how scientific cultures and practices produce androcentric science. (Traweek 1988) Post-colonial science studies scholars also critique the cultures and practices of Western science and its relationship to colonialism, while bringing attention to the alternative knowledge systems, practices and sciences often obscured by Western science. (Harding 2008, 1998; Subramaniam 2009, 961) These are just some of the key contributions of feminist science studies to the field of science and technology studies.

In my study of Hoodia, I draw from insights from feminist science studies scholarship within STS. My use of FSTS will become apparent throughout the remaining chapters of my dissertation. I only provide a brief summary here as a preview to how FST shapes my work and, in turn, is further stretched. For instance, FST literature on women’s experiences in science informs an understanding of how female scientists may have increased difficulty meeting new institutional requirements to patent their inventions. Feminist philosophical critiques of scientific objectivity and value-neutrality as well as anthropological studies of cultures of science help to

inform my inquiry of patent law as reinforcing reductive forms of scientific knowledge production that are gendered and ethno-racialized. In addition, I draw upon FSTS critiques of the gendered metaphors and language of science by examining metaphors within the legal language of patent law, for example, metaphors of “hunting.” (Flannery 2001, 630) FSTS scholarship that critiques binary constructions of nature and culture also becomes useful. I use this work to examine how patent law reinforces dichotomous notions of nature and culture, and to ask how San benefit-sharing agreements are re-imagining new understandings of nature/culture.

FSTS critiques of the relationship between science and economy are probably the largest body of work from which my research draws upon and contributes to. This work informs my examination of the transnational circulations of the patented object Hoodia across various global/local sites from Unilever to the †Khomani San. This is meant to understand the gendered and ethno-racialized narratives articulated within its circulations and the corresponding individual and structural social relations of power revealed by such narrative.

B. Socio-legal Studies: Critical Race Theory and Feminist Legal Theory

There are many theoretical/methodological insights within socio-legal studies from which to draw upon. Vago points to several approaches ranging from classical sociological theorists (e.g., Karl Marx, Max Weber, Emile Durkheim) to more contemporary intellectual movements such as Marxist legal theory, feminist legal theory, and critical race theory. (Vago 2006, 38-85) I frame my research and analysis through the theoretical and methodological tools of critical race theory (i.e., race crit) and feminist legal theory (i.e., fem crit). Designating this scholarship *within* socio-legal studies, however, is somewhat misleading. Critical race theory and feminist legal theory, as will be discussed, have their own historical and theoretical trajectories. They also maintain an uncomfortable relationship within socio-legal studies and continue to be situated at

its margins. (Houh 2006) Thus, I consider critical race theory and feminist legal theory not to be hierarchically organized subsets under a larger umbrella of socio-legal studies, but rather as a part of a loose coalition of fields of study aimed at examining the relationship between law and society. Critical race theory and feminist legal theory, therefore, should be recognized as situated both inside and outside of the institutional and scholarly bounds of what is conceptualized as socio-legal studies within the academy.

1. Critical Race Theory

Critical race theory emerged in the late 1970s when lawyers and legal scholars began to realize that the advances of the 1960s civil rights era were being rolled back. (Delgado and Stefancic 2001, 3-4) Writings within critical race theory differ in object, emphasis, and argument with no set canonical doctrines or methodologies. (Crenshaw 1995, xiii) Despite the differentiation, Crenshaw notes that two common interests unify critical race theory. (Crenshaw 1995, xiii) The first is to examine how the law creates and maintains white supremacy and the subordination of people of color. (Crenshaw 1995, xiii) The second is to work towards human liberation by proposing changes to the relationship between law and racial power. (Crenshaw 1995, xiii) These guiding principles structure much of the work in critical race theory and its central themes. An understanding of critical race theory though should begin with a brief mention of its historical emergence as an academic field of study. Then I will introduce some of the main themes of critical race theory that are relevant to my research project.

The historical emergence of critical race theory flowed out of concerns over institutional struggles within the legal academy. (Crenshaw 2002, 1344) Its beginnings are commonly traced back to student protests at Harvard Law School over the departure of a leading African-American legal scholar, Derrick Bell, and the marginalization of race within the legal

curriculum. (Crenshaw 2002, 1344-54) Rather than teach from the standard casebook method of analysis, Bell taught the course on “Constitutional Law and Minority Issues” by placing racial relations at the center of analysis to show how the law contributed to the systematic subordination of African-Americans. (Crenshaw 2002, 1347) Bell left Harvard in 1980 for the University of Oregon Law School to become one of the first African-American deans of an American law school. (Crenshaw 1995, xx) When students asked law school administrators to replace Bell with another leading professor of color to teach his course, administrators refused and implemented a three-week mini course on civil rights legislation taught by two visiting civil rights lawyers who were white. (Crenshaw 2002, 1350) A coalition of students of color boycotted the mini-course and organized their own “Alternative Course” by raising money to invite several academics of color to teach a chapter from Bell’s textbook. (Crenshaw 2002, 1350) The Alternative Course was a first step towards challenging the white supremacy of the law school curriculum and its institutional hiring practices, while setting the foundation for critical race theory.

According to Crenshaw, a second pivotal moment in the development of the field was the 1985 Critical Legal Studies Conference (“CLS”) organized by feminist legal scholars who invited scholars of color to organize a discussion on race. (Crenshaw 2002, 1355) A workshop was held on racism to contest why the whiteness of CLS kept people of color at bay. The internal critique of CLS resulted in heavy criticism from prominent liberal, white, male scholars and further promulgated the ambivalence scholars of color had towards engaging with CLS. Critical race theory, however, would later find more institutional support within CLS.

As Crenshaw notes, the 1987 CLS conference in Los Angeles proved to be a watershed moment where issues of race were given more institutional support. The race-turn in CLS,

however, was recognized as only a starting point and momentum grew for an institutional space exclusively for critical race theory. What resulted was a series of Critical Race Theory Workshops organized by many of those in participation at the 1985 and 1987 CLS conferences. Scholars of color were invited to the first workshop hosted by University of Wisconsin Law School in July of 1989. The series of workshops discussed such topics as what constituted critical race theory and if race should be theorized as distinct from other social relations such as gender and sexuality. Common themes emerged out of these workshops that linked scholarship together, namely “critiques of neutrality, objectivity, colorblindness, meritocracy, and formal equality.” (Crenshaw 2002, 1363) The workshops crystallized the formal organization of critical race theory and gave it institutional support.

The Harvard story, however, is not the only origin story of critical race theory. Other scholars have contested the centrality of Harvard as the birthplace of critical race theory by offering additional insights into the foundational history of critical race theory. Sumi Cho and Robert Westley present a historical narrative of critical race theory as embedded within student movements around struggles against the apartheid regime in South Africa and efforts to increase diversity at UC Berkeley Boalt Hall School of Law. (Cho and Westley 2000) Cho and Westley argue for the importance of critical race theory by acknowledging its relationship to student movements of the 1970s and 1980s, which contributed to its rise and made lasting changes within the academy around admissions, hiring, and curriculum development. (Cho and Westley 2000) Similarly, Richard Delgado argues that the denial of tenure to white leftist legal scholars such as David Trubek, Richard Abel, Staughton Lynd, and Anthony Platt released energies and talents that provided a foundational institutional grounding for the critical race theory movement. (Delgado 2009, 1544) Delgado argues that law school administrators, faced with concerns over

post-Brown students of colors entering the law school, strategically went about purging white radical legal scholars to reduce the likelihood of militancy and to promote students of color who would integrate peacefully with the capitalist mission of the law school. (Delgado 2009, 1517-21)

I would contend these authors provide a counter-history to the emergence of critical race theory that does not displace the Harvard story, but rather brings additional insights into how and why critical race theory developed within a particular historical moment. This historical context and its connection to institutional struggles and race-consciousness political organizing are central to understanding its core themes as a field of study.

Delgado and Stefancic suggest four central themes of critical race theory that offer key methodological points of inquiry against the law. (Delgado and Stefancic 2001, 15-35) The first is racial realism and interest convergence. Racial realism acknowledges the social construction of race, and desires changes to systems of meaning that perpetuate racial stereotypes, but it also recognizes racism as more than prejudice against other groups. Racism is a means by which society organizes and allocates privileges and material resources to some groups over others. Forms of racism historically shift over time with changing economic conditions and resources are often allocated to marginalized groups only when the interests for doing so converge with the self-interests of elite whites. For example, in a seminal piece by Derrick Bell, he suggests that civil rights advances were given to Blacks (e.g., *Brown v. Board of Education*) because it served the interests of U.S. policy during the Cold War, which was compelled to project a more favorable approach to domestic minorities in order to win the loyalties of Third World peoples of color. (Bell 1980) Mary Dudziak confirmed Bell's suggestion through careful archival work revealing that the U.S. Department of Justice intervened in support of school desegregation in

Brown as a response to several memos outlining the need to improve the U.S. image to the Third World. (Dudziak 1988)

My own work regarding the patenting of Hoodia similarly incorporates these theoretical/methodological insights that take the social construction and material reality of race into account. This research understands the racialization of the San peoples as changing over time. It recognizes the historical construction of San peoples as inferior racialized objects, for example, by addressing colonial representations of the San in the early 1800s, the ethnographic representation of the “Bushman diorama” at the South African Museum since the 1940s, and the popular film “The Gods Must Be Crazy” in 1980. Yet, it also addresses how the construction of San peoples as “other” helped to justify forcibly removing them from their lands, threatening their cultural heritage and languages, and exploiting them as low wage workers. I then attend to how these constructions of the San have been challenged by examining San benefit sharing negotiations. Such analyses give rise to a discussion of how relations of race, ethnicity, and indigeneity are evoked in different ways within Hoodia patent law struggles. It further speaks to how such struggles work to contest apartheid categories of the San as Coloured, while re-inventing San indigeneity. These changing histories and legal advances for San peoples form the backdrop for my larger examination of Hoodia benefit sharing agreements.

A second theme is that of producing revisionist histories of the legal system by bringing in narratives shaped not by the dominant historical narratives, but by the historical experiences of marginalized groups. (Delgado and Stefancic 2001, 20) An example of such revisionist history is accomplished by Robert A. Williams, Jr. in his article demonstrating how contemporary discourses within Federal Indian Law use the same racist narratives of the dominant legal discourses during the Removal era, in which tribal sovereignty was threatened by narratives of

Indians as culturally inferior and traditions of tribalism as incompatible with the dominant values of assimilation within society. (Williams 1989) My own research similarly participates in producing a revisionist history of the re-invention of Hoodia. Dominant narratives of the patenting of Hoodia in legal texts describe the patenting of Hoodia and its benefit sharing agreements within a fixed spatial and temporal narrative. Accounts are generally confined to the 1996 moment of patenting of Hoodia by CSIR and then to the celebratory signing in 2003 of the benefit sharing agreement. These accounts fail to consider how the patented object of Hoodia circulates through various relations of power and ethical frameworks, or how expectations have changed overtime in relation to Hoodia. My research produces a narrative that addresses the re-invention of Hoodia overtime in relation to the San in order to put their interests in the forefront.

A third theme identified by Delgado and Stefancic is a critique of liberalism. (Delgado and Stefancic 2001, 21-25) Crenshaw notes that critical race theory critiques ideas of “color-blindness,” “formal equality,” and “rights” within liberal discourses. Liberal discourses, particularly those around civil rights, construct racism narrowly as “prejudice based on skin color.” (Crenshaw 1995, xv) Liberal discourses suggest that the solution to racism is a formal equality approach in which the law, to ensure equality and fairness for similarly situated individuals, must adopt a colorblind approach and not take a person’s skin color into account. This narrow construction obscures the everyday experiences and structural mechanisms of racism. It also narrows the scope for debate as any affirmative action policy that employs race as a socially significant category, such as affirmative action, can now be charged with being racist.

Critical race theorists are also suspicious of the transformative power of “rights” since rights tend to be more procedural than substantive. Critical race theorists understand rights as “indeterminate and capable of contradictory meanings, and as embodying an alienated way of

thinking about social relations." (Crenshaw 1995, xxiii) Yet, as Patricia Williams asserts, the fight for and conferral of rights for historically disempowered groups symbolically acknowledges their denied histories and elevates them "from human body to social being." (Williams 1991, 153) Williams argues for a broader reconfiguration of rights discourse that gives "voice to those people or things that, by virtue of their object relation to a contract, historically have had no voice." (Williams 1991, 160)

In my research on Hoodia, I advance critiques of the liberal rights discourses within struggles over Hoodia by asking several questions. How are these new models for claiming citizenship rights constrained within neo-liberal discourses that structure rights claims narrowly as an equal opportunity to participate in markets? How are models of benefit sharing capable of contradictory meanings simultaneously portraying San peoples as a static vulnerable peoples as well as dynamic agents in creating new forms of self-determination for the futures of their community? In what ways does the struggle against the patenting of Hoodia give voice to the San peoples and recognize them as full human subjects?

A fourth and final theme asserted by Delgado and Stefancic is an understanding of structural determinism. (Delgado and Stefancic 2001, 25-27) Critical race scholars demonstrate how the structure of law, with its legal categories and methods, maintains the status quo of dominant social ideas and therefore cannot redress certain types of wrong. Thus, the law might not always be the appropriate source of transformation for historically marginalized groups. Yet, the very practice of working against the law might bring its own rewards. (Delgado and Stefancic 2000, 213) In this research project I address the problem of legal structural determinism by demonstrating how the language and structure of patent law doctrine maintains dominant forms of western scientific knowledge production, while marginalizing indigenous scientific

knowledge. In light of this, I ask how benefit sharing agreements maintain, reinforce, and/or contest dominant forms of scientific knowledge production?

Thus, critical race theory offers theoretical/methodological insights for producing a complex analysis of the patenting of Hoodia and its benefit sharing agreements. I employ this field of study for its powerful critiques of law and racial power. Its limitations though reside in its focus on U.S. law and its attention to communities of color within the United States.

2. Feminist Legal Theory

a. Historical Development

Feminist legal theorizing has its historical foundations within the women's movement. U.S. feminist legal theory began to emerge in the legal academy as feminist legal scholars participated in the women's movement, for instance, by fighting for women's equality under the Equal Rights Amendment and their right to reproductive freedom through such landmark cases as *Roe v. Wade*. (Levit and Verchick 2006, 6-7) Writings within feminist legal scholarship, similar to critical race theory, also differ in substance, emphasis, and approach. (Fineman 2005, 13) Katherine Bartlett notes, however, that feminist legal theory does share common methods in terms of the questions asked and the hypothesis formed. (Bartlett 2000, 31-32) Through these common methods, which will be further discussed, feminist legal theory engages in similar thematic examinations as critical race theory, yet with an emphasis on gender and its relationship to other social relations.

Early suffragist movements fought for women's right to vote and spoke out for women's equal legal rights. They also participated in the abolitionist movement against slavery, where they began to make connections to the unequal treatment of women within society as well. The formal beginnings of the women's movement in the U.S. are often traced back to the 1848

Seneca Falls Convention and the drafting of the Declaration of Sentiments and its radical proclamation that “all men and women are created equal.” (Levit and Verchick 2006, 2-3) Seneca Falls incited the women’s movement further as organizing around suffrage continued. At the 1851 National Suffrage Convention in Akron, Ohio the former slave, Sojourner Truth, gave a powerful speech drawing links between the subordination of both women and Blacks. (Levit and Verchick 2006, 3) Tensions often occurred among women organizing within the abolitionist and suffrage movements. Leaders such as Elizabeth Cady Stanton and Susan B. Anthony charged that women must have the right to vote in order to counter the votes of black males who were awarded the right to vote in 1870. (Levit and Verchick 2006, 3)

Struggles around the abolitionist and suffrage movements, despite these tensions, led to further campaigns for women’s legal rights. They lobbied for the passage of Married Women’s Property Acts in the 1840s and 1850s, demanding that states give women the right to own property and enter contracts. (Levit and Verchick 2006, 4) They also launched legal challenges arguing for women’s equal protection under the laws under the Fourteenth Amendment to practice law.³²⁰ The extraordinary work of the women’s suffrage movement eventually led to the passage of the 19th Amendment in 1920 granting women the right to vote.

The women’s suffrage movement set the foundation for theorizing around women’s legal rights that would continue on in the 1960s and 1970s as legal challenges were brought to secure women’s rights, for example, to contraception and abortion and to pass the Equal Rights Amendment.³²¹ Legal challenges continued in the 1980s to secure formal equality rights such as

³²⁰ *Bradwell v. Illinois* 83 U.S. (16 Wall.) 130 (1872) (rejecting Myra Bradwell’s petition for admission to the Illinois Supreme Court to practice law on the basis that women are naturally designed for the separate sphere of the home and unfit for occupations of civil life within the public sphere.)

³²¹ *Griswold v. Connecticut*, 381 U.S. 479 (1965) (granting married women the right to contraception under the Fourteenth Amendment based on their right to privacy). *Eisenstadt v. Baird*, 405 U.S. 438 (1972) (granting unmarried women the right to contraception under the Fourteenth Amendment based on their right to privacy.); *Roe*

women's right to equal pay for equal work and to be free from sex discrimination in the workplace and in schools.³²² They also involved attempts to grant women "special treatment" when they were not as similarly situated as men. This included challenges against laws preventing female workers from being reinstated to their jobs after pregnancy and women from being drafted by the military.³²³

As feminist legal scholars participated in many of these legal challenges they also began to develop feminist legal theorizing within the academy. Much of these beginnings can be traced back to the first Feminism and Legal Theory Workshop at the University of Wisconsin in 1984 and the 1985 feminist-Critical Legal Studies Conference. (Fineman 2005, 13; Menkel-Meadow 1988, 65) Similar to critical race theory, feminist legal theory had its historical beginnings in activist movements devoted to equal rights for women. Through this connection, feminist legal theory developed a common methodological approach to examining the law.

b. Feminist Legal Method

A key theme within feminist legal theory is the use of feminist legal method. Bartlett suggests that feminist legal theorists begin with the hypothesis that the law is not neutral or objective, and that it contains gender bias against women. (Bartlett 2000, 39-40) They then test that hypothesis through methods such as asking the woman question, feminist legal reasoning,

v. *Wade*, 410 U.S. 113 (1973) (granting women the right to abortion based on a right to privacy found within a "penumbra" of rights secured by the First, Fourth, Fifth, Ninth, and Fourteenth Amendments.)

³²² *EEOC v. Madison Community Unit School District No. 12*, 818 F.2d 577 (7th Cir. 1987) (finding that paying female athletic coaches less than male coaches was a violation of the Equal Pay Act of 1963); *Price Waterhouse v. Hopkins*, 490 U.S. 228 (1989) (ruling that evidence of sex stereotyping within a decision to deny partnership to a female employee was a violation of Title VII of the Civil Rights Act of 1964.); *Franklin v. Gwinnett County Public Schools*, 112 S. Ct. 1028 (1992) (individuals are permitted to sue for money damages for intentional sex discrimination in schools under the Title IX of the Education Amendments of 1972.)

³²³ *California Federal Savings & Loan Association v. Guerra*, 479 U.S. 272 (1987)(finding that a California statute granting women the right to reinstatement to their jobs after pregnancy was not a violation of Title VII of the Civil Rights Act of 1964 as amended by the Pregnancy Discrimination Act of 1978); *Rostker v. Goldberg*, 453 U.S. 57 (1981) (concluding that the Military Selective Service Act allowing for a male-only military draft was not a violation of the Fifth Amendment due process clause.)

and consciousness-raising. (Bartlett 1990, 836-67; Bartlett 2000, 35) Asking the woman question involves inquiring how the law fails to take into account the experiences and values important to women and works to disadvantage them. (Bartlett 1990, 837)

Feminist legal theorists use conventional strategies of legal reasoning such as using induction, deduction, analogy, and hypothesis. (Bartlett 1990, 836; Littleton 1989, 763) Feminist legal method, however, engages in a different process of data collection, one that brings new facts into the process of legal reasoning and the evaluation of the fairness of the law and legal decision-making. (Bartlett 1990, 849) Feminist legal theorists engage in a process of legal reasoning that takes into account relevant facts about the historical, social, economic, and cultural significance of the law to women's actual lives. (Bartlett 1990, 851) Part of this fact gathering relates to the third method of consciousness-raising. This method involves testing the fairness of legal principals by considering the collective voices of women speaking about their experiences related to the law.

Each of these methods is used to test whether or not the law contains a gender bias that disadvantages women. The best model for applying feminist legal theory methods is one that in the process of testing its hypothesis maintains openness to different results and substantive conclusions. (Bartlett 2000, 53) Feminist legal theory, therefore, may produce different and often competing conclusions in its analysis of the law, but it shares a commitment to engaging in a feminist method of research.

In applying this method to the study of Hoodia, I take seriously the emphasis on gathering facts in order to engage the fairness of the law. I engage in a multi-sited approach to collecting data and facts, which aims at understanding the relevant gendered and ethno-racialized narratives related to the patenting of Hoodia. For example, I ask how San men and women use

the Hoodia plant differently. I ask how Hoodia Internet advertisements employ stereotypical images of men and women's bodies. I also inquire how women participate, fail to participate, or remain ambivalent toward Hoodia benefit sharing negotiations. Collecting such facts allows me to ascertain whether or not patent law and bioprospecting legislation contains a gender bias against women. My project therefore contributes to feminist legal theory by pushing feminist legal theory further into the uncharted terrain of patent law and bioprospecting as a possible site of subordination and/or opportunity for women. In so doing, this also leads me to questions of equality and gender discrimination.

c. Equality Debates

Another key concern of feminist legal theory is ensuring equality under the law for women. Historical developments of feminist legal theory, as discussed above, generally centered on the establishment of formal equality rights for women. Formal equality is the principle that individuals who are alike should be treated alike. (Ginsberg and Flagg 2001) This approach is also called equality as "sameness" or "equal treatment." It requires a female plaintiff to argue that she is "similarly situated" to the men to which she is being measured against. Central to formal equality, therefore, is the establishment of women as similar to men. Feminist legal challenges employing this approach made significant steps towards increasing women's access to educational and employment opportunities and to strike down gender-based legal preferences.³²⁴

³²⁴ *Reed v. Reed*, 404 U.S. 71 (1971) (striking down an Idaho statute establishing a preference for male executors of estates); *Frontiero v. Richardson*, 411 U.S. 677 (1973) (holding that an Air Force spousal benefit for all wives and only economically dependent husbands was unconstitutional); *Kirchberg v. Feenstra*, 450 U.S. 455 (1981) (striking down a community property law giving husband exclusive control over jointly owned marital property); *United States v. Virginia*, 518 U.S. 515 (1996) (finding against the Virginia Military Institute's male-only admission policy).

Feminist legal theorists though began to vigorously debate the limitations of formal equality. (Crenshaw 1989; Fineman 1992; Littleton 1987; MacKinnon 1987; Scales 1981; Williams 1985) In proposing a feminist jurisprudence for responding to pregnancy, Scales argued that courts must recognize the “sex-unique” characteristics of childbearing on female workers. (Scales 1981, 422) This strategy differed from formal equality approaches calling upon the court to consider pregnancy as just another basic physical condition affecting the workforce participation of both men and women. (Williams 1985, 327) Thus debates began to shift towards theorizing a “substantive equality” approach, requiring courts to take into account gender differences in order to avoid discriminatory outcomes. (Bartlett 1993, 249) This approach includes taking into account “difference” and arguing for “special treatment” for women in order to ensure equality. In the case of pregnancy, a sameness approach argues that courts should recognize pregnancy as a condition of disability, just like any other physical condition impacting workforce participation. On the other hand, a difference approach entails treating pregnancy as a special condition impacting women that is different than other disability conditions affecting male workers. It is the former approach that is most often taken up by the courts. Littleton points out that, when faced with real differences such as pregnancy, the courts can only recognize a formal equality approach. (Littleton 1987, 1306) Thus, it was this approach that the Supreme Court ultimately adopted in its review of pregnancy discrimination cases.³²⁵

Both formal equality and substantive equality, however, each have their limitations. Littleton points out that neither of these approaches goes towards shifting cultural gender norms. (Littleton 1987) She goes on to argue for an “equality as acceptance” model whereby cultural

³²⁵ *Geduldig v. Aiello*, 417 U.S. 484 (1974) (holding a California disability plan excluding benefits for female workers suffering disabilities due to a normal pregnancy constitutional under the Equal Protection Clause); *General Electric Co. v. Gilbert*, 429 U.S. 125 (1976) (finding that a employee insurance plan excluding pregnancy-related medical expenses did not violate Title VII).

meanings subscribed to differences are assessed and become “costless” in order to achieve equality despite those differences. (Littleton 1987, 1285 & 313) Giving an example, Littleton suggests that, in the case of athletics, cultural meanings valuing male athletics over female athletics should first be recognized as creating inequalities. (Littleton 1987, 1312) Female athletics should then be accepted as valuable on its own, despite its differences from male athletics, and receive an equal allocation of resources. MacKinnon similarly argues against both models of equality. She claims that the gender neutrality of the sameness model measures women according to their proximity to man, and the difference model assesses women according to their distance from man. (MacKinnon 1987, 34) In either case, each approach takes masculinity or maleness as its referent. (MacKinnon 1987, 34) She goes on to argue for a dominance approach that examines the inequalities and distributions of power that shape women’s lives. (MacKinnon 1987, 40-45) Both Littleton and MacKinnon offer valuable insights that emphasize the need to shift cultural gender norms and to continually interrogate power. These valuable equality debates, however, are theorized through the case of pregnancy, which limits the discussion of difference to sex and gender. Critical race feminists argue for an attention to difference that includes categories of identity such as race and ethnicity.

According to critical race feminists, notions of equality are based on a single-axis framework that fails to consider how race and gender are mutually exclusive. (Crenshaw 1989, 1991; Harris 2001; Hill Collins 1990) Crenshaw argues for an “intersectional” approach within anti-discrimination law and feminist legal theory in order to account for Black women’s experiences. (Crenshaw 1989) Similarly, Harris claims that feminist theorizing around equality relies on an “essential women’s experience” that is divorced from other realities of experience such as race, class, and sexual orientation. (Harris 2001, 585) In addition, Matsuda suggests a

jurisprudence of “multiple consciousness” that recognizes multiple realities of oppression. (Matsuda 1996) Critical race feminists have also applied intersectionality to issues of legal equality more globally. For example, Lewis calls for a “multidimensionality” theory in human rights law that would include “sexual orientation, ethnicity, religion, nationality, disability status, and other forms of identity in the analysis.” (Lewis 2003, 514-15) Likewise, Romany argues for international human rights law to engage in an intersectional analysis examining country-specific realities of women’s simultaneous experiences of racism and sexism. (Romany 2000, 54) Critical race feminism therefore expands notions of difference to include social relations such as race, ethnicity, and sexuality. Equality jurisprudence and feminist legal theory must account for these multiple, intersecting social relations and how it impacts equality for women under the law.

Tensions within equality debates should not be interpreted as an abandonment of equality jurisprudence. Feminist legal scholars continue to address questions of equality and seek out new models. Scholars continue to suggest better conceptions and approaches towards substantive equality. Martha Fineman, for example, suggests moving away from formal equality equal protection analysis towards a more substantive equality grounded in vulnerability, rather than identity politics. (Fineman 2008) Fineman argues that discrimination-based arguments tied to identity categories are too narrow. Thus, she suggests focusing on shared vulnerabilities and building political movements against those unequal institutional arrangements related to such vulnerabilities. (Fineman 2008, 17) A focus on the “vulnerable subject” is laudable, yet, I would contend that its theorizing as a “post-identity paradigm” opens it up to critique. (Fineman 2008, 17) Nevertheless, Fineman’s work is just one example of how feminist legal scholars are continuing to work towards better models of substantive equality for women.

Claims for substantive equality for women are also being addressed within South Africa. A coalition of women's organizations participated in debates regarding the new South African Constitution in the 1990s. (Bonthuys and Albertyn 2007, 90) Emphasis was placed on substantive equality models as opposed to formal equality models. Adoption of the Women's Charter for Effective Equality was one of the first steps towards carving out a substantive equality model that was inclusive of differences among women.

Bonthuys and Albertyn point out that substantive equality in South Africa is distinctively linked to transformation politics within the country. It is used in a "transformatory manner" to "shift unequal social and economic relations and remedy the social and economic disadvantage of women in the public and private spheres." (Bonthuys and Albertyn 2007, 91) This includes shifting patriarchal norms justifying exclusion and changing the material consequences shaped by such norms. Equality is explicitly articulated within the Constitution and the Constitutional Court interprets it as a substantive equality meant to redress past disadvantages and enable redistribution. The Constitutional Court has issued several opinions illustrating a substantive equality analysis acknowledging the historical context of women's lives and the need to change unequal power relations and gender norms.³²⁶ According to Bonthuys and Albertyn, the Court has been less willing to engage in a substantive equality analysis, however, when discrimination relates to issues beyond the scope of issues of apartheid, exclusion and violence. This is true in cases of women involved in sex work or unmarried women cohabiting with partners.³²⁷ Bonthuys

³²⁶ *Brink v. Kitshoff*, 4 SA 197 (1996) (striking down a law excluding married women, but not married men, from benefiting from certain insurance policies); *Fraser v. Children's Court, Pretoria North* 2 SA 1 (1997) (finding unconstitutional a law requiring courts to obtain permission of both parents prior to approving an adoption order, but not the consent of a father for the adoption of his child born out of wedlock); *President of the Republic of South Africa v. Hugo* 4 SA 1 (1997) (finding that a presidential pardon of mothers in prison with children under 12, but not fathers, was constitutional).

³²⁷ *Jordan v. The State*, 6 SA 642 (2002) (finding a law criminalizing sex work to be constitutional and does not constitute unfair gender discrimination); *Volks NO v. Robinson*, 5 BCLR 336 (2005) (finding constitutional

and Alertyn argue that the Court in both these cases refused to consider the links between sexuality, marriage, and poverty in shaping modes of discrimination against women. They express concern that these later cases demonstrate the inability of the Court to apply an intersectional approach to equality. Section 9(3) and 9(4) of the South African Constitutional recognizes that discrimination can be enacted on “one or more” grounds. Furthermore, the Constitutional Court recently attempted to apply intersectionality in a case concerning “intersecting discrimination” on the basis of sexual orientation and marital status.³²⁸

There is uncertainty as to how the Court will develop intersectionality within its opinions, but it remains an important direction for substantive equality jurisprudence in South Africa. As values of both dignity and equality shape discrimination law in South Africa, the Court has the potential to develop a progressive model of substantive equality from which U.S. courts and feminist legal theorists could learn. Consideration of substantive equality is important for thinking through the policy implications of the patenting of Hoodia and subsequent benefit sharing legislation. Yet, legal notions of discrimination under the law greatly curtail an analysis of patent law.

In this project, I think through how patent law and benefit sharing might discriminate against San women and men, but not “because of” race or sex as specified in discrimination law. Rather, because of knowledge. Feminist legal theorists work within the constraints of the law. Constitutional equal protection analysis is based upon levels of scrutiny tied to identity categories of race, gender, and sexual orientation. Statutory Title VII discrimination law protects

a law permitting married spouses, but not unmarried partners, to make maintenance claims upon the estate after the death of their cohabitating partner).

³²⁸ *National Coalition for Gay and Lesbian Equality v. Minister of Home Affairs*, 2 SA 1 (2000) (striking down a law permitting the immigration of foreign spouses of permanent South African residents, but not the immigration of foreign spouses of permanent South African residents in same-sex relationships).

workers from losing their jobs or being demoted because of their sex, race, or national origin. Legal protection is thus framed around categories of identity. Feminist legal scholars work both within and against these limited frames. Meanwhile, these narrow frames obscure an analysis of the new ways in which “discrimination” is enacted, such as valuing certain forms of knowledge over others through patent law. Thus, patent law as a site of feminist inquiry becomes intelligible.

Yet, feminist and queer theory scholars are working towards broadening frames of legal protection and its emphasis on identity. Halley and Ruskola seek to expand protection for the LGBT community by considering discrimination through notions of acts, versus identities. (Halley 1993; Ruskola 2005) Martha Fineman argues for legal protection based upon vulnerability. (Fineman 2008) In each case, such scholars challenge notions of equal protection and discrimination under the law and seek to move away from law’s entrenchment in identity.

These debates greatly inform my research, but as of this time, I remain unsure of how my work responds. I am certain though that my research on Hoodia patent law struggles offers a site to challenge narrow forms of equal protection and discrimination law. It provides understanding of new expressions of discrimination, which contribute to the subordination of women and men through claims for and grants of epistemic citizenship. The law has already begun to recognize new forms of discrimination based upon “information.” The Genetic Information Nondiscrimination Act of 2008 prohibits employers from discriminating based upon an employee’s genetic information. Genetic information may be interpreted as just another marker of identity, but nevertheless it is an identity based upon information. It is within these debates that my research is closely aligned and seeks to contribute to feminist legal theory by stretching

how we conceptualize, theorize, and mobilize against new expressions of discrimination that fall outside of the bounds of discrimination law per se.

IV. Conclusion

A feminist critical cartography of circulations offers a research design for studying the movement of scientific/regulatory objects within the context of transnational neo-liberal globalization. Its interdisciplinary strategy for research is meant to contribute to scholarship within science studies and socio-legal studies; in particular, feminist science studies, critical race theory, and feminist legal theory, which likewise constitute the field of women's studies. It does so by providing techniques for examining the gendered and ethno-racialized narratives related to struggles over the patenting of genetic and biological material that also signal relevant individual and structural relations of power. Such techniques include an ethno-graphic, multi-sited strategy for data collection that traces the movement of Hoodia through various spatial and temporal geographies. New legal realism informs this strategy by tracing the circulations of Hoodia through these multiple sites in order to understand how legal norms associated with patent law shift and change through various geographies within transnational networks. This method of data collection challenges conventional ethnographic, socio-legal, and science studies research methods by studying "from below" and incorporating Indigenous and African feminist methodologies.

In order to open up the collected data, this project employs post-modern/constructivist grounded theory techniques of assigning codes, writing memos, and erecting situational maps to analyze the data. Feminist theoretical/methodological frameworks within science studies and socio-legal studies also inform and are bolstered by examining struggles related to the patenting of Hoodia. The following chapters begin to contribute to these theoretical fields in multiple and

disparate ways by studying how Hoodia patent law struggles produce difference and inequality, while signaling new expressions of epistemic citizenship granting economic participation and political recognition.

Chapter Three

Encountering Hoodia: The Historical Construction and Classification of *Hoodia gordonii* in Relation to the San

This chapter historicizes *Hoodia gordonii* within discourses of botanical science. The first part concerns encounters with Hoodia by colonial botanists. The “discovery” of Hoodia is generally attributed to Francis Masson, a colonial botanist with the Royal Gardens at Kew. This chapter begins by examining the writings of Masson. In particular, I analyze the first botanical sketch of the plant and Masson’s journal detailing his travels through the interior of the Cape. (Masson 1796) I come to find that although Masson produced the first published accounts of the plant, he learned about the plant from another colonial settler named Colonel Gordon. This reveals how scientific authorship of the first written accounts of the plant is itself contested. Masson’s travel journals also reveal his encounters with the San and Khoi Khoi while collecting and studying local succulent plants. (Masson 1776) Evidence of contact and engagement with the San and Khoi Khoi disrupts notions of scientific authorship further by suggesting that Indigenous peoples were in fact the first to “discover” Hoodia. Masson’s writings also show how the plant and the San are historically co-produced. Masson’s articulations of the plant correspond in time with his descriptions of the San and Khoi Khoi as savage and inferior, thus reinforcing European notions of whiteness.

The second part of the chapter examines the botanical classification of Hoodia. I draw upon Foucault’s understandings of classification as a new way of making history and producing knowledge by ranking and ordering nature according to the language of reason and rationality. (Foucault 1973) This frames my analysis of the first classification of Hoodia by Robert Sweet in

his 1830 *Hortus Britannicus*. (Sweet 1830) I then show how the taxonomic categorization of Hoodia occurred around the same time as the classification of San Bushmen. While nature was being ordered, the San were being ranked as closer to nature. Botanical knowledge of Hoodia, however, changed overtime. In Sweet's text Hoodia emerges only as a catalogued object among its succulent kin, no other details are given. A fuller description of Hoodia emerges with publication of *The Stapelieae* in 1933 by Campbell White and Boyd Lincoln Sloan. (White and Sloane 1933) Examining this text, I find that the classification of Hoodia is accompanied by anatomical and biological descriptions of the plant, which deploy narratives of origin and migration. Hoodia and its succulent kin become sentimentalized as originating in South West Africa. Drawing upon the work of Saul Dubow, I then note how similar narratives were used in the early 1900s to construct the San as the first inhabitants of South Africa in order to justify white rule and claims to land. (Dubow 1995, 69) Narratives of origin and migration were thus deployed within the historical construction of both the Hoodia plant and the San around the same time.

I then conclude with an examination of a more recent comprehensive botanical guide to stapeliads (also collectively referred to as Stapelieae) published in 2005 by Peter V. Bruyns called *Stapeliads of Southern Africa and Madagascar*. (Bruyns 2005) I frame my analysis through the work of Nikolas Rose who suggests that contemporary forms of biomedicine and biopolitics represent an epistemological shift towards "molecularization" whereby the scientific gaze focuses on the interior spaces of the body, for instance, at the level of genes and their molecular environments. Drawing upon Rose, I ask how this text demonstrates a shift in botanical scientific inquiry from the plant at the molar level to "life at the molecular level." (Rose 2006) I find that new advances in molecular techniques and the study of plant DNA have

altered how stapeliads and *Hoodia gordonii* are classified in botanical taxonomic schemes. Evolution of stapeliads, and the relationships among them at the molar level (e.g., stems and flowers), is now explained through more detailed studies of plant DNA and chromosome numbers. Molecularization therefore is not confined to biomedicine, this epistemological shift has also occurred within the field of botany. Biomedicine and botany therefore share similar processes of molecularization. I then place the Bruyns text in conversation with contemporary studies of the San. I come to find that the molecularization of *Hoodia gordonii* also temporally corresponds with scientific studies of San DNA to explain San kin relationships and patterns of human evolution. This shows once again how *Hoodia gordonii* and the San are constructed through similar scientific discourses, albeit in different ways.

This chapter is meant to show how *Hoodia gordonii* and the San are co-produced through similar epistemological foundations within scientific discourses over time. This provides important insights into struggles over the patenting of *Hoodia gordonii*. In the next chapter, I suggest that the patenting of *Hoodia gordonii* depends upon delimiting CSIR knowledge of the plant at the molecular level from San understandings of the plant at the molar level. Historicizing scientific knowledge of *Hoodia gordonii* in relation to the San further problematizes patent law's distinction between these two ways of knowing. It goes towards showing how the patenting of knowledge derived from indigenous knowledge continues to reinforce Indigenous peoples as mere scientific objects, rather than producers of science.

Analyzing how *Hoodia gordonii* and the San are co-produced, however, presents some unfortunate theoretical dilemmas. The discussion that follows inevitably reinforces the link between the San and nature. However, I contest this association in following chapters by accounting how San legal claims for contractual benefit sharing work to disrupt meanings of

nature and the naturalization of San indigenous identity. The historical account provided here serves to further contextualize and inform understanding of San struggles over the patenting of *Hoodia gordonii* and their practices of legal claim making to gain political recognition.

I. Encountering Hoodia

In the Bolus Herbarium Library at the University of Cape Town, I encounter the “first” known drawing of *Hoodia gordonii*. It is located in a 1796 book by Francis Masson, a colonial botanist from London. The *Stapeliae Novae* is a large, brown, leather book with the full title of *Stapeliae Novae: or, A Collection of several New Species of that Genus; discovered in the Interior parts of Africa.* (Masson 1796) It sits on a shelf in a small climate-controlled room containing the rare books of the library. I pull the *Stapeliae Novae* off the shelf, place it on the single desk in the center of the room, and carefully open its pages with gloved hands. On plate number 40 is a bright colorful sketch of the plant.



Figure 1. Digital image of *Stapelia Gordonii* drawing found in Francis Masson's *Stapeliae Novae*³²⁹

Filling up the entire page, it is a drawing of three spine-tipped tubular stems standing tall, with three pink flowers. Below it reads “*Stapeliae Gordonii*.” Gazing at the picture, its phallic shape is striking. Its large erect stems are endowed with circular pink flowers. I am not the first to view this sketch. Early botanists found this plant “strange” and “curious.” (White and Sloane 1937, 1051) Sir William J. Hooker, a botanist, described the drawing in 1844 as “an exaggerated, if not a fictitious representation.” (White and Sloane 1937, 1051)

Images of plants in botanical atlases represented not only nature, but also produced notions of objectivity. (Daston and Galison 1992) In the eighteenth century, illustrated volumes

³²⁹ A librarian at the Bolus Herbarium has denied my request for a copy of the original sketch at this time. Pasted above is an image of the sketch found on Wikipedia to assist the reader. It appears to be a digital copy of the sketch I located in the *Stapeliae Novae*, but its authenticity is uncertain.

of plants were meant to standardize observed nature into workable objects for scientific study. (Daston and Galison 1992, 85) Beginning in the nineteenth century, accurate drawings of nature increasingly served to ensure objectivity by providing sketches that would endure as facts for future researches to make new discoveries and theories with. (Daston and Galison 1992, 86) Contestations over the accuracy of Masson's rendering of *Stapeliae Gordonii* are therefore also about ensuring scientific objectivity. As workable object for science, the plant is also positioned outside of history and the political entanglements of colonial relations.

The drawing is for scientific consumption by colonial botanists in England, who are interested in developing taxonomic classifications of biological life. Yet, Masson's discovery of *Hoodia* was deeply embedded within colonial regimes of power. This colonial history is important to the story of *Hoodia*. Political struggles over the patenting of *Hoodia* are embedded within this history and its relation to the San peoples. Thus, it is important to take into account Francis Masson and his colonial exploration into the Cape.

A. Producing Colonial Science

Historical botanical literature attributes the discovery of *Hoodia* species to colonial botanists exploring the Cape interior. Bruyns notes that *H. pilifera* was the first *Hoodia* species "known to science" and was gathered by Francis Masson and Carl P. Thunberg. (Bruyns 2005, 92) It wasn't until 1796 that *Hoodia gordonii* became known when Masson published a drawing of the plant in the *Stapeliae Novae*. Masson is attributed with discovering the *Hoodia species* but, as will be further discussed, he is not credited with finding the *Hoodia gordonii* plant. A brief biographical sketch of Masson puts the discovery of *Hoodia gordonii* into greater historical context.

Mia C. Karsten provides a historical account of Masson through an examination of his writings and correspondence with other colonial botanists. (Karsten 1994) Masson was employed by the Royal Garden at Kew and was dispatched to the Cape of Good Hope from 1772-1775 to collect plant specimens and bring them back to England. He was born in 1741 in Aberdeen, Scotland and was a man “of simple birth.” (Karsten 1994, 203) He died at sixty-five in 1805. Masson collected plants around the same time as two better-known botanists, Carl Peter Thunberg and Anders Sparman, who were more highly educated. Masson accompanied Thunberg, known as the Father of Cape Botany, on two journeys into the interior of the Cape. Their journeys are credited with producing some of the first discoveries and documentation of stapeliads within Southern Africa. (Bruyns 2005) Masson was also in direct correspondence with Carl Linnaeus regarding his expedition and botanical findings. In fact, Masson sent Linnaeus plant specimens of stapeliads asking for it to be classified among Linnaeus’ botanical taxonomies and sanctioned as a new genus. According to Karsten, Masson followed a simpler mode of life and was less interested in gathering money than his counterpart Sparman. (Karsten 1994, 205) He gained the respect of his employers as an expert botanist who was able to collect a bounty of plants, while avoiding being restrained by Dutch colonialists. His specimens also tended to flourish when brought to the Kew gardens. The Royal Garden at Kew was a private garden of the royal family during this time. It became a state institution in 1841 and the center for all British colonial botanical stations. (Brockway 1979, 452) Kew was an experimental station where plants and seeds were transported, transferred, and studied for their economic value in furtherance of the British Empire. (Brockway 1979, 457) The Royal Garden at Kew eventually asked Masson to explore the Canary Islands, the Azores, Madeira, and part the of the West Indies. According to Bruyns, Masson, a superb draftsman, produced highly skilled

drawings of his specimens. His drawings are considered just as valuable as his specimens. He is best known for his exploration of succulent plants and the publication of his related findings in *Stapeliae Novae: or, A Collection of several New Species of that Genus; discovered in the Interior parts of Africa*. (Masson 1796) The book was first published in four parts beginning in 1796 through 1797 and contained the first drawing of Hoodia as mentioned above.

Masson was a figure within the production of colonial sciences, which drew upon the resources of the Cape to promote the industrial expansion and growth of the sciences within western Europe. Colonial voyages and practices of bioprospecting contributed to the production of new knowledges to serve the interests of Empire. (Harding 1998; Schiebinger 2004) The discovery of Hoodia by colonial botanists is entangled within this history. An examination of Masson's *Stapeliae Novae* and travel journals shows how the production of botanical knowledge was linked to citizenship within Empire. It also demonstrates how the discovery of Hoodia is intertwined with historical constructions of the San. The plant and the San were simultaneously co-produced through the registers of colonial botany as mediated by law.

Scientific knowledge of stapeliads was produced for the King and in the interests of the nation-state. The *Stapeliae* opens up with a Dedication to the King (George III). (Masson 1796) In his dedication, Masson expresses his gratitude at “being, by your Majesty’s command, attached to the Royal Gardens at Kew, as a collector of exotic plants.” He notes that he has had the satisfaction of seeing his plants “flourishing there, more beautifully, in some instances, than in their native soils.” As a “most dutiful and grateful servant” to his Majesty, Masson concludes by stating his only true ambition is to “extend the science of Botany, to enrich the Royal Gardens at Kew, and to obey your Majesty’s commands.” Following his Dedication is a Preface describing the lands in which he explored. He writes, “[t]he deserts, called Karro, are furnished

with great variety of succulent plants, endowed by nature, as the camel is, with the power of retaining within them water...” (Masson 1796, v) Masson also faults the Dutch as “although celebrated as lovers of Natural History and Botany” they engaged in “very little stud[y]” of the local plants during their possession of the Cape. (Masson 1796, vi) He presents his drawings of forty species of *Stapeliae* to the “lovers of Botany” and says it is “my duty to present them to the public, in hopes that they may prove acceptable, both to the Botanist and cultivator of plants.” (Masson 1796, viii)

In these passages, the discovery of stapeliads, including *Hoodia gordonii* (spelled by Masson with one “i”), is meant to produce knowledge for the Royal Gardens and the King. Masson is a citizen servant of the King, promoting the growth of exotic plants and the sciences in the metropole. His transfer of knowledge and plants from the Cape colony to England enables the plants to flourish “more beautifully” than in their native soils. The metropole and its modernities are therefore constructed as a site where plants and their associated knowledge can flourish more productively. Knowledge of *Hoodia* becomes more prosperous. Complex histories of Dutch and English colonials within South Africa are also referenced. Masson criticizes the Dutch for not studying the local plants. His comments indicate a belief in the intellectual capacity of the English over the Dutch. The failure of the Dutch to devote time to the intellectual pursuits of scientific study of plants positions Masson and his counterparts as more capable of reason and rationality. Emphasis on reason then becomes intermingled with passion as Masson presents his drawings to the “lovers of Botany.” As a scientist, he follows scientific methods by giving up his research to the public to be witnessed and “proven acceptable.”

B. Co-producing Stapeliads and San Bushmen

Masson also contributes to the construction of San Bushmen as inferior, while reinforcing whiteness. This becomes apparent by reading his colonial travel journal. Masson published his journal as *An Account of Three Journeys from the Cape Town into the southern parts of Africa: Undertaken for the Discovery of New Plants, Towards the Improvement of the Royal Botanical Gardens at Kew*. (Masson 1776) The journal was published in 1776 as part of the Philosophical Transactions of the Royal Society of London. An examination of Masson's journal writings provides a view into how he perceived the Bushmen, Hottentots, and Dutch colonials he interacted with. During his second journey from the Cape, Masson writes on October 9, 1773 about finding the "miserable cottage" of a Dutchman and his wife, "[t]he hut had only one room; but our host gave us a corner to sleep in, which was detached by a hanging of reed mats, where he and his wife also slept; and in the other end lay a number of Hottentots promiscuously together." (Masson 1776, 280) In this passage, discourses of race, class, gender, and sexuality are used to describe his encounters.

Masson also describes Dutch-Hottentot relations in a passage on November 22, 1773, "[t]he Hottentots are in general servants to the Dutch farmers; who give them for wages beads, and tobacco mixed with hemp; the latter, which intoxicates them, they are extremely fond of. A few free Hottentots still remain here, who live in their ancient manner; but who are miserable wretches, having hardly any flock of cattle." (Masson 1776, 290) He notes the hierarchal master-servant relationship between the Hottentots and the Dutch. The introduction of tobacco/hemp to the Hottentots by the Dutch in lieu of wages is also stated. Hottentot servants are then compared to "free Hottentots" who "live in their ancient manner" but who are "miserable wretches." Their lack of cattle also suggests that the Dutch had stripped them of their

stock, or that the Hottentots being referred to were actually Bushmen. Dubow notes that the terms Hottentot and Bosjesman were often used interchangeably up until the mid-nineteenth century. (Dubow 1995, 20)

Hottentots were not only in the service of local Dutch colonials but they also assisted Masson during his journeys into the Cape. During his third journey, on November 2, 1774 he writes, “[i]n the cool of the afternoon we ascended by a winding road, which was so very rugged and steep, that it took five Hottentots with ropes made safe to the wagon to keep it from overturning.” (Masson 1776, 309) It seems that Masson himself might have also employed the services of Hottentots to help him during this explorations of the Cape. Its highly plausible then that they were the source of his knowledge about the local succulent plants in the first place. It is unclear though what the relationship might have been because Masson does not mention them again in his writings.

Masson also provides evidence of the violence against the Bushmen and Hottentots during his third journey in a passage from November 2, 1774: “[w]e met a party of Dutchmen, who had been about 150 miles to the Northward of Brockland, destroying the Boschman Hottentots.” (Masson 1776, 311) Struggles over land and resources led to many acts of violence between the Dutch and the Bushmen. Masson acknowledges this violence. What is more interesting though is that he spends more time describing the Bushmen as violent. During his third journey, on November 16, 1774 he writes, “[t]he ancient inhabitants of this country, called the Dutch Boschmenschen, are a savage people and very thievish; often carrying off 700 sheep at a time, and killing their shepherds. They use bows and arrows, and poison the arrows with venom of serpents mixed with the juice of a species of *euphorbia*, which we had no opportunity

of seeing. These Hottentots have neither flocks or herds; nor any fixed habitation, nor even skins to cover them; but live in the cavities of rocks, like baboons.” (Masson 1776, 314)

Portrayed here, the Bushmen are constructed as violent thieves who steal sheep and kill their shepherds. They are associated with their use of poisoned bow and arrows. Masson refers to the Bushmen as Hottentots, but who differ from other Hottentots because they have no flocks. He also finds it noteworthy to remark upon their nakedness. Furthermore, Masson describes them as without “fixed habitation” and living in the “cavities of rocks, like baboons.” The Bushmen are thus described here as savage and animal-like. Masson’s journal entries provide us with an understanding of colonial representations of Hottentots and Bushmen. Through this colonial account the Bushmen and Hottentots emerge as “promiscuous” and “savage” and “like baboons.”

Masson also encountered the wives of Dutch farmers, yet he provides little detail into his interactions with the women. During his third journey, Masson writes on November 14, 1774 that “...we found a Dutchman with his wife and several young children sitting under the shelter of some bushes, which they had formed into the shape of an alcove, to screen them from the heat of the sun. We stayed here all night, and the man asked us to sup with them; which we did, and made them a present of some tea and tobacco, which they thankfully received...” (Masson 1776, 313) One can only imagine how the Dutchman’s wife felt when she was asked to cook supper for a group of colonial explorers. Very little is said though about the wives he encountered.

Masson’s journals however do provide evidence of the complex social relations within South Africa. English colonials, engaged in the intellectual pursuits of botany, find refuge with lower-class Dutch farmers, while being fed by their wives. Dutch farmers exploited Bushmen and Hottentot labor, while also “destroying” them. Bushmen “stealing” from farmers and living

in an “ancient manner.” These accounts shed light on the historical context in which Hoodia was first discovered. It brings to light the complex social relationships and hierarchies involved within these interactions. The story of Hoodia, as will be further explored, is embedded within and resisting these historical relations. San claims for epistemic citizenship as mediated through benefit sharing work to counter these historical constructions and re-imagine San identity and San peoples as active producers of science, participants in the market, and agents of political change.

This is also the historical setting in which the first written account of Hoodia is recorded. When read in relation to Masson’s journal entries, the drawing of Hoodia in his *Stapaliae Novae* becomes historicized and politicized. It no longer stands outside of history. It comes to be known as a part of colonial histories of science and violence against the San and the Khoi. This reading also works to counter the drawing of Hoodia as a workable object for science and its logics of objectivity. (Daston and Galison 1992) Rather, the drawing now emerges within the historical practices of colonial botanical science and its making of difference. It came into being through complex relations with Dutch farmers and their wives and through violence against the Bushmen. Through these writings stapliads, including *Hoodia gordonii*, becomes co-produced alongside the production of the San as inferior and closer to nature.

C. Authoring, Discovering Hoodia

Discovery of the first plants that would eventually make up the *Hoodia* genus is attributed to Masson, but the finding of the specific *Hoodia gordonii* plant is credited to another. Masson includes a drawing of *Hoodia gordonii* within his book, but he copies this drawing from someone else. Hoodia patent law struggles, and the forms of epistemic citizenship they engender and respond to, contain contestations over origin and authenticity. Patent ownership is granted to

inventors who can show they were the original inventors of the patented object. Benefit-sharing agreements are entered into with Indigenous peoples who can prove they were the original source of the information for bioprospecting. This makes it even more interesting that Masson's drawing was in fact a copy. Masson's intricate colored sketch of what is now classified as *Hoodia gordonii* is accompanied with the following note, "[t]his unique species of *Stapelia* I have neither seen nor examined. For the copy from which the picture has been made, I have to thank the favour of Mr. Gordon. I have considered [its] place in this collection to be worth an engraving, since it leads to further investigations of the species of this remarkable genus, which I believe to be indeed numerous." (Masson 1796, 34)

Masson's note reveals that the first written documentation and illustrations of *Hoodia* were themselves reproduced from a drawing made by Mr. Gordon. Colonel Robert Jacob Gordon was a Dutch officer of Scottish descent who explored the territory around the Orange River in South Africa. (White and Sloane 1933, 19) He was in command of the Dutch military forces when the colony was surrendered to England around 1795, and it is said that he committed suicide out of indignation over the English occupation. (White and Sloane 1933, 19-20) Masson himself gives credit for discovering *Hoodia gordonii* to Gordon. Masson had not seen or examined the plant. Rather, he learned about it from Gordon. Masson deems it worthy of inclusion in the *Stapeliae* for its potential to lead to new "investigations of the species" in the genus.

The drawing of *Hoodia* was produced at a time before the use of the photograph. Detailed sketches were necessary in the field of botany to reproduce what the scientist observed in order to facilitate further study. Sketches and drawings were therefore important technologies within the production of botanical knowledge and reinforcing notions of objectivity. (Daston and

Galison 1992) Yet, in this case, Masson's drawing of Hoodia was a copy. He admits that his sketch was copied from Mr. Gordon's original drawing. Walter Benjamin notes that a copy can jeopardize the authenticity and historical testimony of the original. (Benjamin [1969] 2001) A copy leads to the "liquidation of the traditional value of cultural heritage" and disrupts the authority of the work. (Benjamin [1969] 2001, 51) Reproduction impacts claims to ownership because "changes of ownership are subject to a tradition which must be traced from the subject of the original." (Benjamin [1969] 2001, 51) Benjamin's essay provides insights for thinking through questions of the "copy" and the "original" when it comes to Masson's drawing and ownership claims over Hoodia. Benjamin however was writing about the technical reproduction of authentic works of art. In his essay, the original was the manual reproduction of, for example, a scene from nature, and the copy was a photograph or filming of that work of art. Masson's copy of Hoodia, therefore, is not the type of "copy" that concerns Benjamin. Thinking through Masson's copy of Hoodia in relation to Benjamin, however, raises useful questions about what is named as the "original" and how that impacts discovery and scientific authorship.

Botanical literature generally attributes Colonel Robert Jacob Gordon with the discovery of the first *Hoodia gordonii*. (Bruyns 2005; White and Sloane 1933) Francis Masson is credited with finding *H. pilifera*, the first species of the *Hoodia* genera. (Bruyns 2005, 92) Who produced the first drawing of the plant however remains in question. Scientific authorship therefore is contested. White and Sloan remark that Masson could draw, but "it is not known who executed the figures in Masson's work." (White and Sloane 1933, 18) Some suggest that Masson was aided by the drawing skills of either Gordon or D. Oldenburg, a soldier of Swedish descent employed by the Dutch East India Company who served as a guide for Masson in 1772. A more recent account by Bruyns states that Gordon is believed to be the author behind the figure of

Hoodia gordonii in Masson's book. (Bruyins 2005, 118) Thus, there is uncertainty over who drew the first image of *Hoodia gordonii*, but discovery of the plant by Gordon seems generally accepted and acknowledged.

This contestation however raises questions over distinctions between discovery and scientific authorship. Masson formally attributes the discovery to Gordon. He admits that his sketch is a copy of the original drawing by Gordon. Yet, it is Masson who puts the figure of *Hoodia gordonii* into circulation and names it. Publishing *Hoodia gordonii* in the *Stapeliae* puts it into public view and available for further scientific study. Gordon may have discovered the plant and even produced the sketch, but Masson is the first scientific author of *Hoodia gordonii*. He was the first to make Hoodia known to others. This differs from Colonel Gordon, who did not share his knowledge of Hoodia more publically. The public witnessing of the plant marks the moment of authorship. (Shapin and Schaffer 1985) Yet, a particular public must perform the witnessing. Authorship, in this case, is designated when "the Botanist and cultivator of plants" view the drawing (and possibly the plant specimen) and deemed it "acceptable." (Masson 1796, viii)

Authorship flows out of the moment when *Hoodia gordonii* is made intelligible to the scientific practices and methods of colonial botanists and the field of botany. Masson brought Hoodia into the language of science, Gordon did not. In this case, scientific authorship of *Hoodia gordonii* seems to take priority in importance over its discovery. This tension also raises questions around why the San are not credited with the discovery of *Hoodia gordonii* or other species of the *Hoodia* genera. It also speaks to the collective process of scientific authorship and discovery as knowledge is borrowed from other sources.

Through Masson's travel journals, we see that he had interactions with Dutch farmers, their wives, and local Bushmen. It is unclear how he precisely obtained his knowledge of succulents. Understanding of the plants may have come from careful observation, study, and drawings made of the plant when he found them in the Karoo and brought them back to the Royal Gardens. He was likely assisted, however, by his guides and those he encountered on his journeys. Dutch farmers may have shown Masson where to find the best succulent plants to study. Masson recounts that the Dutch had engaged in "very little stud[y]" of the local plants." The Dutch however may have amassed large amounts of information about succulents from their interactions with the Bushmen and Hottentots. What Masson really means is that they did not "study" the plants by making them intelligible to science and available for public view. Masson, however, does suggest that the Dutch have the capacity to produce scientific knowledge. He however never acknowledges Bushmen knowledge of the plant. Masson admits that he learned of *Hoodia* from Gordon, but there is no acknowledgement that Gordon may have gotten his information from local Bushmen or Hottentots. The fact that the Bushmen or Hottentots may have been publically aware of *Hoodia gordonii* does not count. Considered to be "savages" and "like baboons," the Bushmen were considered incapable of witnessing or performing science. The Bushmen were the objects of colonial scientific gaze; they were not deemed a subject worthy of producing scientific knowledge. Considered less than human and animal-like, the Bushmen were the objects of Masson's observations in his journal and not capable of creating knowledge. Thus, Masson is credited with making *Hoodia gordonii* and the *Hoodia* genera known for scientific study. He brings the plant into public view through established scientific methods to be witnessed and deemed "acceptable." The San may very well have discovered *Hoodia gordonii* and shared their knowledge of the plant with Masson, but because they were

constructed as incapable of producing scientific knowledge they are not attributed with the discovery or scientific authorship of the plant. As the following chapters will demonstrate, this history structures legal claims for patent ownership and benefit sharing, which shapes forms of epistemic citizenship and who counts as a producer of science.

Notions of discovery and scientific authorship not only reinforce a divide between western science and indigenous knowledge, but they also fortify human exceptionalism and the invisibility of animals within scientific processes. Some †Khomani San explained to me that they learned about *Hoodia gordonii* from observing the porcupine. This gives us pause to consider the porcupine as discovering the plant. Imagine a porcupine scurrying across the arid Kalahari Desert looking for a source of water. S/he comes across a greenish, brown succulent plant with pink flowers and long stems. Beneath the prickly skin of the plant, is a bright green interior flesh, full of moisture for the thirsty animal. Porcupines point out the unique properties and value of this plant. They go to it for thirst; they go to it for energy. Within porcupine-Hoodia interactions, Hoodia is left relatively undisturbed. It is not pulled from the ground and/or cut for replanting. The porcupine may chew off a small part of the plant, but Hoodia remains rooted within the ground. Nature retains its “natural” state. The San learn about the desert and its resources through careful observation of the porcupine (and other animals) sharing their lands. Hoodia comes into view as a potential source of water and energy for the San living in the harsh conditions of the Kalahari. Learning from the porcupine, the San experiment with the plant themselves by carefully removing its prickles and biting into its tough outer skin. They too learn that Hoodia is a useful plant for living in the Kalahari and they give credit to porcupines for their contribution.

Porcupine-Hoodia relations bring further complexity to Hoodia patent law struggles. They make contestations over “origin” within claims of discovery even more complicated. Who discovered Hoodia? The San? The porcupine? Can the porcupine be a producer of knowledge?³³⁰ Hoodia patent law struggles involve legal claim making over who discovered (or more accurately who invented) Hoodia first, the San or the CSIR scientists. Patent ownership applications require the naming of the inventor(s) who initially conceived of the invention.³³¹ Benefit-sharing contracts require the naming of an indigenous community whose “knowledge of or discoveries of indigenous biological resources” are to be used for bioprospecting.³³² Considering animal-plant relations makes us rethink these contestations over discovery, inventorship, and authorship, which reinforce fantasies of human exceptionalism. This distinction between discovery and inventorship will become clearer in the next chapter. For now it is important to continue to examine the historical construction of *Hoodia gordonii* and how it is produced along side the San as objects of science to be ordered and classified.

II. Classifying Hoodia

With its authorship by Francis Masson, *Hoodia gordonii* becomes nature made visible. It entered the field of botany and became known and available for further scientific inquiry. Masson made the plant known, but the first to formally classify the plant was Robert Sweet. He initially classified the composition and arrangement of *Hoodia gordonii* into the genus *Hoodia* in 1830. (White and Sloane 1937, 1051) Foucault reminds us that classification is about a new way

³³⁰ I want to thank Dr. Sandra Harding for bringing my attention to the fact that some Aloe Vera juice labels have been known to credit animals with discovering its benefits.

³³¹ See *Sewall v. Walters*, 21 F.3d 411, 415 (Fed Cir. 1994) (explaining that “[d]etermining ‘inventorship’ is nothing more than determining who conceived the subject matter at issue” and that conception has occurred when “a definite and permanent idea of an operative invention, including every feature of the subject matter sought to be patented, is known”).

³³² See definition of “indigenous community” in the South African Bio-prospecting, Access and Benefit-sharing Regulations of 2008.

of making history and producing knowledge. (Foucault 1973, 131) Beginning in the seventeenth century, there is a shift from resemblance to identities and differences. The knowledge of resemblance in the sixteenth century was based upon linking similar objects together and showing how things resemble one another. God the Divine had left his exterior marks upon the world. Resemblance, or a “knowledge of similitudes,” was founded upon discovering these signs and signatures of the image of God. (Foucault 1973, 26) Knowledge went no farther than these marks; it did not examine the interior of nature.

By the beginning of the seventeenth century, thought moves away from the form of resemblance. Knowledge moves towards representing nature. It consists of two forms of comparison that of measurement and order. Measurement allows for the calculation of identities and differences by analyzing units to establish relations of equality and inequality. Ordering involves establishing the simplest units and arranging differences according to degrees of simplicity to complexity. The task was not to understand how the Divine ordered the world, but to classify the world according to the language of reason and rationality. This meant the “entry of nature, at long last, into the scientific order.” (Foucault 1973, 54)

At the end of the eighteenth century, importance was placed upon classifying nature. This involved observing nature and privileging the sense of sight above all others. To observe meant systematically to see the structure of nature, and put it into language. Classification became a “description of the visible,” rather than the internal unity of the organism. (Foucault 1973, 137) A great interest in botany arose out of this shift in episteme because it “was possible to know and to say only within a taxonomic area of visibility.” (Foucault 1973, 137) To know was to classify. Its epistemological foundation rested upon identity and difference. An object in nature “exists in itself only in so far as it is bounded by what is distinguishable from it.” (Foucault 1973, 145)

Knowledge of nature thus proceeded by defining identities through a “grid of differences.” As will be further noted, the “description of the visible” shifted overtime as new scientific technologies enabled scientists to probe even deeper into the spaces of the body. Foucault’s insights provide a useful lens for examining texts that classify Hoodia.

By following Hoodia through different botanical texts, I find that classification and its ordering changes over time with the emergence of new technologies such as the microscope and the ABI PRISM® 3100 Genetic Analyzer. The epistemological emphasis remains focused on comparison around identity and difference, yet the area of visibility shifts to the level of the molecule and the gene within *Hoodia gordonii*. New relationships between genera of stapeliads emerge with the introduction and use of new technological tools and molecular techniques. These new techniques also represent novel conceptions of what Daston and Galison refer to as “mechanical objectivity.” In the nineteenth century, scientists increasingly produced images of actual individual specimens, rather than types or ideals that could not be observed in a single instance. (Daston and Galison 1992, 96) Illustrations of plants were increasingly distrusted as reflecting the bias and subjective temptations of the artist and/or scientists. The photograph and eventually the x-ray played a role in establishing an objectivity where the mechanical image becomes “the standard bearer of objectivity.” (Daston and Galison 1992, 96) Mechanical objectivity is being established in new ways through mechanizing technologies that analyze at the genetic and molecular levels. The classification of *Hoodia gordonii* within the *Hoodia* genus and family of stapeliads is thus a continual process of re-classification with the emergence of new technologies.

Why is this important to a discussion of patent law struggles? Classification of Hoodia provides a view into how the knowledge of *Hoodia gordonii* has shifted from the molar to the

molecular. I contend that this epistemological emphasis on comparison at the molecular and genetic level is what structures claims for and grants of epistemic citizenship in new ways. As we shall see in the next chapter, knowledge of *Hoodia gordonii* at the molecular level is used to justify the patent ownership claims of scientists over Indigenous peoples. But before moving on to property rights, we shall investigate how *Hoodia gordonii* is characterized through the botanical sciences.

This requires a brief mention of the terminology used within botanical plant classification schemes. A *Hoodia gordonii* plant that grows in a San women's kitchen garden or on a South African farm is located within the larger plant world according to a hierarchical ordering system. Scientists who study plants follow a set of rules that guide them in identifying and classifying a plant and how it relates to other plants. Let me remind the reader of the scientific classification in biology as follows: Kingdom, Phylum, Class, Order, Family, Tribe, Genus, Species, and Variety. The ordering system starts out broad and becomes narrower as each ordering group shares similar characteristics with the level above it. The further down the scale you go the more plants are classified according to distinct differences. *Hoodia gordonii* is a species of the genus *Hoodia*. Understanding how *Hoodia gordonii* is classified requires paying careful attention to the ordering system and the exact spelling of the category names. There is a systematic way in which the end of the name for each category is spelled. For instance, the names of orders end in "ales," the names of families end in "aceae," the names of tribes end in "eae." The name of a genus is written with a capital letter and is followed by the species name with no capitalization. The species of *Hoodia gordonii* has not been classified into distinct varieties (or "races") at this time. If a new variety is found then it would follow the genus and species name after the designation of "var." before the variety name. I mention the distinct spellings in order to help the reader keep

track of the various ways in which the *Hoodia* genus has been classified and re-classified. For instance, one thing to keep in mind is that the word “*Stapeliaceae*” is the name of the tribe that *Hoodia* belongs to. Plants within this tribe are collectively referred to as “stapeliads.” Within the *Stapeliaceae* tribe there is also another genus named “*Stapelia*.” This brief mention of terminology should assist the reader in understanding the historical classification of *Hoodia gordonii*.

A. Recording the *Hoodia* Genus

I first encounter *Hoodia gordonii* as classified within a seminal work produced by Alain Campbell White and Boyd Lincoln Sloane called *The Stapeliaceae* in 1937. (White and Sloane 1937) A picture of the plant appears with a caption below that reads “*Hoodia gordonii* Sweet.” This is a change from the name given to it by Masson –“*Stapeliae gordonii*.” White and Sloan explain that Robert Sweet erected the genus *Hoodia* in the second edition of his publication of *Hortus Britannicus* in 1830. Sweet dedicated the genus to “Mr. Hood, a cultivator of succulent plants.” White and Sloan describe Mr. Hood as a “shadowy figure of whom no other mention has come to our attention.” (White and Sloane 1937, 1051) The inclusion of Mr. Hood into the story raises further questions into the discovery of *Hoodia gordonii*. What role did Mr. Hood play? What knowledge did he contribute? What was his relationship to Mr. Sweet?

The full title of Sweet’s work is *Hortus Britannicus: or, A Catalogue of Plants, Indigenous, or Cultivated in the Gardens of Great Britain; arranged according to their Natural Orders*. (Sweet 1830) The Preface to this 599-page catalogue of garden plants explains that the success of the first edition shows the superiority of classifying plants according to the “Natural Arrangement,” rather than the Linnean ordering system. The Natural Arrangement seeks to classify by bringing “together all the plants that are nearest related to each other.” (Sweet 1830, iii) This is more “pleasing” than the Linnean system that only looks at stamens and styles of a

plant “without ever thinking to what else it is allied.” (Sweet 1830, iii) Despite his explicit distancing from Linnaeus, Sweet does consider Linnean classes and orders, while deriving information from close study of Linnaeus’s original specimens. *Hoodia gordonii* therefore first emerges within a classification scheme that seeks to show a more “natural” kinship of plants that goes beyond the identification of male and female reproductive parts. Plants are classified according to morphological criteria such as similarity and difference in flowering and root systems. This is a limited notion of kinship though. Relatedness remains focused on the plant and its biological systems. It does not reflect the relationships between *Hoodia gordonii* and its connection to its environment, the San, or colonial histories.

Hoodia gordonii appears in the *Hortus Britannicus* as classified under the genera *Hoodia* and family of *Asclepiadeae*. (Sweet 1830, 359) *Hoodia* is its own genus, separate from the forty-four other genera designated under the family of *Asclepiadeae*. The genera are not separated under tribes in this text. The only species listed under the *Hoodia* genus is that of *Hoodia gordonii* with a reference to Masson’s *Stapelia Gordonii*. Sweet therefore only identifies one *Hoodia* species.

ASCLEPIADEÆ.										359
2	Massoni.	(br.)	Masson's.	C. B. S.	1790.	6. 11.	D.S. ½.	Mass. stap.	p. 17. t. 21.	
	<i>Stapelia pedunculata</i> . Mass. <i>pedunculata</i> Massoni. Jacq. stap. c. ic.									
3	Jacquin.	(co.)	Jacquin's.	————	————	————	D.S. ½.	Jacq. stap.	c. ic.	
	<i>Stapelia pedunculata</i> Jacq.									
4	penduliflora.	(br.)	pendulous-flower'd.	————	————	————	D.S. ½.	Jacq. stap.	c. ic.	
	<i>Stapelia pedunculata</i> alia. Jacq.									
5	aperta.	(p.pu.)	open-flowered.	————	1795.	7. 8.	D.S. ½.	Mass. stap.	23. t. 37.	
	<i>Stapelia aperta</i> . Mass.									
PIARA'NTHUS, B. PIARA'NTHUS. Pentandria Digynia. H.S.										
1	punctatus. r.s.	(fl.)	purple dotted.	C. B. S.	1795.	7. 11.	D.S. ½.	Mass. stap.	18. t. 24.	
2	pallus. r.s.	(d.p.)	many-flowered.	————	1774.	8. 9.	D.S. ½.	Bot. mag.	t. 1648.	
3	ramosus.	(bk.)	branched.	————	1795.	6. 8.	D.S. ½.	Mass. stap.	21. t. 32.	
	<i>Stapelia ramosa</i> . Mass.									
4	parviflorus. s.s.	(pu.)	small-flowered.	————	————	————	D.S. ½.	Mass. stap.	22. t. 35.	
5	piliferus.	(bk.)	hairy-tubercled.	————	1799.	————	D.S. ½.	————	17. t. 23.	
HOODIA. HOODIA. Pentandria Digynia.										
	Gordon.	(br.)	Gordon's.	C. B. S.	1796.	D.S. ½.	Mass. stap.	24. t. 40.	
	<i>Stapelia Gordon</i> . Mass.									

Figure 2. Classification of *Hoodia* genus and *Hoodia gordonii* found in Robert Sweet's 1830 *Hortus Britannicus*

The *Hoodia* genus is considered different from the other plants within its family. It becomes an individual branch in the family tree of *Asclepiadeae*. The *Hoodia gordonii* plant also stands alone as the single *Hoodia* species. It is unclear why Sweet does not list *H. pilifera*, the first species of the *Hoodia* genera found by Francis Masson. In the family tree of *Asclepiadeae*, the *Hoodia gordonii* also stands outside of history along with its other family members. Sweet's text only provides a classification scheme. It gives few details regarding the plant specimens. Each plant is named and described with a two-word phrase describing, in most instances, the shape or color of its leaves or flowers. The product of Sweet's research is the taxonomic classification itself. The succulent plants become visible only as catalogued according to their "natural orders." Their only history is Sweet's reference to the text and plate number in which the first image or description of the specimen was recorded. In the case of *Hoodia gordonii* no description of its leaves or flowers is given. It is only described in reference to its recording by Masson.

This historical ordering of *Hoodia gordonii* occurred around the same time as the classification of the San themselves. In his study of scientific racism within South Africa, Saul Dubow discusses racial taxonomies and the quest for the “missing link” in late eighteenth and early nineteenth century western Europe. (Dubow 1995, 20) British colonialists exploring the Cape (such as Francis Masson) brought back reports of Hottentots and Bushmen. Scientific thinking during this time was interested in establishing the Great Chain of Being and ordering life on a continuum from the lowest being to God the Supreme Being. In this pre-Darwinian time, prior to discourses of “evolution,” the Hottentots and Bushmen were figured as the lowest of the savage races and closest to monkeys. They were considered indistinguishable from monkeys and lacked a similar capacity to reason. Linnaeus ranked them as the lowest order of humans and questioned whether Hottentots and Europeans derived from similar origins or not.

Fascination with Hottentots and Bushmen as the missing link between humans and animals eventually led to public exhibitions of live human “specimens.” A group of Bushmen were exhibited in 1847 at Exeter Hall in London where visitors proclaimed them as “sullen, silent, and savage—mere animals in propensity, and worse than animals in appearance.” (Dubow 1995, 24) Dubow notes that these public exhibitions played a crucial role in the construction of hierarchical race and gender stereotypes that would eventually undergird apartheid. The public displays allowed the observer to gaze upon and pathologize Hottentot and Bushmen bodies as “other,” while affirming the European self as familiar and superior. The ordering of San Bushmen and *Hoodia gordonii* therefore corresponded around the same time. Nature was being ordered as the San Bushmen were being ranked as closer to nature.

This history allows us to see how *Hoodia gordonii* and the San were co-produced through similar scientific practices of taxonomy and epistemologies of ordering. This history is important

for understanding how the plant and the San are being re-ordered through patent law ownership, and then being re-imagined in counter-hegemonic ways through benefit sharing.

B. Expanding the Hoodia Genus

According to the history provided by White and Sloan, the next site for studying the classification of Hoodia is the work of N.E. Brown in the 1909 *Flora Capensis*. (Brown 1909) His text was produced around the same time as the Union of South Africa became independent from Britain in 1910. Nicholas Edward Brown worked as a botanist at the Kew gardens in London from 1873 until his retirement in 1914. (Bruyns 2005, 2) He cultivated many stapeliads personally and studied them in detail through a microscope, which enabled him to produce very accurate drawings. Brown acquired a large number of stapeliads from 1870-1877. Henry Barkly, who was the governor at the Cape, arranged to have plants shipped to the Kew. *Hoodia gordonii* therefore joined other plants as cargo being transported to England for study, observation, and dissection. It was placed into service within the regimes of colonial bioprospecting and its construction of Empire. (Schiebinger 2004)

N.E. Brown notes many fascinating discoveries through forty years of studying the *Stapelieae*. He stresses that “many supposed native species have arisen from cross-fertilisation in European gardens” and “have never been met with again by subsequent collectors.” (Brown 1909, viii) Thus it is “feared that one of the most striking features of the South African flora is doomed to gradual and irremediable extinction.” (Brown 1909, viii) It seems that colonial scientists were worried about the authenticity of native species of *Stapelieae* within the Cape and concerned over boundary crossing between plant species. Anxieties arose in 1909 over the possible extinction of plants within *Stapelieae* tribe. In terms of its classification, *Hoodia* is placed within the *Stapelieae* tribe. It is one of six tribes within the *Asclepiadeae* family. (Brown

1909, 525) Brown provides a short paragraph description of the *Stapelieae* plants and those that make up the *Hoodia* genus. In contrast to Sweet, Brown identifies seven *Hoodia* species. Brown was recognized in the field for his use of a microscope to study the *Stapelieae* in greater detail than others before him. *Hoodia gordonii* therefore emerges with new *Hoodia* kin. Microscopic technology enables Brown to order *Hoodia* plants in a more exact manner, bringing their distinct differences more to light, while reinforcing a mechanical objectivity. (Daston and Galison 1992) In a later section, Brown describes the flowers, stems, and reproductive parts of plants within the *Hoodia* genus. (Brown 1909, 896) He also devotes a lengthy paragraph to *Hoodia gordonii*. Brown accounts for how tall and thick the plant measures, as well as the shape and coloring of its flowers. He also notes that his descriptions come from a live plant sent to him from “Sir Henry Barkly in 1874 from Little Namaqualand to Kew, where it flowered in August, 1875.” (Brown 1909, 896) The plant is thus described in more detail and some history is provided.

Brown confirms the historical travels of *Hoodia gordonii* to London in the service of botanical science. It would be over one hundred years later before *Hoodia gordonii* would once again travel to London, but this time for the benefit of the ethnopharmaceutical industry. Classification, however, in the historical moment of Sweet and Brown’s work in the 1800s was just beginning. New technologies would make it possible to identify and classify even more *Hoodia* species. An interesting shift in the narrative in which the *Stapelieae* would be described also surfaced.

C. Ordering and Romanticizing Hoodia

Hoodia gordonii and its *Hoodia* genus multiply within the work of White and Sloan. Alain Campbell White (1880-1951) and Boyd Lincoln Sloan (1886-1955) published a now famous work called *The Stapelieae* in 1933 and a second edition in 1937. (Bruyns 2005, 2)

White had a passion for succulents. He was the son of a real estate dealer in New York. Sloane was a middle-school teacher whose long fascination with cacti included being the president of the American Cactus and Succulent Society. White and Sloan met in December of 1930. White moved to California the following year where he established a large collection of stapeliads. The two men decided to collaborate on a book, which was first published in 1933 at White's expense. The work was then expanded to a monograph and published again in 1937. In their work, the *Hoodia* genus grows to include fifteen different plant species, including *Hoodia gordonii*. (White and Sloane 1933, 159)

Through White and Sloane, we are given more information regarding *Hoodia gordonii* within its larger taxonomic family. The plant is one species of the genus *Hoodia* in the tribe of *Stapelieae*. According to White and Sloane, the *Stapelieae* are a tribe of the family of *Asclepiadaceae*, of the sub-class of *Gamopetalae*, and of the class of *Dicotyledons*. *Dicotyledons* are marked by their two seed-leaves, which shoot out from the embryo as the seed sprouts and then drop away before the main stem begins to fully develop. The *Gamopetalae* are distinctive for their partly united corolla (i.e., petals). The petals are united at their base to form a common center, but then their tips are “free in a series of lobes.” (White and Sloane 1933, 1) The *Hoodia* genus is notable for its “flat or shallowly cup-shaped” corollas with minute lobes at the tips remaining free, which appear to merge into the circular corolla petal. This feature, called “sympetaly,” is an evolutionary “response to the intercourse between flowers and their insect visitors.” (White and Sloane 1933, 1) The *Stapelieae* is a “closely related tribe” with its species members primarily distinguishable by their petals. (White and Sloane 1933, 1) The various shapes of the petals influence the fertilization of the plants.

What is striking about White and Sloan's work is the way in which they describe the plants with the *Stapelieae* tribe within their introduction, which they describe as a "romantic story." This differs from the narratives of Sweet and Brown whose work consisted of classification tables and brief morphological descriptions of the plants. In contrast, White and Sloan tend to use language that sentimentalizes the stapeliads and employs narratives of colonization. For instance, they describe the transfer of pollen in the following manner:

To watch the seed-pods of any Asclepiad open and the myriad flatten seeds unfold, each sustained by its silky hairs and hanging for a moment in expectancy and then, squadron by squadron, all sailing forth into the unknown, drifting on the wings of the lightest breeze, is an experience never to be forgotten. It is impossible to give an adequate idea of the miracle by photography, because the essence of it all is motion; but a hint may be caught in Fig. 7, where some seeds of *Duvalia polita* have just issued from the pod and are awaiting the call of the first puff of air to begin their colonizing ventures. The seeds of the Stapeliads are remarkable for their vitality, the rapidity with which they will germinate... (White and Sloane 1933, 5)

In this passage, White and Sloan describe the opening of the twin female seedpods with sentimental wonder. Watching seeds sailing upon a light breeze is an "experience never to be forgotten." However, the ovaries turned seed pods are then described as soldiers "awaiting the call" and then sailing away "squadron by squadron" to "begin their colonizing ventures." The plant thus becomes characterized through a sentimentalizing and militarizing language at the same time.

Hoodia gordonii is also constructed through narratives of migration and origin as White and Sloan discuss the evolution of stapeliads. Attention to patterns of migration and evolutionary changes drew upon Darwin and new understandings of natural selection and evolution that were prominent at the time. White and Sloan explain that stapeliads likely descended from a "semi-succulent ancestor living somewhere in the tropical regions of British India." (White and Sloane 1933, 5) This ancestor is kin to the species of the genus *Frerea*, which is similar to *Carallumas*.

The *Carallumas* “venture[d] forth into semi-arid lands, and in due time one may suppose that they set out to explore the dryer parts of the earth, so far as these lay within reach of their seed flights and other methods of travel.” (White and Sloane 1933, 6) Their “treks may be pictured as taking them in many directions” to Burma, Ceylon, Afghanistan, Persia, Spain, to the Canary Islands. (White and Sloane 1933, 6) Evolutionary changes occurred while on these treks as “the flowers becam[e] more lurid in color and catering with strange carrion odors to the flies and other insects of each new land they visited.” (White and Sloane 1933, 7) Yet, as White and Sloan explain, in “Arabia a great new adventure began.” (White and Sloane 1933, 7) The tribe turned south into Yemen and exhibited striking changes in flower and stem form to meet new conditions. Three new genera were born, *Echidnopsis*, *Huernia*, and *Duvalia*. These plant ancestors then continued on to the Nubian Desert, Somaliland, and Eritrea to Mt. Kenya. During these “exploratory drifts” and “experiments in hybridization” the plants “were trying to allure their visitors with new types of flowers.” (White and Sloane 1933, 7) The first species of the genus *Stapelia* then appeared “in the gardens of some natives at Bukoba, on the shores of Lake Victoria.” (White and Sloane 1933, 8) These stapeliads were barely distinguishable from the *Carallumas*, except for the separate lobes of its corona.

The stapeliads then found their “most ideal conditions” in the northwestern territory of the Cape Province and southerly lands of South West Africa. Many new genera arose in this area including the *Trichocaulon* and the *Hoodia*. Plants within the *Hoodia* genera have more “ruggedly spiny-tipped angles” and a distinct corolla with “the central limb forming a circular disk and the lobes nearly obsolete.” (White and Sloane 1933, 9) White and Sloan conclude their discussion of stapeliad migration by stating, “[t]he development of these many generic forms in so many widely modified species could never have been foreseen when the stapeliads left home

5,000 miles away an unknown number of years ago. The conception of such a voyage to a Promised Land, from India to the Karroos and Namaqualand.” (White and Sloane 1933, 9) From this description we learn that the genus *Hoodia* originated in the “ideal conditions” of the southerly lands of South West Africa. They descended however from a long line of ancestors that came from “British India.” These ancestors went on to a “great adventure” as they “ventured” forth on “treks” through the Nubian Desert to Lake Victoria until they found their “Promised Land” in the Cape Province. I mention this migration story of the *Hoodia gordonii* and its ancestors because themes of migration and origin also figure prominently within scientific constructions of the San.

Ideas about migration and origin serve as legitimizing narratives within South African history. Dubow notes that these notions were first generated around the time of George Stow’s *The Native Races of South Africa* in 1905. (Dubow 1995, 67) Stow was convinced that the Bushmen were the true aborigines of the country and that the Hottentots and Bantu races were mere intruders. By the mid-nineteenth century Bushmen and Hottentots societies had been decimated by settler violence. Posing little threat, they acquired a “novelty value” and began to be romanticized as the first peoples of South Africa. Through his writings from 1892 to 1919, George McCall Theal established the Bushmen as the first inhabitants of South Africa, who were then followed by Hottentots and Bantu migrations from the South.

Dubow notes that the sub-text of Theal’s writings was to justify white rule and claims to land. If the Bushmen were the original inhabitants of South Africa, and they were “extinct,” then no group could claim ancestral rights to the land. Dubow notes that these writings were made during a time when white settlers were engaged in violent warfare with black Bantu populations over land and resources. Black populations, in contrast to the Bushmen, were thus seen as more

of a threat to white rule. Migration narratives establishing the Bushmen as the original inhabitants of South Africa thus served to justify violence against Bantu invaders and to deny them social and political rights. Dubow notes that the writings of Theal established a racist paradigm that shored up pro-colonialist and anti-black traditions while justifying white rule. Romanticizing the Bushmen as original inhabitants of South Africa is thus historically embedded within the denial of rights to both the San and black Bantu populations in order to secure white settler power.

These narratives of stapeliad and Bushmen evolution and migration are obviously different, yet they are entangled. The migration narrative in White and Sloan places the *Hoodia* genera and *Hoodia gordonii* as from South West Africa. Similarly the Bushmen are romanticized as being the original inhabitants of South Africa. These evolution and migration narratives become significant in the context of Hoodia patent law struggles. As will be further discussed, these scientific narratives are deployed and contested by social actors making claims for rights and benefits to patent law and benefit sharing. Scientific discourses of migration therefore become embedded within claims for and grants of patent ownership and benefits sharing as expressions of epistemic citizenship. *Hoodia gordonii* and the San share histories as objects of science to be ranked, ordered, and classified. Each was constructed during similar temporal moments through scientific epistemologies concerned with classifying life at the molar level. *Hoodia gordonii* is classified through the botanical sciences according to its flat or cup-shaped flowers, indistinguishable corolla tips, and larger and stronger stems. The San Bushmen were ordered by physical anthropologists according to skin color, hair texture, and skull shape. (Dubow 1995, 62) Each was therefore constructed according to a particular epistemological emphasis on the physical parts.

Putting the classification of *Hoodia gordonii* in conversation with the scientific ordering of the San Bushmen is meant to historicize both the plant and the peoples who are struggling over ownership of it. It also serves to show the similar epistemological foundations used in classifying both the plant and the San Bushmen. Hoodia patent law struggles work to contest these histories. I bring attention to these epistemological foundations because they inform a later discussion on how patent law privileges some ways of knowing over others. Patent law struggles, as will be discussed, are embedded within contestations over different epistemologies, which have contributed to the “naturalization” of San peoples in the first place.

III. Molecularizing Hoodia

This chapter has focused on early botanical accounts of *Hoodia gordonii* and how the plant was co-produced alongside the scientific ordering of the San. As noted, mechanisms of classification in the 1800s and early 1900s focused on the visible parts of the plant. Yet, botanical classifications of *Hoodia gordonii*, and stapeliads in general, have changed over time as new scientific technologies have arisen.

This final section examines a more recent botanical text, *Stapeliads of Southern Africa and Madagascar*, published in 2005 by Peter V. Bruyns, a botanist with the University of Cape Town. (Bruyns 2005) This work is significant because it is the most recent comprehensive account of stapeliads and is often cited in the scientific publications of CSIR scientists devoted to Hoodia research. (van Heerden 2008) Through my analysis of this text, I find that the scientific gaze has turned to focus on the interior spaces of the plant. Hoodia has become “molecularized.” (Rose 2006) Plant DNA is now analyzed to produce even more detailed classifications and descriptions that include such information as chromosome numbers. (Bruyns 2005, 33) Classification schemes are now made even more precise through the use of genetic data. The

Bruyns text is then briefly considered in relation to contemporary scientific studies related to the San peoples. Previously focused on measuring and studying the visible parts of San bodies, research has shifted to the interior spaces of their genes and chromosomes. Evidence of this is found within the field of medical and genetic anthropology, which collects and studies San DNA to create maps of genetic ancestry and migration. The scientific gaze has shifted from an emphasis on the easily visible to the hidden interior in its study of both *Hoodia gordonii* and the San peoples.

This epistemological shift from the molar to the molecular informs a study of Hoodia patent law struggles. As will become more apparent in the next chapter, patent law ownership works to privilege knowledge of Hoodia at the molecular level and to incite its commercialization. To further this inquiry, I draw upon the work of Nikolas Rose and his conceptualization of molecularization.

A. Molecular Styles of Thought

Rose contends that contemporary biomedicine involves a process of “molecularization.” (Rose 2006) This involves a spatial shift within the focus of scientific inquiry. Once previously concerned with the visible, tangible body, the scientific gaze is now focused on life at its molecular level. Emphasis is no longer placed upon studying the physical anatomy, but rather the biological and genetic systems of the interior body. Rose also notes that biomedicine has been reshaped through a process of “capitalization.” Biomedicine has become bound up with legal regimes of intellectual property law and corporate shareholder obligations. Yet, Rose notes that while the scientific gaze shifts to focus on the molecular, people still imagine and act upon their bodies at the scale of the “molar” level. For instance, they make changes to their bodies through diet, exercise, surgery, and the taking of pharmaceuticals. Thus, contemporary biomedicine is

marked by an epistemological shift to the molecular level that shapes health care decisions at the molar level by individuals and their families.

In setting out this notion of “molecularization,” Rose presents a valuable account of life science research and biotechnology in “advanced liberal” societies such as the United States and the United Kingdom. He sketches out how contemporary biopolitics has emerged within these societies by detailing debates over genetic and genomic research. Drawing upon Rose, I find his discussion of molecularization particularly useful for understanding the different epistemological foundations at stake in patent law struggles over indigenous knowledge. Attention to molecularization and its place within biopolitics however could be more productive. Rose focuses on advanced liberal societies and biomedicine involving human genetic material. This limited scope curtails a broader understanding of biopolitics. Individuals and groups are being disciplined and collectivized through practices of biomedicine that also involve ethnobotanical and ethnopharmaceutical knowledge.

Departing from Rose, I am more interested in how new forms of citizenship and expertise are emerging through struggles over the commercialization and patenting of biological and genetic material of plants. (Collins and Evans 2002; Jasanoff 2003) Investigating the patenting of plants provides understanding into how modes of expertise are rooted within “divergent experiential contexts” and “‘other’ ways of understanding the world.” (Jasanoff 2003, 392) I also give more attention to where the molar meets the molecular. Emphasis on molecularization can obscure what happens with the visible, tangible body as it is structured by discourses of “biomedicalization” and how individuals make health care decisions and claims for citizenship. (Clarke et al. 2003)

A more fruitful analysis emerges from investigating how molecular styles of thought converge with life at the molar level. The epistemological shift to the molecular level corresponds with new legal regimes where the interior spaces of the bodies of plants, animals, and humans can be controlled through patent law. This shapes decisions at the molar level made by Indigenous peoples. They must contend with how the taking of their indigenous traditional knowledge and resources constitutes and is structured by biopolitics. How does the taking of their knowledge relate to the self-disciplining techniques of others (and possibly themselves) who are compelled to diet, exercise, and take pharmaceuticals? How does the taking of their knowledge and resources impact the health and well being of themselves and their community? How do political decisions over prior informed consent and benefit sharing effect their health care (or not) by giving them more control over their resources and bringing in revenue? How do their political decisions impact the health of others by restricting access to indigenous knowledge and resources? Investigating Hoodia patent law struggles begins to shed light on how the biopolitics of advanced liberal societies, in the words of Rose, is deeply connected to individuals, groups, and institutions within societies historically constructed as “non-advanced.”

B. Molecularization of Hoodia and the San

Encountering *Hoodia gordonii* within Peter V. Bruyns’ *Stapeliads of Southern Africa and Madagascar*, I learn that new scientific technologies have led to a re-ordering of stapeliad kin relations. Bruyns notes that more detailed studies of stapeliads have come from “new molecular techniques by means of which parts of the DNA of plants are analysed and compared.” (Bruyns 2005, 4) Stapeliads are now considered members of the *Apocynaceae* family (not *Asclepiadaceae*). In his 1753 *Species Plantarum*, Linnaeus historically placed plants of the Apocynaceae family together with species of the *Asclepiadaceae* family under a large grouping

called the *Pentandria Digynia*. (Bruyns 2005, 4) This grouping included all plants where each flower had five anthers and two ovaries. Robert Brown divided these families in 1810 when he removed plants whose pollen was attached to “translators” from the *Apocynaceae* family and put them in a new family called the *Asclepiadaceae* (which he spelled “*Asclepiadeae*”). Species within the *Apocynaceae* and *Asclepiadaceae* families have thus been divided since 1810.

Stapeliads of the *Hoodia* genera were historically members of the *Asclepiadaceae* family. They were separated and considered different from species of *Apocynaceae*. Sweet classified *Hoodia gordonii* within the genus *Hoodia* and a part of the *Asclepiadaceae* family (which he spelled as “*Asclepiadee*”). (Sweet 1830) White and Sloane similarly placed *Hoodia* in the *Asclepiadaceae* family, but in contrast to Sweet, they gave mention to the genus *Hoodia* as within the tribe of *Stapeliaceae*. (White and Sloane 1937) *Hoodia gordonii* of the *Hoodia* genera has since remained within the tribe of *Stapeliaceae*, but the tribe has recently changed families. Bruyns explains that “morphological and molecular data have been analysed together” to show that “the *Apocynaceae* and the *Asclepiadaceae* be united once more under a single family, the *Apocynaceae*.” (Bruyns 2005, 4) Thus, techniques of molecularization have unified plant species. Certain plants species have been found to be more similar than different. DNA analysis has incited new family structures. *Hoodia gordonii* is now related to more plant kin. As Bruyns proposes, “only a united *Apocynaceae* and *Asclepiadaceae* form a phylogenetically acceptable ‘monophyletic’ unit.” (Bruyns 2005, 4) Molecularization, in this case, interestingly re-establishes historical plant classification schemes. New molecular techniques confirm that Linnaeus was right after all. Plants of the *Apocynaceae* and *Asclepiadaceae* families should be grouped together. Science at the molecular level shores up knowledge historically made at the molar level.

New scientific techniques have also led to the discovery of new genera of stapeliads. White and Sloan recognized 18 genera of *Stapeliaceae* and Bruyns notes 24 genera. (Bruyns 2005; White and Sloane 1937) Molecular techniques are being used to produce even more robust studies of the relationships between the genera to determine their relatedness and difference. The stapeliads have once again joined the larger *Apocynaceae* family. Their relatives have grown as new genera have been discovered. The *Hoodia* genera itself has also changed. It has grown smaller. Fewer distinct species are now recognized. Bruyns lists only 13 *Hoodia* species as opposed to the 15 of White and Sloan. (Bruyns 2005, 1050; White and Sloane 1937) With the emergence of new molecular and genetic technologies, plants are being classified and reclassified into new family structures. Studies of morphological and molecular relatedness produce new understandings of plant species. Epistemological emphasis is still placed upon classifying species by sameness and difference, but data at the molecular scale now makes it possible “to produce more robust hypotheses” regarding species relatedness. (Bruyns 2005, 5) As scientists move to the genetic level they find new ways in which plants are all related.

Morphology of the stapeliads at the molar level is still emphasized within this text as the stems, leaves, flowers, and seeds of the plants are accounted for. Descriptions of the plant, however, are now more detailed through the power of a dissecting microscope. The text includes images of the plants in the form of photographs and sketches, but also microscopic images magnifying parts of the plant. Accounts of plant fertilization processes and migration of plant species remain important to this text, but Bruyns employs different language than White and Sloan. For instance, Bruyns describes seed dispersal as in the following manner:

When it is ripe, the follicle splits longitudinally along a suture on its adaxial (ventral) surface and releases the seeds (fig. 38). Each seed has a cluster (usually known as a 'coma') of fine transparent hairs 10-25 mm long attached at its micropylar end. On release from the follicle, these hairs spread out like a parachute and enable the seeds to disperse on whatever wind there is. Many of them land up under or entangled in nearby shrubs, after which the seed soon falls off from the come and becomes buried in leaf-litter under the bush. Seeds of stapeliads are certainly also able to disperse over long distances. (Bruyns 2005, 31)

Bruyns recounts the process in a more clinical manner as seeds disperse and land in nearby "leaf-litter" under a bush. This is in contrast to the "experience never to be forgotten" by White & Sloan as they described how "squadron[s]" of seeds drifted on the wind to "begin their colonizing ventures." (White and Sloane 1933, 5) Bruyns' articulation of stapeliad seed dispersal contrasts with the "romantic story" told by White and Sloan. This shows how narratives of botanical science regarding stapeliads change. Knowledge of stapeliads, once sentimentalized, becomes dispassionate, more objective. The shift in language itself is important for San struggles related to Hoodia. San Hoodia knowledge is often discounted as less scientific because it is described in sentimental terms as "life" and as "my brother" but, as evident here, botanical science itself once produced knowledge of Hoodia through sentimental narratives that have since given way to more "technical" language.

Furthermore, notions of migration and origin are still discussed by Bruyns, but the language has similarly shifted. His accounts of the evolution of stapeliads now deploy migration narratives focusing on "dispersal" and "diversity." Stapeliad evolution is now confirmed by molecular studies. Bruyns writes that "[s]ome of the molecular results suggest that the stapeliads originated somewhere in north-eastern Africa." (Bruyns 2005, 39) This differs from previous explanations by White and Sloane who placed its origins in "British India." (White and Sloane 1933, 5) Dispersal and diversification from north-eastern Africa is described as involving four

“major events” Bruyns provides a “biogeography” of each event to explain the radiation (i.e., evolution) of the plants into different geographic regions ranging from India, West Africa, Madagascar, and into southern Africa. In the Bruyns text, the stapeliads are no longer described through the narratives of colonialism found within White and Sloan. They are not described as “ventur[ing] forth” on “treks” to “explore the dryer parts of the earth” and begin “new adventures,” while “trying to allure their visitors with new types of flowers.” (White and Sloane 1933, 6-7) Rather, in the Bruyns text, the stapeliads become acted upon by the environment. Evolution of stapeliads is explained through molecular studies of plant fossil records showing how plants were “rafted” and “spread out” when continents shifted and broke apart. Diversification of speciation also occurred due to “changes in the rainfall regime and increasing aridification.” (Bruyns 2005, 39) Tracking levels of rainfall and arid-conditions indicates centers of stapeliad diversity where various different species exist. The spread of stapeliads across various habitats is thus made intelligible through narratives of environmental change.

Through Bruyns, knowledge of *Hoodia gordonii* and the stapeliads incorporates both molar and molecular styles of thought. New molecular imaging technologies enable more detailed examinations of plant morphology. Bruyns provides lengthy page descriptions of the pollination, biogeography (evolutionary distribution and diversity), and cultivation of stapeliads. He also notes various genetic chromosome counts for different species. Various uses of stapeliads, including *Hoodia* species, are additionally indicated. This is where the molar and molecular meet. Molecular studies of the plants molar parts are used to confirm how to make use of *Hoodia gordonii*. Bruyns notes that the Council for Industrial and Scientific Research in South Africa and various pharmaceutical firms are investigating *Hoodia* species for “commercial production of the relevant active principle and the registration of a patent for it.” (Bruyns 2005,

58) He states that “it has been found that the active principle is produced in greater amounts when the plants are grown in more or less natural conditions.” (Bruyns 2005, 58) Thus a more historical description of *Hoodia* is given that goes beyond an account of its flowers and stems. Its commercial appeal to the pharmaceutical industry is also acknowledged.

Yet, what is significant is an absence of any mention of the benefit sharing agreement with the South African San Council. There is also no mention of how San peoples may have historically used the plant. Bruyns notes the *Hoodia* species has a “reputation for quenching thirst and hunger,” but Indigenous peoples’ knowledge or use of the plant is explicitly left unmentioned. Accounts of *Hoodia gordonii* are stretched to address its potential commercialization and patenting, but Bruyns’ text maintains the boundary between western science and Indigenous knowledge, by failing to make any explicit reference to San peoples and their relationship with the plant. *Hoodia gordonii* remains bounded within a particular set of scientific discourses that penetrate further into the interior spaces of the plant through molecular techniques and styles of thought. Similar modes and epistemologies of molecularization are also being used to construct the San peoples.

Geneticists have become increasingly interested in population genetics and studying the genetic diversity of hunter-gatherer societies. The Human Genome Diversity Project was the first to call for such studies in 1991. (Cavalli-Sforza et al. 1991) The goal of the Diversity Project was to map human genetic variation, but it never became operational. (Reardon 2005) Indigenous rights activists and physical anthropologists strongly opposed the Project while leading a successful campaign to stop it. Desires to study human genetic diversity, however, persisted. The failed Diversity Project has been merely reincarnated in other forms such as the IBM-Genographic Project.

Indigenous San peoples are now at the center of this emerging science. For instance, a recent genomic study deploys the DNA samples of Indigenous San peoples to determine the “Genetic Structure and History of Africans and African Americans.” (Tishkoff et al. 2009) The study shows the southern African Khoesan (SAK) San and !Xun/Khwe populations to be the most genetically diverse population. Questions of migration and ancestral origin are also of interest. Results from the Tishkoff study confirms previous linguistic and archeological evidence of a distinct East African Bantu migration into southern Africa and “the incorporation of Khoekhoe ancestry into several of the Southeast Bantu populations.” (Tishkoff et al. 2009, 1039) Results also surprisingly revealed high frequencies of genetic clusters between the Pygmies of central Africa and SAK populations, which suggests a shared genetic ancestry. The ꞤKhomani San themselves have also been recruited as human research subjects to donate their DNA and participate in genomic diversity studies, which reveal southern Africa (not eastern Africa) as the origin of modern humans. (Henn et al., 2011)

Molecular data is now being collected and examined to determine human genetic diversity. Genetic testing is being used to shore up linguistic and archeological data previously analyzed. The gaze has shifted from the exterior parts of San anatomy to their genes and chromosomes. The San are now characterized through allele frequencies and genetic haplotype markers. Critics contend that this obscures and threatens the important social and cultural relatedness of Indigenous peoples. (Bolnick et al., 2007; TallBear 2007) Molecularization of the San peoples thus occurs at the same temporal moment as the molecularization of *Hoodia gordonii*. The scientific gaze peers into the interior spaces of each in order to explain their ancestry, migration, evolution, and relatedness to other species.

What should give us pause are how these studies and their associated narratives might be used to shore up conclusions once made by researchers such as Stow and Theal. As previously mentioned, researchers in the early 1900s studied the anatomies and languages of San peoples to determine San ancestral origins. Confirmation of the San as the original inhabitants of South Africa was used to justify white rule and settler claims to land. (Dubow 1995, 69)

What is the subtext of today's genetic studies that molecularize the San? The Diversity Project explicitly aimed to "understand human diversity, both normal variation and that responsible for inherited disease." (Cavalli-Sforza et al., 1991, 490) The Tiskoff study characterized genetic variation among ethnically diverse African populations because it is critical "for reconstructing human evolutionary history, understanding human adaptations, and for identifying genetic risk factors (and potential treatments) for disease in Africa." (Tishkoff et al. 2009, 1035) Human genetic variation studies inform genetic disease association studies. They can begin to tell us whether or not certain populations have genetic variants that make them more susceptible to disease or more likely to have different drug responses.

Researchers thus seem well intentioned in their efforts to use genetic diversity studies to move us towards more personalized medicine. However mapping the genetic variation of Africans and African-Americans may work towards identifying genetic risk and finding treatments, one subtext is that it also offers new pathways for revenue. Pharmaceuticals can "become ethnic" when they are approved for treating specific racial and ethnic populations. (Kahn 2004) For example, Kahn notes that this was the case when the Federal Drug Association (FDA) approved BiDil to treat heart failure only in African Americans. The inventors of the drug were also awarded a patent explicitly for its utility in treating African Americans.

Genetic variation studies are thus considered the first step towards a future of personalized medicine that will provide important health benefits, but also new revenue streams around race-based medicine and ethnic drugs. The ꞆKhomani San and their DNA are thus placed into service to generate potentials for personalized pharmaceuticals and their associated profits. The molecular spaces of the ꞆKhomani San themselves, similar to that of *Hoodia gordonii*, become objects of study for pharmacological futures.

IV. Conclusion

The re-invention of Hoodia over time through the botanical sciences provides an important historical understanding into Hoodia patent law struggles. Contemporary debates over who owns Hoodia and who knows Hoodia are embedded within these colonial legacies. Gordon is named as the first to discover *Hoodia gordonii*, but Masson is the scientific author of the plant. He is the one who made the plant publically known by publishing an image of the plant. He is the one who disclosed it to the scientific community. Masson's travel journals work against this narrative of discovery and authorship, however, by revealing his encounters with San peoples. Masson's contact with the San suggests that knowledge of *Hoodia gordonii* came from the San. The re-invention of Hoodia through colonial botanical accounts also occurred alongside the characterization of San peoples as closer to animals. Masson's own travel journals contribute to the construction of the San peoples as he describes them as savage and baboons. San mobilization against Hoodia patents and claims to Hoodia knowledge are simultaneously working within and against these colonial legacies.

How Hoodia is classified and represented over time in scientific botanical accounts also informs Hoodia patent law struggles. Both the plant and the San are ordered through similar taxonomic schemes of classification. As nature was being re-ordered, the San were being

classified as closer to nature. In addition, as objects of science the plant and the San were also both represented through narratives of migration and origin. These classification schemes and representations were used to justify the subordination of the San. Acknowledging these histories gives new meaning to Hoodia patent law struggles over the origin of Hoodia knowledge. In making claims for benefit sharing, the San argue that knowledge of Hoodia's properties originates from the San. The San are now producing their own narratives of origin and migration to claim legal rights.

Furthermore, the re-invention of Hoodia through processes of molecularization are also important for understanding Hoodia patent law struggles. Science has turned its gaze upon the molecular parts of the plant through new genetic technologies. As the plant becomes further fragmented, these technologies re-figure Hoodia and its relatedness to other plant species. Science has also turned its molecular gaze upon the bodies of San peoples. Scientists deploy San DNA samples in their studies of human genetic variation and genetic disease association. San peoples are similarly fragmented into their genetic parts, and their relatedness is re-conceptualized through genetic terms, rather than cultural, social, or political relatedness. Processes of molecularization are also at issue within the patenting of Hoodia.

The next chapter shows how patent law privileges certain forms of knowledge production over others, namely that of scientific molecular styles of thought versus indigenous knowledge. San organizing against the patenting of Hoodia, therefore, can also be read as a counter-hegemonic strategy against representations of the San through molecularization. These histories therefore provide a broader understanding of San mobilization against the patenting of Hoodia and the ways in which the San simultaneously reinforce, contest, and re-figure them.

Chapter Four

Owning Hoodia: Nature/Cultures and the Patenting of Hoodia Knowledge

This chapter examines how patent law transforms and structures *Hoodia gordonii* into a patented object. It finds that, in order to become intelligible to the law, nature is reconfigured in meaning and scale into a cultural, scientific invention. Science studies scholarship argues that patent law reinforces a binary between nature and culture. (Haraway 1997; Kahn 2007; Kang 2006; Pottage 1998) This chapter contributes to such scholarship by examining the precise mechanisms and practices within the law that generate and sustain such dichotomies. In particular, I examine how legal discourses expressed through patent law statutes, patent specification documents, and government websites structure *Hoodia gordonii*, while giving meaning and value to the plant and its associated epistemologies. In the first section, I study South African patent law statutes and the patent office website to investigate rules for registering patents. Specifically, I address patent law requirements for how inventions must be disclosed to the public and who can file a patent application (i.e., patent specification document). Through this examination, I learn that the transformation of *Hoodia gordonii* from plant to patent object depends upon and reinforces discourses of expertise. New forms of expertise and experts emerge, namely, the patent attorney and the inventor scientist, which work to exclude Indigenous San peoples' knowledge and politics.

I then move on to address elements of patentability (e.g., novelty, non-obviousness, and utility) through a close examination of the patent specification document detailing *Hoodia gordonii* as invention. I come to find that discourses of expertise and modes of exclusion become

further entrenched through precise legal rules separating nature from culture in the processes of assigning legal rights. In order for *Hoodia gordonii* to become a patented object, the “invention” of its chemical properties for the ethnopharmaceutical industry must be distinguished from its “state of nature” as a plant. In other words, *Hoodia gordonii* as plant within nature is severed from *Hoodia gordonii* as cultural, scientific invention. *Hoodia gordonii* is fragmented down into its molecular parts and becomes embodied under the law as a chemical structural formula. Drawing upon feminist science studies, in particular feminist ecologies, I also claim that patent law reinforces nature/culture binaries that are particularly gendered.

Through this analysis, I argue that patent law acts as a value system. Patent law, in separating nature and culture, works to privilege certain forms of knowledge production and bodies over others. Scientific epistemologies of molecularization become valued over Indigenous and gendered knowledge practices related to Hoodia. In turn, inventor scientists (and their interests) are given stronger rights of epistemic citizenship in the form of patent law ownership, in contrast to the lesser of such rights for the Indigenous San peoples.

In the final section of this chapter, re-introducing theoretical insights discussed in chapter one, I seek to disrupt patent law and its boundary making by re-casting *Hoodia gordonii* as a “heterogeneous hybrid.” (Strathern 1996) Hybrids by nature are heterogeneous, but Strathern emphasizes this point further, stressing hybrids as amalgamations rather a mixture of two dichotomous parts. Through this analysis, I discuss how the patenting of Hoodia actually depends upon the fusion of both nature and culture. The purified chemical compounds isolated from Hoodia could not have been developed without the raw material of the Hoodia plant itself. Epistemologies of molecularization used to invent Hoodia compounds are themselves dependant upon Indigenous San forms of knowledge. By re-interpreting patent law as network and Hoodia

as hybrid object the hope is that conceptual space will open up to more fully consider and value Indigenous knowledge as a significant source of scientific knowledge production.

I. Theorizing Nature/Culture Dichotomies in Patent Law

Science studies scholarship produces insights into how patent law works to construct and reinforce a dichotomous relationship between nature and culture. (Haraway 1997; Kang 2006; Strathern 2001, 1996) Much of this scholarship employs the work of Bruno Latour to further its analysis. According to Latour, being modern depends upon two related practices. One is a practice of “translation” where new mixtures are created between beings—“hybrids of nature and culture.” (Latour 1993, 10) The other practice is one of “purification” whereby distinct zones are fashioned between beings such as human and non-human or nature and culture. For example, dichotomous relationships are constructed whereby humans are placed in contention with, and hierarchically superior to, animals. Latour notes that we are modern so long as we consider these practices separately. However, once we begin to consider how these practices work together, we stop becoming wholly modern and new possibilities for our futures emerge. Latour’s work goes on to explore the connections between these two practices. He argues that practices of purification depend upon the invisibility of hybrids, but the more hybrids are concealed the more they interbreed and proliferate. These practices keep Westerners distant from other “premodern” cultures and reduce their ability to recognize hybrid forms and to see, for example, that Boyle’s air pump is no less strange than Arapesh spirit houses. (Latour 1993, 115)

Science studies scholarship takes both of these practices of translation and purification into account when analyzing patent law. In terms of purification scholars note that under patent law, objects found in nature cannot be patented. Only man-made objects that have been isolated and purified from nature can become propertyed possessions. (Strathern 2001, 8-10) Scholars

assert that this legal doctrine reinforces a dichotomy between objects discovered in nature and those invented in the lab. This results in value being placed on scientific/cultural inventions in the form of ownership rights. (Strathern 1996, 535) Patent law thus depends upon a legal logic that separates nature from culture in order to award property rights. This logic not only structures the patenting of *Hoodia gordonii*, but it similarly applies to the patenting of biological and genetic materials from humans.

For example, the famous case of *Moore v. Regents of the University of California* demonstrates the binary logic driving patent law.³³³ The 1990 case involves the patient John Moore. Mr. Moore brought a legal claim arguing that physicians at UCLA hospital unlawfully obtained an ownership interest in his cells, without his permission, when they removed them from his body after surgery. The court found against Moore, stating he did not have rights to his bodily tissue because objects found in nature cannot be patented.³³⁴ Under the doctrine, the court treated his tissue sample (“nature”) separately from the invention of the unique cell lines in the lab by UCLA scientists (“culture”) in order to award rights to the scientists. (Strathern 1996, 525) Science studies scholarship therefore points to actual patent law doctrine and how it reinforces nature/culture dichotomies. Why is this important?

Distinctions between nature/culture are vital to Euro-American modes of rationality within modernity. Dualisms of nature and culture have been theorized extensively within feminist theory, in particular within ecofeminism. This political movement and site of theoretical inquiry examines connections between the exploitation of the environment and the subordination of women. (Mellor 1997, 1) It challenges feminism to acknowledge the body and to recognize

³³³ *John Moore v. The Regents of the Univ. of Cal.*, 51 Cal. 3d. 120 (1990).

³³⁴ Moore argued that his cells were unlawfully taken from his body because the patent for the cell line was proof that the cells were an invention and not the same as the cells in his body. The court however ruled against Moore stating that he did not have a conversion claim. *Ibid.*

that “human embeddedness in the environment is related directly to human embodiment.” (Mellor 1997, 2) Specifically, it confronts liberal feminist notions that women must transcend their body (e.g., reproduction, mothering, and caretaking) to achieve equality. (de Beauvoir 1968; Friedan 1997 [1963]) Early ecofeminist writings argued for women to reject patriarchy by embracing their “wild female” and connections to nature. (Daly 1990; Plant 1989) Such writings were criticized for their essentialism and failure to address other histories and forms of subordination. (Lorde 1984, 66-71)

Feminist theorizing of the connections between women and nature have therefore become more complex. For instance, feminist philosopher Chris J. Cuomo distances herself from the label of ecofeminism and turns to “ecological feminisms.” (Cuomo 1998, 6) According to Cuomo, ecofeminism focuses too much on the objects of oppression (such as woman and nature), while ignoring the connections between oppressive systems. (Cuomo 1998, 6) She therefore takes up ecological feminisms which focus “on the links and patterns among the treatment of oppressed, exploited, or undervalued beings and entities—that is, among forms and instances of oppression and degradation, and common ethical and ontological bases for maltreatment.” (Cuomo 1998, 7) Feminist ecologies therefore consider the connections between the exploitation of the environment and women more fully by addressing multiple forms of oppression such as race, ethnicity, sexuality, and disability and focusing on institutional and structural mechanisms of oppression. (Braidotti 1994; Cuomo 1998; Plumwood 1993; Warren 1997)

Feminist political ecology specifically examines the structural explanations for the state of the earth. (Seager 2003) It addresses environmental effects of when local environments are forced into global capital flows and world trade regimes. As Seager points out “the gendered

nature of ecologically based power structures is often most apparent at moments of ecological change: when land is transferred from a commons system to private ownership, for example...” (Seager 2003, 966) The commercialization and patenting of Hoodia properties is a good example of this. Thus, a key site of inquiry within feminist ecologies is patent law ownership and its binaries of nature/culture.

Feminist theorists point out that categories of nature and culture are cast as diametrically opposed to one another and used to reinforce logics of domination. (Gruen 1997, 365) Humans have created categories of nature and culture in order to understand and conceptually order the world. Reason and culture are said to have emerged from nature, while nature itself is understood as something to be conquered and transcended. Patriarchal societies therefore make distinctions between humanity (culture) and the natural world (nature). (Mellor 1997, 59) Through this conceptual ordering, women, people of color, and Indigenous peoples become historically associated with and closer to nature. (Wilson 1997, 398) These distinctions also justify hierarchal sexual divisions of labor, modes of inclusion/exclusion, and the assignment of rights and duties. Challenging these nature/culture dichotomies, feminist theorists argue that although nature is the basis of human life, it is also a historical and social construct. Nature “is both a ‘natural’ and a social construct.” (Mellor 1997, 62) Similarly, categories of woman, gender, sex, and race are also constructed by both biology and social practices. (Cuomo 1998, 45) Biology itself is socially constructed, but has materiality. (Butler 1993) Theorizing of nature/culture dichotomies therefore becomes useful in understanding how oppressive systems construct gendered, raced, and sexual bodies.

More recently, feminist ecological principles have been embraced, challenged, and expanded upon within contemporary scholarship examining the discursive and material

construction of “life” within a globalized world. Theorizing of nature/culture has been integral to STS critiques of how the proliferation of the life sciences has given rise to new modes of thinking about and understanding the self, the body, and politics. (Rose 2006) Feminist science studies scholarship, in particular, examines how advances in genetics and biotechnology promulgate new configurations of nature/culture.

For instance, Franklin et al. investigate how nature becomes denaturalized, displaced and re-naturalized within global culture, while culture itself can now be reproduced biologically. (Franklin et al. 2000, 68-94) This work draws upon Haraway’s metaphor of “implosion” describing how nature and culture have become interpolated through the patenting of the genetically modified OncoMouse used in breast cancer research. (Haraway 1997) Drawing upon Haraway, Franklin et al. show how icons of the blue planet, fetus, gene, and seed work to re-figure boundaries of nature/culture, while suggesting new ways of visualizing life and its parameters. (Franklin et al. 2000, 12) Franklin et al. also draw upon Butler’s reconceptualization of gender as an enactment, process, and performance in order to make connections to the destabilization of nature within global culture. (Butler 1993)

STS scholars also examine how nature becomes “remodeled on culture” and how “culture becomes natural” within genetic technologies studying race and human variation. (Goodman et al. 2003) For instance, such technologies produce new ways of thinking about race as a complex interplay between the social and the biological. (Goodman et al. 2003, 13) Furthermore, STS and feminist STS scholars also examine how the life sciences, and their associated transformations of nature/culture, have become embedded within and re-drawn through neo-liberal economies (Cooper 2008; Sunder Rajan 2006) Such scholarship begins to show how the shifting terrain of

nature/culture, produced through genetic technologies, offers new insights and challenges for theorizing both gender and race within contemporary global economies.

This chapter contributes to STS scholarship regarding nature/culture dichotomies by examining how nature is constructed through patent law into cultural scientific invention. Building upon feminist ecologies and feminist STS, I study patent law as both a social structure and value system that re-configures nature/culture, while enacting new provocations for feminist theorizing of gender, race, and indigeneity in particular. Through an examination of the patenting of Hoodia, I find that patent law reinforces binaries of nature/culture that work to privilege certain bodies and knowledges over others. Such binaries are enacted through discourses of expertise and precise legal rules designed to fortify life at the molecular level.

II. Constructing Legal and Scientific Expertise

A. Registering Patent Applications

To learn how *Hoodia gordonii* becomes a patented object, a useful place to begin is with the actual patent application filed on behalf of CSIR on April 15, 1998. Getting hold of the actual patent specification document, however, turns out to be more difficult than I imagine. According to the website of the Companies and Intellectual Property Registration Office (“CIPRO”) in Pretoria, CIPRO is responsible for the registration of businesses and intellectual property rights. As a governmental office, it is housed under the South African Department of Trade and Industry (“DTI”). Opening up my web browser and clicking on the CIRPO website, I enter the “gateway to formal economic participation.” Its vision is to “provide global leadership in the efficient registration of businesses and intellectual property rights.” Its mandate is thus comprehensive. In comparison to the U.S., it does the work of both the USPTO and a Secretary of State office in the United States. The website is “an easy point of entry” for customers and stakeholders to get

information. Its menu offers a delectable array of services for customers to, for example, incorporate companies and closely held corporations, file annual return disclosures, and register patent rights. I search for an online searchable database for registered patents, and to my dismay, I find no such link.

In early 2009 there was no online searchable database for retrieving registered patent applications. Luckily one informant explained that some of the top intellectual property law firms in South Africa have constructed their own internal databases of registered patent applications from which to search. This is possible because South African firms such as Adams and Adams are responsible for drafting many patent applications for registration in South Africa and abroad. Unfortunately, I do not have access to what would likely be deemed attorney-client work product anyhow. My informant makes another suggestion and gives me the name of a woman in Pretoria who will go to the patent registration office and find the document for me. A quick glance at her website tells me that her agency is devoted to helping attorneys “do the research at the trademarks, companies, and close corporations offices.”³³⁵ I first contact the agency via email on March 1, 2009 requesting a copy of patent number 97/3201 (or 98/3170). I receive a quick email in response saying that they would be happy to do the search for me and then fax the document to me in the United States. So with an initial deposit of R195 to the agency, I eagerly anticipate the arrival of the patent specification document. My wait however becomes longer than expected. Six months later I have not received a copy of the patent, so I send another email to the agency asking for an update. Once again I get back a prompt and professional email telling me the following:

All the patent and trademark files are stored at a storage facility run by an independent operator. The service we receive from them leaves a lot to be desired.

³³⁵ www.trademarksearch.co.za (last accessed 7/13/11)

Be that as it may, when we request perusal of a file and we don't receive said file within the same week, we have to assume that the file has already been booked out by another party. Metrofile do not believe in supplying anyone with a reason for the delay. Our only recourse is to keep on ordering the file, which we are doing.

I know how frustrating this must be for you, but unfortunately in this instance there is absolutely nothing else we can do, except pull at our hair.

In my efforts to locate a copy of the patent specification document I run up against structural, institutional bureaucracies that keep *Hoodia gordonii*, as embodied in the patent specification document, concealed from view. There seems to exist only one legal file of the document for public consumption, and someone else has checked out that file. In the end, it takes an entire year to receive the 169-page file in the mail.

The masking of the patent document within the veil of South African legal and institutional bureaucracy is significant for two reasons in this case. One is that it contradicts an important justification for patent ownership. As will be discussed, temporary monopoly ownership is granted because future innovation is supposedly incited by the public disclosure of the invention through the publishing of patent specification document. My difficulty in accessing the document raises doubts over the extent and manner in which public disclosure occurs and is meaningful. Even if the concealment of the document was due to the lack of action by the agency itself, it still is a testament to the difficulty of being able to access the patent specification document. The concealment of the document is also significant because it points to the role of technology within patent practices and their attendant legal underpinnings.

Early in 2009 there was no searchable online database at the South African patent office. This is different from the United States Patent and Trademark Office. The USPTO implemented an online searchable database beginning in December 1994 with the AIDS Patent Database.³³⁶ The AIDS Patents Project provided researchers and the general public with information on U.S.

³³⁶ <http://www.uspto.gov/patft/help/datesdb.htm> (last accessed 7/13/2011)

patents related to HIV/AIDS. (Fullton and Purcell 1997) Thus, public disclosure of U.S. patents through the Internet began in response to increased demand for HIV/AIDS research being called for by scientists and numerous gay activist organizations. In contrast, South Africa launched its online patent search database in September 2009 for patents issued from 1984 to 2005. The *Hoodia gordonii* patent number 1998/03170 can now be found listed among registered patents, but the body of the document often remains inaccessible through my web browser. The document rarely loads properly due to unknown technical obstacles. Theoretically the *Hoodia gordonii* patent is now available for public disclosure, and I want to assume that others are able to access it more easily than myself. I will just have to continue consulting my hard copy version of the 169-page document. Access to the patent document now gives me the chance to inquire how *Hoodia gordonii* became a patented invention.

B. Constructing Patent Law Experts and Legal Expertise

My search for the *Hoodia gordonii* patent application brings me into the worlds of the CIPRO website and its dissemination of IP information. In reviewing the website, what strikes me most is the attention paid to the importance of using a patent law attorney to file patents. Legal expertise is made and governed by statute and becomes fortified through the CIPRO website. Clicking on the hyperlink to “Intellectual Property,” I am given the option to learn about “copyright, designs, patents, trademarks” and the “acts and notices” and “fees and costs” associated with those forms of intellectual property rights. The screen for “patents” explains to me that a patent is an “exclusive right” for an “invention,” which gives an owner “the right to exclude others” from making or using the invention generally for 20 years.³³⁷ This short one-paragraph description is followed by a lengthier five-paragraph explanation on “services of

³³⁷ South Africa Patent Act 57 of 1978, § 46 (*amended* 2002).

patents experts.” I am told that individuals can file their own patent applications, but “it is however, advisable for applicants to seek the assistance of the Patent Attorneys.” This is because the scope of patent protection will depend “on the wording and content of the specification.” Patent attorneys are more “familiar with international requirements” and are in a better “position to draft provisional specifications in an internationally acceptable fashion, thus promoting protection both in South Africa and abroad.”

According to the website, patent protection depends upon precise legal language that is best drafted by legal experts. Patent attorneys are also “more familiar” with the legal requirements in securing patent ownership. The South African Patent Act of 1978 specifies that any inventor can file a patent application.³³⁸ But as the law becomes implemented through the institutional structures of CIPRO, the expertise of the patent attorney is bolstered. Much of the information given to the public on the website is devoted to explaining the importance of using an attorney to file patents. The expertise of the patent attorney becomes disaggregated from the expertise of the inventor. An individual inventor may know how to invent a “product or a process that provides a new way of doing something, or offers a new technical solution to a problem” but they do not have the training to draft a patent application. Scientific experts and expertise are at once entangled and split from legal authorities.

Upon further inquiry, the discourse of legal expertise becomes thicker and more compulsory. I come to find under “registration procedure” that an individual can only file a “provisional application.” A quick glance at the Patent Regulations as amended in 2006 confirms that this is a legal requirement.³³⁹ The website explains that a provisional application is only

³³⁸ South Africa Patent Act 57 of 1978, § 27(1) (*amended* 2002).

³³⁹ South African Patent Regulations of 1978, § 27 (*amended* 2006).

good for 12 months. It allows for an inventor to work on his invention and/or “test-the-market” to find out if the invention is viable. After 12 months a “complete patent application” should be filed. Once a complete application is filed, a formal examination is performed after 6 months. CIPRO is a “non-examining” patent office though, so applications are only reviewed for form and not on the merits. According to Section 40 and 41 of the regulations, so long as all the proper documentation has been submitted and “prescribed formalities” are met, then patent ownership is awarded. A patent attorney or patent agent is the only one who can file a complete application. Section 28 of the regulations confirms that this requirement is grounded in the law. The filing of a complete specification allows for the inventor to claim priority from the date of the provisional application.³⁴⁰ An inventor himself cannot file a complete application with CIPRO. The website in 2003 informs me that if a complete application is submitted, “the assistance of a Patent Attorney is essential.” This language becomes even more firm in 2011 when the website says that the use of a patent attorney or patent agent is “compulsory.” This is likely a testament to the passage of the amended regulations that made it even clearer that only patent attorneys or agents can file a complete specification.³⁴¹ This differs from the United States.

In the U.S. an inventor can file a provisional or non-provisional patent application with the USPTO without the assistance of a patent attorney or agent.³⁴² (Mueller 2006, 38) The USPTO website spends less time urging applicants to utilize the services of a patent attorney or patent agent. It does however warn that the filing of an application requires “knowledge of patent law” and “scientific or technical matters” and that, without the aid of a legal expert, an applicant

³⁴⁰ South African Patent Act 57 of 1978, § 31(1) (*amended* 2002).

³⁴¹ South African Patent Regulations of 1978, § 28 (*amended* 2006).

³⁴² United States Patent Rules, 37 C.F.R. § 1.41 (2010).

may run into “considerable difficulty.”³⁴³ This opening up of access and who can file patent applications should in no way be read as an indication of the democratization of the U.S. patent law system. It is true that anyone can file a provisional or even non-provisional patent application, but given that applications are reviewed on their merits by the USPTO, inventors are more likely to need the assistance of patent attorneys. Thus, lines of expertise and a lack of access remain.

This review of the CIPRO website demonstrates the importance of patent law experts and expertise within South Africa. It also shows how IP information is disseminated publically in such a manner as to reinforce cultural notions of legal expertise. Patent law thus gives rise to a new form of legal expertise—the patent attorney. Invention of *Hoodia gordonii* into a chemical compound involves the expertise of CSIR scientists (with knowledge from the San), while the creation of the plant into patented object involves the expertise of patent attorneys. Thus, how does one become a patent agent or patent attorney?

Section 20 of the South African Patent Act explains that a patent agent or patent attorney is one who takes a “prescribed exam” and who pays the appropriate fee. So a person can become an agent if he or she passes a test. Section 21 tells me that the Patent Examination Board determines the patent exam. To learn more about this test for patent law expertise, I must go to the Patent Examination Regulations of 2003. I am told that only certain individuals are qualified to sit for the test. A person must have a technical, scientific, or university degree with at least a three-year course of study. There is also some discretion though. The Board will also allow someone who has a technical or scientific qualification or practical experience to take the test if

³⁴³ http://www.uspto.gov/patents/resources/general_info_concerning_patents.jsp#heading-9 (last accessed 7/15/2011)

they decide that their background is sufficient to pass the examination requirements.³⁴⁴ A law degree therefore is not required to take the patent bar in South Africa. Practically speaking though the majority of persons sitting for the patent bar are likely to have a degree in law. Persons that pass the patent bar that do not have a law degree are licensed as patent agents. Passing the examination is not easy either.

The Patent Examination Board sets forth the general format of the exams. An eight-page list of regulations says what the testing should look like. The patent bar examination requires knowledge of the patent law, how it relates to other forms of intellectual property, and the relevant national and global issues relevant to patent law. Candidates are tested on basic legal rules related to patent law and on practical skills such as drafting specification documents. Candidates are tested in several subject areas by writing essays that take up to 4 hours for each subject. The Patent Examination Board sets forth the testing requirements, but the South African Institute of Intellectual Property Law (SAIPL) administers the test.³⁴⁵ This is the main professional association for persons practicing intellectual property law in South Africa. They provide lectures on the material and administer the exams. Those that pass the exams are entitled to register with SAIPL and abide by their code of ethics. Fees for student members of SAIPL include R500 (\$65) per subject and R500 per exam enrolled for.³⁴⁶ Student membership fees as of 2012 were R1500 (\$197) per year.

Such examination guidelines further show how patent attorneys and their expertise is a legal designation. The Patent Act of 1978, Patent Examination Board regulations, and SAIPL

³⁴⁴ South Africa Patent Examination Regulations, § 3 (2003).

³⁴⁵ South Africa Patent Examination Regulations, § 13 (2003).

³⁴⁶ Guidelines for Intellectual Property Examination Lectures. <http://www.saiipl.org.za/student/9-uncategorised/82> (last accessed 3/26/2012)

Guidelines all come together to define who a patent attorney is. The figure of the patent attorney itself is invented through an assemblage of laws, regulations, professional guidelines and ethics. Expertise is therefore legally defined and mediated. Legal boundary making draws lines between who can file a patent application and who cannot. (Star and Griesemer 1989) The professionalizing of patent attorneys through a separate patent bar and professional association sets them apart as specialized legal experts in the technical mechanisms of obtaining patent ownership. It also means that they can justify charging higher fees for their expertise. Legally constructed expertise also influences the types of inventions that become patented objects. Only those inventors who can afford the fees of patent attorneys are able to apply for complete patent protection. In 2011 the cost of filing patent application was R590 (\$88). This is almost double from the cost in 2003 of R266 (\$39). Patent filing fees are not the main cost however. According to a 2010 survey done by the technology journal, Tech4Law, the average hourly rate for trademark or patent law services was R1827 (\$272).³⁴⁷ Regulatory construction of patent law engenders an expertise that plays a role in what science gets translated into patent ownership. This makes it more difficult for Indigenous peoples such as the San to obtain patent ownership. If they wanted to apply for a patent on Hoodia properties they would have to hire a patent attorney to file the application. They would then have to incur the costs of hiring the legally required assistance of the expert patent attorney.

One might argue that because South Africa has a non-examining patent office, then the costs of a patent attorney would be lower. Patent applications are not reviewed on their merits. Patent ownership is assigned so long as all the paper work is in order. A patent specification document is only further reviewed if someone challenges it in court. One might assume then that

³⁴⁷ <http://www.tech4law.co.za/business4law/efficient-business-process/the-south-african-law-firms-hourly-rate-survey-results.html> (last accessed 3/26/2012)

patent applications filed in South Africa with CIPRO are not extensive, but in fact they are. A faculty member at UCT School of Law, who is an expert in intellectual property law, explains to me that attorneys who file patent applications “take it fairly seriously” and “they do spend time and effort.”

The registration office is considered an “absolute joke” by outside officials such as those with the World Intellectual Property Organization (“WIPO”). Patents are not reviewed, so a South African patent “has no weight.” This means that, to obtain strong patent protection, attorneys will usually file in the U.K. or the U.S. as well as in South Africa. The offices in the U.K. and the U.S. are examining offices, so the application must show that the invention meets all of the statutory requirements of patentability. The patent application that gets submitted to CIPRO is similar to the one that was filed in the U.K., with some minor changes. Applications are therefore often extensive and carefully drafted to ensure patentability and to stand up to potential court challenges. Patent attorneys also have an incentive to carefully draft patent specification documents despite the lack of enforcement by CIPRO. More time spent on drafting means more billable hours to the client. My informant reminds me that “remember your attorneys here want to make a buck, so they want to apply their minds and put in a bit of work. And they do it in a professional manner.” Despite a patent office that is “not clued up,” South Africa patent attorneys are diligent in their drafting of patent specification documents. Obtaining patent ownership, even in South Africa, remains costly and often out of reach for those Indigenous communities that might consider it.

As *Hoodia gordonii* moves through patent application processes and procedures it becomes embedded within discourses of legal expertise. It also provides further understanding into debates over expertise. (Collins and Evans 2002; Jasanoff 2003) Objects of nature become

patented objects through the skillful drafting of patent attorneys. Jasanoff points out the role of experts and expertise within democratic societies. Drawing upon Ian Hacking, she notes that experts are “indispensable to the politics of knowledge societies” because they provide information that works to manage uncertainty. (Jasanoff 2005, 267) Governments depend upon trained professional patent law experts to communicate what inventions should be patented. There is uncertainty as to what types of inventions are acceptable for neo-liberal capital markets and thus in need of patent protection. Patent attorneys therefore become credible experts in discerning what forms of knowledge should be patented.

They also become key figures in drawing lines between different forms of knowledge production. As Arundhati Roy made known, “...it’s not really a question of experts versus laypersons or of knowledge versus ignorance. It’s the pitting of one value system against another, one kind of political instinct against another.” (Roy 2001, 27-28) Patent attorneys play a key role in transforming nature into patentable subject matter. This involves the reworking of scientific knowledge into patentable knowledge, which necessitates the devaluing of indigenous forms of knowledge production. As will be discussed, patent attorneys refigure CSIR’s knowledge of the *Hoodia gordonii* plant by distinguishing it from San peoples’ knowledge of the plant.

Legal expertise therefore is utilized in the valuing of scientific forms of knowledge production and the devaluing of indigenous San knowledge regarding the plant. Their expertise in drafting patent specification documents plays a part in privileging and promoting certain forms of knowledge production over others. They are key figures in maintaining hierarchal forms of epistemic citizenship as scientist inventors and their institutional employers make claims for ownership.

C. Fashioning Inventorship and Scientific Expertise

Patent law also carves out a new type of scientific expert, that of inventor. Under South African law, inventors are permitted to file an application for patent ownership or, in the case of a complete application, direct their patent attorney to do so.³⁴⁸ Inventors are also the ones who file applications for U.S. patents.³⁴⁹ Inventors in the U.S. must also make an oath to the patent registrar that they believe themselves to be the original and first inventor of the invention.³⁵⁰

An inventor is different from a scientist. All inventors could be categorized in some way as scientists; but not all scientists are inventors. An inventor is a legal category that circulates culturally. Several scientists may work on a project, but only certain members of the research team are designated as inventors. A scientist comes into being as an inventor under the law if he or she is the person who conceived of the invention before any one else. (Burrell 1999, 56) If there is more than one inventor, South African law specifies that joint inventors can apply for a patent in equal undivided shares.³⁵¹ United States law also makes it clear that inventorship is about determining who conceived of an invention. As Dan Burk makes clear, the touchstone of inventorship in U.S. patent law is therefore “defined by the ‘conception’ of an invention, rather than by the physical construction or ‘reduction to practice’ of the invention.” (Burk 2007, 186) Joint inventors can also apply for patent ownership in the U.S., so long as they made a contribution to at least one of the claims.³⁵²

³⁴⁸ South Africa Patent Act 57 of 1978, § 27(1) (*amended* 2002).

³⁴⁹ 35 U.S.C. §111(a)(1).

³⁵⁰ 35 U.S.C. §115.

³⁵¹ South African Patent Regulations of 1978, § 27(2) (*amended* 2006).

³⁵² 35 U.S.C. § 116 states that inventors can apply for a patent jointly even though “(1) they did not physically work together or at the same time, (2) each did not make the same type or amount of contribution, or (3) each did not make a contribution to the subject matter of every claim of patent.” To be named as an inventor, each

As will be further discussed, an invention is an idea that is novel and has an industrial application. Scientists can make novel scientific discoveries, but inventors are the ones who demonstrate how those discoveries can be commercialized. So who created an invention from *Hoodia gordonii*? Who found a way to commercialize its properties?

Hoodia gordonii comes into focus as a patented chemical composition through the expertise of scientists with the South African Council for Scientific and Industrial Research. Through the specification document the plant is given a name change. It is now an invention, a patented object, with the name “pharmaceutical compositions having appetite suppressant activity.” The plant comes into being as a chemical composition for the pharmaceutical industry. So who conceived of *Hoodia gordonii* as a patented object? The named inventors include scientists from the bioprospecting unit at CSIR, who are listed as Fanie Retief Van Heerden, Robert Vleggaar, Roelof Marthinus Horak, Robin Alec Learmonth, Vinesh Maharaj, and Rory Desmond Whittal. As employees of CSIR they are listed as inventors, but they do not become patent owners. As a condition of employment, employees are often required to assign their rights over to their employers. In South Africa, when a contract of employment requires an employee to assign his rights to an invention over to their employer, patent ownership is assigned to the employer.³⁵³ This also holds true in the United States.³⁵⁴ The scientist inventors therefore assign their rights over to CSIR and the organization becomes the applicant for patent ownership by hiring their patent attorneys to draft up the legal documents.

joint inventor must contribute to the conception of at least one claim. (*Ethicon, Inc. v. United States Surgical Corp.*, 135 F.3d 1456, 1456 (Fed. Cir. 1998). One does not qualify as a joint inventor though by “merely assisting the actual inventor after conception of the claimed invention.” *Ethicon*, 1456.

³⁵³ South African Patent Act 57 of 1978, § 59(2) (*amended* 2002).

³⁵⁴ 35 U.S.C. § 261

Hoodia gordonii as patented object is therefore mediated not only by patent law, but also by contract law. CSIR uses contracts to structure employee working conditions. In this case they are stripped of their rights to become patent owners. Contract law is therefore used to shift power from employees to employers. The relationship between patent and contract law is the subject of the next chapter, which discusses how the San use contract law in the form of benefit sharing to shift power from CSIR to the San peoples.

To find out more about CSIR and its invention, I go to their website and learn that CSIR was constituted by an Act of Parliament in 1945. Its mandate is to engage in “multi-disciplinary research and technological innovation, to foster, in the national interest” fields of “industrial and scientific development” for “the improvement of the quality of life of the people of” South Africa.³⁵⁵ Its main headquarters are located in Pretoria, but it has various different regional offices across South Africa in places such as Durban, Johannesburg, Cape Town, and Stellenbosch. At its core is a “focus on science” whereby CSIR “transfers the knowledge generated through research activities by means of technology and skilled people.”³⁵⁶ CSIR involves “the generation and application of knowledge.” This takes place in domains such as “biosciences; the built environment; defense, peace, safety and security; materials science and manufacturing; and natural resources and the environment.”

It is no wonder that CSIR became interested in *Hoodia gordonii* because it touches upon almost all of these sectors. The study of plant material is conducted alongside emerging research in the areas of nanotechnology and synthetic biology. Sophisticated CSIR research also demands state of the art technologies. CSIR claims to have research centers with advanced information,

³⁵⁵ CSIR’s mandate is articulated in Section 3 of the Scientific Research Council Act (Act 46 of 1988, as amended by Act 71 of 1990).

³⁵⁶ Focus on the Council for Scientific and Industrial Research (CSIR), (Media Release, February 2008) (on file with author)

communications, and laser technologies. For its research and development outcomes, CSIR lists “intellectual property (IP) management, technology transfer (for commercial gain as well as social good), knowledge dissemination and impact assessment.” The organization holds itself out as a leading scientific institution pursuing cutting edge research with the latest technology. It also makes explicit its connections to the government and the nation-state.

CSIR describes its research as structured by the “macrostrategic framework” of South Africa’s development goals. It contributes to these goals by “building and transforming human capital” and “strengthening the S&T (science and technology) base” of South Africa. This is possible through funding received from the South African Parliament. CSIR notes that forty percent of its monies come from Parliament by way of the Department of Science and Technology (DST). According to their website, remaining income is generated from public and private research contracts, IP royalties, and commercial dividends. The invention related to *Hoodia gordonii* therefore becomes entangled within the development of South Africa. It emerges as a symbol for a “modern” South Africa seeking to establish itself within the global economy.

Hoodia gordonii as patented invention becomes part of a larger focus within South Africa on “innovation.” In 2007, the Minister of Science and Technology proposed a Technology Innovation Agency Bill. The objective of the agency is to, “support the State in stimulating and intensifying technological innovation and invention in order to improve economic growth and the quality of life of all South Africans by developing and exploiting innovations and inventions.” Inventors and inventions come forth as key figures for improving the economic growth and quality of life of South Africans. Inventorship is given value as a means to improving the quality of life in South Africa. Inventors thus become important citizens in strengthening the

nation-state and its citizenry. They are also given legal tools to further their practices of inventorship. Around the time of the Innovation Bill, the Republic of South Africa also passed the 2008 Intellectual Property Rights from Publicly Financed Research and Development Act.³⁵⁷ The object of the Act is to ensure that “intellectual property emanating from publicly financed research and development is identified, protected, utilized and commercialized for the benefit of the people of the Republic...”³⁵⁸ Similar to the 1998 U.S. Bayh-Dole, the IPR Publicly Financed Act compels universities and government research institutions receiving public funding (such as CSIR) to find ways to patent and commercialize their research findings. Recipients of funding are also required to protect their IP “from appropriation” and ensure “it is available to the people of the Republic.”³⁵⁹ In particular, they are obliged to give small enterprises and broad-based black economic empowerment entities “preferential access to opportunities arising” from the attendant intellectual property.³⁶⁰ Thus, inventorship and patent ownership become linked with black empowerment initiatives within South Africa.

Such affirmative-action type initiatives were set into motion by the Broad-based Black Economic Empowerment Act of 2003. The BBBEE Act was meant to “promote economic transformation in order to enable meaningful participation of black people in the economy” and to achieve a “substantial change in the racial composition of ownership.”³⁶¹ “Black people” were defined under the BBBEE Act as Africans, Coloureds, and Indians. The importance of the

³⁵⁷ South African Intellectual Property Rights from Publicly Financed Research and Development Act of 2008.

³⁵⁸ South African Intellectual Property Rights from Publicly Financed Research and Development Act, § 2(1) (2008).

³⁵⁹ South African Intellectual Property Rights from Publicly Financed Research and Development Act, § 2(2)(b) (2008).

³⁶⁰ South African Intellectual Property Rights from Publicly Financed Research and Development Act, § 2(2)(e) (2008).

³⁶¹ Broad-based Black Economic Empowerment Act of 2003, § 4(2).

BBBEE Act was that it emphasized transformation in South Africa as a project of economic transformation. The BBBEE Act, and the Black Economic Empowerment Advisory Council it established, strives to promote more meaningful citizenship for black people by designing strategies for improving their rates of participation within the economy their ownership of resources. I mention the BBBEE Act and its connection the IPR Publically Financed Act in order to further contextualize the patenting of *Hoodia gordonii*.

The remaking of *Hoodia gordonii* into a patented object is enmeshed within new transformation politics of South Africa. Inventorship and patent ownership have emerged as key components in the economic transformation of post-apartheid South Africa and its goals for black empowerment. The transfiguration of *Hoodia gordonii* through the legal mechanisms of patent law corresponds with the transformation of the nation-state. This helps to explain the stakes involved within struggles over *Hoodia gordonii* and its larger political meaning. CSIR as inventor, under the IPR Publicly Financed Bill, is now obliged to commercialize its inventions for the people of the Republic and to contribute to black economic empowerment.

For *Hoodia gordonii* to become a patented object it must first move through the worlds of CSIR and its scientific practices. Nature must be observed, examined, tested, and reconfigured into a scientific creation potentially eligible for patent ownership. Chapter three discussed how colonial botanists investigated and studied *Hoodia gordonii* as a botanical object. Its visible, molar parts were classified and ordered through scientific practices and epistemologies of colonial botanical science. Botanists continue to classify the plant along with other stapeliads. This chapter, however, looks at how CSIR scientists study *Hoodia gordonii* as an ethnopharmaceutical object. As scientific discourses change, we see how the scale of the plant and its attendant meanings change. It shifts from being a plant to being a chemical composition

embodied in the form of a structural formula. The scientific gaze of CSIR seeks out the ethnopharmaceutical, patentable potential of the plant by examining its molecular parts. This focus on its ethnopharmaceutical properties however is a recent phenomenon.

D. Militarizing Hoodia gordonii

Studies of *Hoodia gordonii* by CSIR first began as a military project. Colonial botanical accounts of the *Hoodia* species as a food and water substitute led directly to its investigation by CSIR for a 1963 report on edible wild plants in the region. (Wynberg et al. 2009, 95) CSIR aimed to study the toxic and nutritional properties of wild plants to determine if they were suitable for the South Africa Defense Force. (Wynberg et al. 2009, 95) In this move, *Hoodia gordonii* became militarized in support of a South African army soon to be involved in a decades-long war against Namibia. Formerly placed in the service of English and Dutch colonialists, the plant was now within regimes of a militarized nationalism preparing for war. Valuable properties of *Hoodia gordonii* were being considered as sources of food and water for army troops pushing across the Kalahari Desert against the SWAPO.

Feminist international relations scholars have done much work around processes of militarization. Cynthia Enloe reminds us that militarization is the “step-by-step process by which something becomes *controlled by, dependent on, or derives its value* from the military as an institution or militaristic criteria.” (Enloe 2000, 281) *Hoodia gordonii* becomes militarized in the sense that it derives value from and for military troops. Militarization involves transformation of the cultural, political, economic, and even the scientific. Enloe notes that it “requires *both* women’s and men’s acquiescence, but it *privileges* masculinity.” (Enloe 2000, 3) Militaristic assumptions become normalized, which obscures the military dependence upon gendered hierarchies used to justify patriarchal military practices such as the use of rape for “ethnic

cleansing” and the exploitation of “comfort women” to provide sex to soldiers (Enloe 2000, 89 & 42) Militarization also depends upon constructions of women as “unruly nature.” (Tickner 2001, 34) Ann Tickner points out that Western political theory has a long history of associating the feminine with wild and untamed spaces and the masculine with virtuous forces that must prevail over the feminine “state of nature.” (Tickner 2001, 34)

When *Hoodia gordonii* enters into processes of militarization it becomes entangled within these histories of militarization. Science is used to study the plant with the hopes of putting it into military service. The plant becomes a *potential* tool for technical, military apparatuses. The hope is that soldiers who eat *Hoodia gordonii* may find the extra energy they need to carry out acts of war and violence. Some of these soldiers may even be the !Xu and Khwe who were compelled to fight for the SADF. As the San are being recruited into military service, so too is their knowledge. Scientific constructions of the San as “closer to nature” work to position them as having “innate military prowess.” (Sharp and Douglas 1996, 327) At the same time, nature itself, in the form of the *Hoodia gordonii* plant, is being scientifically structured as a potential instrument for war. San bodies and their knowledge of Hoodia are thus both put into military service.

Hoodia gordonii as militarized, however, did not live up to expectations. Scientists used laboratory experiments with mice to identify the potential of *Hoodia* species as a non-toxic appetite suppressant, but researchers could not identify the active ingredients with the plant. (Wynberg et al. 2009, 95) CSIR lacked the sophisticated technology needed to investigate the molecular and genetic structures of the plant. Research on the project was discontinued until the early 1980s. (Wynberg et al., 2009, 95) The 1980s marked the end of South Africa’s war with the South West Africa People's Organisation, and it was also a time of intense political struggle

against the apartheid regime. Within CSIR, however, it was a significant moment in terms of the progress of scientific research. In 1989 CSIR acquired high-field nuclear magnetic resonance spectroscopy equipment that enabled them to investigate the relevant molecular structures of *Hoodia gordonii*. (Wynberg et al. 2009, 95) Possession of this sophisticated technology ushered in a new approach to the study of *Hoodia* species accompanied by a change in scientific epistemologies towards molecularization of the plant and its emergence as an ethnopharmaceutical object. A key step in the construction of *Hoodia gordonii* as commercialized ethnopharmaceutical object is through the process of applying for patent ownership, which requires the applicant to publically disclose the scientific methods and steps needed to create the invention. It is this legal requirement of disclosure that I will turn to now.

E. Disclosing Hoodia gordonii

I go in search of *Hoodia gordonii* as ethnopharmaceutical object, but to my dismay the plant remains out of view. After several interviews with activists and attorneys close to the Hoodia patent law struggle, I am given the name of someone at CSIR to ask permission for interviews. After my initial email introduction, a representative for the CSIR bioprospecting unit denies my request for interviews with the following response:

As you can imagine CSIR are overwhelmed by similar requests and it is impossible for us to partake in each and every such interview. We have over the last few years granted a few dozen such interviews with students in a similar position to yourselves.

These students have written up several thesis [sic], publications and have given talks internationally on this topics with input from ourselves. With the patent in its 12th year, we really have no new information to add and we suggest that you access past students' thesis's [sic], publications and the like (as these are all in the public domain) and use these as your source. (email communication, March 5th, 2009)

Obviously I am disappointed to learn that I will not be able to interview scientists at CSIR. Local activists, attorneys, and members of the †Khomani San have given me generous amounts of their time. CSIR scientists however are unwilling to assist me. I have questions about how the scientists describe and give meaning to the *Hoodia gordonii* plant. I am curious as to whether or not the benefit-sharing agreement changed CSIR practices related to the plant and the bioprospecting of resources more generally. These questions will have to go unanswered. As a U.S. researcher in South Africa, I expect to be denied access to interviews. Denials of access should be read as important post-colonial and anti-imperialist strategies. What I find curious though is the justification for the denial, not the actual denial itself.

The patent on *Hoodia gordonii* properties is twelve years old, so I am told there is no new information to add. Knowledge production related to the plant therefore becomes measured and bounded according to the term of the patent. I am also instructed that *Hoodia gordonii*, as shaped by CSIR, must now be accessed through the historical record of public domain materials of previously authored theses and articles. The legal term of the patent and concepts of the public domain are thus used to close off further conversation and debate. New developments have emerged though. Unilever has dropped the project. This means no royalties will flow to CSIR as the patent holders. Thus I am curious as to why CSIR remains silent on the matter. This means that I must look to other sources in order to investigate the characterization of *Hoodia gordonii* as an ethnopharmaceutical object. The initial CSIR patent application is one of the first public sources to characterize the plant as an ethnopharmaceutical object.

The normative justification behind patent law monopolies assumes that giving inventors exclusive, temporary monopoly rights incites innovation by encouraging them to publicly disclose their inventions. A world without patent rights would be a secretive world. Companies

and their inventor employees would keep their inventions as trade secrets. Innovation within an economic terrain of secrecy would fail to produce public goods efficiently for the benefit of society. Inventors are therefore given exclusive, temporary monopoly rights in exchange for unveiling their scientific work by filing a patent specification document. This document, theoretically, is open to public gaze.

Patent documents are therefore productive components within the scientific process. Scientists are able to refer to patent documents in order to learn new directions for scientific research and to confirm if their existing research is in fact novel. Patent documents therefore act as tools within scientific research. They lead scientists towards more innovation that improves upon or departs from the invention described in the specification document. When patent rights expire the invention is then available for use by others in the public domain. Short-term monopoly rights are thus said to encourage further innovation and a future of freely traded goods in the public domain. Scholars however debate whether or not patent ownership stimulates further innovation. (Aoki 2007; Chander and Sunder 2004) Actual disclosure and access to specification documents is also questionable. As previously noted, South Africa only recently made their patent documents available online and even then this author was having trouble accessing the website.

A more tenable justification for patent rights is grounded in industry-wide research and development practices. Scientists and inventors are compelled to apply for exclusive patent rights in order to secure investment funding. Investors and companies are not willing to put money into developing and commercializing a product unless they can ensure a return on their investment. Patent rights provide a window of exclusivity that allows them to be first to market. Patent specification documents therefore act as one of the first views into scientific knowledge

production. The *Hoodia gordonii* patent application thus offers the initial public glimpse into the transformation of the plant into a chemical compound, ethnopharmaceutical product, and patented object. Through this process scientific practice becomes articulated through the language of patent law.

As I enter the legal and scientific landscape of the 117-page patent specification document I come to find *Hoodia gordonii* as a molecularized chemical compound and plant extract. The first part of the patent specification document is the “body.” (Burrell 1999, 67) Its function is to instruct the public on how to replicate the invention. It therefore gives a detailed description of the scientific knowledge production behind the invention. So how is the plant transformed from plant to steroidal glycoside? How does a patent body articulate changes to the body of *Hoodia gordonii*? I come to find that the plant has been reduced in scale from plant, to extract, to chemical compound through various scientific practices. This reduction in scale ensures its delivery into global scientific and capital flows of ethnopharmaceuticals. It also matters for legal rights.

As will be discussed, patent ownership rights only attach to products of nature that are isolated into subject matter for trade or industry. At this moment, however, I am interested in how the patent specification document gives meaning to the plant and publically discloses it as scientific and legal object simultaneously. Therefore, I will be paying attention to how the document articulates the science behind the plant, and how this scientific narrative is structured to satisfy the precise legal requirements for granting patent ownership rights.

III. Patent Law Rules and the Making of Hoodia as Patented Invention

A. *Hoodia as Invention (versus Discovery)*

Through the mechanisms of legal drafting by patent attorneys, *Hoodia gordonii* comes into being as patented scientific invention within the space of the patent specification document. The document is one of the required forms in applying for a patent with CIPRO or the USPTO. It describes the invention through specific “claims” and discloses the best method for performing the invention.³⁶² The claims are important for defining the patent owners rights, whereas the body of the specification is meant for instructing and giving notice to the public on how to re-create the invention.³⁶³ A close reading of the patent specification document reveals how nature is constructed through the legal language of patent law and practice of drafting patent ownership applications.

Botanical studies of *Hoodia gordonii* describe the plant through the language of science and botany. For instance, White and Sloan gave meaning to the plant by describing its plant parts, reproductive processes, and migratory journeys. (White and Sloane 1937) The patent owner CSIR, however, is more concerned about its biological and chemical structures for purposes of developing pharmaceuticals.³⁶⁴ CSIR is therefore more interested in the molecularization of *Hoodia gordonii*. The molecular properties of *Hoodia gordonii* are isolated with the help of sophisticated technologies within the CSIR bioprospecting facilities, namely, “nuclear magnetic resonance, mass spectrometry, high-pressure liquid chromatography, and gas

³⁶² South African Patent Act 57 of 1978, § 32(2) (amended 2002).

³⁶³ *Selas Corporation of America v. The Electric Furnace Co* 1982 BP 442(A); Timothy Donald Burrell, *Burrell's South African Patent and Design Law*, 3rd ed. (Durban: Butterworths, 1999), 70.

³⁶⁴ “Adding value to Indigenous Knowledge through Scientific Innovation,” Presentation by Marthinus Horak for the International Workshop on Indigenous Knowledge, Benoni, South Africa, February 9-11, 2005. (on file with author)

chromatography.”³⁶⁵ These technologies work to isolate relevant properties in the plant that signify its value as an ethnopharmaceutical and patentable object. Let’s turn now to the actual specification document itself in order to witness how *Hoodia gordonii* is characterized as a patented object.

At the bottom of the patent specification document is the signature of D.M. Taylor, an attorney with the South African law firm, Adams & Adams. Taylor and his associates are the legal experts translating the scientific expertise of CSIR scientists into regimes of ownership. Through the language of patent law, *Hoodia gordonii* becomes a patentable invention now referred to as “pharmaceutical compositions having appetite suppressant activity.” The plant is no longer referred to by its botanical name; it is now an invention referred to as a pharmaceutical composition that suppresses appetite. What exactly is a patentable invention?

For nature to become a patented object it must be considered an invention. Under South African Law, an invention involves an “inventive step” and is “capable of being used or applied in trade or industry.”³⁶⁶ An invention is also determined by what it is not. Discoveries and scientific theories are not considered inventions.³⁶⁷ Biological processes for the production of plants and animals are also not considered an invention.³⁶⁸ This distinction between invention and discovery is important. As noted in the previous chapter, there is debate over who discovered *Hoodia gordonii*. Who first learned of *Hoodia gordonii*? Was it Francis Masson or Captain Gordon or the San? South African patent law, however, is uninterested in this question. The question that drives legal patent ownership in South Africa relates to invention, not discovery.

³⁶⁵ Ibid.

³⁶⁶ South African Patent Act 57 of 1978, § 25(1) (amended 2002).

³⁶⁷ South African Patent Act 57 of 1978, § 25(2) (amended 2002).

³⁶⁸ South African Patent Act 57 of 1978, § 25(4)(2) (amended 2002).

This distinction is less clear under United States patent law. Patent law monopolies are constitutionally justified under the U.S. Constitution under Article I, § 8, cl. 8. This clause states, “[t]o promote the Progress of Science and useful Arts, by securing for limited Times to Authors and Inventors the exclusive Right to their respective Writings and Discoveries.” Patent ownership over discoveries is therefore justified as a way to promote science. Under the U.S. Patent Law Act inventions are expressly defined as either “invention or discovery.”³⁶⁹ Patentable inventions are generated from “whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement.”³⁷⁰ Invention is therefore expressly defined as either invention or discovery. The distinction between invention and discovery is therefore less clear under U.S. law as it seems to treat the two as synonymous.

However, U.S. case law begins to carve out a distinction between the two by defining what is not patentable invention. What is considered non-patentable subject matter is set out in case law, not in the statute itself. For instance, U.S. courts have ruled that laws of nature, natural phenomena, and products of nature are not considered patentable inventions. The Supreme Court clearly stated, “[h]e who discovers a hitherto unknown phenomenon of nature has no claim to a monopoly of it which the law recognizes. If there is to be invention from such a discovery, it must come from the application of the law of nature to a new and useful end.”³⁷¹ The moment of discovery occurs when nature is found. Yet, invention occurs when nature becomes useful for trade or sale. This temporal distinction is important for carving out legal ownership rights over Hoodia. It becomes further delineated as Hoodia is determined to be patentable subject matter.

³⁶⁹ 35 U.S.C. § 100 (a).

³⁷⁰ 35 U.S.C. § 101.

³⁷¹ *Funk Bros. Seed Co. v. Kalo Inoculant Co.*, 333 U.S. 127, 130 (1948).

B. Hoodia as Patentable Subject Matter (versus Product of Nature)

Temporal moments of discovery and invention are severed under the law in order to grant patent ownership rights. This also implies a splitting of nature from culture. Some countries exclude “products of nature” from patentability (e.g., U.S.), while others make the same move by excluding “discoveries” (e.g., South Africa and the U.K.) In both cases, the legal analysis centers on whether or not the invention already exists in nature and thus cannot be considered patentable invention. In other words, it is centered upon delineating nature from cultural, patentable invention.

Patent law first makes it clear that certain things in nature are not patentable. For instance, under South African law, a patent cannot be granted on a plant or animal variety per se. A patent is not permitted on “any variety of plant or animal or any essentially biological process for the production of animals or plants, not being a microbiological process...”³⁷² Breeders who cross-breed new varieties of plants cannot get a patent, but can receive some protection under the Plant Breeders’ Rights Act 15 of 1976. Microbiological processes for the production of plants, however, are eligible for a patent. This leaves the door open for patents, for instance, on processes that genetically modify plants. The United States also denies patents on plants per se, yet it allows for patents on plant varieties. Plant patents are available to “anyone who invents or discovers and asexually reproduces any distinct and new variety of plant.”³⁷³ An inventor who produces a genetically identical copy of the plant through budding, grafting, or cutting is eligible for a patent. Plant varieties that are sexually reproduced can be protected through the Plant Variety Protection Act, but are not eligible for a patent. Thus, nature per se is not patentable, but a cultural/scientific invention related to the plant is. The *Hoodia gordonii* plant itself, in its

³⁷² South African Patent Act 57 of 1978, § 25(4) (*amended* 2002).

³⁷³ 35 USC §161.

“wild” and uncultivated form, is not patentable. Patent law therefore structures *Hoodia gordonii* by distinguishing it from its bodily form.

In the patent specification document, *Hoodia gordonii* is reduced to a chemical compound and an extract. The *Hoodia gordonii* plant itself disappears from view. The invention as legally described does not relate to the *Hoodia gordonii* plant at all. On the first page of the 156-page document, I learn that the invention is really about “compositions containing such steroidal glycosides” and to a “method of extracting and isolating these steroidal glycosides” from the *Hoodia gordonii*, *Hoodia currorii*, or *Hoodia lugardii*. The invention is eligible for both a product patent on the composition and a process patent on the method of extracting. To become patentable subject matter, *Hoodia gordonii* must be distinguished from its form within nature.

The “products of nature” doctrine in patent law states that patent rights are not granted to products of nature, they only apply to man-made cultural objects. Under U.S. law, to obtain patent rights, an inventor must “isolate and purify” a product from nature, and that product must be “markedly different” from its natural state.³⁷⁴ Patent rights only extend to the isolated and purified element of the plant, and not the plant itself. South African law implies a similar doctrine, although with less specificity, as set forth in the exclusion of discoveries from

³⁷⁴ Patent Act, 35 U.S.C. § 101 (2010) (stating “whoever invents or discovers any new or useful process, machine, manufacture or composition of matter, or any new and useful improvement thereof, may obtain a patent therefore, subject to the conditions and requirements of this title”). The common law doctrine around the products of nature doctrine was initially set forth in *Parke-Davis & Co. v. H.K. Mulford & Co.*, 189 F. 95 (S.D.N.Y. 1911). The court found that a purified form of adrenaline, a naturally occurring hormone, was patentable subject matter. The doctrine was then affirmed in *Funk Bros. Seed Co. v. Kalo Inoculant Co.*, 333 U.S. 127, 130 (1948) (“[h]e who discovers a hitherto unknown phenomenon of nature has no claim to a monopoly of it which the law recognizes. If there is to be invention from such a discovery, it must come from the application of the law of nature to a new and useful end.”). The Court also asserted the doctrine in *Diamond v. Chakrabarty*, 447 U.S. 303, 313 (1980) (Section 101 patentability is based upon the distinction “between products of nature, whether living or not, and human-made inventions”). The reason for excluding products of nature from patentability is because “too much patent protection can impede rather than ‘promote the Progress of Science and Useful Arts,’ the constitutional objective of patent and copyright protection.” *Lab Corp. of Am. Holdings v. Metabolite Labs., Inc.*, 548 U.S. 124, 126–27 (2006). See also USPTO, *Utility Examination Guidelines*, 66 Fed. Reg. 1092, 1093 (Jan. 5, 2001), available at www.uspto.gov/web/offices/com/sol/notices/utilexmguide.pdf.

patentability. Through this doctrine, *Hoodia gordonii* becomes isolated and purified down to a composition of several chemical compounds. In the lab, the materiality of these chemical compounds would appear visible. Through the power of nuclear magnetic resonance technology, scientists can gaze at the compounds and their properties. But in the domain of patent law, the materiality of this composition is the following structural formula:

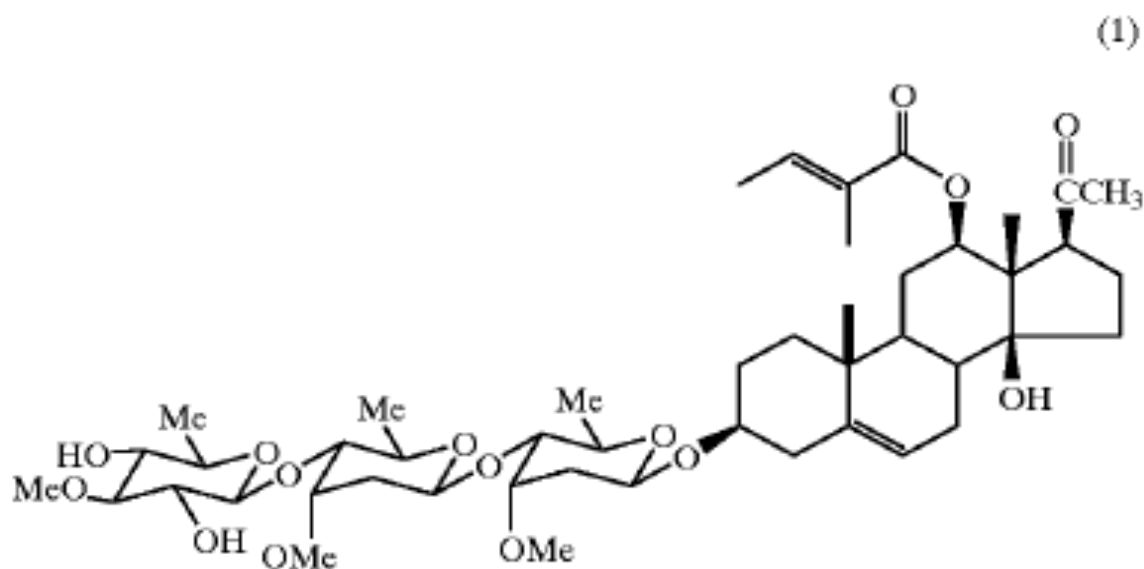


Figure 3. Chemical structure of patented *Hoodia gordonii* chemical composition

The patent specification document takes great pains to carefully outline how Hoodia is isolated and purified into this chemical composition.

In reading the patent specification document, I learn that multiple methods of purification are involved. Collected plant material is treated with a solvent, its valuable properties extracted, and then “further purified.” (van Heerden et al. 1998, 1) The plant becomes “homogenised” in a Waring blender when a suitable solvent is added. Filtration or centrifugation then works to separate extraction solution from plant material. (van Heerden et al. 1998, 2) Solvent is removed from “separated crude extract” and then further isolated down into a “partially purified active

extract” as methylene chloride mixes with water and processes of evaporation are put into motion. *Hoodia gordonii* is purified through interactions with water and chemical solvents. It moves through scientific technologies of Waring blenders, rotary evaporators, column chromatography, and “suitable bioassaying procedures.” (van Heerden et al. 1998, 2-3) Through these processes *Hoodia gordonii* becomes a “purified fraction” available for further study. Nuclear magnetic resonance is then used to identify the exact chemical compound within *Hoodia gordonii* that acts as an appetite suppressant agent. *Hoodia gordonii* is transformed into patentable subject matter as isolated chemical composition through an articulation of scientific technology and method. Nature becomes invention when homogenized, separated, and mixed with chemical solvents to reveal its precise chemical properties. Cultural practices of scientific knowledge production in the lab are what work to transform *Hoodia gordonii* into invention. These scientific practices from the lab became structured through the legal language of “isolate and purify” as Hoodia is delineated from nature and becomes patentable subject matter. Regimes of isolation and purification work to fragment and dehistoricize the plant body. Yet, *Hoodia gordonii* must not only be isolated and purified, it must also be novel, non-obvious, and have utility.

C. Hoodia as Novel

Hoodia must not only be isolated and purified into patentable subject matter distinct from nature, its reduction to chemical compound must also be novel. If a challenge is made against a patent, the courts in South Africa and the U.S. must ask if the invention was novel. This question is also raised in the United States by examiners with the USPTO when they first evaluate a patent application. Under both South African and U.S. law, novelty is a question of prior art and whether or not the invention has been “anticipated.” South African law states that an invention is

novel if it differs from the “state of art” prior to the priority date of the invention.³⁷⁵ The state of art is defined as all matter “which has been made available to the public (whether in the Republic or elsewhere) by written or oral description, by use or in any other way.”³⁷⁶ The priority date is generally the date that the patent application was filed with CIPRO.³⁷⁷ Under U.S. law, the state of art (or prior art) is defined in 35 U.S.C. Section 102(a). Under this provision an invention is novel unless the USPTO finds “prior art” references showing the invention was known or used by others *in the U.S.*, or described in a printed publication *in the U.S. or a foreign country* before the date of invention.

In the case of Hoodia, the San and their lawyer Roger Chennells explicitly decided not to challenge the patent. A patent challenge would be costly and aiming for a benefit sharing agreement was deemed a better route. According to one informant, however, the San and their representatives threatened to challenge the CSIR patent as a way of strengthening their bargaining position within benefit sharing negotiations. Because a challenge was never brought, the Hoodia patent was never examined on the merits within a South African court. *Hoodia gordonii* however, did emerge as novel within the United States when the USPTO examined the application on its merits and approved patent application 6,376,657 on April 23, 2002. The U.S. patent was filed on the same invention approved in South Africa in 1998 by the same inventors.

The application was actually filed through under the Patent Cooperation Treaty (“PCT”). The PCT is an international treaty that went into effect in 1978 and its administered by the World

³⁷⁵ South African Patent Act 57 of 1978, § 25(5) (*amended* 2002).

³⁷⁶ South African Patent Act 57 of 1978, § 25(6) (*amended* 2002).

³⁷⁷ South African Patent Act 57 of 1978, § 33(1) (*amended* 2002).

Intellectual Property Office.³⁷⁸ If inventors want to apply for patent rights on their inventions in other countries, they can file one patent application with WIPO, rather than filing separate applications with each state.³⁷⁹ The 2002 U.S. Hoodia patent contains an almost identical description as the South African patent. However, the claims are different. There are 58 claims in the U.S. patent as opposed to 132 claims in the South African patent.³⁸⁰ This is further evidence that patent attorneys in South Africa, despite a non-examining patent office, are drafting rigorous patent applications. The point is that when thinking through novelty, it is U.S. law that really matters in this case. A challenge was never brought against the Hoodia patent in South Africa and the patent was never examined on its merits because CIPRO is not an examining office. Hoodia therefore only emerges as novel, non-obvious and having utility under U.S. law when the 2002 patent was filed, examined, and approved with the USPTO.

³⁷⁸ Patent Cooperation Treaty Applicant’s Guide–International Phase, World Intellectual Property Organization, § 2.001 (2011).

³⁷⁹ The first part of the PCT process is the “international phase” where the applicant files a preliminary patent application with the International Bureau at WIPO. The application is then reviewed by one of the “International Searching Authorities” who does a search for any prior written disclosures of the invention to determine if the invention is novel and non-obvious. (PCT Applicant’s Guide–International Phase, §7.003, 2011) This is generally referred to as “prior art.” Section 11.1 of the regulations defines prior art as “everything made available to the public anywhere in the world by means of written disclosure (including drawings and other illustrations)” before the “relevant date.” If there is a prior art disclosure and it enables “a person skilled in the art” to carry out the invention then the invention is not novel. (PCT Applicant’s Guide–International Phase, §12.01, 2011) When conducting a prior art search, the authorities must consult “minimum documentation.” (PCT International Search and Preliminary Examination Guidelines, § 15.01, 2004) Rule 34.1 of the regulations states that the minimum documentation involves national patent documents and some published non-patent literature such as scientific journals. (Regulations under the Patent Cooperation Treaty, §34.1, 2011) So there is no geographical limitation on the search, which makes it a broader search than the one conducted by the U.S. The authorities then issue a written opinion as to the presence of absence of prior art. The written opinion gives the applicant a better basis for deciding whether they should file an application in a specific country. (PCT Applicant’s Guide–International Phase, §2.002, 2011) The second phase involves the “national phase.” (PCT Applicant’s Guide–National Phase, 2010) This is when an applicant’s international application is then filed with the examining office of the designated state (e.g. USPTO). The application must then meet the requirements for patentability under the laws of that state.

³⁸⁰ Claims are different from the written description of the invention. The written description is meant to disclose to the public how to make the invention and must be written, under U.S. law, in such a manner as “to enable any person skilled in the art” to make the invention and the “best mode” of carrying out the invention. (35 U.S.C. §112(1)). In contrast, the claims identify the scope of the patent owner’s property right in the invention and the boundaries in which the owner has the right to exclude others from using the invention. (35 U.S.C. §271(a))

When Hoodia enters the worlds of the USPTO, patent examiners review the application to determine if the invention is novel. According to the U.S. Hoodia patent, Ralph Gitomer, is the primary patent examiner, and his assistant is Devesh Khare. They are required to get a thorough understanding of the invention and then do a prior art search.³⁸¹ A search is done to determine if the invention was known or used by others *in the U.S.*, or described in a printed publication *in the U.S. or a foreign country* before the date of invention.³⁸² To make this determination, examiners are instructed to search previous patents, published documents, and nonpatent literature. If the prior art materials, taken together, show that any skilled person in the field could have anticipated how to create the invention, then it is not novel and hence unpatentable.

So how is the Hoodia invention novel? How is it new when it was known and used by the San for generations? Many would argue that it is not new. According to the San I spoke with, and relevant ethno-botanical literature, the San knew about the plant for generations for uses such as food, energy, and water. San women used it to treat gassiness in babies and ease breast-feeding. Novelty, however, is a legal standard. The examiners are compelled to only review certain types of prior art in order to determine if the invention is novel. For example, the fact that the San knew or used the plant in such a manner is irrelevant because their use is outside of the United States. Under the patent law statute, such prior art is only referenced if it is “known or used in the United States.” Patent examiners only review prior art from outside of the United States if it is in a printed publication. So if the San had written their knowledge of the plant in a publication, then it might be considered prior art. Yet, the San did not publish their knowledge of the plant.

³⁸¹ U.S. Patent Rules, 37 C.F.R. § 904 (2010).

³⁸² 35 U.S.C. § 102(a).

How did the San learn about the plant then? What counts as written publication? This is one of the questions that I ask members of the ǀKhomani San while visiting them in Andriesvale. The town is located north of Upington in the Northern Cape. Several of the ǀKhomani San elders and community leaders live there with their families. I drive by car to the area through beautiful stretches of the Kalahari Desert. I finally turn right off the highway onto a dirt road that leads to the game park. I quickly find myself amongst a scattering of homes with tin roofs. I also see a few larger brick buildings that appear to be a grocery store and gas station, and two wooden rectangular buildings that I find out later are a ǀKhomani San traditional medicine shop and cultural center (primarily for tourists).

The largest feature in the landscape however is the Molopo Lodge. The assistant in the Upington SASI office has arranged for me to stay here and meet with some people in the community. She has also arranged for me to have a translator. He is a young man from the community to whom they want to give more experience working with researchers and tourists. As I approach the lodge I find a swimming pool, a large restaurant with patio terrace, and several small personal guest cabins. The lodge is significant to Hoodia patent struggles. It was where the Hoodia benefit-sharing agreement was signed and where dignitaries from all over South Africa came to witness the historical signing. As I walk through a parking lot, a white pick-up truck pulls up beside me. Two young men wave to me. One jumps out of the truck dashing dressed in jeans, a large silver belt buckle, and blue-grey t-shirt. He calls out to me “Hello Laura.” I smile and ask, “How did you know it was me?” He smiles back and says, “Ah I just knew.” He then drives me to one of the brick buildings close to the lodge that turns out to be the local SASI office, where I first encounter a San written description of Hoodia.

The office has faded cream-colored concrete walls and dark pink chipped concrete floors with a rusted white stove/oven to the right and a sink with a few glasses. On the wall across from the entrance are a few shelves of books. This I am later told is the community library. A rusted metal table and chairs are at the center of the room. A woman, who appears in her twenties, sits in the corner wearing a yellow knit tank top with a long brown and yellow skirt. She is slumped over, reading a romance novel, twirling her hair. Beside her is a blue cabinet with a large television set turned off. On the walls above the books are faded, yellowing posters. A light air conditioner hums in the background. Various small wooden crafts hang on the walls. Above the books is a poster of a large green “book” worm with thick black eyeglass frames. A conversation bubble pops out from his mouth and proclaims in Afrikaans “die boesman” (the Bushman). To the right of the worm poster, are three old posters related to World Book Day April 2003 showing various children reading. To the left of the large worm posters, are small post cards of petrol station pumps. It is in this community library space that I encounter a written description of Hoodia that informs a discussion of prior art.

During my stay I meet with Samuel Tsumkwe, a young ǀKhomani San man who lives in Andriesvale, works for SASI, and leads some of the San youth activities. Mr. Tsumkwe speaks to me at length about his knowledge of intellectual property rights, Hoodia benefit sharing, and their struggles to protect San cultural heritage. During our conversation, he leads me to the library space and hands me a piece of paper that describes Hoodia to the community. The document reads, “[i]n 1937 some San healers told scientist about the uses of the Hoodia, or Ghaap. It takes away hunger. In 1995 the council of Science and Industrial research registered a patent on what they call “their discovery.” The document goes on to further discuss the Hoodia benefit sharing trust and it is unclear who wrote the document. It describes Hoodia as a plant that

takes away hunger and is obviously written after the San learned about Hoodia research studies by CSIR and negotiated a benefit sharing agreement. This matters to the law. It is a written description, but it is not prior art.

A prior art reference must come before the date in which the patent application was filed. Regardless, even if it was written before the filing date, it is not a written description of the invention itself. It is a summary of Hoodia patent law struggles in a language meant for San peoples in Andriesvale to understand. Patent examiners are looking for prior art that references the invention, or that would lead scientists to anticipate the invention. The San description refers to the plant, it does not refer to steroidal glycosides or chemical compositions. This means it does not qualify as prior art because it is outside of its scope. However, prior art is not considered solely on its own. Prior art materials are reviewed as a collection of materials to determine if scientists would have anticipated the invention. For instance, botanical publications regarding the plant are listed as prior art within the patent application. Such information does not refer to the molecular parts of the plant, but speaks to how *Hoodia gordonii* is used and may help lead scientists to anticipate its appetite suppressant properties. So if the San produced a written description of the plant prior to the filing date, would that qualify as prior art?

I ask Mr. Tsumkwe if there are any other written materials describing Hoodia, he says he doesn't think so. Later, I meet two San youths in the San cultural centre across the road. I ask if they have any written materials describing Hoodia. They say no. The only written document I find from the San describing Hoodia is the one Mr. Tsumkwe handed me.

Later in my research, I search for Hoodia in the archives of Wilhelm Bleek and Lucy Lloyd at the University of Cape Town. Bleek and Lloyd recorded the stories and practices of the San in the late 1800s. Their work on the San has produced a valuable, yet controversial archive

of San history. (Moran 2009) The index to the Bleek archive collection only points to one group of papers on San medicines. I search through their notes on San plant knowledge and find no reference to *!Xhoba* or seemingly related plants. I begin to conclude that there are no uses of *!Xhoba* mentioned in the archive. My search to find written recordings of the plant is really more of an exercise to satisfy my curiosity. A lack of written recordings of San Hoodia knowledge is not surprising. Knowledge of the Hoodia plant was transmitted orally.

In speaking to members of the ꞆKhomani San, many explain that they learned about the plant from speaking to their mothers. As young children, their mothers taught them about the local plants, how to use them, and which plants to avoid. Some learned about the plant from their fathers and grandparents, but the most common response was that their mother told them about the plant. Information about the plant, therefore, was disseminated through oral communication practices in gendered ways. It was not written down. Scholars have pointed out that indigenous traditional knowledge does not meet the novelty requirement because it is collective knowledge disseminated orally and not written down. (Brush 1993, 664) This is true, indigenous traditional knowledge has to be written down in the form of a patent application document in order to receive patent ownership protection rights.

But the more interesting question that I have been discussing is how traditional indigenous knowledge is or is not considered to prior art in order to negate and challenge a patented invention. As previously mentioned, indigenous traditional knowledge orally disseminated *in the U.S.* is considered prior art because it demonstrates that the invention was previously known. In contrast, if it is outside the U.S. it does not count as prior art. In that case, the knowledge must be written down in a printed publication. Thus, it is not just an issue of

indigenous traditional knowledge being collective oral knowledge. It is a matter of explicit exclusion under the law.

Novelty is a legal standard and is determined by what prior art is referenced. If the scope of prior art is bound by the patent statute to exclude certain types of prior art, then an invention is more likely to be found novel. U.S. patent law statutes are designed to keep the scope of prior art limited. Novelty is determined only by its comparison to prior art. If the scope of prior art is narrowed by reference to nation-state borders then more inventions emerge as patentable.

This section has shown how San knowledge of the plant is not considered prior art under U.S. patent law. Their knowledge of *Hoodia gordonii* is thus excluded from view by the law itself. Indigenous traditional knowledge is unintelligible to the law because the law excludes it through its statutory provisions.³⁸³ In discussing the legal mechanisms behind its exclusion and invisibility, this section worked to make San knowledge visible in contesting U.S. patent law novelty and prior art provisions. In the next section I discuss how the invention of *Hoodia gordonii* into a pharmaceutical composition involves scientific practices of molecularization and its epistemologies.

D. Hoodia as Non-obvious

In its transformation into patented object, the plant emerges as a non-obvious invention under the law. This legal standard closely overlaps with the novelty requirement. It is also where discourses of scientific expertise are firmly rooted. Issues of non-obviousness are generally resolved through litigation after patents have been awarded. According to 35 U.S.C. Section 103,

³⁸³ This is why some countries are developing digital databases for traditional knowledge. The hope is that patent examiners will reference these databases for prior art that might negate the novelty of an invention. These efforts might be misplaced though, at least in terms of affecting U.S. law. If Indigenous peoples produce written descriptions of their traditional knowledge regarding certain plants, patent examiners may find it relevant as prior art. Yet, patent examiners will still be required to consider the prior art along with other prior art materials in order to determine if the invention was anticipated. Publication of traditional knowledge in a digital database and its acceptance as prior art still does not guarantee the denial of a patent application on the basis of novelty.

an invention is not patentable if its “subject matter as a whole would have been obvious at the time the invention was made *to a person having ordinary skill in the art.*” In other words, the invention has to actually be an invention and go beyond common knowledge. To make this determination, the examiners and courts are required to review prior art related to the invention. As noted above, prior art that comes in under Section 102 is a bounded field that excludes evidence of indigenous peoples’ knowledge and practices as well as nation-state boundaries. Prior art is even further bounded within a non-obviousness analysis under Section 103. This is the moment when patent law invents its own expert inventor.

The figure of the PHOSITA arrives. This figure is pulled from the statutory language of a “person having ordinary skill in the art.” Courts must look at all the available prior art references together and determine if the invention would have been obvious to a PHOSITA. Not all prior art references are available however. The prior art must be “analogous art.” The courts are only looking at prior art that a PHOSITA would have consulted when creating their invention.³⁸⁴ This legal standard further excludes and devalues Indigenous peoples’ knowledge.

For example, what if a party wanted to challenge the Hoodia patent in a U.S. court? Let’s say Pfizer wanted to bring a lawsuit against CSIR arguing that their patent is invalid because the invention was obvious to biochemists in the field. The court must carefully examine existing prior art and determine if a person with “ordinary skill in the art” would have obviously known how to make the invention. Pfizer would likely bring in evidence of previously filed patents and science journals indicating that biochemists generally knew about the chemical compound and isolating it would have been predictable and obvious to them.

But what if the San tried to challenge the patent in court? Prior art references consisting of, for example, ethnographic field notes and indigenous writings (i.e., printed publications)

³⁸⁴ *KSR International Co., v. Teleflex, Inc.*, 550 U.S. 398 (2007).

showing that the San knew about the Hoodia plant would not be permissible. A PHOSITA (in this case CSIR scientists) would not ordinarily consult those types of references. Their inquiry would center on previously filed patents, scientific journals, and botanical reference guides. San knowledge of *Hoodia gordonii* may be recognized if mentioned in the botanical guides as addressed in the previous chapter. Yet, San knowledge *as produced by San peoples themselves* remains unintelligible to the law because the law is premised on the assumption that a PHOSITA would not consult San knowledge references as prior art. To challenge the patent, lawyers for the San would have to submit prior art references similar to what legal counsel for Pfizer would produce. The legal standard would compel them to exclude references to their own Indigenous knowledge practices.

Indigenous San knowledge practices around *Hoodia gordonii* become unintelligible to patent law through its legal standard of non-obviousness and its PHOSITA expert. Discourses of expertise are used to limit legal challenges against patent owners. Challenges can only be made through the language of science and its expertise. Patents can only be found invalid through an analysis of analogous prior art that a PHOSITA would reference. San knowledge of *Hoodia gordonii* becomes excluded under the law because it is excluded from standard scientific practices. Scientific epistemologies of molecularization of the plant, and those bodies who are skilled in such practices, therefore become valued under the law. San knowledge of *Hoodia gordonii*, as produced by them, is excluded from both scientific and legal analysis. Recognition of San produced knowledge of *Hoodia gordonii* only becomes visible through their personal narratives.³⁸⁵ Thus, articulating some of these narratives is important for bringing San knowledge to the forefront and to challenge U.S. patent law.

³⁸⁵ During my visit to Andriesvale and Upington, I spoke with 11 individuals who self-identified as †Khomani San. Five were women and six were men. Four of the women lived in Andriesvale and the other lived in

My encounters with Hoodia, through the narratives of the San, begin in Upington. My first stop is the SASI offices. The office is in downtown Upington, on a street three blocks from the river. It sits on the corner across from the Legal Aid Office. It is a large concrete block structure with a gate all around the property lot, which is slightly ajar. I walk up to the front door and a small-framed woman in a dress opens the door gate for me. In the main foyer there are faded yellow posters on the wall. One poster reads “Cultural Heritage and Rebuilding.” Another says “San Community–Making the Invisible Visible” and contains pictures of San men in traditional dress. There is also a poster of the “Indigenous Place Names” of the Kgalagadi Transfrontier Park where heritage sites are listed. A poster of the Mátaatua Declaration of Cultural and Intellectual Property Rights of Indigenous Peoples also hangs on one wall.

There are three or four offices surrounding the foyer. I walk into the one on the left to meet with Mr. Datum Olyn, a †Khomani San leader. After meeting with him and signing a research agreement, Mr. Olyn gives me permission to interview members of the †Khomani San and gives helpful suggestions on how to do so. My meeting with Mr. Olyn speaks more to the issue of prior informed consent and will be discussed in the conclusion. After my meeting with Mr. Olyn, he introduces me to Mr. Peter Komtsa, who is an active leader in †Khomani San governance. They first speak privately in Afrikaans and Mr. Olyn tells me that he has reassured Mr. Komtsa that I have agreed to keep any information regarding San knowledge of medicinal plants discussed in the interview confidential. Mr. Komtsa then sits down across from me and shyly smiles.

Upington. They consisted of two elder female leaders, two women who worked in the tribal medicine shop, and a younger woman who was mobilizing other San women around gender-based issues. The men were all local leaders in the community or tribal elders. Permission to interview people in the community was granted by the South African San Council after a meeting and my agreement to sign the San Media and Research Contract. A translator, a young San man assigned by the Chairmen, assisted me. Close to half spoke English.

He is dressed in dark dress pants and a brown polo shirt with dark stripes. Atop his head is a beige hat with a Los Angeles logo. I smile brightly, introduce myself, and tell him how much I like his hat and that I am from Los Angeles. He smiles and boisterously laughs, pulling his hat off his head looking down at the L.A. logo. We begin to talk about his role in the community, his thoughts on Hoodia, and what he knows about intellectual property rights.

He explains to me that the San refer to Hoodia as *!Xhoba*. He calls it “Hoodia medicine.” That the San use it for “energy” to stay many days in the veldt. Some people can also use Hoodia “to get thin” and the plant is “very very important.” You can also use it “for health.” He also explains “sometimes the babies have wind the babies have wind at 3 months wind in them. Wind in them so that is why some of our elders use that medicine for them.” He goes on to tell me “Yeah the moms use it for the babies...They put a little bit of something like that the point of a teaspoon” and they “put it in a bottle something like milk.” He is quick to say though “men use it more than women.”

Mr. Komtsa thus recognizes the gendered uses of the plant, but emphasizes its use by men as a source of energy as its more prominent use. I am unable to empirically confirm how the San in fact use the plant. Nevertheless, the gendered narratives of its use are valuable pieces of information on their own.

Mr. Komtsa articulates *Hoodia gordonii* through its uses for the community. It is medicine, energy, for health, and for gassiness in babies. He tells me that *Hoodia gordonii* was “used in the olden days with our forefathers” for “energy in the veldt.” But today the San know “how to use the plant by the technology people.” The plant is used “for people that are very fat,” but this “knowledge also comes from the San.” I ask him if the San knew about *Hoodia gordonii* before the controversy with CSIR and he says “I think they know it, but at the time they don’t

say it, but know what the use it for.” It is his reference to the “technology people” that strikes me. CSIR scientists and their knowledge are distinguished by access to technology. I learn about Hoodia from others during my visit to Andriesvale.

Samuel Tsumke, a San youth who works with SASI, greets me as I enter the SASI offices in Andriesvale. As mentioned previously, Mr. Tsumke is the man who gave me the description of Hoodia patent law struggles from their library. He is dressed in dark blue jeans and a t-shirt. He appears to be in his twenties. He takes me into an office and I sit down. The office is filled with two desks, bookshelves, computer, printer, and various papers scattered about.

Mr. Tsumke speaks to me about Hoodia and SASI efforts to protect San cultural heritage. He is extremely knowledgeable on the subject. His expertise partly stems from attending United Nations sponsored conferences on issues of cultural heritage and cultural development. Mr. Tsumke informs me that he knew about *Hoodia gordonii* before the controversy with CSIR as a plant used for “hunting” and to “less your hunger” and if you are thirsty. He also says that it is used to “clean your blood” to “make your blood strong to protect you from other illnesses.” Mr. Tsumke doesn’t mention any gendered uses of the plant so in the end I ask. He says that San women “regularly use it...no not for dieting. Just because it is good and healthy.” When asked if women use it for hunting, he says no, “mostly men.”

The other San men and women I speak to give similar narratives of *Hoodia gordonii*. One woman explains that it is used to “make people sexy” and that the San use it if they are hungry or thirsty, and that it also helps treat asthma. Another man explains that it is “for medicine” and “for water” and for “if you have a pain in your stomach.” They also often described as both a medicine and a food. San narratives of *Hoodia gordonii* also articulate the plant in contrast with its form in the CSIR lab.

Martha Karu is a slim woman who takes pride in working in the traditional medicine shop. She used to assist a traditional San healer in the community. Ms. Karu tells me about the time she went to Pretoria and took a tour of the CSIR bioprospecting lab. I asked her what she thought about how CSIR used the plant. She explains that she “use it from nature but the tablets comes from they put other things inside the *Hoodia gordonii* plant so it is not like *!Xhoba*. There is a difference between the tablets and the eat it from the field.”

She invites me into the medicine shop and shows me how she transforms a plant into medicine. She places a small succulent plant in a large grinder on a table in the center of the room. She turns the handle of the grinder and the small plant pieces fall into a bowl. She then rinses them and puts them into the sun to dry. Later she will put the dried plant material in small, clear plastic packets and sell them to tourists in the shop. She tells me that this is a very different way of preparing plant medicine than used by CSIR. She says that CSIR makes Hoodia in a “fancy” lab with lots of machines, as she makes a high-pitched twirling noise with her tongue.

Ms. Karu, similar to Mr. Komtsa, distinguishes CSIR knowledge of the plant with San knowledge through reference to technology. Mr. Komtsa speaks of CSIR as those “technology people” and Ms. Karu mentions their “fancy” labs with machines. San narratives of Hoodia speak about how *Hoodia gordonii* is useful for their community and how it differs from CSIR knowledge of the plant. San knowledge of *Hoodia gordonii* and its meaning however becomes obscured and devalued through the patenting of the plant. The legal standard for non-obviousness and its PHOSITA reinforces and produces discourses of expertise that devalue San knowledge of the plant. Patent law privileges science of *Hoodia gordonii* in the CSIR lab over San knowledge of the plant. Patent law also values CSIR knowledge of *Hoodia gordonii* because it is useful for the market place.

E. Hoodia as Useful

In the first phase of its transformation into patent object, *Hoodia gordonii* must be characterized as an invention. The plant, under South African law must be “capable of being used or applied in trade or industry” or, under U.S. law, have a “useful end.”³⁸⁶ Within the bioprospecting unit of CSIR, phytochemical investigations of *Hoodia gordonii* revealed the presence of a class of compounds known for suppressing appetite. (van Heerden 2008) The compound in *Hoodia gordonii* was “identified as a triglycoside of 12_-tigloyloxy-14_-hydroxypregn-5-en-20-one.” (van Heerden 2008, 436) *Hoodia gordonii* thus became a chemical compound. Its transformation into patentable invention, however, did not occur until scientists concluded that the compound could be useful for the ethnopharmaceutical industry. Within the discourses of science, *Hoodia gordonii* emerges as a chemical compound, or more specifically, a steroidal glycoside. But within the domain of patent law, it becomes a patented object to treat obesity. Patent ownership becomes the legal conduit that ensures the flow of *Hoodia gordonii* and its chemical properties into the worlds of ethnopharmacology. Patent law is where nature becomes cultural invention for the market.

Under 35 U.S.C. Section 101, the legal standard for “utility” requires an invention to actually work and have some practical and specific use.³⁸⁷ U.S. Courts tend not to make moral decisions on whether or not an invention is beneficial for society (e.g., gambling machines) or if an invention will have actual market success.³⁸⁸ This is in contrast to South African law, which does include a morality clause. A patent cannot be granted for an invention that “would be

³⁸⁶ South African Patent Act 57 of 1978, § 25(12) (*amended* 2002); 35 U.S.C. §101.

³⁸⁷ *In re Dane K. Fisher and Raghunath v. Lalgudi*, 421 F.3d 1365 (2005).

³⁸⁸ *Ex parte Murphy*, 200 U.S.P.Q. 801 (Bd. Pat. App. & Int. 1977).

generally expected to encourage offensive or immoral behavior.”³⁸⁹ The requirement of utility and usefulness marks the moment when Hoodia becomes, not just a chemical composition, but a “*pharmaceutical* composition having appetite suppressant properties.” In reading the patent specification document, Hoodia emerges as an invention with utility and usefulness.

Reading through the patent document, I learn that the invention applies to an extract used for the “manufacture of a medicament.” The link to its commercialization is made. The plant is extracted for the purpose of producing a medical treatment. To make this happen the invention extends to “a method of suppressing an appetite by administering to a human or animal an effective dosage.” (van Heerden et al. 1998, 4) Hoodia moves from plant to extract to medical treatment. The invention extends to the compound and certain molecules that enhance the “activity of the active ingredient.” (van Heerden et al. 1998, 5)

I then learn about the modifications made to the chemical compound to increase its biological activity. (van Heerden et al. 1998, 6) Structural chemical formulas appear on the pages. Hoodia appears now in the language of International System (S.I.) Nomenclature as written formulas describing each of the bonds between carbohydrates and glucose molecules. Specific structural formulas then emerge as the process for synthetically producing “a chemical compound having appetite suppressant activity” is explained. (van Heerden et al. 1998, 13) Formulas are used to describe the compounds involved and then each compound newly produced when treated with various chemicals. These are meant to show the steps involved in preparing the steroidal glycosides. Scientific method is articulated in legal terms through a step-by-step description on how compounds are treated with various chemicals and their respective structural formulas. (van Heerden et al. 1998, 30)

³⁸⁹ South African Patent Act 57 of 1978, § 25(4) (*amended* 2002).

The invention also applies to administering a suitable dosage of “the appetite suppressant agent comprising an extract” from the plant. (van Heerden et al. 1998, 45) The dosage of the extract can be “incorporated in a composition or formulation including also pharmaceutically acceptable other ingredients.” (van Heerden et al. 1998, 45) The appetite suppressant agent may be an “isolated natural chemical or a synthetic chemical compound.” (van Heerden et al. 1998, 46) It can be admixed with “a pharmaceutical excipient, diluent or carrier” and “other suitable additives.” (van Heerden et al. 1998, 46) The invention also extends to a “foodstuff or a beverage containing an effective quantity of the steroidal glycoside.” (van Heerden et al. 1998, 47) Hoodia emerges as a useful medicament, foodstuff, or beverage for suppressing appetite through the language of science.

Hoodia is also transformed into a product with usefulness beyond the household or community. It becomes an invention when it has utility for ethnopharmacology. Patent law therefore places value upon CSIR knowledge of *Hoodia gordonii* for the market place, and devalues San knowledge of the plant for use in the community. As noted, the San tend to articulate Hoodia through its usefulness in the community. It is used for hunger, thirst, energy, asthma, and to clean blood. Men (and women) use it to hunt. Women use it to treat gassiness in babies.

Yet, through the plant’s transformation into patented object, the gendered uses of Hoodia for the sustainability of San communities become invisible in the patent specification document. As it changes scale and becomes intertwined within the worlds of chemical solvents and bioassays in the “fancy” CSIR lab, Hoodia is transformed into patented object for global commercialization. The legal standard of usefulness also reinforces a nature/cultural binary that relegates “natural” caretaking work to the family, thus devaluing it. San knowledge of Hoodia

references its everyday uses within the family and the community. Yet, only CSIR Hoodia knowledge of its utility for the market place is valued under the law. Thus, CSIR is given stronger rights.

IV. Patent Law as Value System

Hoodia emerges as invention through the legal exclusion of Indigenous San knowledge. As discussed above, this is done through legal standards of patentable subject matter, novelty, non-obviousness, utility and their bounded rules around prior art, analogous art, and a fictitious PHOSITA. The Hoodia invention and its associated scientific epistemologies of molecularization become valued as new and novel. It is an original invention, unanticipated by others. What does this say about San knowledge of the plant? By valuing the molecularization of *Hoodia gordonii* into a pharmaceutical chemical composition, the law implies that San knowledge of the plant is not new or novel. San traditional knowledge becomes constructed as less modern and advanced than CSIR knowledge of the plant. The knowledge practices of CSIR are held out as more capable of producing cultural, scientific invention. Patent law therefore acts as a value system. It places value on some forms of knowledge over others through its legal mechanisms. Epistemologies however are also associated with bodies. Value is placed upon CSIR and its inventors, rather than the San. Yet, in some ways isn't this a good thing?

CSIR is a South African government-backed research institution. Its claims for patent ownership rights can be read as a post-colonial strategy of resistance. Discourses of colonialism and development have historically constructed South Africa as a backwards and underdeveloped country. It has not been considered a source of cultural production, but rather an object of it. When CSIR inventors apply for patent rights they assert themselves as cultural producers. CSIR scientists emerge as inventors with the same capacity for reason and rationality as their European

and United States counter parts. When South Africa passes legislation to encourage innovation through the filing of patents and the protection of its traditional knowledge, it seeks to disrupt colonial and development legacies that have left the country maldeveloped. It is also a move that de-centers the flow of intellectual property rights and protections favoring the global North.

The patenting of Hoodia should also be read in connection with recent struggles over the patenting of HIV/AIDS drugs. In 1998, the pharmaceutical industry, backed by the United States, filed a lawsuit against South Africa for violating TRIPS. The lawsuit garnered wide scale public attention when the Treatment Action Campaign (“TAC”) successfully mobilized against the lawsuit, while raising global public consciousness regarding patent law. Particular attention was directed at the connections between free trade and patent ownership through the WTO and the impact of TRIPS on public health within developing countries. Scholars also considered it to be a key event in moving the WTO towards the Doha Declaration. (Mayne 2002; Picciotto 2002; Pretorius 2002) The lawsuit was against South African legislation allowing for the importation of generic drugs into the country. The South African government encouraged importation because drugs protected under patent laws and sold in South Africa were too costly and restricting access to low-cost HIV/AIDS treatments.

Feminist activists also brought awareness as to how patent ownership was a gendered issue. They expressed concern that patent ownership rights were restricting low-cost HIV/AIDS drugs particularly to women who represented the fastest growing population with HIV/AIDS. (Govender 2007) The TAC campaign against patent rights was also deeply rooted within South African gay and lesbian activist networks concerned about high rates of HIV/AIDS. In response to intense political pressure from these activists, the U.S. eventually withdrew the lawsuit.

The struggle against the lawsuit remains a paradigmatic example of the tension that patent law raises between countries in the “global north,” which hold the majority of patent rights, and countries in the “global south,” which hold fewer patent rights. This is an important point. Struggles against patent law in South Africa have historically been constructed within a binary logic of north/south, developed/underdeveloped. CSIR disrupts this binary when it applies for patent rights. Yet, a new unstable dichotomy emerges. CSIR scientists are placed in contention with Indigenous San peoples. As CSIR seeks to challenge post-colonial conditions of modernity by asserting its own agency through patent ownership, it only ends up reproducing legacies of apartheid that devalue individuals, groups, and knowledge systems categorized as Black and Coloured.

Locating patent law as a value system brings attention to these contradictions within Hoodia patent law struggles. Patent law acts as both social structure and value system. It also opens up a broader awareness of citizenship practices. Discrimination and equal protection laws have given us greater tools to protect against violence to the body. Feminist scholars and activists have concentrated much of their efforts to protect against gender-based violence and unfair labor conditions. Yet, what about discrimination against knowledge practices? I contend that within neo-liberal conditions, bodies experience new expressions of violence from the devaluing of their knowledge practices and ways of knowing. This will become more apparent in the discussion in Chapter Five.

V. Countering Patent Law with Hoodia as Hybrid

This chapter has addressed the precise provisions under the law that transform *Hoodia gordonii* from plant to propertied chemical structural formula through discourses of expertise and exclusions of indigenous knowledge. In this final section, I re-cast *Hoodia gordonii* from

purified object to hybrid where new mixtures of nature and culture are being rewritten. Science studies scholarship critiques patent law practices of isolation and purification by re-classifying them. Binary characterizations of nature and culture under the law are shown to be socially and historically constructed categories that are co-constituting. Patent law is thus re-figured through critique to be a hybrid network where nature is actually mixed with culture. Challenging patent law in this manner disrupts its power to maintain nature and culture as separate categories. This section will address these specific critiques and how they inform an analysis of Hoodia patent law struggles.

I want briefly to re-introduce STS critiques of the products of nature doctrine discussed in Chapter One under discussions of a hybridized public domain. Through the work of Marilyn Strathern, patented inventions become “heterogeneous hybrids.” (Strathern 1996) The products of nature doctrine states that only purified and isolated, man-made objects can be patented. Objects found in nature cannot be patented. This doctrine sets up a dichotomy between objects found in nature versus those invented in the lab, thus valuing scientific forms of knowledge production. (Strathern 1996, 525) Patent ownership thus depends upon a legal logic separating nature from culture. To counter this logic, Strathern asserts that patented objects actually involve the mixing of nature with culture.

Strathern’s insights inform understandings of the patenting of *Hoodia gordonii*. CSIR patented specific chemical properties within the plant known to suppress appetite. In awarding ownership rights to CSIR inventors, the products of nature doctrine treats the isolated and purified chemical compounds (“culture”) as markedly different from the plant (“nature”). However, through the insights of Strathern, one can see that the Hoodia P57 invention actually involves mixing the “raw material” of Indigenous San labor and knowledge related to the plant

(and the plant itself) with the scientific practices of the scientists. The invented “pharmaceutical compositions” could not have been developed without the plant and/or San knowledge of it. Thus, the patented chemical compositions are not an “isolated and purified” object from nature, but rather a heterogeneous hybrid involving the mixing of both nature and culture.

Understanding patented objects as heterogeneous hybrids counters patent law logics separating Hoodia found in nature versus Hoodia found in the lab. It works to contest these nature/culture distinctions, while opening them up to critique. Such an understanding creates space for recognizing different ways of knowing and being that embrace hybrid forms, rather than dichotomous categories. Furthermore, it provokes fissures within systems of oppression undergirding modernity, such as hierarchal relations of gender, race, and ethnicity, which depend upon clear separations between nature and culture,

Hoodia gordonii as purified object also becomes heterogeneous hybrid through the insights of similar scholarship concerned with patent law narratives. Hyo Yoon Kang notes that legal narratives are given power through codification, which freezes a text into a socially acceptable form. (Kang 2006) The codification process gives legitimacy to some narratives over others. For instance, patent law codifies and privileges dominant narratives or epistemologies of law and economics. These narratives reinforce normative understandings of science as “objective” and devoid of social relations. To disrupt this dominant narrative, Kang argues that patent law is a hybrid network involving dynamic movements from the social to the natural to the social. Scientific knowledge is *socially* constructed knowledge; it is not free from social relations. When socially constructed scientific knowledge enters the patent network to become invention, it is re-configured as *natural* because the knowledge produced is from nature and bodies. Then as information is patented, it becomes *social/cultural* artifact when it is publically

disclosed. This important point may be further emphasized through a return to the Hoodia example.

Patented *Hoodia gordonii* properties are not separate from the social relations and histories of the San peoples, or from CSIR as a government sponsored research institution. Thus, CSIR's scientific knowledge related to steroidal glycosides from *Hoodia gordonii* is socially constructed prior to entering the patent network. As the *Hoodia gordonii* plant enters the patent network it is constructed under the law as "natural" raw material taken from the public domain. The law then fashions the plant into a patented invention. A new social/cultural artifact is constructed as the raw material of plant is mixed with the labor of scientists to produce a propertied object in the form of a chemical composition.

Nature and culture emerge, therefore, in relation to each other, not as discrete categories. Rather, as Kang and Strathern point out, patent law depends upon the construction of a continually shifting nature/culture. (Kang 2006; Strathern 1996)

In sum, re-figuring patent law and inventions as hybrid networks and objects contests the legal codification of nature and culture binaries. It also goes farther to challenge Euro-American epistemologies, where dichotomies of nature and culture are used to define who is or is not considered fully human within liberal democracy (and to allocate resources accordingly). Re-characterizing patented objects as hybrids turns the gaze back upon Euro-American practices of purification within legal codification processes. It further recognizes legal borders fencing off nature from culture, while simultaneously disrupting those boundaries.

VI. Conclusion

Science studies scholarship examines how patent law shapes and is shaped by binaries of nature and culture. In its critique of these binaries, such scholarship re-interprets patented

inventions as hybrid objects where nature and culture are mixed. This chapter contributes to this scholarship by discussing the precise mechanisms within the law that generate and sustain such dichotomies. It also differs by emphasizing patent law as a value system. New legal experts emerge through specific requirements for registering and disclosing a patent. Patent law also produces new scientific experts. Rules for patentability (novelty, non-obviousness, utility) bring forth the inventor. A distinct sub-set of scientific expertise is furnished, a scientist who can produce novel science for commercial ends. Legal and scientific expertise are therefore reinforced and produced together under patent law. In making new experts, patent law produces difference and inequality. It values the molecularization of the plant into a pharmaceutical chemical composition, while devaluing Indigenous San knowledge of the plant as found in nature. Patent law constructs San knowledge of the plant as not new or novel, in other words, less modern and advanced than CSIR knowledge of the plant. Difference is produced by casting San ways of knowing as Other. Inequalities are made when patent ownership is awarded. CSIR is granted legal rights that strengthen its pathways to citizenship. To be sure, CSIR is already a corporate citizen, but patent rights give it fuller citizenship rights to participate in economic markets and gain political recognition (e.g., government funding). Control over knowledge enables CSIR to dictate the terms of Hoodia research, what it is used for, and who it benefits. In valuing CSIR knowledge of Hoodia, patent law constructs CSIR as the more worthy epistemic citizen whose ways of knowing and knowledge practices are more valuable to the nation-state project of neoliberalism. One theoretical strategy, to disrupt the power of patent law, is to unsettle its nature/culture dichotomies by re-casting patented Hoodia as hybrid object.

The next chapter brings San agency to the forefront by discussing how San negotiations for benefit sharing generate new meanings of the plant, which in turn compel Phytopharm to re-

present the plant and its associated Indigenous knowledge. The current chapter, however, reminds us that San agency cannot be overdetermined. Epistemic citizenship is based upon whose knowledge matters most to neoliberal economies. It is not the same for everyone. There are precise rules and interpretations in which the law produces and values legal and scientific expertise over Indigenous San knowledge.

As will be discussed in the next chapter, the San may receive some rights to citizenship based upon their knowledge through contractual benefit sharing, but patent owners and their licensees retain control over knowledge production. Power over knowledge production means that science is structured through the priorities and interests of its patent owners. Yet, CSIR is a government-sponsored organization ideally committed to serving the people of South Africa. The next chapter will show how Hoodia research has resulted in partnerships with indigenous communities through benefit sharing, small farming projects, and renewed efforts to transition Hoodia into a fair trade product. Despite these laudable efforts, CSIR is afforded stronger rights of epistemic citizenship. It maintains control over Hoodia research. Although CSIR is currently using Hoodia in ways that create partnerships with and benefits for San peoples, as its priorities and interests change, such research and alliances may end.

AUTHOR'S NOTE

The American Invents Act was signed into law on September 16, 2011. The Act makes significant changes to U.S. patent law, namely it changes it from a “first to invent” to a “first to file” system. In particular, changes are made to Sections 102 and 103 of the Patent Act, which go into effect March 16, 2013. This chapter does not consider the new law within its analysis and the author looks forward to conducting additional research on this new area of law.

Chapter Five

Commercializing Hoodia: The Making of Hoodia and Difference through Ethno-pharmaceutical Research and Contractual Benefit Sharing

As we saw in the previous chapter, patent law reinvents the split between nature and culture over and over again through its legal rules and doctrines. The wild uncultivated Hoodia plant is placed in opposition to the invented P57 molecular compound. San knowledge of Hoodia in its natural state is made distinct from what is constructed as the expertise, creativity, and ingenuity of the CSIR scientists. It becomes the Other to CSIR's molecular ways of knowing. Difference is thus produced through the codification of nature/culture binaries under patent law and its precise legal rules.

But what happens when the patented object enters the commercialization process? How are differences produced and inequalities reinforced? CSIR and its licensees (Phytopharm and Unilever) are granted patent ownership rights that pave the way for Hoodia's global commercialization and sale. As more worthy epistemic citizens, with valuable commercial knowledge of Hoodia P57, CSIR and its licensees design the direction of Hoodia commercialization and how the plant is represented.

This chapter traces how Phytopharm and CSIR represent Hoodia before and after San benefit sharing negotiations through their various press releases, reports, website site content, and interviews with the author. Tracing articulations of Hoodia produces understanding of how claims for and grants of epistemic citizenship enable the circulation of the material plant and its representations and meanings.

What I find is that as Hoodia enters the global commercialization process, the plant and notions of difference are produced in new ways. At first, while the plant is transformed from pharmaceutical to functional food, Indigenous San knowledge is simultaneously made visible, invisible, and even hazy. However, as a politics of San indigeneity emerges through outcries of biopiracy, Phytopharm changes its representations of Hoodia and begins to recognize Indigenous San knowledge, albeit in a limited manner. Therefore, this chapter asks how differences and inequalities are produced, contested, and re-imagined through struggles over patent ownership.

The first part of this chapter briefly accounts how Hoodia enters the worlds of pharmaceutical research after becoming a patented object. It then analyzes how Hoodia changes meaning through various sites. It first examines Hoodia on the Phytopharm website and sees how it is described differently over time within Phytopharm's company press releases. The plant is characterized as raw material. As research and development continues, it is transformed from "natural anti-obesity treatment" to "drug candidate." Articulations of this transformation obscure the plant itself and its associated San knowledges.

The second part examines San political mobilization against CSIR and Phytopharm as corporate biopirates stealing San knowledge of Hoodia without their permission. The plant is re-figured as a "stolen object," while a stronger collective San identity emerges. As claims of biopiracy shift into claims for benefit sharing, the San bring recognition to the plant found in nature and to their own Hoodia knowledge. The plant comes to symbolize a dynamic San identity and agency. It also generates new ethical frameworks in law and science around sharing and giving back. With international attention on Hoodia and CSIR-San benefit sharing, the plant is held out as a prime example of indigenous knowledge systems of South Africa and their place as the "roots of life." Hoodia is thus simultaneously re-invented as the indigenous knowledge of

both the San and the nation-state. A reading of the actual benefit sharing contract, however, shows how Hoodia is apportioned out into CSIR molecular knowledge versus San molar knowledge and structured through ethics of sharing and containment.

The third part of this chapter then asks how Phytopharm and CSIR re-articulate Hoodia and the San after the signing of benefit sharing. It finds that Hoodia and the San are named and recognized in new important ways, but the plant and San knowledge remain a raw resource that must be “scientifically proven.”

Recent work by Comaroff and Comaroff guides and is a site of departure for this and the next chapter. According to the authors, the lines between identity, culture, and property are ever more fuzzy. (Comaroff and Comaroff 2009) Identity is increasingly claimed as property. Colonial trade in traditional “ethnic objects” blurred the line between property and “authentic” culture. Ethnic identities became associated with the traded propertied objects themselves. The blurring of this line worked to establish hierarchies between enlightened/primitive and universal/parochial, which undergird modernity and Euro-nationalism. Through colonial trading practices, the “images and identities of others were extracted as raw material, refashioned, and transacted by Western elites ‘entirely free’ of native control.” (Comaroff and Comaroff 2009, 29) In the age of empire, citizenship was organized around identity and cultural otherness in order to justify colonial rule. Racial and ethnic difference of the colonized was recognized, yet reified and devalued in order to privilege whiteness.

Decolonization however brought a new world order. Ethno-racial difference and otherness have now shifted to “scarce, desirable commodities” in the service of identity politics. (Comaroff and Comaroff 2009, 30) Marginalized and colonized individuals and groups can make claims over property as a way to assert cultural difference and control resources. They seek to

brand, market, and commodify their own culture to gain access to property. Thus, in the age of neoliberalism, culture and capital have merged in new ways. According to Comaroff and Comaroff, practices of what they call Ethnicity, Inc:

...involve[] a double process...One element of that process lies in the incorporation of identity, the rendering of ethnicized populations into corporations of one kind or another; the second, in the creeping commodification of their cultural products and practices.” (Comaroff and Comaroff 2009, 21)

...has *both* insurgent possibility *and* a tendency to deepen prevailing lines of inequality, the capacity *both* to enable *and* to disable, the power *both* to animate and to annihilate. Some of these costs and contradictions, as any number of critical anthropologists have pointed out, flow from the growing hegemony of the global intellectual property regime. And from the impulse to reduce culture to a “naturally” copyrighted possession. They are underscored, made undeniably poignant, by an all-too-concrete reality: that, in many desperately poor parts of the world, the attenuation of other modes of producing incomes has left the sale of cultural products, and of the simulacra of ethnicized selfhood, one of the only viable means of survival. (Comaroff and Comaroff 2009, 139)

Such practices are therefore full of contradictions and double processes. The authors find Hoodia patent law struggles to be a prime example. With the formation of the South African San Council to negotiate benefit sharing contracts, the authors suggest that San identity is incorporated while new pathways for the commodification of San identity emerge. According to Comaroff and Comaroff, in an age of neoliberalism, “difference, these days, takes shape at the intersection of culture, biology, the market, and intellectual property law.” (Comaroff and Comaroff 2009, 37)

In this and the remaining chapter, I investigate these intersections.

I agree with Comaroff and Comaroff that practices of what they call Ethnicity, Inc. involve a double process of both enabling and disabling, but I argue that this double process is also an elastic one. The degree to which insurgent possibilities arise and inequalities grow is something that shifts and changes over time. The patenting of Hoodia intensified lines of inequality by devaluing San knowledge, identity, and heritage. Those lines, as this chapter will

show, shifted with San accusations of biopiracy. San Hoodia knowledge became more visible and recognized. Historical constructions of South African San identity as a racialized group (i.e., Coloured) under apartheid also began to dissolve. The San asserted themselves as an Indigenous peoples fastened to global Indigenous peoples' networks and institutions.

Thus, Hoodia patent law struggles serve as a site for San agency and political mobilization to re-imagine San identity and indigeneity in response to colonial and apartheid histories. Through contestations over the patenting and commercialization of a plant, ethno-racialized San identities are challenged and re-imagined.

This account therefore differs from science studies scholarship recently focused on the patenting of pharmaceuticals for use with particular ethno-racialized populations. (Kahn 2004; Roberts 2011) Such scholars fear that such “race-based drugs” reinforce race as biological, rather than social or cultural. Hoodia patent law struggles is not about a race-based drug or how a “drug becomes ethnic;” rather it is about how a pharmaceutical is embedded within deep colonial and apartheid racial violence and histories. (Kahn 2004) It shows how a drug becomes Indigenous San knowledge as the San peoples use benefit sharing to contest the patenting and global commercialization of Hoodia while re-imagining themselves as Indigenous peoples. Hoodia patent law struggles therefore differ from debates over race-based medicine, yet greatly inform how difference is produced through struggles over the patenting and commercialization of pharmaceuticals.

Hoodia patent law struggles also inform notions of citizenship within neoliberal, bioeconomies. This chapter asks how CSIR-San benefit sharing granted the San new expressions of epistemic citizenship, where their claims over knowledge created new pathways for economic

and political participation. It also seeks to understand how the recognition of San indigeneity may have slightly shifted inequalities in order to bring some benefit to the San.

I find however that this double process is elastic. The plant and San identities go through continual moments of re-invention. Promises of Hoodia as a pharmaceutical give way to its future as a functional food and then eventually to its demise, which dampens the hopes of San peoples. The lines of inequality shift and change again as Unilever decides to drop the project, which puts the CSIR-San agreement at risk. Yet, within the elastic process of Ethnicity, Inc., change occurs again. As the next chapter will discuss, another process of re-invention is in the making. Plans are discussed to grow Hoodia as a fair trade object branded with the San image. San peoples must re-negotiate San identity and indigeneity once more. This chapter begins to elucidate the elasticity of Ethnicity, Inc. as the San make claims for epistemic citizenship and re-imagine the San as Indigenous peoples, rather than a former racialized group under apartheid.

This chapter also stretches Comaroff and Comaroff to consider nature itself. Within the elasticity of Ethnicity, Inc., there is a “creeping commodification” of Indigenous San cultural products and practices. This involves San complicity with a language of naturalization historically used to subordinate them. What about nature itself? Ethnicity, Inc. not only involves the re-invention of San indigeneity, it also involves a re-imagining of the Hoodia plant and its associated knowledges. It therefore gives agency to nature. Attention to nature, in relation to the San, opens up the complexities of Ethnicity, Inc. This chapter asks how nature is linked in new ways to the production of difference and inequality under neoliberal conditions. Thus, it shows how Ethnicity, Inc. merges with Life, Ltd. Critical examinations of these intersections inevitably reinforce historical linkages of nature and culture used to subordinate marginalized groups.

Critique necessarily always involves some measure of re-inscription. Accentuation on elasticity and re-invention thus becomes paramount. Connections between nature and culture, the San and Hoodia, become dangerous when naturalized as fixed and static. Analysis of the simultaneously re-invention of the plant and the San overtime through different discourses attempts to mitigate the unavailability of re-inscribing power. Chapter Three examined the re-invention of Hoodia in relation to the San through the botanical sciences and its taxonomic schemes. Chapter Four asked how processes of re-invention are structured through patent law. In a similar fashion, this chapter analyzes how Hoodia and the San come into being and change through representations of ethnopharmacology and benefit sharing.

Finally, this chapter contends that practices of Ethnicity, Inc. tells us something more about citizenship generally. The re-invention of Hoodia and the San signal the emergence of new expressions of citizenship. Lines of inclusion and exclusion are being drawn based upon whose knowledge practices matter most to neoliberal economies. Pathways to economic participation and political recognition are being rendered through the assigning of legal ownership over knowledge. Critical scholars have produced much work on how certain racial, gendered, and sexual bodies have been excluded from full citizenship. Yet, as Comaroff and Comaroff suggest, “difference, these days, takes shape at the intersection of culture, biology, the market, and intellectual property law.”

The limits of citizenship are being drawn within these intersections. Under neoliberal conditions, lines of exclusion and inclusion are being drawn around knowledge practices and ways of knowing. The important social and political movements have generated numerous legal reforms to help ensure full citizenship for historically marginalized groups. The law cannot formally discriminate against racialized, gendered, sexualized, and indigenous bodies (without a

compelling, legitimate, or rational reason). Yet, how does the law exclude such bodies from full citizenship by privileging certain forms of knowledge production over others?

To be sure, citizenship has always in some ways been shaped through knowledge and power. Yet, there is something new going on. There is a new legal terrain expanding and assigning rights to and regulating knowledge through patent ownership, benefit-sharing contracts, bioprospecting permits, and informed consent. Participation in markets and the public sphere is being shaped in new ways by an epistemic citizenship that is not the same for everyone. This chapter continues to build our understanding of the making of difference and epistemic citizenship at the intersections of culture, biology, markets, and patent ownership.

I. Hoodia as Inspiration: Phytopharm and the Commercialization of *Hoodia gordonii*

With the patenting of *Hoodia gordonii*'s chemical properties, the body of the plant is anointed to enter the circuits of ethnopharmaceutical development and commercialization. After filing a provisional patent in South Africa on April 15, 1997, CSIR signs a licensing agreement with Phytopharm two months later to develop the plant “into a prescription medicine.” (Phytopharm Press Release, 1997) So who is Phytopharm? And how does *Hoodia gordonii* take on new meanings if it is commercialized? How does the production of new meanings produce difference, inequality, and recognition?

This section will begin by introducing Phytopharm and then examining how it articulates the commercialization of Hoodia on its website through press releases to the public. This examination shows how Phytopharm's corporate identity depends upon oscillations of nature/culture. The company constructs nature as both inspiration and raw material for scientific discovery, while simultaneously veiling nature in order to bring P57 chemical compositions into view as novel scientific ingenuity.

This section therefore looks at articulations made by Phytopharm to the public through their website. With the termination of *Hoodia gordonii* research in late 2008, participant observation of Phytopharm's lab and clinical research was not possible. I was also unable to interview Phytopharm representatives during my fieldwork research. Announcement of Unilever's termination of *Hoodia gordonii* research on November 12, 2008 resulted in a significant decline in Phytopharm stock price from 8.3 to 3.7. The sharp drop however was the last straw in a steady decline of shareholder price over the year from a peak of 46.5 in June of 2007. It also led to the resignations of its chief financial officer, Daryl Rees, and chief executive office, Piers Morgan. With Phytopharm in turmoil, interviews were impossible to come by. Therefore, to learn more about Phytopharm, my research was directed at its corporate website and relevant newspaper articles from the London Financial Times. So who is Phytopharm? How do they articulate *Hoodia gordonii*? How do these articulations construct difference and inequalities?

To begin, I go in search of *Hoodia gordonii* on the Phytopharm website. The company's homepage in 2009 announces "Welcome to Phytopharm - Inspired by Nature." Phytopharm is described as a "pharmaceutical development and functional food company."³⁹⁰ Based in the United Kingdom, it has been traded on the London Stock Exchange as of April 25, 1996. The company sets itself as different and apart from its competitors through what it calls its "unique approach:"

...rather than starting with a library of chemicals the Company starts with a medicinal plant that has a history of clinical use, and either isolates the active chemical in order to develop it as a pharmaceutical product or develops a functional food based on a controlled extract of the plant.

³⁹⁰ This is the same development model described on their website in 2002, before the CSIR-San Hoodia benefit sharing agreement. The "inspired by nature" tagline however doesn't appear until 2005 on the company website.

Plants therefore appear to take center stage within a Phytopharm development model “inspired by nature.” The origin of Phytopharm research starts with a plant, rather than a library of chemicals. Yet, although plants are made visible in the process, it is their “active chemical[s]” or “controlled extract[s]” that drive Phytopharm’s development model. Plants, chemicals, and extracts therefore become co-mingled within the process of developing pharmaceuticals and/or functional foods. Emphasizing plants as origin, Phytopharm positions itself differently in the market by designating life itself (i.e., plants and nature) as the point of departure for its business.

Affirming plants and nature as origin and inspiration works to establish the corporate identity of Phytopharm and its difference in the market place. What constitutes “nature” however changes overtime. The Hoodia plant is described differently over the course of a decade as Phytopharm and its partners try to produce the plant into a pharmaceutical. To understand these changes, I will examine relevant press releases issued by Phytopharm in conjunction with additional information found in newspaper accounts.

In June of 1997, Phytopharm issued a press release announcing the development of a “natural anti-obesity treatment.” Phytopharm was going to transform a ‘naturally occurring appetite suppressant’ into a “prescription medicine.” Collaboration would be done with a “prestigious South African statutory research council, CSIR” who had already conducted animal studies on the plant extract. Phytopharm anticipated working with CSIR to produce the drug substance in South Africa and develop it “world-wide.” CSIR would retain marketing rights for the product in South Africa, while Phytopharm would seek licenses for other markets. The treatment would be targeted at the estimated “70 million obese adults in the Western world.” Market share for such a treatment was anticipated to be anywhere from “\$4 billion up to \$30 billion (which includes the over-the-counter market).” The Hoodia natural appetite suppressant

was also part of a larger agreement between CSIR and Phytopharm to “collaborate in the development of botanical medicines arising from CSIR’s new ethno-botanical screening programme.” Dr. Richard Dixey, Phytopharm’s chief executive, announced, “this medicinal plant is well characterized and offers a straightforward developmental pathway.”

In this 1997 press release there are high hopes for the appetite suppressant. With a straightforward development pathway, its market shares are projected at \$4 to \$30 billion. It is also a pathway for future collaboration and the “first example of many products.” Interestingly nowhere in the press release is the plant explicitly named as *Hoodia gordonii*. Its specificity remains absent. Rather, emphasis is placed on a “naturally occurring appetite suppressant” that will be made into a “prescription medicine.” Nature is at once integral to and invisible within the development process. The plant figures as origin and source material that must be re-invented into a prescription medicine.

Hoodia gordonii also remains invisible in a press release a year later. On August 24, 1997 a press release announced a new partnership with Pfizer, a U.S. based pharmaceutical company and maker of Viagra, to “develop and commercialize obesity drug (P57).” A licensing agreement was signed with “Pfizer Inc. for the development and commercialization of P57, an appetite suppressant derived from an extract of a South African plant.” Pfizer was given “exclusive worldwide license” to develop and market P57. In exchange, Phytopharm was to receive “up to \$32 million in license fees and milestone payments” and \$7 million from Pfizer to start an early stage development program of P57. Phytopharm also received rights to royalty payments on sales of P57 by Pfizer. P57 was “to be developed globally as a prescription drug for obesity.” Its target market was the United States. According to the press release, the United States represents “the largest opportunity for obesity drugs” with an estimated “35 to 65 million

obese individuals.” The potential U.S. market for prescription pharmaceuticals was estimated “to be worth in excess of \$3 billion.” Richard Dixey declared the partnership with Pfizer to be a “landmark in the development of Phytopharm.” Yet, as Phytopharm began to position itself in the ethnopharmaceutical market place as a different and unique company worthy of investing in its characterizations of the Hoodia plant also changed.

Changing characterizations of Hoodia reflect the flexible and variable demands of ethnopharmaceutical research and capital production in neoliberal economies. In the August 1997 press release, one-year into the development process, reference to *Hoodia gordonii* remains absent. A reference is made to an ambiguous “South African plant” and no specificity is given. But the plant moves from being described as ‘naturally occurring appetite suppressant’ to “P57.” According to a representative with Unilever, P57 “has no meaning whatsoever” and is “actually the project name in Phytopharm.” P57 is not just one isolated compound, but a ‘number of active compounds’ found in the plant. Yet, according to the press release, Phytopharm is embarking upon the commercialization of P57 active compounds, not the plant itself. The “South African plant” is merely an ambiguous source in which an extract is taken, isolated, and purified into P57. It is also the potentiality of P57 as an “obesity drug” that matters most for Phytopharm’s financial future. As Hoodia research moves forward, however, the plant itself remains obscured but its representation shifts from ‘naturally occurring appetite suppressant’ to “P57.”

As the research and commercialization of *Hoodia gordonii* continues, the plant is concealed farther from view. A press release issued October 13, 1998 fails to mention the plant at all. Rather, attention is placed entirely on the “anti-obesity drug candidate (P57).” The plant therefore exists only in its fragmented and dehistoricized state as P57, a drug candidate waiting to graduate into the world of ethnopharmaceutical stardom along side Viagra (a top seller at

Pfizer). Emphasis on P57 and the invisibility of the plant itself reflects the ongoing commercialization process.

According to the October 1998 press release, the drug candidate has entered Phase I clinical trials. Global development as an “oral prescription drug to treat obesity” is getting closer. Clinical trials have commenced in order to “establish the safety and tolerance in health volunteers.” Press releases from March, April, and July of 2001 tell me more about the drug trials. First stage trials were completed in April to evaluate “ascending single doses of P57 in twenty-four subjects” (80 up to 2400 mg) through a double blind, placebo-controlled design study involving exclusively male volunteers. Completed in July 2001, second stage trials tested the effectiveness of P57 when administered repeatedly over 5 days to a group of 18 males. Such trials aimed at treating the “global problem” of obesity, which “affects more than 100 million people seriously enough to warrant medical attention” and was declared by the World Health Organization in 1997 to be “one of the greatest neglected public health problems of our time.”

The P57 drug candidate then approached the next hurdle in becoming an ethnopharmaceutical. In third stage trials, 19 “overweight otherwise healthy male volunteers” were given either a placebo or P57 twice daily for 15 days. The studies showed a “statistically significant reduction” in daily caloric intake and in body fat with no serious side effects. As P57 moves through the process of becoming an anti-obesity drug it therefore becomes entangled within the politics of human drug trials. The use of all male volunteers is notable as P57 in female bodies goes untested. Yet, females are likely to be a significant percentage of potential consumers of the drug. Discussion of the politics of human drug trials around Hoodia, however, remains beyond scope of this dissertation and available for further study.

What is important for our discussion here is that with the emergence of clinical drug trials comes the characterization of the plant increasingly as P57. The plant as P57 drug candidate becomes most important to Phytopharm's public disclosure of its drug trials in order to maintain and secure additional investor funding. Keeping the focus on P57 reinforces the drug trials as objective and neutral protocols for pharmaceutical safety. Mentioning the plants as source material serves no favorable purpose for Phytopharm in these public statements. Explicit naming of the plant as *Hoodia gordonii* also offers no advantages.

So when does the *Hoodia gordonii* come into view? When is the plant specifically named and acknowledged? The plant remains unnamed until an April 11, 2002 press release revealing, "P57 is derived from an extract of *Hoodia gordonii*, a South African succulent plant." The plant is no longer an ambiguous "South African plant," but is specified as *Hoodia gordonii*. Phytopharm also announces its new manufacturing unit in South Africa, which is expected to increase the production of "raw materials by 300 percent." Thus, although it is named and recognized, the plant continues to be characterized as "raw material."

Why focus on the plant and how Phytopharm characterizes it? Why is it important that the plant was concealed, not named, and/or considered merely raw material? Because examining how the plant is characterized reveals the specific mechanisms within processes of commercialization in which Indigenous San knowledge and bodies are devalued. The plant becomes a boundary object. Depicting it as P57 ensures that patent ownership remains intact and epistemologies of molecularization are secured. The plant must also be re-invented into its fragmented P57 form for its transformation from P57 chemical composition into ethnopharmaceutical object. It also enables new assemblages of people and relationships to emerge, while others are veiled.

The patenting and commercialization of *Hoodia gordonii* incites the invention of new relationships between the plant, human research subjects, and future U.S. consumers. With patent ownership over the P57 invention secured, research and development can move forward, while new relationships come into being. The plant, its extract, and its chemical compound become linked with the obese but “otherwise healthy” male research subjects who have volunteered to take doses of P57. Future connections also come into view. P57 becomes linked to the “35 to 65 million obese individuals” in the U.S. that represent possible consumers of the future drug. Not only does P57 become connected to these future consumers, it also participates in the production of anti-obesity discourses that focus too much on weight-loss and individual self-control, rather than on health. (Kirkland 2011) So as “fat bodies” come into view, the body of the plant and the bodies (and knowledges) of San men and women are concealed. The press releases do not discuss how the San historically used the plant or how their knowledge of the plant led to its investigation by CSIR scientists. Thus, multiple bodies are obscured, namely, the bodies of *Hoodia gordonii* plants and San men and women. At the same time, new bodies emerge and become visible. The bodies of research scientists, research subjects, and “fat bodies” come into view. Similar patterns of concealing and revealing occur in the depictions of Hoodia research by CSIR, yet there is less public disclosure of the research in general.³⁹¹ As a

³⁹¹ The CSIR website also provides understanding into how plant is characterized through their media releases and Annual Reports. CSIR references Hoodia research in the early stages of its partnership with Phytopharm. The CSIR bioprospecting unit is known for its secrecy. A former employee with the Biochemtech Division in the CSIR Bioprospecting Unit explained to me, “a lot of the work that was done in this bioprospecting unit was secret. They had special locks on the doors and you couldn’t go in...Their servers were separate from the CSIR’s main servers just to protect knowledge of communities, and they were very strict about people getting access.” The secrecy is to protect the knowledge and work of the scientists and the traditional healers they worked with. Thus, it is not surprising that few public disclosures were made of its research. The biggest public disclosure was in fact the filing of the patent application, but the degree to which it was available to the public at large is questionable. CSIR is also a statutory research council funded by the South African government. Its “shareholders” are ostensibly the South African people, so it does not need to pursue investors in the same way as Phytopharm. CSIR however does pursue grant money from sources, for instance, in the U.K. and the U.S. A few references to Hoodia research are made by CSIR in some of their reports. Yet, the plant and the knowledges of San men and women are absent from CSIR references to their ongoing research with Phytopharm. CSIR’s 1999 annual report, in

government backed research institution, CSIR is less compelled to publically announce its progress in order to satisfy current shareholders and generate new ones.

How is this producing difference and inequality? The making of *Hoodia gordonii* into a pharmaceutical produces difference and inequality through the oscillation of nature/culture binaries. The unique corporate identity of Phytopharm depends upon constructing nature as both source of inspiration, and raw material for scientific research. Phytopharm asserts its own “difference” as inspired by nature in order to satisfy shareholders, generate investors, and appease market analysts. Playing up botanical plants such as *Hoodia gordonii* as both inspiration and raw material makes nature central to Phytopharm’s corporate identity. Nature itself becomes invented. Botanical plants are constructed as natural, pure sources of raw material animating new pathways for corporate identities and their scientific research agendas. Performing corporate difference, however, also requires Phytopharm to conceal forms of nature. While nature might be inspiration and source, it must be converted into scientific cultural invention. Patent ownership depends upon distinguishing between nature and culture and likewise plants and invented chemical compositions. Pharmaceutical research also involves transforming nature into a drug.

As the commercialization of *Hoodia gordonii* moves forward, Phytopharm shifts the attention to the cultural/scientific invention of P57. References to nature and plants drop out of view as press releases account the details of P57 clinical drug trials. Plants are constructed as mere raw material to service the creative genius of Phytopharm scientists in the lab and clinic working hard to make new ethnopharmaceuticals for treating obesity. The chemical composition,

the “highlights and achievements” section, announces that CSIR and Phytopharm are jointly developing an “anti-obesity agent (P57) that has been extracted from an indigenous plant.” There is reference to an indigenous plant, but the highlight is the extract and its P57 agent. Nature is acknowledged as the raw material for the extract, but agency is given to P57 as the real achievement. There is no mention of *Hoodia* research at all in the 2000 and 2001 annual reports. It is only until 2002 that the San peoples and the *Hoodia gordonii* plant are specifically mentioned in the annual report and in a media release regarding the signing of a Memorandum of Understanding with the South African San Council.

rather than the plant, comes to symbolize the creativity, ingenuity, and worthiness of Phytopharm as a profitable company. Nature then becomes devalued as invented chemical compositions become prized. Nature becomes something to be manipulated into more inventive and useful properties. Epistemic hierarchies are fashioned as lines are drawn between Indigenous knowledge of plants versus ethnopharmaceutical knowledge of their chemical properties. While the *Hoodia plant* remains unnamed, the bodies of San men and women with knowledge of the plants likewise remain absent. Phytopharm's constructions of nature as inspiration for scientific invention disguises another source of inspiration, that of San men and women using the plant and sharing their knowledge with others. Yet, ethnopharmaceutical research is the pathway to new drugs and potential corporate profits. *Hoodia gordonii* is thus obscured as it becomes invented P57 - a marker of Phytopharm's difference, corporate identity, and profitable potentiality.

Articulations of *Hoodia gordonii*, however, change over time within these elastic processes. In these early press releases the specificity of the plant is not given. References to "South African plants" are made, but plants remain an ambiguous source of inspiration and raw material. Nature/culture binaries are simultaneously asserted and re-figured, as nature is made visible, while also being concealed within processes of commercialization. Yet, how do these configurations change when Phytopharm is accused of biopiracy? How does Phytopharm re-articulate *Hoodia gordonii*? How does Phytopharm re-cast its corporate identity through these articulations? How are the bodies and knowledges of San men and women recognized? These questions and more are asked in the next section on the emergence of San debates over the biopiracy of their knowledge, culture, and histories.

II. Hoodia as Stolen Object: Bio-piracy and the “disappearance” of the San

The plant and its associated San knowledges may have been absent from Phytopharm’s public disclosures, but the connection to the San captivated the international news media. An April 11, 2001 article in the London Financial Times, described *Hoodia gordonii* as a “cactus used in the initiation rites of an extinct African tribe.” (Firn 2001) Its description as a “cactus” was misleading. The mistake prompted Richard Gillman, Treasurer of the British Cactus and Succulent Society, to write an editor to the letter on April 23rd informing the paper that they had a case of “mistaken” identity. Gillman was delighted that “the humble cactus made headline news,” but *Hoodia* plants are not cacti, they are succulents. The inaccurate portrayal of *Hoodia gordonii* as a cactus may have prompted a letter to the editor, but subsequent articles would depict the plant as central to a story of biopiracy against San peoples. The transformation of *Hoodia gordonii* into an anti-obesity product, primarily for U.S. markets, would draw criticism as another case of Indigenous knowledge being used to benefit the “West.”³⁹² The London Financial Times article of April 2001 became a key site of contention and helped generate wider political organizing against the patenting of *Hoodia gordonii* plant properties.

Although the San peoples were largely absent from Phytopharm press releases, the 2001 London Financial Times article acknowledges the contributions of San knowledge regarding the plant, yet in a limited and homogenizing manner. The article notes that the “Kung people, bushmen who lived on the Orange River in southern Africa” used the plant in order “to starve off their appetite during long ceremonial hunting trips.” San histories related to the plant are

³⁹² The London Financial Times article goes on to discuss Phytopharm’s clinical trials involving the plant. The trials “come as drugs groups are being criticized for their failure to provide affordable treatments to people in Africa. Obesity is a growing problem among South Africans and a leading cause of heart disease and diabetes.” According to the 2003 South African Demographic and Health Survey, 55% of women and 30% of men over age 15 are overweight or obese. Given the rise in levels of obesity in South Africa, this makes it more interesting and problematic that *Hoodia gordonii* products are being targeted to United States markets.

recognized; yet homogenized through a reference to only the Kung San peoples. No mention of the †Khomani and Khwe San in South Africa are given, or for that matter of the other groups of San peoples across Southern Africa.

This universalizing assumption is then joined with a narrative of extinction. At the end of the article, Dr. Dixey with Phytopharm states, “[w]e’re doing what we can to pay back, but it’s a really fraught problem, especially as the people who discovered the plant have disappeared.” The San peoples are marked as disappeared; an ancient peoples who are now extinct. This also means that *Hoodia gordonii* as symbol and vehicle for “giving back” is unstable. Navigation for whom to give back to is rife with tension, given the apparent extinction of the San peoples. This narrative of extinction and its colonial legacies would be a spark to ignite accusations of biopiracy against Phytopharm and turn the attention towards recognition of San peoples’ knowledge.

Unbeknownst to Dr. Dixey and Phytopharm, a researcher and environmental activist in South Africa, named Dr. Rachel Wynberg, began investigating the patent on *Hoodia gordonii* plant properties. Dr. Wynberg currently works in the Environmental Evaluation Unit at the University of Cape Town, where she has been a Senior Researcher & Deputy Director since 2005. During a 2008 interview, Dr. Wynberg graciously told me more about how she became involved in Hoodia patent law struggles. Her interest in environmental justice issues became crystallized after attending the 1992 Earth Summit. Since that time she has become an expert on questions of environmental governance, while writing governmental reports on bioprospecting and acting as a consultant in negotiations around the 2004 Biodiversity Act. Dr. Wynberg also worked with David Fig in starting Biowatch, a non-profit governmental organization in South Africa that became a key organization in mobilizing against Hoodia patents.

According to their website, Biowatch was established “to publicise, monitor and research issues of genetic modification and promote biological diversity and sustainable livelihoods.” In working with Biowatch, Dr. Wynberg says she “stumbled upon” the CSIR provisional patent related to *Hoodia gordonii*. She then started doing more research. She eventually contacted a journalist at the Cape Times who wrote a story on how CSIR registered the patent related to *Hoodia gordonii* and did not acknowledge the San. Dr. Wynberg also interviewed the lead scientist for CSIR at the time, Dr. Marthinus Horak. Based on her conversations with Dr. Horak, Wynberg recalls that in the late 1990s, the CSIR bioprospecting unit operated on a “vague bioprospecting policy” with a “very loose sort of framework.” The initial policy was focused on activities “before commercialization happens and if commercialization happens” then they would “get back to the San.” Ms. Wynberg explains that CSIR did not want to raise expectations, so their policy was to go back and initiate benefit sharing after commercialization. She is careful to point out that the people at CSIR were scientists, not social scientists, so they did not have the “expertise” on tensions with bioprospecting and indigenous knowledge, but they still should have been “sensitized to it.” Dr. Wynberg’s observations however differ from a former CSIR employee who used to work with the CSIR Biochemtech division.

In speaking with this former employee, he explains that Dr. Horak, the lead CSIR scientists with the bioprospecting unit, had a lot of interaction with traditional healers. He built trusted relationships with them over several years. The same employee, however, expressed unease over how CSIR interacted with the San over the Hoodia plant. He questioned if they signed a benefit-sharing agreement “from a PR point of view” or if they thought “it was genuinely correct that they should be compelled to reward the community.” This former employee and Wynberg are most likely both correct. Scientists such as Dr. Horak likely had

strong, trusted, and respectful relationships with traditional healers, but they might not have been strong enough to fully recognize how histories and relations of power would have structured those relationships as hierarchal. As will be discussed later, CSIR appeared to change its bioprospecting policy in 1999 with the signing of an agreement with South African traditional healers. Indigenous knowledge systems, however, were still considered to be knowledge that must be improved upon.

Returning to Dr. Wynberg, I learn her version of the beginnings of the Hoodia controversy. After the Cape Times article in 1997, the story “just sat” for a few years. She and other environmental activists were “overstretched.” It was a “very post 1994” time and everyone “was very much in this new policy development phase and frantic” as they were “re-writing every law in the country.” The year 1994 marked the election of Nelson Mandela and the beginnings of a post-apartheid era in South Africa. A more immediate concern was land reform claims initiated by the San in 1995.

Eventually, Dr. Wynberg contacted Action Aid in the U.K. and, with the help of Biowatch, they brought the issue to the attention of a reporter in London with The Observer. The reporter, Antony Barnett, wrote an article on June 17, 2001—“In Africa the Hoodia cactus keeps men alive. Now its secret is ‘stolen’ to make us thin.” Dr. Wynberg describes the article a key turning point in bringing international attention to the patenting of Hoodia and in fighting for San peoples’ rights for benefit sharing. The story firmly positioned Phytopharm as a corporate biopirate who stole secrets from the Indigenous San. It reported that Phytopharm had patented P57 with the hopes it would become a “slimming miracle.” It also accused the company of “seducing” the media, financiers, and shareholders, while “forget[ing] to tell the bushmen, whose knowledge they had used and patented.”

Most damaging was a verbatim reference to Dr. Dixey's quote in the 2001 London Financial Times that the San had disappeared. The Observer article asserted that Phytopharm's "excuse appears to be that it believed the tribes which used the Hoodia cactus were extinct." Reference to Dixey's claims of San extinction is significant. It generates links between Hoodia and the taking of San lands during colonial expansion. Colonial settlers historically made assertions of San extinction in order to justify land claims, while buttressing whiteness and white minority rule. Linking the taking of Hoodia to San colonial histories therefore strengthened initial claims of biopiracy against Phytopharm.

The Barnett article thus positioned Phytopharm as a corporate bio-pirate and the San as victims of such bio-piracy. At the same time, it represented the San as an organized political community and as "expert botanists" who could "readily identify more than 300 different types of plants." The article explained that San leaders were attending their annual gathering at a "farm" 45 minutes outside of Cape Town. At the top of their agenda was "to plan their strategy against Phytopharm and Pfizer." According to Barnett, the San "were angry, saying that their ancient knowledge has been stolen" and that they were "about to launch a challenge and demand compensation." Roger Chennells, the attorney for the San, was quoted in the article saying that the San:

...are very concerned. It feels like somebody has stolen their family silver and cashed it in for a huge profit. The bushmen do not object to anybody using their knowledge to produce a medicine, but they would have liked the drug company to have spoken to them first and come to an agreement.

According to Chennells, the injury was not the use of San knowledge per se, but that Phytopharm used San knowledge without their consent. In the article, Alex Wijeratna of Action Aid also characterized the situation as a "major case of bio-piracy" related to corporations scouring the globe "ripping off traditional knowledge" without "consent or compensation." Wijeratna called

for urgent reform of the patent system in order to “protect the knowledge nurtured over generations by groups like the African bushmen.” Patent ownership is therefore singled out and implicated as a tool of biopiracy that must be reformed to protect indigenous knowledge.

The article is also significant from a theoretical standpoint as it reveals the various different discourses at odds with each other within Hoodia struggles. In response to the news of the San being alive and angry, Dixey was quoted as saying:

I honestly believed that these bushmen had died out and am sorry to hear they feel hard done by. I am delighted that they are still around and have a recognizable community. The ownership of medicinal plants is extremely complex, but I have always believed that this type of knowledge is the most valuable asset of indigenous tribes. Instead of weaving baskets and taking tourists around, royalty payments from medicines could transform their prospects.

In the remainder of the article, Dixey insists that he is happy to enter into talks with the San and then blames CSIR for telling him the San were extinct. In his comments, he places value on indigenous knowledge as their most valuable asset. At the same time, however, Dixey makes clear that science could transform San lives. This implies that SASI-sponsored development projects by the San, for example, to sell crafts and provide guided treks to tourists will not produce results. Science, rather than cultural heritage, is the key to development and modernization. Royalty payments from “nature inspired” medicines, rather than the selling of crafts, are considered more worthwhile development strategies. Yet, the selling of crafts creates jobs, which royalties do not, and helps preserve a valuable cultural heritage with its own forms of potential “royalties.” Dixey therefore recognizes Indigenous knowledge systems, while simultaneously undermining them.

The article also provides a response from Dr. Marthinus Horak. Dr. Horak explains that only a few hundred San are left in South Africa. They live in remote areas and are hard to contact. He is quoted in the 2001 Observer article as stating:

We always intended to speak to the community at some stage, but we did not believe it would be appropriate to do so before the drug had passed on the clinical tests and been finally approved. We did not want to raise their expectations with promises that could not be met.

Dr. Horak also notes that CSIR had a track record of dealing with local communities through a variety of different benefit-sharing programs. Dr. Horak similarly falls back on discourses of science as an excuse for not telling the San. The appropriate time to communicate with Indigenous communities should be set by the clock of the commercialization process. Science must first test and approve the knowledge before it can be verified to produce results. Speaking to the San before such testing would only “raise their expectations.” The idea of unfairly raising expectations is problematic. Phytopharm found it appropriate to inform the public and its inventors about each stage of development. Why was it okay to raise the expectations of investors in order to generate additional funding and increase their stock price share, but not the San?

The Observer article also marks a turning point in how *Hoodia gordonii* and San knowledge of the plant are characterized. The plant itself and the knowledges and identities of San peoples become more visible. Political mobilization against the patenting of *Hoodia gordonii* forced Phytopharm and CSIR to recognize the San peoples and their claims. Discourses of nature/culture also began to be re-figured. Previous Phytopharm and CSIR statements constructed nature as the raw material that inspired pharmaceutical development. In the face of claims of bio-piracy, the body of *Hoodia gordonii* was now being linked to the histories, bodies, identities, and knowledges of San peoples. The plant becomes a symbol of the urgent need to reform patent law. It was no longer merely raw source material. It became affiliated with San histories and their contemporary political struggles. Phytopharm and CSIR were being forced to contend with nature as culture, and nature as political. Political mobilization on behalf of San

peoples was beginning to disrupt nature/culture binaries and re-cast the San as agents of scientific knowledge and political change.

In the Observer article, we see a re-presentation of indigeneity, San identity, and San knowledges. The San are described as expert botanists who have accumulated vast amounts of plant knowledge over time. They are characterized as politically organized, gathering together to discuss strategies for challenging CSIR and Phytopharm. The San are not opposed to the use of their knowledge for medicines. Rather, they are against the use of their knowledge without prior informed consent. Positioning the San as supporters of medicines derived from their knowledge unsettles assumptions of indigenous knowledge and culture as aligned with magic, spirituality, and voodoo science. Shifting the debate to questions of prior informed consent allows Indigenous peoples rights of self-determination to frame the discussion. San peoples are situated as citizens who should be asked to give consent before others use their knowledge.

As the plant is named and becomes a symbol of biopiracy, the corporate identity of Phytopharm is also challenged. The ethnopharmaceutical company is re-configured as a corporate biopirate in the business of appropriating and commercializing Indigenous knowledge for profit and the benefit of elites. Nature is no longer inspiration to Phytopharm, but rather stolen object. Indigeneity is produced in new and novel ways through claims of biopiracy meant to disrupt the corporate power of Phytopharm.

Yet, there are limitations. One is that the re-presentations remain gender neutral. The gendered uses of *Hoodia gordonii* as food for families and to treat gassiness in babies remains unacknowledged. Second is the issue of who is representing the San? Environmental activists and lawyers generated the initial mobilization and discourses of biopiracy in support of the San. Although the San may support such representations, they are not quoted in the article or asked to

speak on their behalf. Thus, their agency remains limited. The next section will provide a brief account of San benefit sharing negotiations. It will then examine the provisions of the benefit sharing contract and ask how Hoodia and San knowledge are constructed.

A. Sharing Hoodia: Benefit Sharing, Indigenous Knowledge, and “doing the right thing”

The 2001 article in *The Observer* brought international attention to the patenting of Hoodia and the San peoples. In the words of one former CSIR employee, the controversy created a “media circus” and created a “PR nightmare” for CSIR. Accusations of biopiracy pressured CSIR to enter into negotiations with the San for the sharing of benefits. Rachel Wynberg, Roger Chennells, and Doris Schroeder give a more detailed account of these negotiations in their recent book on the San-Hoodia case. (Wynberg et al. 2009) Supported by WIMSA and SASI, the San entered into negotiations with CSIR. In particular, the South African San Council was appointed by WIMSA to negotiate on behalf of all San across South Africa, Namibia, and Botswana. Roger Chennells, long-time lawyer to the South African San, and Petrus Vaalbooi, Chair of the South African San Council, played pivotal roles in the negotiations. Formal negotiations began in November of 2001 and a memorandum of understanding between the two parties was signed in February of 2002. In the process of negotiating, a new assemblage of actors began to emerge.

Representatives from the San, CSIR, South African government departments, and NGOs were regularly brought together to discuss key issues of concern. Workshops were also held with members of the San community to keep them informed about the negotiations. According to Wynberg et al., key areas were building trust between the stakeholders, identifying the traditional knowledge of *Hoodia gordonii*, selecting beneficiaries, and ensuring the protection of San culture and knowledge. (Wynberg et al. 2009, 104) The San were mistrustful of negotiating with CSIR because of its history as an apartheid institution. Identifying the holders of *Hoodia*

traditional knowledge was also difficult. Support for the San as the knowledge holders was bolstered when WIMSA found published records indicating that the San historically used *Hoodia* plants for a variety of purposes, mainly as a food. Negotiations proceeded with this fact in mind, but anxieties remained about potential conflicts with non-San groups such as the Nama, Damara, and Topnaar, who also historically lived in the same region and likely knew and used the plant.

After two years of negotiations, a formal agreement was eventually signed in March of 2003. A formal ceremony marked the signing of the agreement at the Molopo Lodge in Andriesvale. Dr. Sibusiso Sibisi, President of the CSIR, and Petrus Vaalbooi, sat together at a table in front of a large crowd to sign the agreement with several reporters present. Mr. Kxao Moses, Chairperson of WIMSA, and Dr. Ben Ngubane, Minister of Arts Culture Science and Technology, were on hand to sign as witnesses.

The signing of the agreement was enacted through a spectacle of post-apartheid, transformation politics. Complex scripts of indigeneity were performed. South African officials sat alongside Petrus Vaalbooi, who was proudly dressed in traditional clothing. Ethnicity, Inc. was on stage. San peoples emerged as an organized, collective political group who had successfully negotiated a benefit sharing agreement and were ready to enter into similar agreements with others. Mr. Kxao Moses articulated new expressions of indigeneity within his speech at the Molopo Lodge. I present it here in its entirety:³⁹³

As hunter-gatherers the San have survived directly from the land for centuries already. In the past, however, we had control over land and natural resources, so our ancestors had what they needed to survive despite a dry climate and any other difficult conditions they might have faced. They learnt to be attentive to what was happening with the weather, the land and the animals; they became keenly aware of rainfall patterns, game movements and veld-food availability. These skills enabled us to survive.

³⁹³ http://www.culturalsurvival.org/images/media/WIMSA_Hoodia_Speech.pdf (on file with author)

When other groups in the region also became aware of the land's richness in resources, they occupied much of the richest land. Our ancestors were dispossessed of their land. Not being regarded as equals of the new 'landowners', they were killed, forced into slavery on their own land or otherwise driven into marginal areas. Though nearly all San groups around the region lost their land base and some almost lost their language too, the elderly San continued passing on to the younger generations the traditional knowledge of fauna and flora.

The Hoodia is a good example of a plant that all generations of San have learnt about from their forebears. We San of Angola, Namibia, Botswana and South Africa know that Hoodia sap can be used to treat eye infections; that the brew of boiled Hoodia pieces can be used to treat severe stomach pain; and of course, that Hoodia suppresses hunger and helps to maintain a high energy level. Indeed Hoodia is one of the important traditional medicinal plants that San have collected and utilised for centuries past.

We are delighted that a part of our traditional knowledge is being honoured on this historic occasion. For us it is an occasion to celebrate. It is of critical importance to us that the Council for Scientific and Industrial Research (CSIR) has acknowledged our traditional knowledge of the Hoodia as the source of information that started the process leading to the granting of the patent in 1995.

From the start the WIMSA General Assembly has closely observed the South African San Council and CSIR negotiations around the Hoodia. I am happy to say that the South African San Council took its mandate seriously and deserves praise for a job well done. My dear fellow San, I wish to thank you for your hard work, in which you were supported by our remarkable lawyer, Roger Chennells, to whom I also extend a hearty thanks. After the first round of negotiations we rejoiced in the signing of a memorandum of understanding between the San and the CSIR. Today we rejoice in the signing of a benefit-sharing agreement as the outcome of the second round.

The San culture - including our traditional knowledge - has been put to use by external parties for multiple purposes, with little or no benefit accruing to the San. Recently the CSIR and several media workers and academics have set a positive example by signing agreements with the San and thus not exploiting us as has been the norm. The international interest that the agreement between the San and the CSIR has aroused has helped the San umbrella body, WIMSA, to raise awareness of the need to protect and control San intellectual property. We hope that commercial concerns will soon follow the CSIR example and stop using images of San in their adverts without our prior consent and without ensuring that we also benefit, financially or otherwise.

It must be noted that all benefits accruing to us from our sharing of our intellectual property are put to use by WIMSA through its many San member organisations in implementing sound and sustainable development projects, in providing skills training and education to San, and in building institutional capacity among San groups across the region.

Again I thank the members of the South African San Council and our lawyer Roger Chennells, as well as the CSIR representatives and the organisers of this splendid celebration for their respective contributions. May we all enjoy the day in harmony and peace!

Figure 4. Text of speech by Mr. Kxao Moses, Chairperson of WIMSA, at the CSIR-San benefit sharing signing ceremony. http://www.culturalsurvival.org/images/media/WIMSA_Hoodia_Speech.pdf (on file with author)

In this speech, *Hoodia gordonii* becomes a symbol of a dynamic San identity responding to conditions of neoliberalism with its assemblages of culture and capital. Mr. Moses positions the San as skilled knowers of plants and their environments, despite histories of genocide against them and their loss of land. Benefit sharing is represented as bringing recognition to San knowledge and its contribution to CSIR scientific research and patents related to the plant. Moses also spends considerable time praising the work and organizing of the South African San Council and their lawyer, Roger Chennells. *Hoodia gordonii* thus becomes a symbol of San governance. It represents San resistance against exploitative research practices and new San efforts to sign benefit sharing agreements with others. San peoples also emerge as collectively organized against the unfair use of their traditional knowledge and bodily image without their consent.

San agency and collectivity are constituted through the performance of indigeneity as linked to an ancestral past. Images taken at the signing ceremony show Petrus Vaalbooi sitting at the table dressed in traditional San clothing made of animal skin and feathers. The decision by Mr. Vaalbooi to appear in traditional clothing, however, differs from herbal supplement companies who advertise Hoodia products using images of San male hunters with bows and arrows. Mr. Moses explicitly calls for commercial interests to stop using San images without their consent.

The Hoodia plant thus emerges within and through narratives of tradition versus modern, which simultaneously become challenged and re-configured. The Hoodia plant also becomes the hub in which a complex assemblage of actors revolves—the South African San Council, WIMSA, CSIR, Roger Chennells, and San peoples across Southern Africa. For instance, Mr. Moses acknowledges their contributions and concludes with a blessing for a day of harmony and peace. His speech shows how *Hoodia gordonii* is put into service as a symbol of San difference and new modes of indigeneity. As *Hoodia gordonii* is re-invented, so too is San identity, culture, and governance.

Given the assemblage of actors involved in the Molopo Lodge signing event, the plant also becomes embedded within the re-invention of South Africa and its indigenous knowledge systems. In his speech to the crowd, Minister Ngubane notes the complexities surrounding benefit sharing, while situating it within the making and codification of South Africa's Indigenous Knowledge Systems:³⁹⁴

The significance of today's event and signing ceremony is enormous. To appreciate it fully, allow me to remind you of the complexity of some of the issues involved. The concept of traditional knowledge has only in recent years acquired the recognition it deserves, as the broader society increasingly started to recognise that there could be no life without roots. Science and society began to reconnect and the seeds of mainstreaming Indigenous Knowledge Systems were sown. As part of this process, the Department of Science and Technology will release in June this year, a policy on indigenous knowledge, resulting in a Bill and a range of practical measures to protect indigenous knowledge that will represent the country's first national policy and legislation on IKS. The role of indigenous knowledge in our national system of innovation is also clearly spelled out in the National Research and Development Strategy I released last year after being approved by Cabinet.

But for this case, IKS in practice demanded to be dealt with before the policies and legislation on IKS were in place. The CSIR and the San - in formulating this agreement - carried the responsibility of drafting an agreement that anticipates future government policies in this area, would withstand scrutiny from many quarters as well as serving as an acceptable basis for the

³⁹⁴ <http://www.info.gov.za/speeches/2003/03032410461009.htm> (last accessed 4/24/12)

development of similar agreements in future. Part of the challenge in this domain presents itself in the contrasting nature of traditional knowledge, handed down from generation to generation and being community-owned, and Intellectual Property Rights, which views knowledge as being owned by an individual or company. South Africa's new draft bill addresses this issue and makes provision for providing legal protection of the intellectual property rights of communities, not just individuals.

The agreement signed today is a landmark case in terms of an indigenous community staking its claim and it symbolises the restoration of the dignity of indigenous societies. This agreement in particular illustrates the benefit that can be unleashed when owners of traditional knowledge and local scientists join forces to add value to the biodiversity and IKS of our region.

The responsibility that comes from playing in the field of biodiversity, arguably Africa's richest asset, is not slight either. I am pleased to note the two parties' commitment to the conservation of biodiversity by applying "best practices" with the collection of any plant species for scientific investigation, and by ensuring that no negative environmental impacts flow from the proposed bio-prospecting collaboration. In this respect too, a draft Bill, the National Environmental Management: the Department of Environmental Affairs and Tourism have published Biodiversity Bill. It sets out an enabling regulatory framework for the integrated management of South Africa's biodiversity.

Other complexities impacting in this arena include dealing with man-made borders that do not apply to cultural groups and biodiversity; deciding and agreeing on what constitutes equitable benefit-sharing: how to proportionally distribute benefits and reward knowledge; how to contract when the revenue or benefits to the parties are uncertain, contingent, and linked to the outcome of future clinical trials; balancing "trade secret"/knowledge protection with transparency; and how to administer the potential future benefits. To the CSIR, San and government teams who have consulted, talked, learned, laboured, travelled, debated, and debated some more to come to an agreement on a complex matter: well done.

However, as much as the matter is complex, it is simple. The agreement signed today is simply about doing the "right thing". The right thing in terms of benefit sharing with the holders of traditional knowledge, of delivering on the promise that bioprospecting can create social and economic benefit to a nation, including its poorest communities. The right thing in terms of engaging in bioprospecting and not biopiracy; and in terms of fulfilling a responsibility of recognising indigenous knowledge and not merely acting charitable. If the road to getting it right - to arriving at a responsible, mutually-acceptable agreement that will withstand local and international scrutiny - has been bumpy, it had been a small price to pay in the interest of advancement in a field which has been crying for it for so long.

You will agree that few things feel as good as "doing the right thing". And, while it will be many years before the benefits from P57/Hoodia will be realised, "doing the right thing" will give our celebrations meaning, when the time for celebrating comes.

I thank you.

Figure 5. Text of speech by Dr. Ben Ngubane, Minister of Arts Culture Science and Technology, at the CSIR-San benefit sharing signing ceremony.
<http://www.info.gov.za/speeches/2003/03032410461009.htm> (last accessed 4/24/12)

The focus in this speech is placed on Indigenous Knowledge Systems (IKS), rather than San knowledge or Indigenous peoples' knowledge. He characterizes IKS as the roots of life, holding up and sustaining vitality, and found within the reconnection of science and society. A new goal of the government is to "mainstream" IKS. At the same time, the agreement is held out as a vehicle for restoring the dignity of Indigenous societies. It also symbolizes a partnership between scientists and indigenous societies that "adds value" to biodiversity and indigenous knowledge systems.

Ngubane speaks differently of traditional knowledge than Moses does. In Ngubane's speech, indigenous knowledge is left open for interpretation as the knowledge of indigenous societies within South Africa. This is different from Moses who speaks of traditional knowledge as connected to the histories of San peoples. Ngubane's position as Minister of Arts Culture Science and Technology compels him to imagine IKS in the context of the nation state. His discussion is not framed through struggles of Indigenous peoples' rights to self-determination, but through South African post-apartheid politics. IKS are the roots for the economic life of neoliberal, transformation South Africa. Value must be added to it and it must be "mainstreamed."

Through Ngubane's speech, the plant, bioprospecting, and scientific practice are re-figured. The agreement is about "doing the right thing." Previously depicting as biopiracy, practices of bioprospecting re-emerge as a promise for the nation, bringing with it social and economic benefits. Bioprospecting is calibrated as recognition for IKS, rather than charity. Celebration is found in "doing the right thing" in a time of South African transformation politics.

Hoodia gordonii therefore takes on new meaning as a symbol of ethics. Benefit sharing is not about charity, but rather about ethical scientific practices. It is about scientists doing the right thing and engaging in just practices of bioprospecting. According to Ngubane, they have a responsibility to recognize IKS. Bioprospecting coupled with benefit sharing is characterized as an ethical practice that can bring social and economic benefits for the nation and its “poorest communities.” Yet, what mode of recognition is called for? Can scientific practices of bioprospecting and benefit sharing bring political recognition to Indigenous peoples? Can it engender new pathways for San citizenship? How might its framing as ethical practice circumvent such efforts? A close examination of the CSIR-San benefit sharing agreement begins to show how benefit sharing is structured through ethics of containing risk and liability that limit its liberatory potential.

B. Apportioning Hoodia: Ethics of Sharing and Containing in the CSIR-San Agreement

The above accounts from the Molopo Lodge signing ceremony translate *Hoodia gordonii* into a symbol of sharing. The CSIR-San benefit sharing agreement becomes a hallmark for the recognition of Indigenous peoples’ knowledge and ethical modes of sharing within scientific bioprospecting. However, a close reading of the CSIR-San agreement’s technical provisions mitigates the celebratory fanfare showcased at the Molopo Lodge. As *Hoodia gordonii* is translated through the language of contract law, I suggest that discourses of sharing give way to those of containment.

Under South African law, the formation of a contract depends upon the following: “(1) agreement of the parties for performance or non-performance; (2) capacity to contract; (3) serious intention of the parties; (4) possibility of performance; (5) certainty; (6) the formalities;

and (7) absence of illegality.” (du Bois 2007, 740) The elements of performance/non-performance and possibility of performance are most relevant for our purposes here.

Under the contract, legal rights are assigned by apportioning *Hoodia gordonii* out into two discrete forms of knowledge divided between two parties. On the one side is CSIR bargaining for the right to maintain control over its invention of *Hoodia gordonii* as an isolated chemical composition (i.e., P57). On the other side is the South African San Council negotiating for the rights of the San. Under the contract, the San are assigned the “traditional indigenous knowledge on the use of the Hoodia plant,” which led to the “scientific findings, which formed the basis of the patents.” *Hoodia gordonii* is therefore apportioned into San traditional knowledge of the plant found in nature versus CSIR knowledge of Hoodia as chemical composition. Thus, to be intelligible to contract law, scales of *Hoodia gordonii* at the molecular level and molar level remain distinct and separate under the agreement. San knowledge of the plant as connected to the vital orderings of San lives is placed in opposition to CSIR knowledge of the plant as dehistoricized and fragmented.

A contract is about performance or non-performance. Parties must agree to do something or not to do something. In the contract, CSIR agrees to give the San 6% of the royalty income from Phytopharm’s successful exploitation of the patented products during the duration of the patent. They also agree to assist the San with obtaining educational scholarships. Additionally, both parties agree to enter into a bioprospecting collaboration that is committed to the conservation of biodiversity. Ethics of sharing, collaboration, and conservation are at play. CSIR agrees to share potential profits, the San agree to share their knowledge (albeit retrospectively), and the two parties agree to collaborate on bioprospecting with the shared goal of conservation.

Performance of the contract through these ethical frameworks becomes dependent on apportioning San knowledge into its “natural” plant form versus its “cultural” P57 invention.

Performance of indigeneity is also foundational to the agreement. In negotiating for rights, the South African San Council must construct the San peoples as “custodians of an ancient body of traditional knowledge” related to *Hoodia gordonii*. Nature/cultures are simultaneously binary and collapsing. The agreement depends upon separating *Hoodia gordonii* found in nature from its invention in the lab. Yet, *Hoodia gordonii* found in nature becomes connected to the cultures and histories of San people in order for them to claim benefit sharing rights. Similarly, CSIR patent ownership rights are secured by naturalizing the plant in the lab as objective scientific invention. Nature is transformed into cultural invention and then naturalized as objective scientific knowledge of its molecular parts. Contractual performance therefore depends upon and reinforces indigeneity and scientific objectivity through the construction, disruption, and re-figuring of nature/cultures.

These renderings enable an agreement to be entered into. *Hoodia gordonii* is apportioned out, becoming two forms (e.g., plant versus composition) and two pieces of knowledge. The San share their knowledge with CSIR and, in return, CSIR gives the San a share of potential income from the commercialization of *Hoodia gordonii*. Yet, how strong is this ethic of sharing? Is the sharing equal and fair? Who is given more rights under this agreement? How does the agreement reflect Comaroff and Comaroff’s suggestion that practices of Ethnicity, Inc. have the “capacity *both to enable and to disable?*” I contend that the language of the agreement both enables the San through granting them a percentage of income, but simultaneously disables them through specific requirements of non-performance.

Ethics of sharing, collaboration, and conservation become muted as the plant is quickly embedded within norms of liability, containment, and risk. At the end of the contract the San agree to the following: (1) not to claim any co-ownership of the Hoodia patents; (2) not to develop industries that might compete with the patents and products; (3) not to approach the patent licensees for additional financial benefits; and (4) not to contest the validity of the patents themselves.³⁹⁵ The San also agree to help CSIR defend their patents in the case of any third party claims of infringement and to re-evaluate the contract if challenges are successful. Through this reading, the agreement becomes less about the sharing of benefits and more about protecting CSIR's ownership rights and potential profits from further challenge by the San.

These provisions reveal the anxieties scientists have over doing benefit sharing. As patent owners, they are concerned about possible co-ownership with Indigenous peoples. If the San were given co-ownership, they would be entitled to royalties directly from license holders such as Phytopharm and Unilever. This would curtail partnerships between scientists and the biotechnology, pharmaceutical, and consumer product companies that help get an invention to market. The San are therefore denied co-ownership and thus given fewer rights under benefit sharing. They can only claim a percentage of CSIR revenue from Phytopharm. The CSIR-San benefit sharing agreement therefore reduces the size of the pie that is subject to sharing.

Co-ownership would also unsettle the assignment of patent ownership rights to CSIR as a company. CSIR scientists are listed as inventors but, subject to their employment contracts, their rights are assigned to their employer CSIR. Thus, CSIR is the patent *owner* under the law. CSIR employees are therefore compelled to make decisions over the direction of *Hoodia gordonii* research for the benefit of their employer. The San, however, are not employees of CSIR. If they

³⁹⁵ *Benefit Sharing Agreement Between the CSIR and South African San Council* (March 24, 2003) (on file with author)

were somehow able to contest the patent and become co-inventors, they would not be bound by CSIR employment contracts. They would be listed as co-inventors and co-owners because they would not be compelled to assign their rights over to CSIR due to their employment. As co-owners they might seek a voice in decisions regarding the licensing of the invention and hence its future commercial development. Under the contract the San are not entitled to claim co-ownership. It is unclear though whether or not the San could make claims on future Hoodia patents as co-inventors. Could the San be listed as co-inventors, but then be required to assign their rights to CSIR? This would give symbolic recognition to the San as contributors to CSIR Hoodia knowledge, but without co-ownership they would continue to lack control.

As it stands, the CSIR-San benefit sharing contract denies the San co-ownership and thus a voice in the licensing of the invention and/or how it should be developed and commercialized. Benefit sharing therefore narrows the scope of sharing to a portion of CSIR's revenue from its licensees. San rights to be co-owners, share in decision-making, and receive a larger share of revenue from commercialization are forestalled. Thus, CSIR autonomy in *Hoodia gordonii* research and profit are contained.

The agreement also obstructs the San from developing industries that might compete with *Hoodia gordonii* products. Some of the San I spoke with expressed desire to grow their own *Hoodia gordonii* plants for sale and export to herbal supplement companies. Discussions were just beginning how to transform the plant into a fair trade product for global sale and consumption. One San woman invited me to her kitchen garden where she grows a few *Hoodia gordonii* plants that she hopes to sell to tourists. While in Andriesvale, I also walk by a large fenced swath of land that had been cleared as a potential community garden where the San can grow Indigenous plants. Samuel Tsumkwe, the San representative with SASI, however explains

“we are allowed to grow *Hoodia* when we have the permits.” The SASI-sponsored community garden therefore contains no *Hoodia gordonii* plants. Thus, San desires to grow *Hoodia gordonii* themselves are obstructed in two directions under the law. One is the benefit sharing contract itself. If the San were able to create a fair trade market in *Hoodia gordonii*, would CSIR consider this to be competition? The other is San perceptions of the 2004 Biodiversity Act.

Mr. Tsumkwe and a few other ǀKhomani San inform me that it is illegal to pick the plant. One ǀKhomani San man explains “you can’t pull the whole plant out of the ground then the law find you and they punish you.” Another man tells me “I can’t give you a piece of that *!Xhoba* to take it to America that the police will stop you... So if you see a *!Xhoba* in the field you must eat it there and just leave all the stuff there.” Thus, there is a perception that new laws governing bioprospecting prevent the San from growing or selling *Hoodia gordonii* themselves.

The 2004 Biodiversity Act specifies that a person must have a permit to engage in bioprospecting or export an “indigenous biological resource.”³⁹⁶ An indigenous biological resource is “any living or dead animal, plant or other organism of an indigenous species.”³⁹⁷ It also pertains to the genetic material of such species.³⁹⁸ But what is an indigenous species? It is “a species that occurs, or has historically occurred, naturally in a free state in nature within the borders of the Republic, but excludes a species that has been introduced in the Republic as a result of human activity.”³⁹⁹ An indigenous species is therefore designated by its historical links to the land. Its presence must be the result of “natural” migration patterns, rather than human activity. Furthermore, what is not considered to be an “indigenous biological resource?” The

³⁹⁶ South African National Management: Biodiversity Act of 2004, § 81(1).

³⁹⁷ South African National Management: Biodiversity Act of 2004, § 1(1).

³⁹⁸ South African National Management: Biodiversity Act of 2004, § 1(1).

³⁹⁹ South African National Management: Biodiversity Act of 2004, § 1(1).

Biodiversity Act excludes “genetic material of human origin” from the Act and those resources listed in the International Treaty on Plant Genetic Resources for Food and Agriculture, which lists some common food crops such as wheat, barley, and potato.⁴⁰⁰

Thus, it appears that *Hoodia gordonii* would be considered an indigenous biological resource under the Biodiversity Act. It has historically occurred naturally within in the borders of South Africa and is not listed in the International Treaty. Yet, what is considered bioprospecting?

Under the law bioprospecting means “any research on, or development or application of, indigenous biological resources for commercial or industrial exploitation.”⁴⁰¹ Given this definition, it seems that if the San occasionally pick a *Hoodia* plant from the ground for personal use, then a permit is not required and they are not in violation of the law. However, if the San wanted to grow and sell *Hoodia gordonii* on a larger scale, then they are more likely to be engaged in bioprospecting and would be required to apply for the appropriate permits. However, as previously mentioned, the San perceive that the new laws prevent them from picking *Hoodia gordonii* plants for their personal use. Thus, San perceptions of the law become important. Whether real or imagined, both the benefit sharing contract and the 2004 Biodiversity Act work to curtail the San from developing *Hoodia gordonii* industries themselves.

A third provision of the contract specifies that the San must not approach the patent licensees for additional benefits. The risk that the San would try to negotiate additional deals with Phytopharm and Unilever is thus contained. This also protects CSIR and its relationship with its development partners.

⁴⁰⁰ South African National Management: Biodiversity Act of 2004, § 80(2)(b)(i); International Treaty on Plant Genetic Resources for Food and Agriculture of 2001, Annex I.

⁴⁰¹ South African National Management: Biodiversity Act of 2004, § 1(1).

The fourth provision of non-performance makes sure that the San do not contest the validity of the patents. The San are forestalled from taking a “no patents on life” approach. They cannot bring a court action to invalidate the *Hoodia gordonii* patents. This prevents the San from taking further political action. Yet, it also cuts off San participation in larger networks of Indigenous rights movements that work to contest patents on medical plant material such as neem and tumeric. According to my interview with Roger Chennells, the San deliberately choose to forgo a legal challenge to the patent. The San decided that benefit sharing and its possible financial rewards would be beneficial for the community. San political action is therefore further contained, while the intellectual property of CSIR is protected.

Then again the patent owners are not entirely protected from legal challenge. Other groups such as the Nama could bring a legal challenge against the patent. In that case, the benefit sharing contract requires the San to support CSIR in fighting off such a legal claim. Through the CSIR-San agreement we thus see tensions between ethics of sharing and containment. These tensions are enacted through apportioning *Hoodia gordonii* into plant/P57 and Indigenous/western knowledges. Performances of San indigeneity and CSIR scientific authority are also at work.

Such tensions reveal the various interests at stake over benefit sharing as an expression of epistemic citizenship. Rights are granted to both CSIR and the San. CSIR maintains its position in the market place because its intellectual property and research pathways are protected. The scientific authority of CSIR is fortified, along with South Africa itself as a leader of innovation. Difference is produced in the form of corporate and nation-state identity. The agreement enables CSIR (and Phytopharm and Unilever) to maintain access to the plant, while demonstrating South Africa as a producer of ethnopharmaceutical knowledge.

Yet, a representative of Unilever explained his own personal views to me on benefit sharing as a “political minefield.” The 2004 Biodiversity Act requires companies such as Unilever to sign agreements with Indigenous communities during the discovery phase, before the real worth of medicinal plant knowledge is known.⁴⁰² He contends that the discovery phase is the “wrong time to sign a deal” and is “stopping things at the start.” Legislation intended to bring benefits to local communities, is “probably putting a lot of people off at the moment.” He states that companies may conduct bioprospecting in places with less government restrictions, rather than South Africa.

The 2004 Biodiversity Act allows researchers such as Unilever to continue to access resources in South Africa, in exchange for benefit sharing with Indigenous and local communities. Benefit sharing thus becomes about balancing interests between companies such as Unilever and those of South Africa and the San. Regulation allows South Africa to maintain control over its indigenous biological resources and who has access to them. It also provides for recognition and benefits to Indigenous communities. Yet, some worry that too much regulation may jeopardize future investment in South Africa and potential partnerships with global multinational companies. As evident above, benefit sharing is also limited in its sharing with Indigenous peoples as the San are asked to give up rights in exchange for benefits.

Benefit sharing during the discovery phase also raises questions of the validity of the contract itself though. Recall that a contract requires “possibility of performance.” Under South African law, a debtor is discharged from its obligation if performance becomes impossible after the contract is signed. (du Bois 2007, 849) Yet, a debtor is not discharged from its obligation if the impossibility of performance was actually or reasonable foreseeable. (du Bois 2007, 849) If Unilever drops its *Hoodia gordonii* research and no monies flow to CSIR, then is CSIR

⁴⁰² South African National Management: Biodiversity Act of 2004, § 3(a).

discharged from paying the San its share of the revenue? Is CSIR still liable for paying the San if the commercial potential of *Hoodia gordonii* research was uncertain and it was reasonably foreseeable that CSIR would fail in performing the contract? Bioprospecting and benefit sharing alike rely on notions of potentiality and the hopes and promises that ethnopharmaceutical research will work out. How this relates to contract law requirements is beyond the scope of this dissertation, but remains a possible site for further investigation. What is more central to this discussion is how ethics of sharing and containing, the apportionment of *Hoodia gordonii* and its knowledges, and the performance of indigeneity and scientific authority reveal the tensions within benefit sharing and its power to both enable and disable.

Returning to Comaroff and Comaroff, these circulations of ethics, knowledges, and performances work to produce difference at the intersection of plant biology, San and South African cultures, ethnopharmaceutical markets, and patent law. Yet, my research on Hoodia patent law struggles builds upon and expands the valuable insights of Comaroff and Comaroff. I am interested in how benefit sharing also has the power to re-figure scientific practices and San political power.

The agreement, although limited, brings recognition to the San, their cultures, and ways of knowing. When asked if the agreement was a success, a large number of the San and those involved in Hoodia patent law struggle informed me that the contract was a success because it brought recognition to the San. The contract also strengthened San capacity to negotiate for benefit sharing contracts with other researchers.

However, does it change how CSIR does research? Does it change how CSIR scientists characterize Indigenous knowledge? Will it strengthen San political power by eventually enabling them to gain representation in the Traditional House of Leaders? In the next section, I

discuss questions regarding the re-configuring of scientific practice by examining how Phytopharm and CSIR characterize *Hoodia gordonii* and its associated San knowledges after the signing of benefit sharing. This discussion begins to cast doubts on whether or not benefit sharing can do the work of changing science to more respectfully take into account Indigenous knowledges and peoples. The following examination demonstrates how *Hoodia gordonii* and San knowledge of the plant remain mere raw material that must be “scientifically proven” in order to “add value” to the plant. I begin by first examining how Phytopharm characterizes the plant after benefit sharing on its website through its Hoodia Fact File.

C. Naming Hoodia: Narrow Recognition of Hoodia and the San in the “Hoodia Factfile”

In 2009, after facing a storm of biopiracy accusations, Phytopharm positioned Hoodia prominently on the its website in its “Hoodia Factfile.” The facts of Hoodia are accompanied by an image of a Hoodia stem shooting out from atop a pharmaceutical capsule.



Figure 6. Hoodia/Pill amalgamation image found on www.phytopharm.com

Hoodia gordonii mutates into half plant, half pill, mixing nature with culture. The 2009 Factfile sets out a series of questions about Hoodia and then seeks to answer them. The first question posed is “What is Hoodia?” Hoodia (not the species *Hoodia gordonii*) is described as “a succulent plant found in the Kalahari desert of South Africa” and is clearly delineated from a

cactus. There is no mention of its use by the San peoples or the 2005 version of the Hoodia Factfile is much the same, except there is a clarification that *Hoodia gordonii* is just one species of the *Hoodia* genus. One has to wonder why the specificity to *Hoodia gordonii* was dropped from the Factfile in 2009.

A second question in the 2009 Hoodia Factfile asks, “Is Hoodia different from other products containing Hoodia?” Phytopharm’s *Hoodia* is said to be different from other products being sold on the Internet claiming to contain *Hoodia*. The company states “[o]nly Phytopharm’s patented *Hoodia* product is botanically verified to contain pure *Hoodia*” and “has had extensive safety studies performed and been clinically proven to reduce calorie intake.” Phytopharm also warns that many *Hoodia* products being sold over the Internet as herbal supplements “contain little or no *Hoodia*” and that Phytopharm and Unilever have contacted “relevant authorities.”

Hoodia is thus characterized as different because it is patented, safe, and clinically proven effective. Discourses of law and science are used to create a boundary between Phytopharm’s *Hoodia* and those imposter *Hoodia* products being sold by herbal supplement companies committing fraud. Furthermore, Phytopharm explains that “[t]he benefit sharing to the CSIR and the San people is only generated by Phytopharm’s patented *Hoodia* product.” Phytopharm’s *Hoodia* emerges as different again because it is patented and has the potential to generate benefits for the San people. Through the reference to benefit sharing, Phytopharm positions itself as a more ethically and morally engaged company because it shares benefits with CSIR and the San.

Yet, the wording of the text is misleading. Only CSIR signed an actual agreement with the San to share benefits. Phytopharm agreed to pay CSIR royalties in exchange for being given a license to use their patented product. The company did not sign a benefit sharing agreement

with the San or an additional agreement with CSIR. The wording of the text passes off the giving of royalties to the South African CSIR as “benefits.” Nevertheless, Phytopharm articulates Hoodia as its own unique product through these characterizations. Difference in the market place becomes mediated through discourses of ownership, safety, efficacy, and sharing that distinguish pure patented Hoodia from imposter Hoodia.

The 2005 Hoodia Factfile tells a slightly different story. Much of the language delimiting Hoodia from other products is still the same. One obvious difference is the specificity regarding the plant. The language in 2009 is more broadly focused on the *Hoodia* genus, yet in 2005 attention is placed on the “patented *Hoodia gordonii*” product. It is unclear why the *Hoodia gordonii* species is erased in the 2009 Factfile and absorbed into other *Hoodia* species. One might suspect that as Phytopharm continued its research it investigated other *Hoodia* species for pharmaceutical potential. The language also casts a semblance of ownership over all *Hoodia* species, not just *Hoodia gordonii*. Phytopharm positions itself as a likely owner of patents on other *Hoodia* plant species. One reason behind the change might be because Phytopharm had patent applications pending on other inventions involving several species of *Hoodia*.

A search on the USPTO patent database confirms why Phytopharm’s website reflects an interest in *Hoodia* species more generally. In 2006, the company was issued a patent on “extracts, compounds, and pharmaceutical compositions having anti-diabetic activity and their use.”⁴⁰³ The invention involved pharmaceutical compositions from an extract of the *Hoodia* genus plant that had anti-diabetic activity. More recently Phytopharm has obtained two other patents related to Hoodia. One is a 2010 process patent for producing Hoodia plant extracts for

⁴⁰³ Rubin, et al. “Extracts, compounds and pharmaceutical compositions having anti-diabetic activity and their use.” #7,033,616 (April 25, 2006).

minimizing heavy metal content in such extracts.⁴⁰⁴ The other is a 2011 patent on Hoodia extracts and compositions having improved flavor.⁴⁰⁵ As research progresses on the plant, new stakes in ownership are confirmed. *Hoodia* research also takes off on a new pathway in the treatment of diabetes. New circuits of commercialization open up and are mediated by Phytopharm's exclusive ownership rights over *Hoodia* properties for anti-diabetic properties. Thus, nature inspires new channels for *Hoodia*'s potential as biocapital.

The 2005 Hoodia Factfile also does not caution against imposter Hoodia products and fraudulent companies. Warnings against imposter Hoodia products only recently became an issue. Why was Phytopharm compelled to address this within the 2009 Hoodia Factfile? Patent law might provide one explanation. Exclusive patent ownership only remains strong if patent owners enforce their rights. CSIR and Phytopharm must ensure that others are not infringing on their ownership rights. They must make sure that companies claiming to produce Hoodia products are not using their patented technology.

Phytopharm also has a fiduciary responsibility to safeguard its shareholders by protecting its market share. Fraudulent Hoodia herbal supplements might be perceived as cutting into Phytopharm's future interest in Hoodia products and jeopardizing its commercial development stream (and needed investors). In fact, Phytopharm's interests in Hoodia products seem to be getting some protection. According to an April 2009 press release from the U.S. Federal Trade Commission (FTC), charges were filed against Nutraceuticals International, LLC for deceptive advertising of *Hoodia gordonii* products. The Advertising Standards Authority of South Africa also recently issued a formal complaint against Planethoodia for claiming that their Slender Gel

⁴⁰⁴ Alaoui Ismaili, "Processes for production of Hoodia plant extracts containing steroidal glycosides." #7,807,204 (October 5, 2010).

⁴⁰⁵ Batenburg et al. "Hoodia plant extract with improved flavor." #7,923,435 (April 12, 2011).

containing *Hoodia gordonii* was scientifically proven to reduce weight. The company was compelled to change its advertising of its *Hoodia* product from “proven to work” to “some people believe the product works.”⁴⁰⁶

The 2009 Factfile asks a third question that mentions Hoodia’s history, “How has Hoodia been used in the past?” The website claims that “[f]or many centuries the San bushmen of the Kalahari desert have used *Hoodia* plants as a food.” Phytopharm therefore acknowledges the San and their connection to the plant. Yet, the one sentence reference leaves many histories unrecognized. As noted in the previous chapter, the San claim to have used the plant for many gendered uses over time to suppress appetite, provide energy, and to treat gassiness in babies, for example. Its use as a food is only one way the San use the plant. When *Hoodia* moves into circuits of the pharmaceutical industry its diverse uses by the San become invisible and homogenized into a single use—as a food. San histories of subordination are also left unrecognized. The 2005 Hoodia Factfile provides very little information. It contains an additional sentence regarding *Hoodia gordonii* specifically. It explains that this species of *Hoodia* was eaten less frequently because of its bitter taste, but that in times of hardship it was eaten.

The 2009 Hoodia Factfile then turns to Hoodia bioprospecting. It asks a fourth question, “How did CSIR start researching Hoodia?” Thus, slightly more attention is given to *Hoodia*’s past, but within the context of CSIR’s bioprospecting unit. Phytopharm explains that “due to the tradition of food use of *Hoodia* plants” the CSIR included the plant in a scientific research project to screen “bush foods” for toxic effects and possible use by humans. Militarization of Hoodia and the fact that this research project was for the South African Defense Force is not mentioned.

⁴⁰⁶ http://www.health24.com/news/Natural_health/1-932,49484.asp (last accessed November 29, 2011)

The Hoodia Factfile therefore contains very few details about the history of the plant and/or the San peoples. Yet, to ensure its potential as biocapital, Hoodia must be severed from its past with the San and CSIR. Phytopharm must distinguish its work on Hoodia from the way the San and CSIR use and research Hoodia. Under the law, it has a fiduciary duty to its shareholders. Phytopharm must convince its shareholders and future investors that what it is doing with Hoodia is novel and profitable. Phytopharm's construction of Hoodia therefore should be read with this in mind. As a publicly-held company, Phytopharm is bound by law to meet the interests of its shareholders by adhering to standard business practices. This explains why much of the remainder of the Hoodia Factfile is devoted to emphasizing Hoodia as patented, safe, and clinically-proven effective.

Phytopharm states that not all Hoodia species reduce appetite. It explains that “[o]nly Phytopharm's *Hoodia* extract has been proven to decrease calorie intake in human volunteers.” Thus it is only the plant, as manipulated and transformed by Phytopharm, which is proven effective. Its effectiveness has also been clinically-proven. The Hoodia Factfile notes that “in 2001 Phytopharm completed a double-blind, placebo-controlled clinical study in overweight, but otherwise healthy volunteers using an extract of *Hoodia*.” The study showed that large doses of the extract caused a “statistically significant reduction” in calorie intake and body fat content. The clinical trial showed by day 15 there was a significant decrease in calorie intake by approximately 1000 kcal per day. It also showed the use of *Hoodia* to have a “satisfactory overall safety profile.” However, Phytopharm notes that “further scientific studies are required to establish the safety profile of *Hoodia* extract” and that these studies are “currently ongoing.” More trials are needed to guarantee its safety and it “will take a few years before a product will become available.”

Phytopharm then reassures its readers (and its shareholders) that Hoodia is patented. The Hoodia Factfile explains, “CSIR has submitted patents in territories all over the world relating to *Hoodia*” and “Phytopharm has an exclusive license for these patents.” The plant and its extract therefore become characterized through discourses of ownership, safety, and efficacy. The focus differs slightly however in the 2005 Factfile. The language remains the same, except references to *Hoodia* are more specific and the plant is explicitly named as *Hoodia gordonii*. Thus, Phytopharm asserts its authority and claims in 2009 on the *Hoodia* genera more broadly.

The Hoodia Factfile also presents the plant as benefiting the San and South Africa. It asks a fifth question, “How does Hoodia benefit the San?” Phytopharm takes time to answer the question with the following:

The CSIR have entered a benefit sharing agreement with an organization representing the San people, to ensure that any financial benefit flowing from the commercialization of the patented *Hoodia* extract is shared with people whose traditional knowledge first led to the investigation of the plant. In addition, Phytopharm has worked closely with the CSIR and appreciated the importance of the continuing development to South Africa. To this end, Phytopharm has collaborated with the CSIR and opened a clinical supplies unit and a botanical supplies unit in South Africa.⁴⁰⁷

A laudable item in the Hoodia Factfile therefore becomes the CSIR-San benefit sharing agreement. The San are recognized as the people whose knowledge led to the investigation of the plant. Recognition however is limited. The San are acknowledged as the original holders of Hoodia knowledge, but the wording implies that the real “investigation” was conducted by CSIR (and Phytopharm). Phytopharm may have been “inspired by nature” and borrowed from San knowledge, but knowledge of Hoodia is refined through scientific investigation proving it is safe and effective.

⁴⁰⁷ <http://phytopharm.com/hoodiafactfile> (screenshot on file with author)

Another important piece in the Hoodia Factfile are the benefits bestowed upon South Africa and CSIR. Phytopharm positions itself as “collaborating” with CSIR to provide clinical and botanical supplies to “continue[] development to South Africa.” A close reading of the Hoodia Factfile shows how Hoodia research is situated as contributing to the development and modernization of South Africa and its scientific research institutions. It demonstrates the precise ways in which Hoodia research is represented, and how the connections between the plant and San histories and knowledge are obscured.

At the end of the Hoodia Factfile, the plant is structured through discourses of conservation embodied within international law. A sixth question asks, “Is Hoodia sustainable?” The answer explains that *Hoodia* has been included in Appendix II of the Convention on International Trade in Endangered Species (“CITES”).⁴⁰⁸ Members of The World Conservation Union drafted a resolution in 1963 to begin negotiations for implementing a Convention for the protection of trade in wild animals and plants across nation-state borders. The Convention was agreed to in 1973 and now has 175 Parties (including South Africa, the U.S. and the U.K.) Appendix I lists species threatened with extinction. Appendix II “includes species not necessarily threatened with extinction, but in which trade must be controlled in order to avoid utilization incompatible with their survival.”

The CITES species database reveals 14 protected species of *Hoodia*, one of which is *Hoodia gordonii*. Each species was included in Appendix II as of December 2005. CITES mandates that the export of any listed Hoodia species shall require an export permit from the state.⁴⁰⁹ Export permits are only granted if the trade in the species “will not be detrimental” to its survival, was not obtained illegally, and will be shipped “as to minimize the risk of injury” to the

⁴⁰⁸ Convention on International Trade in Endangered Species (1975), <http://www.cites.org>

⁴⁰⁹ Convention on International Trade in Endangered Species (1975), Art. IV, § 2.

species.⁴¹⁰ The Hoodia Factfile explains that the inclusion of *Hoodia* into the Appendix II will ensure that all harvesting and trade of the plant will be “controlled at an international level in order to conserve indigenous plant populations within the range states (South Africa, Namibia, Botswana).”

Thus, *Hoodia* species are now formally protected under international law. Exports of Hoodia are controlled through the issuing of permits meant to conserve indigenous plants. *Hoodia gordonii* becomes structured under a different legal regime through an ethic of conservation. This differs from patent law and its discourses of ownership that configure the plant. Phytopharm signals its compliance with ethics of conservation by stating in its Hoodia Factfile that:

[w]ild stocks are also extremely limited so Phytopharm has established plantations over the past 5 years to grow sustainable quantities of *Hoodia* exclusively for Phytopharm’s product. There is a continuing development programme by Phytopharm to ensure sustainable supplies for Phytopharm’s product in the future.⁴¹¹

Phytopharm is conserving wild stocks of Hoodia by growing the plants on plantations exclusively for their use. They have a “development programme” to ensure “sustainable supplies” for Phytopharm’s product.

Hoodia becomes embedded with ethics of conservation, development, and sustainability. Yet, the wording of the text reveals the direction of these ethical concerns. The emphasis is on ensuring “sustainable supplies for Phytopharm.” It is not to ensure the conservation and sustainability of the plant for the San or other Indigenous peoples. Establishing plantations to grow Hoodia helps to make sure that Phytopharm is not depleting local populations of wild plants. Ethics of sustainability, however, are focused more strongly on sustaining plants as a raw

⁴¹⁰ Convention on International Trade in Endangered Species (1975), Art. IV, § 2.

⁴¹¹ <http://phytopharm.com/hoodiafactfile> (screenshot on file with author)

material and resource for future commercialization, and less so on benefiting San men and women. This point will be discussed in more detail in the following sections.

In sum, as Hoodia becomes poised as potential biocapital for Phytopharm, it changes meaning. The previous chapter showed how Hoodia was transformed from plant to patented object by separating the plant found in nature from the chemical composition invented by CSIR scientists in the lab. To challenge this dichotomy, in the previous chapter, I re-cast patent law as a hybrid network and Hoodia as a heterogeneous object where nature and culture are in fact mixing.

The Hoodia Factfile presents a similar landscape in which to examine the oscillation of nature and culture. The plant is located within discourses of ownership, safety, efficacy, sharing, development, conservation, and sustainability. Hoodia is situated as life, nature, and a plant that comes from the San and “inspires” the scientific enterprise of Phytopharm. It is fragmented into a propertied plant extract with high biocapital potential for reducing calorie intake and increasing Phytopharm profit and shareholder price. Hoodia therefore fluctuates as it is simultaneously constructed both as natural plant and cultural/scientific invention through representations of ethno-botanical research.

III: Hoodia as Scientifically Proven: Phytopharm, CSIR, and Pathways from “Farmer to Pharma”

The Hoodia Factfile is one way in which Phytopharm gives meaning to the plant as both inspiring plant from nature and potential commercialized pharmaceutical. Phytopharm also gives meaning to the plant through its partnerships with CSIR. As the Hoodia Factfile indicates, there is a “continuing development programme by Phytopharm to ensure sustainable supplies for Phytopharm’s product in the future.” The emphasis in the text implies an ethics of conservation

and sustainability directed at the plant, rather than a concern for the sustainability of the San peoples.

According to a Department of Science and Technology Department report, two development programs are being run at farm sites in the Pella and Onseepkans communities in the Northern Cape.⁴¹² A 2007 article, written by several CSIR scientists, confirms that they collected *Hoodia gordonii* plant stems from the Pella district. (van Heerden et al. 2007, 2551) The report states that these sites are a part of a Sustainable Livelihoods Programme that focuses on “technologies with a social impact.” The program is funded by the National Treasury to ‘create jobs and improve the quality of life for the poor.’ The focus of the report is on indigenous medicinal plants. An estimated “28 million users of indigenous medicinal plant products and 255,000 traditional healers in SADC and that more than 90% of South Africans rely on indigenous medicinal plants for their health care.” Furthermore, “[o]f the 300,000 medicinal plants found in the region, about 1,000 are harvested from the wild and actively traded in herb markets...Only 5% have made it on to the formal market.”

This is the problem. Only 5% have made it to “formal market.” Hence a new strategy labeled “Farmer to Pharma (F2Ph)” was initiated. Its purpose was to “combine biotechnology with South Africa’s indigenous knowledge systems (IKS)” in order to “strengthen the emerging bioeconomy in the country.” The challenge of F2Ph is to “catapult South Africa into a leading position in biotechnology and pharmaceuticals by harnessing the country’s rich biodiversity and indigenous knowledge using biotechnology tools.” Thus, its mission is to:

⁴¹² Department of Science and Technology, Republic of South Africa, “Technology for Sustainable Livelihoods.” The report contains no obvious date but appears to be written sometime after November 2005 and before 2008. (on file with author)

promote[] community production of indigenous medicinal herbs, ***scientifically proven to possess medicinal and or healing properties*** to produce feedstock to support R & D with cultivated raw materials, as well as to enter into the medicinal herbs market, as sustainable producers. [bolded by original authors]

The cultivation of *Hoodia gordonii* is a part of that mission. CSIR supports projects at Onseepkans and Pella where each site grows about 2.5Ha of the plant “under scientifically controlled conditions by members of local communities.” The harvested plant material is sold to the licensee of the Hoodia technology (e.g., Phytopharm). The project has supposedly resulted in the development of land and the building of irrigation systems, office, bathrooms, and an eating area. It also employs 23 full time employees in Pella and 17 in Onseepkans. Employees also receive agro-technical and business training skills in labor relations and productivity. A community-based Section 21 company has also been established in each community “to manage the enterprises.” The project is summed up in the report as follows:

The challenges of poverty reduction, sustainable livelihoods, job and wealth creation and improvement of quality of life in economically-depressed areas are interconnected. The projects at Onseepkans and Pella provide much needed employment and capacity building for these communities. In addition these projects are important for the preservation of *Hoodia gordonii*, an indigenous medicinal plant under threat because of the great market demand for it.

Through Farmer to Pharma and its Sustainable Livelihoods Project, Hoodia becomes embedded with discourses of sustainability, poverty reduction, and job/wealth creation. In the production cycle from Farmer to Pharma, Hoodia is represented as a way to improve quality of life. This is admirable. CSIR and the Department of Science and Technology are using Hoodia cultivation as a vehicle for bringing jobs and training to impoverished communities. CSIR directing benefits back to communities in ways that go beyond the CSIR-San benefit sharing agreement. But who is employed? Who benefits more?

CSIR issued a second report devoted to the Sustainable Livelihoods Project sometime after March of 2008. According to the report, 11 women (over 25), 1 woman (under 25), 1 man (under 25), and 12 men (over 25) are employed in the Pella project that includes Hoodia cultivation.⁴¹³ So Hoodia production seems to be benefiting both men and women equally at Pella. Statistics for CSIR's other Sustainable Livelihood Projects also indicate that 58% of the "project beneficiaries" are women. Farmer to Pharma thus appears to be supporting gender equity and the development of women's livelihoods.

It is unclear however if San peoples themselves are the ones who are benefiting. The report failed to indicate how employees self-identified according to race or ethnicity. The location of the project in the Northern Cape and its proximity to Upington means there is a strong likelihood that self-described San men and women are involved. Yet, without actual empirical data, one cannot be sure. Lack of additional information however should not obscure the important question, of who benefits more from the program? The program at Pella and other sites provides much needed opportunities for local women and men. Yet, this reality should not shield the fact that the program also serves the interests of CSIR and Phytopharm more. The Farma to Pharma project keeps lines of access open to indigenous medicinal plants. One may argue that offering 25 people the opportunity to cultivate Hoodia helps to squash larger demands for more San control of the resource and its profit potential. Without further investigation it is difficult to assess the extent to which *Hoodia gordonii* cultivation at Pella and Onseepkans is increasing quality of life.

⁴¹³ Department of Science and Technology, Republic of South Africa, "Technology for Sustainable Livelihoods." The report contains no obvious date but appears to be written sometime after March 31, 2008. (on file with author)

What does appear certain though is that the projects are uni-directional and Indigenous knowledge remains less valued. The projects are meant to train and “develop” impoverished communities. Indigenous knowledge systems are also being combined with biotechnology, but it is the biotechnological output that remains central. Again, the projects are to “promote[] community production of indigenous medicinal herbs, ***scientifically proven to possess medicinal and or healing properties.***” CSIR uses a bold font to place emphasis on the fact that only medicinal herbs scientifically proven to contain medicinal properties are the object of Farmer to Pharma. CSIR scientists must first legitimate San knowledge of Hoodia by investigating Hoodia’s molecular and chemical properties in the lab. The goal of the Sustainable Livelihoods Programme is to “combine biotechnology with South Africa’s indigenous knowledge systems (IKS).” However, the idea of combining somehow implies that both ways of knowing are equally valued. This does not appear to be the case. Indigenous knowledge systems are not valued on their own, they must be “scientifically proven.”

In my encounters with Hoodia, I had the opportunity to meet with one San man who was assisting CSIR scientists with cultivating plants in a small garden in Andriesvale. Research scientists from CSIR use the garden to grow and test plants. I was unable to get a precise answer on what the plants are being grown for, but I could see that there was no Hoodia in the garden. The man told me that the plants were being tested for oils. A 2008 CSIR report confirms the production of plants containing “essential oils” for fragrance and flavor markets and for cosmetic and pharmaceutical industries.⁴¹⁴ Plants such as the *Agathosma betulina* (round-leaf buchu),

⁴¹⁴ Department of Science and Technology, Republic of South Africa, “Technology for Sustainable Livelihoods.” The report contains no obvious date but appears to be written sometime after March 31, 2008. (on file with author)

which have been used for generations by the San, are being grown. In 2004/2005 CSIR initiated the Northern Cape Essential Oils Cluster (Onseepkans and Pella) to grow Rose geranium and Hoodia on each site, ‘in support of ongoing research interaction between the CSIR and the South African San Council.’ The report however does not mention that the project includes a small garden in Andriesvale, so I cannot confirm that it is the same project. Based on this man’s comments though it seems somehow related to CSIR interest in essential oils. What is was interesting through was how he articulated his experience with CSIR scientists with some ambivalence”

We learn a lot but then they make us getting a lot of our own mistakes. You know it is like every time we do something we have done it wrong...It’s a professor making sure that he just gives us a little knowledge about growing the Hoodia, the Devil’s Claw, meanwhile making sure the only reason for him was to be certain that it does grow here...in the end it is just us here. On the land. On the difficulty. But the changes are there, but it isn’t really changing. It is nothing. In the end somebody learns. Somebody that sees. Go back, just plant. Just assist. Just learn. Just accept.

He went on to tell me that the researchers are “serious people” and he has respect for them, but he expressed frustration that he makes mistakes such as taking measurements inaccurately. Change is happening as new partnerships are being made with CSIR scientists, but “it isn’t really changing.” He is planting, assisting, learning, but also just accepting that real change has yet to occur. Training is uni-directional. The San are assisting CSIR scientists with measurements, for instance, and learning new ways to cultivate indigenous plants. Yet, how are CSIR scientists not learning from the San? They learn how the San use certain plants for medicinal purposes, but are they learning to understand and respect the epistemological foundations of San indigenous knowledge?

According to a 2005 presentation by Dr. Horak on “Adding value to Indigenous Knowledge through Scientific Innovation,” CSIR changed its bioprospecting policies in 1999

when they signed an agreement with South African traditional healers. In the presentation, Horak insists that Indigenous knowledge systems (IKS) are “different, but equal, to ‘Western’ knowledge systems.” They “may have ancient origins” but IKS is ‘relevant in day-to-day lives of people’ and it continues to “evolve.” IKS can also contribute “significantly to development” to meet the United Nations Millennium Development Goals. However, according to Dr. Horak, IKS “must be leveraged with other knowledge resources” and that “value addition to IKS through scientific innovation can create new benefits for society” but it “requires partnerships.”

Dr. Horak’s presentation shows some improvement in the recognition of Indigenous knowledge. CSIR has come to recognize the value of IKS and its contributions to science. The language of “different, but equal” though is limiting. In the end, it is the scientifically proven knowledge that matters most to South Africa’s economic futures. Ways of knowing how to molecularize Hoodia remain privileged. This also has consequences for an ethics of sustainability. What would an ethics of sustainability look like if IKS (and Indigenous peoples) were equally valued? How might the health and well-being of San men and women flourish to a greater degree?

IV. Conclusion

Struggles over the patenting of San knowledge and subsequent benefit sharing reveal the contours of new expressions of epistemic citizenship and its production of difference and inequality. The previous chapter showed how CSIR and its licensees were granted stronger rights of epistemic citizenship through patent ownership. The CSIR patent signaled Hoodia molecular knowledge as valuable. This facilitated Hoodia’s travels into the worlds of global commercialization and ethnopharmaceutical research by Phytopharm and eventually Unilever. These worlds engender new representations of the plant and the San. Phytopharm initially

represented the plant as a “natural anti-obesity treatment,” but as research progressed, it became a “drug candidate.” The plant and its associated San knowledges were made invisible. San political mobilization against CSIR and Phytopharm as corporate biopirates, however, brought visibility to the plant and the San. Through claims of biopiracy Hoodia was re-figured as a “stolen object,” and a stronger collective San identity began to emerge.

Visibility brought recognition and paved the way for epistemic citizenship through benefit sharing. With the ceremonial signing of the contract, the plant was positioned as the indigenous knowledge of both the San and the nation-state. The provisions of the benefit sharing contract, however, gave limited and partial rights to citizenship based on ways of knowing. The San were promised monies from the commercialization and sale of Hoodia, but CSIR and its licensees maintain control over the design of Hoodia research and its applications. Benefit sharing though did bring increased visibility and recognition to the San. Their required contractual forbearance may have cut short their pathways for economic participation on Hoodia research, but it paved new directions for benefit sharing contracts with others and strengthened their desires for recognition in the National House of Traditional Leaders.

It also prompted a change in the way Phytopharm and CSIR represented the plant and the San. The plant became named as *Hoodia gordonii*, rather than the anonymous “South African plant” or “drug candidate.” San knowledge and histories around the plant were also briefly accounted for. The San were being recognized as worthy epistemic citizens, entitled to recognition and monies for their valuable knowledge of Hoodia. Yet, San claims to epistemic citizenship were limited and constrained. Although made visible, *Hoodia gordonii* and San knowledge remain a raw resource that must be “scientifically proven.”

The goal of this chapter has been to examine how representations of Hoodia research and San benefit sharing give meaning (or not) to *Hoodia gordonii* and San Hoodia knowledge. It also shows the specific ways in way in which power and inequality are operating. In doing so, it has shown the ways in which contractual benefit sharing both enables and disables San peoples. It brings recognition to San peoples and offers a potential pathway to economic and political recognition. As this chapter shows, however, that pathway is limited and its libratory potential is questionable.

Chapter Six

Claiming Hoodia: Epistemic Citizenship and the Making of Difference and Inequality when Benefit Sharing Fails

The previous chapter examined representations of Hoodia in relation to the San through the commercialization process. San claims for benefit sharing brought the San new opportunities for economic participation with CSIR and facilitated possible benefit sharing agreements with others. It also brought the San increased visibility and pathways for seeking out formal political representation. A collective San identity as Indigenous peoples was strengthened, while San histories of racial classification under apartheid were slightly dissolved. This incited Phytopharm and CSIR to articulate and recognize the plant and its associated San knowledges.

However, the chapter showed how rights of epistemic citizenship as mediated by benefit sharing are not enough to bring full recognition to the plant or the San. Hoodia and San knowledge is recognized, but remains raw material to be “scientifically proven.” San peoples continue to lack control over Hoodia research and its directions. For the San, benefit sharing becomes a pathway towards economic participation and political recognition. Travels along the benefit sharing path fortified San indigeneity and offered strategies to re-imagine citizenship, yet in limited ways.

This chapter continues to examine benefit sharing through the lens of citizenship by asking what happens after benefit sharing seemingly fails. Section One discusses the termination of Hoodia research by Unilever and its consequences for CSIR-San benefit sharing. For instance, as Hoodia anti-obesity research ends, the plant is once again characterized as raw material, but as

required input for more recent patented inventions related to diabetes research and veterinary medicine.

Section Two discusses new legislation in South Africa regarding benefit sharing. Governmental management and approval of Hoodia benefit sharing strengthens notions of citizenship as an epistemic citizenship, where degrees of inclusion and exclusion in the market place are assigned based upon claims to knowledge. Such lines of inclusion and exclusion, however, are drawn in unequal ways according to certain priorities as outlined by the nation-state. In this case, ethics of conservation, rather than human rights or Indigenous peoples' rights, become the foundational structure guiding claims for epistemic citizenship as mediated by benefit sharing.

Section Three examines knowledge claims more specifically by analyzing articulations by a Unilever scientist, a South African farmer, and a few members of the †Khomani San. It shows how each articulates claims based upon their ways of knowing and knowledge practices through narratives of indigeneity, race, and gender. Findings in this section are constrained by the limited interview data. Nevertheless, it offers partial insights for further research into how difference and inequality are produced in new ways through claims over patent law ownership and benefit sharing, which signal changes in citizenship itself.

Section Four concludes by discussing Hoodia's potential futures. It thinks through the possibilities of a San benefit sharing agreement with South African farmers and its implications for San control over the use of their image to market Hoodia. It then briefly introduces emerging plans for Hoodia as fair trade object.

These sections thus come together to show the mutating potentialities of benefit sharing and the pathways it engenders. Through this chapter, I contend that as the promise of CSIR-San

benefit sharing seemingly fails, new potentialities, interests, and stakes emerge. This chapter shows how new stakes and interests unfold in the face of legal and scientific uncertainty over Hoodia research. Relevant actors are compelled to articulate novel claims to Hoodia knowledge through narratives of indigeneity, race, and gender in order to protect their changing interests. Examining these articulations provides partial insights into how difference and inequality are produced in new ways through modes of citizenship refashioned around claims to and grants over knowledge.

I. Returning Hoodia: Termination and Transfer of *Hoodia Gordonii*

On November 12, 2008 Unilever reported it was terminating its *Hoodia gordonii* research. With the announcement, Phytopharm's share price dropped sharply from 8.3p to 3.7p on the London Stock Exchange.⁴¹⁵ Chief financial officer, Daryl Rees, and chief executive office, Piers Morgan quickly resigned. Three days later, the London Financial Times reported that Phytopharm was in "turmoil." (Jack and Wiggins 2008) The Financial Times article spoke of how Phytopharm had worked for several years on the "pivotal experimental" product. It initially developed the plant as a "high-margin prescription-only medicine with Pfizer." When Pfizer dropped the project in July of 2003, Phytopharm began working with Unilever in December of 2004, developing the plant as a "functional food" for Unilever's SlimFast brand of products.

Suggesting a reason for the project termination, the London Financial Times article reported that *Hoodia* was found to be "bitter, caused nausea and was metabolized too quickly, reducing its efficacy." (Jack and Wiggins 2008) However, this reason was different than other explanations given to me. A representative from Unilever informed me that the project was

⁴¹⁵ <http://www.londonstockexchange.com/home/homepage.htm>; Corporate Diary, Thursday 27th, London Financial Times (November, 2008) (on file with author)

dropped because “we couldn’t meet our safety efficacy standards.” He failed to provide further details, however, as to why it was considered unsafe. Thus, it is not clear whether or not nausea was in fact a safety concern. Others involved in Hoodia patent law struggles generally interpreted these articulations of safety with uncertainty. A long-time activist working with the San told me he was unsure “on what exactly the safety concern was.” Offering a guess, he told me clinical trials showed rats were starving to death when given *Hoodia gordonii* extracts along with food. He respected Unilever for dropping the project because it “gave them a warning that especially teenage kids who might want to be as slim as possible that they would starve and starve.” Another academic/activist working on behalf of the San also explained that “it was unclear why Unilever has pulled out.” Unilever and others commonly cited safety as the research for terminating *Hoodia* research. Yet, I could never learn the specific scientific reason behind the safety concerns.

The timing of the termination in late 2008, during the peak of the global financial crisis, raises additional questions. Was the decision to end the project an issue of safety or profitability? Was *Hoodia* research divested? In other words, when faced with the financial crisis, did Unilever drop *Hoodia* research because it no longer fit within its corporate model? Did a narrative of “safety” become a more palatable and conflict-free explanation to mitigate possible criticisms for shattering the hopes of benefit sharing for San peoples? To be sure, the same representative from Unilever indicated that consideration for others did go into the decision-making to end *Hoodia* research. In particular, there was a concern “first and foremost...[with] the farmers who had been working with us to grow the *Hoodia*” in South Africa. South African farmers would lose revenue because large supplies of the plant would no longer be needed. Despite these concerns, the timing of the decision and lack of details as to the specific safety concerns should continue to

raise questions. Further details of the termination, however, became publically known a month later.

On December 12, 2008 Phytopharm issued a press release announcing, “Unilever returns rights to *Hoodia* extract.”⁴¹⁶ According to the press release, *Hoodia gordonii*’s future as a weight loss product may be over, but new pharmaceutical possibilities are emerging. Phytopharm has mutually agreed with Unilever to “terminate” their agreement “for the development of Hoodia extract as a functional food targeting weight management.” It is also quickly noted, “all the original Phytopharm patents and rights will revert to Phytopharm.” Thus, termination is formulated as return. Central to this process of coming back is the transfer of patent rights. *Hoodia gordonii* became a patented object initially through the 1997 South African patent, which expires in 2017. Yet, its life as patented object continues as new creations based on *Hoodia gordonii* are invented and patented.

Per the USPTO website in late 2008, Phytopharm had two patents already approved by the USPTO and two more applications pending.⁴¹⁷ Phytopharm had re-invented *Hoodia gordonii* into a method for treating gastric acid secretion in animals, pharmaceutical compositions with anti-diabetic treatment, and processes for minimizing its heavy metal content and for improving its flavor. Return of its patent rights therefore was a key component to the termination of *Hoodia gordonii* research. According to the press release, Unilever also gave Phytopharm a royalty-free right to sub-license any Unilever patents associated with the Hoodia programme. This means that Phytopharm could utilize any subsequent Unilever patents based on Hoodia research without

⁴¹⁶ Press release on file with author.

⁴¹⁷ U.S. Patent #6,488,967 for “gastric acid secretion” approved December 3, 2002. U.S. patent # 7,033,616 for “extracts, compounds and pharmaceutical compositions having anti-diabetic activity and their use” approved April 25, 2006. U.S. patent # 7,807,204 for “processes for production of Hoodia plant extracts containing steroidal glycosides” filed August 14, 2007 and approved October 5, 2010. U.S. patent #7,923,435 for “Hoodia plant extract with improved flavor” filed April 21, 2008 and approved April 12, 2011.

paying royalties fees and without fear of infringing Unilever patents. Does Unilever have any new patents derived from research on *Hoodia gordonii*

A quick patent search on the USPTO website surprisingly fails to turn up any *Hoodia* patents with Unilever as the assignee. Alternatively, the European Patent Office (“EPO”) website provides an easier way to search for Unilever patents associated with *Hoodia* research. Something must be different in the search algorithms behind each database because the EPO website shows that Unilever has applied for twelve different *Hoodia* patents beginning in 2006. Eight of which were also applied for in the United States. Although Unilever research into *Hoodia gordonii* for weight loss may be over, stakes remain in its value as patented object. Unilever and Phytopharm both have potentially profitable *Hoodia* patent portfolios. The patented plant properties may still generate royalty payments from others wanting to pursue *Hoodia* research.

The Phytopharm press release also refers to the return and transfer of *Hoodia gordonii* plants and extracts. Unilever agrees to facilitate an “orderly handover” of plant cultivation sites and existing stocks of dried *Hoodia* and extract to Phytopharm. While speaking to relevant *Hoodia* stakeholders, I learn that Unilever decided to stop operations at eight farm sites in South Africa that grow *Hoodia gordonii* plants for Unilever research. Rumors begin circulating among *Hoodia* stakeholders that South African farmers were bulldozing over *Hoodia* plants. The growing of *Hoodia gordonii* plants for research, however, did not entirely end. Phytopharm was to take over a portion of existing cultivation at three of those sites. Along with the handover of plants, came the need to transfer the permits and permit processes required for cultivating *Hoodia* under South African law. *Hoodia gordonii* plants are attached not only to their patented chemical compositions, but also to their regulated plant bodies. With the plants come their

attachments to patent law and bioprospecting legislation. A transfer of plants thus requires a transfer of legal paper and knowledge of such laws.

Phytopharm remained positive as *Hoodia* was terminated, returned, and transferred. In its December 12, 2008 press release, Alistair Taylor, Chairman of Phytopharm, commented, “Phytopharm continues to believe strongly that there are alternative product formats and applications for the commercialisation of *Hoodia*. We will seek to identify potential partners in the areas of veterinary and orphan pharmaceutical products, as well as functional foods.” *Hoodia* research was thus meant to continue. New futures were emerging and being sought out. For instance, the plant had possibilities for veterinary science. As noted, in 2002, Phytopharm was awarded a U.S. patent on an invention for administering an extract of *Hoodia* to reduce gastric acid secretion in animals. The plant also apparently has a possible future as a pharmaceutical for orphan diseases. According to the same press release, it might be useful for treating rare diseases often orphaned by pharmaceutical companies unable to parent costly research that would bring little to no profit.

Such futures however remain uncertain. The bottom of the press release contains boilerplate language warning against such “forward-looking statements” that involve “risk and uncertainties that could cause results to differ materially from those expressed or implied.” In the bioeconomic age of potentiality comes new legal disclaimers for shielding companies from liability. At this point, this chapter turns another important phenomena going on at the same time as the termination of *Hoodia*; the enactment of new bioprospecting and benefit sharing legislation, which speaks to the re-invention of *Hoodia* and San indigeneity and new expressions of epistemic citizenship.

II. Managing Hoodia: Regulation of Hoodia gordonii Access and Benefit Sharing

While *Hoodia* research by Unilever was ending in late 2008, new expressions of citizenship were emerging. South Africa recently passed the 2008 Access and Benefit Sharing regulations. The new laws grew out of and gave further depth to the 2004 Biodiversity Act and its goal of implementing the Convention on Biological Diversity. According to the 2008 Regulations on Access and Benefit-sharing, parties wanting to conduct bioprospecting research must apply for a permit. The application process requires parties to obtain prior informed consent from and enter into benefit sharing agreements with the Indigenous communities who provide access to indigenous biological resources. Benefit sharing agreements now fall under the governmental management of the Minister of Environmental Affairs and Tourism. They must be in accordance with a legal form set out in Annexure 8 of the regulations. Parties can elect to use their own forms and attach further provisions, but they still must follow the general structure of the proscribed form.

Benefit sharing therefore becomes standardized through a set of governmental forms. Annexure 8 brings agreements into line by reducing them to a simple pronouncement of the parties involved, the biological material being accessed, and the monetary and non-monetary benefits being shared. Sharing of monetary benefits is also systematized. Monies must now be paid into a centralized Bioprospecting Trust Fund to be managed by government officials. Benefit sharing becomes systemized and managed through regulatory procedures embodied in standardized procedural forms. Prior to the regulations, benefit sharing agreements came out of negotiations between two parties such as CSIR and the San. This allowed more space and potential for engagement between parties. Agreements were now subject to governmental management and oversight. Thus, the San benefit sharing agreements with both CSIR and the

South African Hoodia Growers were now contested, uncertain, and on the desk of the Minister for approval.

As of 2009, implementation of these regulations was still in the making. In speaking with government officials, I learned that discussions on how to administer the new rules had just begun, and that no agreements had been reviewed. Permit applications and benefit sharing agreements had been submitted, but they were rejected because, as one official explained, “no one knows how to read directions.” Emerging regulations created uncertainty among Hoodia stakeholders. Members of the South African San Council expressed distrust over the impending governmental management of their affairs. Regulatory oversight over their land rights had caused considerable tensions, thus concerns were raised over what could be another paternalistic governmental oversight of Indigenous peoples. A standardized Bioprospecting Trust also raised flags. Some †Khomani San members I spoke with worried that it would hinder their ability to negotiate for benefit sharing agreements with CSIR and others. A representative of Unilever also suggested that the regulations added a burdensome layer of red tape that would likely cause delays to time sensitive bioprospecting projects. Implementation of the benefit sharing regulations was still in the making, so these concerns remained unresolved. Government officials were initially focused on satisfaction of procedural elements. Attention was placed on making sure applicants submitted the proper forms and checked the right boxes. Officials had yet to consider the substance of benefit sharing agreements. Ethics of standardization and procedure were top priorities, while a broader discussion of the fairness of benefit sharing agreements had yet to occur.

Under the new regulations, governmental officials must be satisfied that the agreement is “fair and equitable” to all parties.⁴¹⁸ To make such a determination, officials may obtain technical advice or invite public comment. However, governmental officials, at the time, had not had a chance to reflect on what a fair and equitable agreement might look like. More attention was placed and needed on whether or not applicants had submitted all the required paper work. Within this emergent space the liberatory potential of the regulations was unclear. How would fairness and equality be determined? Would an emphasis on procedure supplant norms of social justice? If interpreted through a social justice and indigenous rights framework, the regulations could provide additional policing against the exploitation of Indigenous peoples’ knowledge and resources. The CSIR-San agreement could be determined as unfair and inequitable because it asks the San to give up too many of their rights, for instance, to challenge CSIR patents or to ask for additional monies in the future. However, norms of conservation are more likely to structure the interpretation of benefit sharing agreements. The regulations themselves are governed by the mandate of the 2004 Biodiversity Act from which they flow. The central goal of the Act is the conservation of indigenous plant material. As benefit sharing agreements become regulated and standardized they will likely be governed through norms of conservation, rather than Indigenous rights to self-determination.

Indigenous peoples such as the San must also now apply for monies from a centralized Trust. When monies are received, they can be distributed according to the Hoodia Trust as specified by the ꞤKhomani San. Yet, an additional layer of bureaucracy is put in place. This is on top of the requirements that benefit sharing contracts must follow the forms and procedures outlined in the legislation. Claims for and grants of epistemic citizenship through benefit sharing

⁴¹⁸ South African Bio-Prospecting, Access and Benefit Sharing Regulations of 2008, § 1.

agreements are now managed and regulated in additional ways. Indigenous peoples are now faced with an additional hurdle in negotiating for benefit sharing—approval by the Minister. Such oversight may offer extra protection to Indigenous peoples to ensure benefits are shared with them, while also introducing additional burdens. New expressions of citizenship based on knowledge claims are thus simultaneously enabled and disabled. Lines of inclusion and exclusion seem to be drawn in new ways that continue to reinforce familiar hierarchies and inequalities.

Will governmental management and oversight of the process, likely through an ethics of conservation, truncate Indigenous peoples' efforts to use benefit sharing negotiations as a pathway towards re-inventing indigeneity and gaining recognition? Will it hinder the possibilities of benefit sharing further? As the regulations remain in the making, such questions remain open. The timing alongside the termination of *Hoodia* research makes these questions even more pressing. It becomes apparent that even when Indigenous peoples obtain benefit sharing contracts, these rights are inequitable. The power remains with the researchers and scientists who ultimately decide the development of the project. Rights of epistemic citizenship may be granted to the San, but such rights to economic and political participation hang on what is best for Unilever's corporate model. This becomes clearer in the following section.

III. Re-inventing Hoodia: Claiming Hoodia Knowledge through Narratives of Difference

In this section, I ask how claims for and grants of epistemic citizenship, as mediated by patent ownership and benefit sharing, are being re-made after the termination of *Hoodia* research and new forms of management of benefit sharing regulations. As uncertainty persists over the fate of San benefit sharing and new benefit sharing regulations: how are Hoodia and its

associated knowledges re-articulated? How is difference produced, reinforced, and re-configured through such articulations?

I focus my examination of these questions by analyzing my transcribed interview data obtained from conversations with a representative from Unilever, a farmer with the South African Hoodia Growers Association, and several members of the †Khomani San. Given the narrow scope of the interview data, my analysis can only provide partial insights into articulations of Hoodia and difference, but nevertheless offers some directions for further inquiry. Through this examination, I find that claims for and grants of epistemic citizenship, as mediated by patent law and benefit sharing rights, are being made through gendered and racialized narratives in order to participate within global market economies. I argue that such claims for rights constitute inequitable forms of epistemic citizenship whereby privileges and responsibilities are granted based upon whose ways of knowing and knowledge practices matter most to the service of neo-liberal economies.

In her work on the Chernobyl nuclear disaster, science studies scholar Adriana Petryna demonstrates the emergence of biological citizenship in the Ukraine. (Petryna 2002) She shows how individuals make claims through new regulatory regimes for inclusion into the post-soviet welfare state based upon their biological suffering and bodily injury from the disaster. Inclusion into disability status and its regimes of legal protection, however, was inequitably determined by who had access to knowledge regarding the proper medical forms and scientific experts. Thus, questions of knowledge were central to the construction of biological citizenship in the Ukraine.

Drawing upon and departing from Petryna, I am interested in how relevant stakeholders re-articulate claims, in the face of new benefit sharing regulations, for inclusion into South Africa's post-apartheid, neoliberal economy based upon their Hoodia knowledge. Citizenship has

always been linked to knowledge, power, and bodies, but the legal expansion of patent law ownership and contractual benefit sharing gives rise to new modes of citizenship that re-enact familiar hierarchies.

This section, for example, shows how a representative from Unilever articulates claims for patent law protection based upon Unilever's cultural invention of Hoodia as P57 chemical compound. In contrast, some members of the †Khomani San articulate claims for benefit sharing based upon their knowledge of the plant as life and as found in nature. But this is not a simple story of western versus indigenous knowledge. This section also shows how one representative from the South Africa Hoodia Growers Association articulates claims for benefit sharing based upon his knowledge of how to cultivate and grow Hoodia. This section also examines how these claims are constructed through various narratives of indigeneity, race, and gender. In making his articulations, the representative from Unilever unwittingly reinforces masculine, scientific forms of scientific knowledge production in the lab. Additionally, the San become compelled to adopt stereotypical images of San male hunters to market Hoodia, which masks the contributions and uses of San women to the plant. Still further, the SAHGA farmer articulates his claims by contesting the stereotypes of San male hunting practices, while explicitly recognizing San women's knowledge of the plant. However, in doing so, he unwittingly co-opts feminist politics of gender recognition in order to secure the rights of South African farmers. To explore these insights and questions further, the next section examines examination of how one representative from Unilever articulates Hoodia and the need for patent law protection.

A. Corporate Personhood and Hoodia as P57

Hoodia began as a promising plant with a profitable future as an anti-obesity drug and eventually as a functional food (e.g., milkshake, energy bar, etc). Further studies by Unilever,

however, called into question its safety and likely FDA approval. Thus, in late 2008, during the global collapse of the financial markets, Unilever announced it was terminating the project and transferring its Hoodia related patent licenses back to Phytopharm. Hoodia research, however, sparked new discoveries as Unilever filed its own patents for producing Hoodia plant extracts. At stake, were new patents and their potential portfolio revenue. As mentioned previously, according to the European Patent Office, Unilever had applied for twelve different Hoodia patents beginning in 2006. Eight of which were also applied for in the United States. Although Hoodia research for anti-obesity was ending, Unilever still had a vested interest in defending its knowledge of the plant and related patents. In fact, patent owners are compelled under the law to enforce their monopoly rights and to police possible infringers to fulfill their fiduciary duties.

With new benefit sharing legislation on the horizon in South Africa and other countries looking to implement the CBD, corporate patent holders find it even more necessary to defend patent law and enforce their ownership rights. Benefit sharing can be read as a response to the patenting of biological and genetic material derived from Indigenous peoples' knowledge. It acts as a counter-hegemonic strategy, albeit limited, against the imbalance of power that patent law secures by giving corporate owners control over the patenting of life and nature. Benefit sharing agreements thus offer a space for negotiating contracts that could possibly reduce patent owner control. The liberatory potential of benefit sharing however seems further curtailed by new governmental oversight and regulations.

Regardless, as previously discussed, benefit sharing creates some fissures within commercial scientific research models because researchers must now enter into such contracts to commence bioprospecting. Prior informed consent and benefit sharing are now required under South African law. This means that corporate patent owners are compelled to continually re-

assert the importance of patent rights. A representative from Unilever spoke to me about the need for patent protection:

Now there is nobody in their right mind going to spend that money on a project if they feel they can't get a return on it. And one way of getting a return, of course, is to be exclusive. You know, you are not going to spend a hundred million dollars and then find someone who has only spent two million dollars could come to market tomorrow... If you're not able to get intellectual property on the project. It simply won't happen.⁴¹⁹

Scientists are under increasing pressure to secure patents for their inventions as a condition for research and development funds from investors. Benefit sharing agreements present a possible threat to their patent ownership. Government regulations now require such agreements. In the case of CSIR-San benefit sharing, the San agreed not to challenge their patents. Nevertheless, companies such as Unilever are uneasy about how benefit sharing negotiations might impact their patent ownership claims and hence access to research investment. Increasing pressure for scientists to secure patents and their anxieties over benefit sharing also speak to changes in citizenship and corporate personhood.

As South Africa looks to patent ownership to incite medical and pharmaceutical innovations, new forms of citizenship based on ways of knowing are emerging –whereby corporations and government research institutions can make claims for ownership based upon their processes of producing knowledge. Corporate personhood thus also becomes tied to making claims over knowledge. Under South African and U.S. patent law, corporate patent owners, such as CSIR and Unilever, are constructed as persons vulnerable to infringement or “piracy” of their inventions. Corporations are therefore assigned temporary monopoly rights over their employees’ inventions in order to protect the former’s capital investment for developing scientific technologies –to protect their corporate body. A vulnerable institutional body signals

⁴¹⁹ Personal communication with author, March 2009.

risk, which threatens opportunities for investment in research and development. Patent law therefore gives institutions temporary monopoly control over their knowledge production, while constructing corporate personhood.

At the same time, epistemic citizenship, as mediated by patent law, involves the re-invention of the plant itself. Under the law, Hoodia is characterized as an isolated and purified chemical composition, a legal invention having novelty, non-obviousness, and utility. The plant therefore comes into being as a chemical composition that is further embodied, in the patent specification document, as a structural formula. As discussed previously, Hoodia is codified under the law as life at the molecular level, in a new bioeconomic state of what Nicholas Rose calls “molecularization.” (Rose 2006) Hoodia thus becomes a set of vital mechanisms that can be isolated, manipulated, and recombined through scientific practices of intervention. Hoodia is no longer constrained by its vital order as the cultural heritage of the San peoples. It is “cut” and severed from its historical, social, political, and cultural relationships. Hoodia becomes privileged and valued under the law as an isolated and purified chemical composition known as P57. The plant is transformed through regimes of isolation and purification into a patented, invented chemical composition. *Hoodia gordonii* as invented P57 is vulnerable to being used by other researchers in their scientific pursuits. But it is not the actual chemical composition itself that is at risk of being used (i.e., legally infringed). It is the idea of it put into practice. It is the novel way in which Unilever scientists conceived of and worked to isolate and purify it.

Patent ownership rights are thus needed to protect the idea, practices, and processes behind making *Hoodia gordonii* into a purified chemical composition with appetite suppressant properties. The fear is that other scientists might copy the invention and develop their own anti-obesity products. Exclusive monopoly control through patent law protects the invented idea from

being copied, while safeguarding the vulnerable corporate body from unfair competition. Unilever therefore emerges as a more worthy epistemic citizen whose knowledge of how to isolate *Hoodia gordonii* into specific chemical compounds is more valuable for neoliberal market logics. Patent rights are therefore granted because research “simply won’t happen” without it.

A citizenship based upon claims to and grants over knowledge also involves new ways of constructing the Other. A representative from Unilever explains:

You know, so if you have a patent, by definition it’s not traditional knowledge...let’s take Hoodia as an example. You know, for somebody talking about traditional knowledge, the traditional knowledge didn’t relate to dry material. I’m not aware of anybody that...use[d] it dried, traditionally...there seems to be an assumption that the chemistry of the, what I would call the wet material, i.e., the original plant, is the same as the dried. And that’s clearly not true from what we’ve seen from science.⁴²⁰

This passage reflects normative understandings of western science and how it differs from what is referred to as traditional knowledge. Scientists are more familiar with these dominant framings. They are untrained in post-colonial or Indigenous theorizing. In making such normative scientific distinctions, the Unilever scientist is likely unaware that delimiting patented Hoodia knowledge from San Hoodia knowledge works to devalue traditional knowledge, while also reinforcing masculinized notions of scientific objectivity.

Re-inventing *Hoodia gordonii* as patented invention means distinguishing it from its epistemic and material other—the Hoodia plant itself. Patent law, as Donna Haraway suggests, incites boundary making between some forms of knowledge over others. (Haraway 1997) Epistemic citizenship and its pathways to market participation is thus constructed by the classification of P57 Hoodia as different from the original plant - patented knowledge versus traditional knowledge, dry material versus wet material. As the representative from Unilever

⁴²⁰ Personal communication with author, March 2009

notes, scientific tests prove this distinction. In other words, science verifies that Unilever's knowledge of the plant is different from the San and thus can be patented. By assigning patent ownership to the Hoodia chemical compositions, science in the lab is privileged over Indigenous knowledge of the plant.

Patent law codifies the technoscientific visualizing techniques of western science. Techniques that Donna Haraway calls "the gaze from nowhere"—a disembodied objectivity that has the power to quote "see and not be seen, to represent while escaping representation." (Haraway 1988, 581) Patent law codifies life at the molecular level and a disembodied objectivity, which stands in opposition to a feminist objectivity or situated knowledges, and in conflict with a feminist writing of the body. Through its articulation of such disembodied knowledge of Hoodia, Unilever (not the San) emerges as the more worthy epistemic citizen entitled to patent ownership and participation within the market. This is contrasted with the San, who also emerge as epistemic citizens, but who are given fewer rights.

B. San Indigeneity and Hoodia as Life

With the implementation of new laws, the San are once again obligated to articulate claims based upon their Hoodia knowledge in order to obtain government approval of the CSIR-San benefit sharing agreement. How are these articulations different than claims made during initial benefit sharing negotiations? They are not entirely different. The San find themselves having to make similar assertions. This section speaks to how the San give meaning to the plant in the historical moment of benefit sharing's uncertain legal and scientific future.

What I found was that epistemic citizenship depends upon distinguishing San knowledge of Hoodia as different from Unilever's knowledge. Through these articulations, Hoodia comes into being as "life." South African San indigenous identity is also strengthened, while apartheid

classifications of San as Coloured slightly dissolve. According to some members of the †Khomani San, Hoodia means the following:

Life because it comes from the nature because the Bushmen don't to the nature, he come from the culture, he born of the nature. So that is Life. All the plants you see.⁴²¹

So to me it means our heritage, it means a good future, it means a healthy life to our community.⁴²²

It means a lot to him, it is life, it is medicine to him, it's his nature. So that is what *!Xhoba* is.⁴²³

It is like mother and daughter or mother and son so that means the *!Xhoba* too.⁴²⁴

As evidenced by these quotes, the †Khomani San articulate Hoodia as a plant from nature that symbolizes life, as a medicine that sustains life, as a mother that reproduces life, and as heritage that brings economic life through benefit sharing. Hoodia remains open through its vital orderings as connected to, not severed from, its historical, social, political, cultural, and familiar relationships. It is an embodied knowledge, a situated knowledge.

Constructing Hoodia as life also depends upon distinguishing it as more natural from patented Hoodia. As noted in a previous chapter, one San woman explained to me that, “[h]e said they use it from the nature, but the tablets comes from, they put other things inside [the] Hoodia plant, so it is not like Hoodia there is a difference between the tablets and the eat it from the field.” As we see here, Hoodia is constructed as more natural than Hoodia tablets. It remains connected to its vital orderings because it is “from the nature” and untouched by additives. The

⁴²¹ Personal communication with author, March 2009.

⁴²² Personal communication with author, March 2009.

⁴²³ Personal communication with author, March 2009.

⁴²⁴ Personal communication with author, March 2009.

Hoodia plant is therefore is constructed as closer to nature, more natural and pure than scientifically manipulated Hoodia. Discourses of naturalization are thus used to construct a binary between San knowledge of the plant and Unilever's, thus reinforcing binaries of nature and culture. In making claims based on knowledge, therefore, the San are obliged to take on the very same discourses of naturalization that have historically constructed them as inferior.

Taxonomic schemes of classification constructed the San as less than human. Such characterizations of the San as closer to nature depended upon distinctions between nature and culture. Now as the San re-articulate claims for benefit sharing they unwittingly reestablish binaries of nature and culture. Constructing Hoodia knowledge in this manner is necessary for securing benefit sharing and its avenues for economic and political participation. The San emerge as worthy epistemic citizens entitled to benefit sharing rights because they hold a distinct knowledge of "natural" Hoodia. While the plant is re-cast as different than its patented P57 form through delimiting nature and culture, San identity is also re-invented.

Hoodia benefit sharing offers moments for the San to re-invent themselves as Indigenous peoples connected to global Indigenous rights networks. As discussed previously, taxonomic schemes of classification constructed the San as less than human and animal-like. Classification of San bodies was central in establishing hierarchies of race, in privileging whiteness, and in the "invention of Africa." Scientific practices of classification became the foundation for political categories and practices of inclusion and exclusion. Under apartheid the San were classified as "coloured." Racial classification of the San was used to exclude them from the full economic, political, and social life of the nation-state and its material resources.

In the current neoliberal conditions of South Africa, benefit sharing provides space for the San to re-construct themselves as Indigenous peoples. Concepts of race and indigeneity are

themselves western concepts and socially constructed. Yet, the San are adopting, contesting, and re-imagining these notions by making claims to citizenship based upon their knowledge. Struggles over benefit sharing have enabled the San to participate within networks of Indigenous peoples. Some “elite” San go to meetings at the Indigenous Peoples Permanent Forum and participate within the Indigenous Peoples of Africa Co-ordinating Committee (IPACC). Associations with global and regional networks of Indigenous peoples enable the San to define themselves in new ways as Indigenous peoples, thus re-characterizing notions of indigeneity. Making claims based upon their knowledge is a key strategy within the re-making of San indigenous identity. Racialized political characterizations of the San as coloured begin to slightly dissolve. San identity becomes less attached to racial categories and more aligned with indigeneity and its connection to land. This is not to say that a clear line is drawn between notions of race and indigeneity. As categories of analysis, identity, and politics both race and indigeneity inform each other and are historically linked as inter-related. Benefit sharing however provides a space for the San to re-draw these lines in new ways, and with more control over their design in order to benefit San rights to self-determination.

Characterizing the “natural” plant found in nature as San traditional knowledge disrupts naturalized categories of apartheid and re-invents San identity as Indigenous peoples connected to the land. As benefit sharing is managed and regulated by the government, strengthening recognition of San indigeneity and their knowledge becomes even more important. Indigenous knowledge has become codified under the law. Holders of indigenous knowledge are now legally entitled to receive benefits from researchers using their knowledge. Researchers are given permits for bioprospecting only with proof of a benefit sharing contract. This is different than when the CSIR-San agreement was initially signed. The San were not legally entitled to benefits.

The CSIR-San agreement came out of political pressure by San political mobilization against CSIR and its patenting of Hoodia as an act of biopiracy. Claims to indigeneity now afford real material rights under the law. Citizenship, and its pathways to market participation, becomes more intertwined with claims over knowledge and ways of knowing.

However, these new expressions of epistemic citizenship and the rights they afford are inequitable. The San emerge as stakeholders in the success of Hoodia's global production, sale, and consumption. Yet, they lack control over the means of production. Their participation within the market place is curtailed through an unequal relationship. Unilever maintains control over the outcomes of the benefit sharing agreement and its potential flows of money. The corporation decides when, how, and if Hoodia research should proceed according to their own corporate models. Thus, epistemic citizenship and its bridge to economic and political participation is inequitable with the San being given fewer rights than Unilever. Despite its limitations, San peoples consider benefit sharing to be an important source of legal rights and a space for re-inventing San identity and politics. New expressions of epistemic citizenship through articulations of Hoodia as life should also give STS scholars pause.

As mentioned previously in the introduction, recent debates over "life itself" and "life as surplus" engender theories around a new biopolitics flowing from the commercialization and patenting of biological and genetic material. (Cooper 2008; Rose 2006) However, discussions tend to narrowly focus on human stem cell research, genetically modified food crops, and race-based pharmaceutical drugs. Biopiracy and the patenting of plants receives some attention, but is often relegated to environmental studies. STS scholars have yet to fully discern how the patenting of plant life informs debates over the patenting of human and animal life properties.

There are some exceptions though. For instance, Doris Schroeder draws lessons from Hoodia patent law struggles to understand debates over medical research and informed consent. (Schroeder 2009) STS scholarship also fails to consider how the commercialization and patenting of environmental life forms such as plants have engendered new expressions of citizenship and difference, including race and indigeneity, which relate to and materially impact bodies in unequal ways.

A more robust theorizing will only come from a fuller conception of what we mean by Life. This dissertation shows how a plant changes over time, how life and nature is re-invented over and over again through various discourses to meet different needs and interests. What is considered “Life itself” is unstable and historically situated. This point is further illustrated in the following sections through an examination of how one farmer with the South African Hoodia Growers Association gives meaning to plant.

C. Farmers’ Rights and Hoodia as Cultivated

In 2005, a group called the Southern African Hoodia Growers Association was formed to collectively organize regional farmers to grow Hoodia. At one point, the group had close to 40 members. In late 2005, SAHGA approached the South African San Council to negotiate a benefit sharing agreement. In March of 2007, a benefit sharing contract was signed. SAHGA agreed to pay a levy of 24 ZAR per kilogram of dry, processed Hoodia to the San. (Wynberg et al. 2009, 113) The levy would be charged and collected prior to the issuing of the CITES export permits and would be revisited on an annual basis.

Despite the promise of the agreement, no monies have been distributed to the San. With the passage of the 2008 Access and Benefit Sharing regulations the agreement was now subject to Minister approval. Within this moment of legal uncertainty, this section asks how SAHGA

articulates claims to Hoodia knowledge. My encounters and observations of SAHGA, however, are limited to a single representative of the group, thus my analysis only produces informative yet partial insights, which remain open for further study.

My understanding of SAHGA comes from my observations and interview with Mike Dreyer, an active member of Southern African Hoodia Growers Association (SAHGA). I sit beside Mr. Dreyer in his Land Rover truck as it slowly moves along an orange ruddy dirt road, carefully rolling up a small steep hill over large sharp rocks. He has graciously agreed to show me around his farm, located in a small farming town in the Western Cape. Twisting up the hill from the main road we crest the top of the hill and a small valley appears with plots of farmland. Mr. Dreyer, who self-identifies as South African, has darkly tanned skin and wears a large brim hat to shade his face from the mid-day sun. Stepping out of the truck, I immediately see tiny young Hoodia plants under a canopy of green netting. Carefully planted Hoodia plants are sitting in neat rows, partially shaded by the netting. Small black rubber hoses snake through the rows, providing small amounts of water.

Jumping back into the truck, we drive a few feet over to another plot of land where Mr. Dreyer is growing “indigenous plants.” Tall plants of several varieties grow together side by side. In contrast to the neat rows of baby Hoodia plants, I cannot discern a pattern to these plantings. It doesn’t look like a “farm,” but rather a field of plants you might stumble across while out walking. Mr. Dreyer explains each plant in detail as we sit in the truck, while sprays of water from the irrigation system hit the windshield. The truck then pulls forward and he drives towards a plot of land with several hectares of *Hoodia gordonii*.

The *Hoodia gordonii* plants grow in straight lines alongside slightly larger Sutherlandia plants. Mr. Dreyer tells me that the bushier Sutherlandia plants protect the Hoodia from the

strong winds that whip off the mountains like a “funnel.” He describes the Sutherlandia as “feeding the soil as well. So, it’s medicine. It’s protection.” I find out later that Sutherlandia plants are also a well-known local medical plant. He describes the Hoodia plants as “rows of gold” with value for indigenous plant markets. He bends down and picks up some Hoodia seeds, placing them in my hand. I try to keep the brown flat seeds with their feathery soft white parachutes from flying out of my hand. Mr. Dreyer suggests that I put the seeds in my pocket and take them back home with me to California. I smile and explain that I would never get the seeds through customs. Every time I return from South Africa, customs agents always select my baggage for extra screening through large x-ray machines. We continue to walk along the rows of plants, finding some Hoodia with dull pink flowers decorating its long, greenish brown prickly stems.

Mr. Dreyer describes Hoodia as a ‘high energy plant.’ He makes reference to “a bushman running after or walking after an injured elephant” who needs “some sustenance.” He quickly informs me, however, that the plant was not just used for hunting. It is a “normal vegetable” and is used as “a food.” I remark that Hoodia is most often described as used for hunting. He says this is because most people associate the San Bushmen “with the bow and arrow.” He suggests that people should consider other images of the San. For example, Hoodia is also associated with an image of “three women with little pouches and fifteen little kids all sitting around eating piece of Hoodia because that is the food today.” San women and children also use Hoodia as a food, which is more common today than its use for hunting. It is interesting how Mr. Dreyer simultaneously evokes the San male hunting narrative to describe the plant, while also disrupting it by referencing San women and children using the plant as food. He brings in a gendered narrative of San Hoodia knowledge and uses.

He continues to disrupt the hunting narrative by describing the plant in multiple ways. He describes Hoodia as a plant from God who was “clever enough” to give us a plant that makes you feel well fed. It is also a “grateful plant. Because if you give a little bit, then it gives you a lot back.” It grows in the semi-desert with very little water and is “labor friendly.” But it is difficult to “just pick and eat. You need to get past the prickles.” Yet, the prickles prevent the plant from being “easily stolen.” Rather than a plant used by San male hunters, Mr. Dreyer articulates the plant as a “very hardy” plant from God that requires little labor and protects itself. I would suggest that constructing Hoodia’s divine origin from God opens up space for re-inventing the *Hoodia gordonii* as a Southern African plant. Mr. Dreyer suggests that:

It should be seen as a Southern African plant. Foodstuff. Good. Strong plant. A really good indigenous food. And a great medicine for the stomach. For the body. The San should be seen on the marketing.⁴²⁵

Mr. Dreyer shifts the relatedness of the plant towards its geographical origins within the bounds of Southern Africa. The focus is directed away from nation-state boundaries of South Africa, while recognizing the plant as transnational. Additionally, the plant remains connected to the San, but the San are positioned more as a brand with which to advertise Hoodia. A discussion of the San and their image as brand will be taken up shortly. At issue now is the construction of *Hoodia gordonii* through its geographical relatedness.

Mr. Dreyer re-invents the plant as a Southern African plant. Hoodia becomes a local indigenous plant used for food and medicine. With the re-positioning of the plant from Southern Africa, meanings of indigenous become complicated. The plant is unhinged from its attachments to the San. Indigenous knowledge is stretched and fastened to regional geographies, rather than

⁴²⁵ Personal communication with author, February 2009.

San historical lands. As our conversation continues, Mr. Dreyer begins to position the plant as attached to the bounds of the South African nation-state. He explains:

But I prefer to lobby towards the idea of educating a nation. Teaching people really what's going on around them. So, my company exists from a dream to do two major things. One, learn as much as possible on how to cultivate wild material. In other words, what would normally would be harvested in the veld, to actually turn it into agricultural product. Because I feel God made the indigenous crops of this country in the wild for the indigenous people of this country...to provide America with a product from South Africa, you'd need to develop the agricultural possibility to cultivate that product and not take it from the wild. The wild will be depleted of it within a few months. Like Hoodia nearly did it. So, cultivating the wild is the most important thing. And then, second of all, the reason for cultivating the wild that one can pass on the knowledge to the indigenous communities that tend to live where there's barely any water and hardly any money for tractors and so on. And let them, with these hardy indigenous crops, produce an income. Not--that not necessarily always been self sustainable. It's that big buzz word. But it will help to pay something at some stage of the year. It all will help. So, teaching them how to do it is the other part of what we do. This is why the guys came for training.⁴²⁶

According to Mr. Dreyer, the work of SAHGA is meant to “educate a nation.” A central goal is to cultivate God’s wild indigenous plants for the people of South Africa, as it remains useful for “America.” Cultivation also means conservation and protecting the environment. The wild must not be depleted—like Hoodia nearly was. Cultivation is also important for a second reason. Mr. Dreyer states that knowledge of how to grow wild crops should be passed on to indigenous communities. Indigenous crops can bring them income and a sustainable future. SAHGA teaches, trains, and gives lessons to indigenous communities on how to cultivate wild crops. Framed through discourses of God and nation, indigenous knowledge becomes something to give to back to Indigenous peoples. As the plant is transformed into cultivated resource, meanings of what is indigenous knowledge change.

⁴²⁶ Personal communication with author, February 2009.

Claims for Hoodia benefit sharing become a site in which meanings of indigenous are contested through gendered and racialized narratives. After a generous tour of the farmlands, Mr. Dreyer drives us back across the road to a small, local hotel. He offers to continue our conversation over lunch. We sit at wooden tables outside on a concrete patio overlooking the rolling hills as a few chickens and two large turkeys sit near by in the grass. Mr. Dreyer expresses interest in my background in Women's Studies and begins to talk about issues of gender.

He begins by thinking through questions of governance and female representation. Mr. Dreyer remarks that there has been an "equal mix of everybody," both men and women, at Hoodia benefit sharing meetings. He explains that gender is not the issue; it is about "commercial needs." I am told that subtle gendered differences may occur at meetings. Female delegates may discuss benefit sharing in broader terms. They make think about it beyond questions of money, talking more about the needs of the community such as education. In contrast, male delegates are more likely to talk about benefits in terms of "rands and cents" (i.e., money). His comments remind me of a recent study by Saskia Vermeylen, a lecturer with the Environment Centre at Lancaster University in the U.K.

Her study involved interviews with San living in the communities of Blouberg and Vergenoeg in Namibia and Andriesvale-Witdraai in South Africa. She asked San men and women to choose between the following three scenarios: (1) refusal to share knowledge; (2) share knowledge in exchange for benefit sharing monies; or (3) share knowledge in exchange for legal control over its use. (Vermeylen 2008, 4) San women were more likely than men to choose option 2 because they felt it was important to immediately generate money to feed their children, pay school fees, and buy clothes. (Vermeylen 2008, 6) In contrast, San men were more likely to

choose option 1 because they felt that gaining rights over their land and natural resources was important for restoring the human dignity and they were generally distrustful of benefit sharing as an option. (Vermeulen 2008, 7)

Mr. Dreyer's observations align slightly with these findings. San women, in his experience, tend to focus on how agreements can actually bring immediate benefits to their children, families, and communities. As Mr. Dreyer considers issues of gender and benefit-sharing he questions, "are there more females or males buying or interested in Hoodia?" He wonders if women "might be more influenced to consume obesity pills because of magazines and fashion. Men don't mind being fat." Through our discussion, Mr. Dreyer theorizes multiple ways in which Hoodia patent law struggles work to produce, reinforce, or contest gendered social relations. He offers sophisticated starting points for thinking about a gendered analysis of benefit sharing and patent law through questions of governance, representation, consumption, and body image.

As we continue to talk, gendered narratives are further deployed through discourses of whiteness. Mr. Dreyer tells me the following story:

Mr. Dreyer: When we were negotiating with the San for their part of the benefit share, their little share, on the sale of Hoodia from South Africa, we took a flip chart and we drew—put a line through the middle. The top half we made a little pencil drawing... An outline drawing of a San looking woman walking in the veld. Eating some Hoodia. On the same page below that line, we drew a field of what looked like rows of Hoodia and a tractor and a guy—a white farmer, you know a bloke with this big head.

LF: So, what was her knowledge?

Mr. Dreyer: She got passed down from her inheritance, forbearers, that she can eat that plant. The guy sitting on the tractor got the knowledge passed down from his forbearers on how to plant them in a row and grow them and germinate them and bring them—collect them and turn them into farming. No San bushman taught me what I know about farming. I'm teaching San bushmen to learn about farming. So where's my intellectual property now? Where's my right?⁴²⁷

Articulations made by the farmer produce and reflect the complexity of gender, race, and indigeneity within South Africa. Compelled by the law to share benefits, the Hoodia Growers enter into negotiations with the San. Gendered constructions of whiteness are deployed in order to strengthen the farmer's rights and bargaining power. The farmer makes his claims by evoking San women's knowledge of the plant. The heterogeneity of Indigenous San knowledge thus unfolds, as its gendered uses are made visible. He later explains that he drew a woman because he didn't "want another guy with a bow and arrow and a big bum running after a buck. That's not the only place in the San's culture where they eat Hoodia. It's just one white scientist's example of where they're headed. They certainly were not the only Hoodia eaters. Everybody was eating Hoodia in South Africa." San women's knowledge is thus made visible in order to disrupt readings of San identity through stereotypical images of San male hunters with bows and arrows. However, the recognition of San women's knowledge falls short of its power to unsettle historical understandings of San identity.

The farmer constructs San woman and their knowledge as Other—a figure through which to assert his own rights. The material conditions of her life are left unexamined. He articulates his indigenous knowledge of Hoodia as a cultivated resource, lined up in neat rows awaiting a tractor, in contrast to the supposed natural, wild Hoodia of San women's knowledge. Knowledge of growing Hoodia is delimited from eating Hoodia. San women walking in the veld are placed in opposition to a white male farmer riding his tractor. What work does this discursive gendered

⁴²⁷ Personal communication with author, February 2009.

and racialized demarcation do? Legal claims over Hoodia as invented pharmaceutical knowledge versus San Hoodia become complicated by the emergence of new indigenous knowledge claims over Hoodia by farmers. SAHGA re-invents Hoodia as a natural resource cultivated by white farmers for generations. Such histories of South African farming are generally tied to Afrikaner identity. Demarcating farming knowledge specifically from San women's knowledge strengthens the bargaining position of SAHGA farmers. Knowledge of how to cultivate Hoodia is constructed as a more sophisticated and advanced form of knowledge when read against the household knowledge and labor practices of San women feeding their children. In this case, oppositional comparison to San women's labor, rather than San male hunters, seems to offer a different, perhaps, more productive polarity to assert Afrikaner farming practices as more modern. Mr. Dreyer's valuable recognition of San women's bodies, knowledge, and caretaking work therefore becomes mitigated as it serves to protect histories of whiteness and Afrikaner positions of privilege as farmers of the nation.

Protection of Afrikaner farming knowledge, however, offers possible benefits for both SAHGA and the San peoples. As mentioned previously, the 2008 South African benefit sharing regulations were in the making. The Department of Environmental Affairs and Tourism was considering how to implement the regulations and had yet to approve both the CSIR-San and the SAHGA-San agreements. Uncertainty existed over whether or not SAHGA was required to comply with the regulations. The purpose of the regulations was to regulate the permit system involving indigenous biological resources and their export for the purposes of bioprospecting or any other kind of research. A question became whether or not growing Hoodia on farms was bioprospecting or not. According to the regulations, bioprospecting refers to the discovery and/or commercialization phase of a bioprospecting project. Farming of Hoodia, it was argued, should

be considered bioprospecting in its commercialization phase. Under the law, this phase is defined as:

any research on, or development or application of, indigenous biological resources where the nature and extent of any actual or potential commercial or industrial exploitation in relation to the project is sufficiently established to begin the process of commercialisation.⁴²⁸

Farmers with SAHGA were clearly developing Hoodia as an indigenous biological resource for actual or potential commercial or industrial application. This means SAHGA was required to apply for a bioprospecting permit. To get a permit, SAHGA was legally required to obtain the prior consent of any person for providing and giving access to the indigenous biological resource and to enter into benefit sharing agreements with such stakeholders.⁴²⁹ In speaking with officials at DEAT, they appeared to consider small-scale farming as governed by the law as they confirmed their review of the SAHGA-San agreement. Negotiations therefore were opened on how re-drafting the 2007 SAHGA-San agreement to meet the new legal requirements and recent market developments.

At issue was the formation of the SAHGA itself. Since its constitution in 2007, SAHGA had yet to be a properly functioning entity with the power to enroll members and enforce benefit sharing. Mr. Dreyer spoke of the need to formalize SAHGA membership and improve enforcement. Re-negotiating with San regarding the timing and payment of benefit sharing monies also seemed an issue. According to the 2007 agreement, the San were to receive 24R per dry Kg of Hoodia. Payment of this benefit sharing “tax” was to be collected prior to the issuing of a CITES export permit. Some sources indicated that these figures remained an appropriate pricing structure, while others suggested the possibility of reducing the price because of

⁴²⁸ South African Bio-Prospecting, Access and Benefit Sharing Regulations of 2008, § 1.

⁴²⁹ South African Bio-Prospecting, Access and Benefit Sharing Regulations of 2008, Ch 2, Part I, § 8(c).

downturns in the market. Regardless, delimiting San knowledge of the plant from SAHGA knowledge was critical for SAHGA now that it was governed by new bioprospecting regulations.

Through racialized and gendered narratives, SAHGA was strengthening its claims for bioprospecting permits to commercialize Hoodia. Permits would enable SAHGA farmers to continue to grow Hoodia. A benefit sharing agreement would have to be re-negotiated and signed with the San, which posed an added burden. But new relationships between SAHGA and the San through benefit sharing also offered the San potential financial benefits. They would receive monies from SAHGA for the export of Hoodia plants for the herbal supplement industry.

Mr. Dreyer articulates the mission of SAHGA to be one of “educating a nation.” This meant training the San how to grow and cultivate Hoodia. Mr. Dreyer explained, “we do train indigenous people” and provide “hands on” education regarding farming practices. But his success at educating and training was mixed. He explained that some individuals wanted to learn, while others wanted to be paid first. Without further observation of the actual training, it was unclear whether or not the San and other indigenous peoples were truly benefiting or not. Benefit sharing strengthened the chances for such training, but its actual potential was uncertain. Mr. Dreyer’s intentions regarding “training” were laudable, but also one-sided. Farmers were meant to train the San, rather than vice versa.

With the construction of Hoodia as an indigenous crop from God, knowledge of the plant was imparted to the farmers from their “forebearers.” Yet, when mediated under the law, the SAHGA-San agreement acknowledges the San as the primary holders of “traditional knowledge” of Hoodia. Indigenous knowledge is malleable knowledge, re-made into divine knowledge from God, while pliant enough to simultaneously flow from the San. Its plasticity stretches from the demarcation between San knowledge of how to eat Hoodia versus SAHGA knowledge of how to

grow the plant. Differentiation enables adaptability. Such flexibility empowers the plant and its associated knowledges to circulate as they become commodified, commercialized, owned, and shared, while simultaneously enabling and disabling San re-inventions of themselves as Indigenous peoples.

Limited pathways for San empowerment also emerge. A re-negotiated SAHGA-San agreement could potentially bring them money, teach them to farm, and recognize the San as primary holders of traditional Hoodia knowledge. In return, benefits would also flow to the SAHGA. A benefit sharing contract with the San would enable them to get a bioprospecting permit to grow Hoodia for commercialization. Delimiting and re-inventing Hoodia as cultivated plant and Hoodia farming knowledge as a national resource works to value the expertise of white Afrikaner farmers, while securing their historical position as growers of the nation. Whiteness itself becomes reinforced through the figure of the Afrikaner farmer as a symbol of South Africa. Yet, the production of whiteness is unstable. Boer farmers have figured prominently in the construction of Afrikaner histories and nationalism undergirding apartheid rule and its deep injustices against majority non-white populations. (McClintock 1997) Yet, Afrikaner farmers also represent histories of colonialism where European whiteness was constructed in opposition to white Afrikaner farmers along lines of class. Whiteness is reinforced, but it is a particular whiteness given the histories of South Africa and its class-based politics between white racialized groups. Interpreted through these histories, the production of whiteness through SAHGA claims to epistemic citizenship as mediated by benefit sharing become infinitely more complex.

Mr. Dreyer himself is an effective and articulate leader within the new assemblages of Hoodia stakeholders. He has made important steps in organizing Hoodia farmers. He takes

benefit sharing with the San seriously, and has willingly brought SAHGA into negotiations for benefit sharing with the San. He is also committed to benefit sharing as a way to give back to the San by offering to teach them how to grow Hoodia and other indigenous plants. He also challenges narratives of San male hunters by recognizing the contributions of San women to Hoodia knowledge. However, to be sure, his efforts are also out of self-interest and they remain open to critique.

Mr. Dreyer's actions to bring SAHGA to the negotiating table for a SAHGA-San benefit sharing agreement are commendable. Such actions work to counter models in the global north where benefit sharing is not accepted, such as in the United States. They also strike back against outside corporate exploitation and patenting of South African resources. SAHGA organizes and asserts itself, and the nation-state of South Africa, as a worthy producer of cultivated Hoodia while also contesting the patenting of nature.

Yet, benefit sharing also benefits SAHGA. It enables them to get a bioprospecting permit and ensures continual access to Hoodia. The San may also agree to allow SAHGA to use the San image to market the plant. Furthermore, Mr. Dreyer engages in a valuable gender analysis by articulating liberal feminist concerns over governance and body image. He discusses San women's representation in benefit sharing negotiations and asks if women tend to buy Hoodia more often than men. His recognition of San women's knowledge is also laudable, but mitigated when the recognition of San women's knowledge is used to advance the rights of farmers to cultivate Hoodia and receive benefits.

I raise these points in order to address the complex and contradictory structural relations simultaneously enabling and disabling SAHGA as seen through the articulations of Mr. Dreyer.

The next section examines how whiteness is produced and creates transnational relationalities through discursive modes of Internet advertising.

IV. Advertising Hoodia: The Branding of Hoodia and the San

The re-making of a SAHGA-San agreement opens up possibilities for the use of San images in the marketing of Hoodia products. This section discusses how Hoodia and the San are co-produced through their representations on Internet websites. It shows how their images circulate within transnational networks of producers and consumers mediated by the Internet. It also shows how difference and inequality are produced through the merger of science and commercial markets. The branding of the San and the plant rely upon and reinforce notions of indigeneity through familiar colonial narratives used to construct Africa and its peoples as Other.

In a 2009 meeting between Hoodia stakeholders, Mr. Dreyer emphasized the importance of the San becoming the “face of Hoodia.” He hoped that a SAHGA-San agreement would give the farmers the right to use the San image in their marketing of *Hoodia gordonii* plants to herbal supplement companies. Branded with the San image, SAHGA Hoodia plants would incite practices of Ethnicity, Inc. where marginalized groups seek to brand, market, and commodify their own culture to gain access to property, resources, and citizenship. (Comaroff and Comaroff 2009) Several †Khomani San I spoke with expressed approval over using their image to market the plant.

Peter Komtsa, an active leader within †Khomani San community governance, sits across from me with a blue Los Angeles Lakers hat on, while explaining that he prefers to be represented as a Bushman carrying bows and arrows. He is proud of his traditional dress and what it says to his children. He says, “I don’t have a problem with the traditional image. For me it is very very important because the San is a unique people.” The image is not the problem he

asserts, “it is how you explain this image, it is how you do it.” Similarly, Samuel Tsumkwe, the youth leader with SASI, says it is good to use traditional San images to market the plant. He warns that the problem arises when the image is used without the permission of the San and “without buying the copyrights from the †Khomani San.” Both Mr. Komtsa and Mr. Tsumkwe emphasize the need to control how and when the San image is used, and by whom. They claim that the San should have authority over the circulation of their image. The San could agree to allow SAHGA farmers to use their image, but require San control over how their image was used.

Some scholars such as Michael Brown argue that when Indigenous peoples seek to claim ownership rights over their image, knowledge, and creative works they curtail the free exchange of ideas and borrowings that historically generate culture. (Brown 2003) In some instances, Indigenous peoples may prevent the use of their image by others. But in this case, the San may agree to authorize the circulation of their image. Then again, some San may disagree. However, if the San gave permission they would become complicit with the farmers in the commodification of difference by allowing images of San male hunters to circulate with the plants and their knowledges. This use of San image and identity as brand would enable farmers to better market the plant. Better marketing means more sales and brings potential revenue to the San. Yet, what type of legal control would the San have over their image?

A re-negotiated SAHGA-San benefit sharing agreement could outline the specific parameters and restrictions under which farmers could deploy the San image. What about how others use the image? What legal recourse would the San have against others who use their image to market the plant?

One potential legal source of protection would be trademark law. The 1993 Trade Marks Act governs trademark law in South Africa. This area of law is different than copyright law, which grants ownership rights over creative works such as music, books, and films. The unique patterns embodied in artworks such as sculptures, baskets, and textiles also fall under copyright protection. More relevant to the case of Hoodia however is trademark law. This area of law concerns, for example, the logos and brands affixed to companies and their products.

Under South African law, an entity is allowed to register a mark in order to distinguish its goods and services from another.⁴³⁰ There are exceptions to the rule though. For instance, an entity cannot register a mark of the national flag or any other nation-state emblems without authorization.⁴³¹ Additionally, a person cannot register a mark that is “inherently deceptive” or the use of which would likely “deceive or cause confusion” or “give offence to any class of persons.”⁴³² For example, if a company registered a mark with the image of the San, the South African San Council may take legal action to invalidate the mark as offensive.

In the case of Hoodia, stereotypical San images are used to sell trademarked products, but the San images themselves are not registered marks under the law. The San cannot rely on trademark law to argue that the San images are offensive. The issue becomes how stereotypical San images are used to bolster trademarked Hoodia products. The names or logos of Hoodia weight loss products are registered as a trademark, not the San images.

⁴³⁰ Trade Marks Act 194 of 1993, Ch III, §9(1).

⁴³¹ Trade Marks Act 194 of 1993, Ch III, §8.

⁴³² Trade Marks Act 194 of 1993, Ch III, §12.

An Internet search of Hoodia weight loss products in March of 2007 produced numerous websites selling Hoodia products. One website in particular offered Desert Burn ZA 750 from its headquarters in Las Vegas, Nevada:



Figure 7. Desert Burn web site home page at www.desertburn.com

The trademarked products (e.g., Desert Burn® ZA 750™) are advertised as the “#1 Hoodia gordonii supplements in the world.” As the website images load on the screen, sound also emerges from the computer speakers. An arrow shoots across the page below a small image of the continent of Africa. Techno drumbeats play as a woman sings, “give me that feeling.” A desert landscape serves as backdrop to the multiple transformations of “authentic *Hoodia gordonii*” into a juice, java, tea, and shake. Seven persons, who appear to be men clothed in traditional San Bushmen dress, walk across the desert towards a large Desert Burn bottle. References are made to the regulatory institutions of the USDA and the Department of Fish and Wildlife. Its origins are as “imported Direct from South African Farmer.”

Much can be said about the marketing of Desert Burn, but of particular interest is how images of the San are used to advertise the product. Most prominent is the image of San male hunters walking across the desert. The San male hunter becomes a figure in the making of Desert Burn as authentic and worthy of purchase. Such images historically draw upon and re-produce colonial images of San men with bows and arrows, which reinforced western European notions of whiteness and the San as Other. Similar images of the San in traditional dress are now used to sell Hoodia products to consumers. San images are used to bolster Hoodia trademark products and, by extension, enable consumer self-help techniques at weight-loss, their desires for thinness, the associated norms of whiteness that are attached. Thus, difference and inequality are produced in new ways, using familiar colonial scripts. Advertising of Hoodia also discursively constructs and reinforces normative notions of gender.

Another prominent company selling Hoodia products is Hoodoba in Sarasota, Florida. On their website appears an image of a seemingly white, thin, bikini-clad woman gazing out into the water as an erect, flowering Hoodia stem drips at her naval:

Hoodoba®
HOODIA GORDONII PRODUCTS
HOODIA DIET PILLS.com

All About Hoodia | About Us | Order By Mail
Order 24/7 (800) 701-4556
ScanAlert! HACKER SAFE TESTED 27-FEB

Home Certification Products Hoodia Checklist Testimonials FAQ Buy it NOW!

Hoodia
Diet Pills

Hoodoba® Hoodia Diet Pills, The Only Brand Featured Exclusively On: **60 MINUTES**

Still aching to drop pounds fast, but can't find a diet pill you can trust?

Don't Let Anyone Tell You "Your Appetite Problem Is Beyond Your Control."

Keep reading to discover why only Hoodia gordonii (the exclusive hunger killing ingredient in all Hoodoba® brand Diet Pills and Weight Loss aids) is scientifically established to contain the highest levels of Molecule P57... Proven by controlled clinical double-blind study to stop the downward spiral of hunger and give you the best chance ever for weight loss success!

100% Vegetarian

No Fillers, No Starch, No Gelatin, No Animal products. NOTHING ELSE!
Order 100% Natural Hoodoba® Pure

Expert Opinion

Figure 8. Hoodoba Hoodia Gordoni Products web site home page at www.hoodia-dietpills.com

Reinforcing biopolitical techniques of self-control, the website proclaims, “Don’t let anyone Tell You ‘Your Appetite Problem is Beyond Your Control.” To restrain your hunger, the company offers Hoodoba® brand Diet Pills containing *Hoodia gordonii*, the “exclusive hunger killing ingredient.” As an ingredient, the plant is re-imagined as a weapon against hunger. The irony is striking. The San have used the plant to starve off hunger when food supplies were low due to conditions of poverty. Now the plant kills the hunger of overweight consumers wanting to control their appetite and stop over-eating. Its effectiveness to kill hunger is strengthened through discourses of science and affiliations with the San.

The marketing of Hoodoba® uses discourses of science and law to give the plant legitimacy as a product. It declares that the plant is ‘scientifically established’ to contain “the highest levels of Molecule P57.” It has also been “proven by [a] controlled clinical double-blind study.” Hoodia in its patented P57 form is used to validate its efficacy. Scrolling down the page, one finds the declaration that “ALL Hoodoba® *Hoodia gordonii* San Certified and Approved.” The company is a member of the South African Hoodia Growers (Pty) Ltd, so all products come with the “San Seal of Authenticity.”

There is also mention of a 2006 historic agreement between the SAHG and the San, empowering the SAHG as the exclusive legal body for growers of *Hoodia gordonii* in South Africa. Is this the same SAHG as previously discussed? Actually, it is not. In speaking with Mr. Dreyer, he informs me about a group of farmers formerly representing themselves as SAHG. They were a limited liability company working what he calls a “scam.” In response, Mr. Dreyer organized several Hoodia farmers into the Cape Ethnobotanical Growers Association, which eventually changed their name to the Southern African Hoodia Growers Association (SAHGA). Marketing of Hoodoba® makes references to the San and SAHG as a way to bring legitimacy to the product, while casting the appearance of being an ethical company. However, under the surface, SAHG is suspect.

Interestingly discourses of law, science, and ethical production merge together in the service of consumers desiring to embody the thin, seemingly white woman on the page. At this intersection, normative notions of gender and femininity are reinforced. This becomes further complicated when examining another website, this time from a company in South Africa, where relationality becomes even more visible.

Bushman Hoodia is based in Cape Town, South Africa and specializes in trading “Africa medicinal herbs” for the “international wellness industry.” It offers a range of products from Hoodia gordonii, to Devil’s Claw, and Sutherlandia. What is striking are the series of images used to market the company and its products. At the top of the first page, on the left, is the logo and company contact information. On the right, there is a continuous scrolling of the following images:



BUSHMAN HOODIA
 PO Box 4370, Durbanville, 7551
 Cape Town, South Africa
 Tel: +27 21 982 4831
 Fax: +27 88 021 982 5436
 Email: info@hoodiabushman.com

Hoodiabushman.com is the online retail store for Bushman Hoodia, trading in African medicinal herbs extracts and related goods for the international wellness industry.



BUSHMAN HOODIA
 PO Box 4370, Durbanville, 7551
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 Tel: +27 21 982 4831
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Hoodiabushman.com is the online retail store for Bushman Hoodia, trading in African medicinal herbs extracts and related goods for the international wellness industry.



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 PO Box 4370, Durbanville, 7551
 Cape Town, South Africa
 Tel: +27 21 982 4831
 Fax: +27 88 021 982 5436
 Email: info@hoodiabushman.com

Hoodiabushman.com is the online retail store for Bushman Hoodia, trading in African medicinal herbs extracts and related goods for the international wellness industry.



Figure 9. Scrolling Header Graphic of Bushmen Hoodia web site home page at www.hoodiabushman.com

As the pictures move across the page, images of thin, seemingly white women's bodies in bikinis materialize next to San males in traditional dress and what appear to be two San women. The exact identity of the men and women, however, are unknown. The product is also represented through images of the plant flowering in the desert, growing out of the soil, exposing its green interior, and mutating into pill form. Landscapes of a desert and expansive sky are situated beside a slender bottom covered by blue jeans. What is striking is the assemblage of images to advertise Bushman Hoodia.

This website and the others show how the plant is marketed through stereotypical images that construct and reinforce Eurocentric and gendered hierarchies. Hoodia is advertised as a "natural," "authentic," "tribal," "South African" weight loss remedy evoking colonial narratives of the Other. The advertisements contain stereotypical images of seemingly, white western women's bodies as the perfect image of thinness. Employing familiar colonial scripts of the use of white women in the production of Africa as Other, these images are juxtaposed against scenes of San men and women in "tribal" dress. Thus, white western women's bodies are depicted as modern in relation to San men and women as exotic, tribal, and less modern. The imagery therefore functions in complex ways in its subordination of women through modes of relationality. On one level, images of white women's bodies operate as symbols normative beauty and appearance, which work to exclude women whose bodies do not fit these ideals. On another level, these images marginalize the contributions of Indigenous San women who, given

their historical role within the community as plant gatherers, were central in cultivating Hoodia and continue to use it today to ease breastfeeding, sooth gassy babies, and feed their families.

Along with images of San peoples, the purity and authenticity of Hoodia is also reinforced through textual references to the patented scientific invention of P57. For example, the Hoodoba ® website asserts that Hoodia “is a stoneage wonder plant found in the dry arid regions of Southwestern Africa. Not long ago, Scientists isolated its main active component and named it P57AS3 aka ‘P57’.” Emphasis on Hoodia P57 as a scientifically proven patented invention is thus used to augment its efficacy and purity in order to entice consumers. Patent law thus acts as a value system signaling that Hoodia is new, novel, safe, and thus desirable for purchase by consumers. Images of the San and textual references to Hoodia P57 as patented invention become inextricably linked through their articulation of discourses of naturalization and purity in order to commercialize Hoodia. San men and women are depicted as closer to nature and culturally fixed in time. Likewise, Hoodia’s P57 is portrayed as an isolated and purified compound invented by scientists from the natural Hoodia plant. Images of the San and references to Hoodia as patented object thus become strategically employed, albeit in different ways, through discourses of naturalization and purification to further the sale and consumption of Hoodia.

A post-colonial reading of these representations, however, is challenged when and if the San themselves consider allowing their image to be used in marketing Hoodia. In the historical moment of uncertainty over Hoodia research, benefit sharing regulation, and the SAHGA-San agreement, it is unclear how the San will proceed. How might a re-negotiated SAHGA-San agreement account for the use of San images to market the plant? What would the scope of that permission be? If the San become the “face of Hoodia,” what would that look like? Mr. Komtsa

and Mr. Tsumkwe said they preferred to be represented as Bushmen in traditional dress with bows and arrows.⁴³³ I discuss with them my fear that the global circulation of this image would seem to reinforce stereotypical images of the San as closer to nature and not modern.

If the figure of the San male hunter became the face of Hoodia, it would also obscure †Khomani San women's reproductive and intellectual labor as well as the gendered knowledge practices related to Hoodia. In speaking with members of the †Khomani San, they articulate gendered forms of knowledge regarding the plant. Responding first that both men and women have similar knowledge of Hoodia, they go on to explain that †Khomani San women use the plant to ease breast-feeding and to treat gassiness in babies. In addition, both †Khomani San men and women are said to use the plant during hunting trips. Dissemination of knowledge regarding the plant is also described in gendered ways. Most community members interviewed describe learning about Hoodia from their mothers and grandmothers. †Khomani San knowledge regarding Hoodia is therefore described in complex gendered ways. However, these gendered forms of knowledge production would become silenced if the San find themselves obligated to adopt stereotypical masculinized hunting narratives to market the plant. Furthermore, branding the plant and the San image in this way would fortify historical constructions of the San used to subordinate them.

However, an alternative reading is possible. Mr. Komtsa and Mr. Tsumkwe said the problem was not the image per se, but whether or not the San controlled its use. Although the San become complicit in the reification of their image, they also challenge broader nature/culture binaries used to subordinate them. The San become agents of production, determining how their

⁴³³ A representative from Unilever told me about their internal focus group research on how they might market a Hoodia weight loss product. Focus group members actually reported a discomfort in seeing San images in Hoodia advertising. They responded more positively to messages that conveyed self-control over weight loss and before and after testimonials of successful weight loss. According to this marketing research, the use of the San image may not be the best strategy.

image might be used. Thus, a disabling moment of reification simultaneously promotes a path of enablement allowing the San to control the circulation of their image and culture.

Uncertainty remains though as to the degree to which such control leads to empowerment. Would the monies and control from a SAHGA-San benefit sharing bring the San closer to owning their own lands, growing their own food, or representing themselves at the National House of Traditional Leaders? Would it bring them closer to full citizenship? Would it engender recognition of their full humanity and allow them to flourish?

What is certain is that benefit sharing brings recognition to the San and their knowledge, while creating new assemblages of people, resources, and ideas for San futures of self-determination. As these new assemblages become more apparent, these questions and more will continue to frame the re-invention of Hoodia and the San in relation and a part from one another.

V. Conclusion

In each case, with Unilever, SAHGA, and the San, there are moments of enabling and disabling as they make claims for epistemic citizenship. Each are granted some rights, but those rights are not equal.

Unilever is given stronger rights of ownership over Hoodia knowledge and can protect those rights by charging herbal supplement companies with fraud and patent infringement. Benefit sharing becomes a “political nightmare,” but Unilever remains control over Hoodia research. Their decision to terminate Hoodia research negatively impacts South African farmers growing Hoodia for them and San peoples depending on benefit sharing monies from CSIR. Additionally, SAHGA is given some rights of epistemic citizenship through the granting of bioprospecting permits that allow them to participate in herbal supplement markets. They also maintain control over Hoodia cultivation and its possible flows of money into a SAHGA-San

agreement. Yet, small SAHGA farmers are wary of potential charges of infringement by corporate patent owners. Termination of Hoodia research by Unilever also sends a negative message regarding *Hoodia gordonii* products that may impact Hoodia markets.

In turn, the San also receive some rights of epistemic citizenship through benefit sharing that promises them monies and brings them political recognition. A second agreement with SAHGA might give them some control over how their image is used to market Hoodia and the opportunity to learn techniques for cultivating Hoodia. The San also have new pathways for San self-determination as they move forward in signing additional benefit sharing agreements with others and ultimately desire formal representation in the National House of Leaders.

Their rights, however, are considerably less strong. The San do not have control over the production of Hoodia research or cultivation. They have to rely on Hoodia futures that may never materialize. In the end, the San peoples have only received around 50,000 from the CSIR-San benefit sharing agreement. Epistemic citizenship, as mediated by patent law and benefit sharing, thus provides unequal pathways for economic participation and political recognition.

Epistemic citizenship in South Africa continues to be in the making as intellectual property and biodiversity legislation are implemented. Within these moments of uncertainty, signs of re-invention were already appearing. Hoodia was transforming once again, this time into a fair trade product. The San were beginning talks to Phytotrade Africa on possibilities for growing and cultivating Hoodia themselves for sustainable fair trade markets. Furthermore, new conflicts were emerging as Indigenous Nama peoples assert their own claims for Hoodia benefit sharing. The San also began talks with the Nama over the origins of traditional Hoodia knowledge.

Despite these failings, most of the ꞆKhomani San I spoke with said Hoodia benefit sharing was a success. Although given weaker rights of epistemic citizenship through benefit sharing, the agreement brought international attention and produced pathways towards formal recognition in the South African National House of Traditional Leaders. The South African San Council also began to sign additional benefit sharing agreements with others.

Thus, expressions of epistemic citizenship may be unequal, but Hoodia benefit sharing becomes a vector for San peoples to challenge histories of racial classification, and to re-invent themselves as collective Indigenous peoples, albeit in limited ways. The extent of these limitations remains unknown. I was told that some ꞆKhomani San traditional elders consider benefit sharing unsuccessful and another example of the taking of San resources, culture, and heritage. At the same time, other ꞆKhomani San consider it a success and a pathway to fuller citizenship. What is clear is that the potentialities of benefit sharing and the directions it might lead remain uncertain.

Chapter Seven

Partial Conclusions: From Hoodia Re-inventions to Understanding Epistemic Citizenship

This dissertation project sought to move beyond normative understandings of patent law, bioprospecting, and Indigenous knowledge frequently couched within dehistoricized frameworks of law and economics and/or the public domain. In particular, its goal was to study how relations of power are shaping and being shaped by San peoples' struggles over the patenting of *Hoodia gordonii* plant properties. In particular, it studied how the Hoodia plant and the San (and their Hoodia knowledge) are co-produced overtime through histories of bioprospecting, patent law ownership, benefit sharing, and the commercialization of Hoodia. It asked how such struggles produce modes of difference and inequality through relations of indigeneity, race, and also gender. This required a new theoretical/methodological approach to the study of patent law.

I. Review of Dissertation and Findings

The first move was to make room for a feminist analysis of patent law. What I mean by a feminist analysis is an approach where partiality, materiality, location, and contradiction are what drive our understandings. (Haraway 1988) It embraces a focus on knowledge, power, bodies, and identities in order to consider gender within an assemblage of social relations. (Deleuze and Guattari 1987; Foucault 1988) Such considerations may reveal that gender itself is less significant, for example, than indigeneity or race.

Why was a feminist analysis needed? I was troubled by how scholarly critiques of patent law tended to speak past each other, even as they shared similar concerns over the expanding scope of patent ownership. The anxieties of scientists over the patenting of human DNA

sequences tended to eclipse Indigenous feminist critiques of the patenting of Indigenous peoples' knowledge, heritage, and culture. Likewise, the patenting of plant properties is treated with less urgency than the legal ownership of human biological and genetic material. I would contend that the privileging of interests regarding human genetic and biological material over that of plants not only obscures Indigenous peoples' full concerns, but also dangerously conceals how plant matter and human bodies are significantly related. Bringing a feminist analysis to patent law not only recognizes the historical contributions and concerns of Indigenous feminist movements, but it also offers ways to push feminist theory to develop new understandings of the relationality of plant matter, bodies, subjectivities, political economies, and legal systems.

A. Situating

In response, Chapter One of this dissertation synthesizes scholarly debates loosely emanating from the disciplines of law, anthropology, science studies, and women's studies. The notion of the public domain simultaneously emerged from this synthesis and became a way of organizing the scholarly material. Four conceptions of the public domain materialized within critical intellectual property scholarship speaking out against expansive patent law ownership. Some scholarship desires what I called an *open public domain* where scientific materials and their associated knowledge can circulate freely. Other scholars call for a *protective public domain* where desires for the open flow of scientific materials and ideas are balanced against the safeguarding of Indigenous peoples' knowledge and biodiverse resources. Science studies scholarship also brings forth a third conception of the public domain, which I named as a *hybridized public domain*. Focusing on the relationship between the public domain and private patent law, such scholarship desires a public domain where new hybrid categories of nature/culture and social/biological are re-imagined to produce new possibilities for modernity.

Lastly, the notion of *egalitarian public domains* arises from a fourth area of scholarship analyzing how the relationship between the public domain and patent law shapes and is shaped by individual and structural relations of gender. Each of these scholarly areas and their conceptions of the public domain share a common critique of expansive patent laws, but they come to the table with very different concerns, values, and interests that can often leave relations of power unexamined. Thus, I argued for a notion of *situated public domains* to take into account how struggles over patent law ownership are complex, contradictory, and deeply impactful on peoples' lives in various and unequal ways.

Thus, Chapter One makes multiple contributions as it made space for a feminist analysis of patent law. It synthesized critical intellectual property scholarship around the notion of the public domain in order to encourage a broader interdisciplinary understanding of patent law ownership. It also introduced an emerging field of scholarship concerned with how patent law relates to gender and women's lives. Finally, it re-conceptualized the public domain as situated public domains. Unpacking the debates over patent law, proposing situated public domains, and making room for a feminist approach enables the study of Hoodia patent law struggles through various discourses of law, science, and market.

B. Studying

A second move was to place the *Hoodia gordonii* plant at the center of my analysis. This dissertation produced a multi-sited, ethnographic account of the plant itself. It traced how a plant historically travels, circulates, and is represented through colonial botanical sciences, patent law regulations, ethno-pharmaceutical research, and claims for benefit sharing. I drew upon feminist constructivist grounded theory methods to gather, code, and analyze data. (Charmaz 2006; Clarke 2005) Indigenous, transnational, and post-colonial feminisms, in their different ways,

guided my analysis within the histories of South Africa, its complex notions of indigeneity, and uneasy relationships with “western feminism.” (Arnfred and Codesria 2004; Green 2007; Moreton-Robinson 2000; Nnaemeka 2003; Ouellette 2002; Oyěwùní 2005; Smith 1999) Additionally, methods of “law from below” and “science from below” offered an initial starting point for this research, taking into account Indigenous feminist social movement critiques of patent ownership and bioprospecting. (Harding 2008; Rajagopal 2003; Rodríguez Garavito and Santos 2005) The theoretical/methodological approaches of feminist science studies, critical race legal theory, and feminist legal theory also shaped my research and analysis more broadly. This dissertation therefore makes a significant methodological contribution by putting a plant at the center of this project, thus simultaneously recognizing and giving it agency.

The remaining chapters examined the various re-inventions of Hoodia over time from classified botanical specimen, to patented invention, and then to object of benefit sharing. I became interested in how the materiality of the plant shifted and changed from natural plant, to chemical composition, to cultivated resource. Tracing these re-inventions of the plant produced an understanding of how the plant and how San peoples and their knowledges are historically co-produced through emerging modes of biopolitics, difference, and citizenship. Emphasis on the plant itself revealed how citizenship itself is changing and increasingly being structured through claims to and grants over knowledge.

C. Encountering

Chapter Three investigated how *Hoodia gordonii* became a classified botanical object. This required archival research into the botanical publications and journals of relevant colonial botanists exploring the Cape in the late 1700s. Francis Masson produced the first drawings of *Hoodia gordonii*, but he did not discover the plant and it is unclear if he actually produced the

first drawing. Masson's travel journals indicated that ancestors of the San and Khoikhoi likely informed his knowledge of Southern African stapeliads. Positioning the San as the likely origin of Hoodia knowledge unsettles scientific narratives of discovery and scientific authorship. Masson's personal accounts also reveal his perceptions of the "Bushmen" and "Hottentots" he encountered while searching for stapeliads. His language contributed to colonial representations of them as "savage" and closer to animals, which are discursive framings that justified violence against them.

This chapter then examined colonial botanical classifications of the plant. What I found was that as nature was being classified, the San were being ranked as closer to nature. The chapter demonstrates how *Hoodia gordonii* was initially classified and ranked below the animal kingdom. Overtime the *Hoodia* genus expanded, and *Hoodia gordonii* acquired new stapeliad kin. Descriptions of the plant remained limited to its basic features, such as petal and stem size. At the same time, epistemologies of classification are being equally applied to humans. Colonial racial taxonomies classified San men and women as the lowest of humans and closer to nature. Thus, similar techniques of classification were being used to order both *Hoodia gordonii* and the San. The classification of the San as closer to animals and nature obviously had differing consequences for the San. This chapter however demonstrates how San histories become related to *Hoodia gordonii* plant matter through scientific practices of classification.

Chapter Three concludes by examining more contemporary classifications of *Hoodia gordonii*. A significant 2005 botanical publication on stapeliads shows how epistemologies of plant classification now adopt molecular styles of thought. Plants are now ordered according to similarities and differences at the molecular, genetic level. This chapter considers the molecular classification of *Hoodia gordonii* along side the growing interest in genetically classifying

humans. Advances from the Human Genome Project have enabled the classification of human populations at the genetic level. The Diversity Project, for instance, aimed to classify and understand human variation. (Cavalli-Sforza et al. 1991; Reardon 2005) Scientists have been particularly eager to collect DNA samples from the San in order to generate large-scale DNA biobanks, which can produce classifications of human genetic geographic origins and possibly tell us more about genetic disease correlations. (Tishkoff et al. 2009) Thus, San histories continue to stand in relation to *Hoodia gordonii* as ordered through new systems of classification based on molecular systems of thought.

These findings go to a larger goal of Chapter Three that aims to historicize *Hoodia gordonii* in relation to the San. Each were ranked and ordered through systems of classification, although with different consequences. Classification of the San as closer to nature was used to justify violence against them and exclude them from full citizenship. Then again one may argue that the ordering of plants below that of humans and animals justifies degradation of the environment. Nevertheless, Chapter Three presents a historical analysis to contextualize San histories and politics. These related histories shed light upon contemporary contestations over the patenting of Hoodia. San peoples' challenges to the patenting of Hoodia work to counter these histories, albeit in limited ways. The San make claims to Hoodia knowledge and benefit sharing as a potential pathway towards economic participation and political recognition.

D. Owning

Chapter Four examined the re-invention of Hoodia into a patented object. Its materiality changes from plant growing in the Kalahari to isolated chemical composition. This chapter also showed how scientists were given stronger rights to citizenship through patent ownership claims that strengthened scientific expertise and ways of knowing. It began by introducing science

studies scholarship detailing how patent law reinforces nature/culture dichotomies. (Pottage 1998; Strathern 1996) Shifting nature/culture binaries are nothing new to scholars, but what is new is how their expression within contemporary biosciences and patent law ownership. This chapter then discusses patent law rules by examining how both scientific and legal expertise are constructed through the registration and disclosure of a Hoodia patent. The focus then shifts to elements of patentability (novel, non-obviousness, utility). This chapter thus shows how as Hoodia is transformed into a patented isolated and purified chemical composition, Indigenous San knowledge of the plant is obscured and thus devalued. This chapter also contends that patent law acts as a value system privileging certain ways of knowing over others. Masculinized notions of scientific knowledge production in the lab are valued over San ways of knowing. Scientists are therefore given stronger rights of citizenship through patent ownership in order to participate in the market place. This chapter concludes with an analysis of Hoodia as a hybrid object in order to counter ethics of patent ownership and further recognize San Hoodia knowledge.

E. Commercializing

Chapter Five investigates how Hoodia is transformed into a commercialized ethno-pharmaceutical and object of contractual benefit sharing. This chapter shows how the re-invention of Hoodia corresponds with the re-configuration of San indigeneity and politics. The chapter begins by examining representations of Hoodia research by Phytopharm on its website and in its press releases. Initially, the plant as *Hoodia gordonii* and San knowledge of it remain anonymous. The plant is only referred to as a “natural obesity-product” and “drug candidate,” while its connection to San peoples goes unmentioned.

The chapter then goes on to examine San political mobilizing against the patenting of *Hoodia gordonii*. As the San re-invent *Hoodia gordonii* as a stolen object, they simultaneously re-configure themselves as an Indigenous peoples who are active political and economic participants. The contractual benefit sharing terms, however, show how San peoples are given weaker rights than CSIR. San peoples continue to lack control over Hoodia resources and financial benefits are contingent upon the commercial success of the plant. The San are also compelled to contractually agree not to contest Hoodia patents or develop competing Hoodia markets. Contractual benefit sharing thus enables the recognition and production of San indigeneity and politics, while simultaneously disabling it. This chapter finds that contractual benefit sharing is considered by some to be a pathway to formal political recognition within South Africa's National House of Traditional Leaders. Yet, such futures are uncertain as the San continue to wait for material benefits from Hoodia research.

The chapter then concludes by asking how representations of Hoodia research by Phytopharm and CSIR changed after allegations of biopiracy and negotiations for benefit sharing. The plant as *Hoodia gordonii* and its associated San knowledges become explicitly mentioned and recognized, yet in limited ways. *Hoodia gordonii* continues to be characterized as raw material. Furthermore, San knowledge of the plant remains less valued as it must be "scientifically proven." I suggest though that San claims to Hoodia knowledge through benefit sharing signal new modes of citizenship based upon knowledge and ways of knowing. Citizenship has become stratified in many ways; one such way is an epistemic citizenship where lines of inclusion and exclusion are drawn around whose knowledge matters most to neoliberal economies. Chapter Five reveals how grants of epistemic citizenship through patent ownership and benefit sharing are given to both CSIR and the San, but such modes of citizenship are

unequal. The San are given weaker rights and *Hoodia gordonii* remains normatively cast as mere raw material.

F. Claiming

Chapter Six offered a final examination of how Hoodia is re-invented when benefit sharing seemingly fails. It started with the termination of Hoodia research and new regulations regarding access and benefit sharing. Uncertainty over such research and regulations opened up a new political and legal terrain. Relevant actors began to assert new claims over Hoodia knowledge. Unilever continued to make claims to their knowledge over how to isolate and purify Hoodia. This was necessary for maintaining the integrity of existing Hoodia patents. San peoples also continued to assert their knowledge of Hoodia as more natural and as Life. Making continual claims of San knowledge over Hoodia is important if San peoples are going to develop Hoodia as a possible fair trade object. San claims to Hoodia knowledge are also critical for responding to challenges made by the Nama who began to make indigenous knowledge claims over *Hoodia gordonii*. In addition, the South African Hoodia Growers Association similarly began making claims over Hoodia knowledge. New laws compelled SAHGA to enter into benefit sharing with the San. Asserting their own indigenous knowledge claims to Hoodia served to strengthen their bargaining position and their rights to participate in the market place.

Chapter Six therefore finds that at the moment when Hoodia benefit sharing seemingly fails, renewed claims to Hoodia knowledge proliferate. Claims to and grants of epistemic citizenship through patent ownership and benefit sharing seem to open up further when the potential of Hoodia research and CSIR-San benefit sharing becomes unrealized. Such claims continue to produce difference and inequality, albeit in new ways. They reinforce Unilever corporate personhood and San indigeneity. South African identity and its whiteness are also

fortified through claims by SAHGA. I present a further overview of these findings in the final section of this conclusion.

The end of Chapter Six concludes by examining Hoodia advertisements on the Internet by herbal supplement companies. San-SAHGA benefit sharing signals a possible future where San images may be used to market and sell *Hoodia gordonii* based products. To think through such futures, this chapter analyzes current Internet advertising where images of San male hunters in traditional dress are most frequently used to sell Hoodia products. Hoodia as herbal supplement product is therefore sold through traditional colonial scripts of San peoples as closer to nature. Such images offer a precaution and challenge to San peoples who desire control over how their image will be portrayed by SAHGA or even themselves as they seek to develop Hoodia fair trade markets.

In the end this dissertation could have been framed in multiple ways. However, my research pointed to questions of citizenship and the ways in which economic and political participation are being structured through claims over knowledge. Tracing the Hoodia plant through various discourses of science, law, and market revealed the new ways in which lines of exclusion and inclusion are being drawn. Placing the plant at the center of my analysis also enabled this project to examine how the drawing of such lines produces difference and inequality around gender, race, and indigeneity.

II. Significance for Feminist Science Studies and Feminist Socio-Legal Studies

This project asked how Hoodia patent law struggles produce difference and inequality. For instance, it discussed two significant areas where gender becomes significant. This offers both feminist science studies and feminist socio-legal studies a way of understanding how struggles around patent law, scientific bioprospecting, benefit sharing, and Indigenous

knowledge can be gendered. First, it showed how patent law ownership reinforces masculinized notions of scientific knowledge production. Chapter Four detailed the exact patent law rules that construct Hoodia as patented invention. The plant becomes an isolated and purified chemical compound produced in the lab. It thus becomes disconnected from San histories and peoples. This works to devalue San knowledge of the plant while reinforcing masculinized notions of scientific objectivity that are dehistoricized and disembodied, rather than a feminist notion of knowledge as situated. (Haraway 1988)

Second it discussed how representations of San Hoodia knowledge are generally associated with San male hunters. When Phytopharm and CSIR explicitly started to mention San knowledge of the plant, they articulated its use by San male hunters. This becomes the dominant narrative around San Hoodia knowledge. The problem is that it obscures gendered knowledge practices related to the plant. For instance, some !Khomani San informed me that San women use the plant for breast-feeding and to ease gassiness in babies. Additionally, this project also examined Internet advertising of Hoodia. It showed how herbal supplement companies represent Hoodia as a pure, natural, authentic weight loss supplement through stereotypical images of seemingly thin, white western women's bodies juxtaposed against images of San men in traditional dress with bows and arrows. Such images evoke historical colonial scripts of white women in relation to "Black Africans." This project also discussed how contemporary San peoples are compelled to adopt similar narratives and images when articulating their knowledge of the plant. A new SAHGA-San agreement or re-invention of Hoodia into a fair trade object may, however, offer a chance where San peoples can re-present San knowledge of the plant that recognizes and brings justice to the multiple gendered uses and understandings of Hoodia.

A feminist analysis of Hoodia patent struggles brought these questions of gender to the forefront. However, the main focus of this dissertation was on how Hoodia patent law struggles produce difference around indigeneity. It accounted for how Hoodia patent law struggles enable the San to construct themselves as Indigenous peoples, while dissolving histories of South African San as “Coloured” under apartheid. Yet, at the same time, such struggles work to disable San peoples. Grants of limited recognition are given to the San, but such are meant to ensure access and control over Hoodia resources by researchers and scientists. This project therefore offers a way of understanding how the nexus of patent law, scientific bioprospecting, and contractual benefit sharing can produce difference around indigeneity and Indigenous knowledge in new and complicated ways that speak to conditions of neoliberalism, which depend upon the commodification of difference to ensure the circulation of capital.

For instance, as an additional overview, Chapter Six examined how claim making around Hoodia knowledge shifts in a climate of legal and scientific uncertainty when Hoodia research is terminated and new South African benefit sharing laws emerge. This chapter found that claims for and grants of epistemic citizenship circulate anew, reinforcing notions of difference and inequality. It showed how Unilever makes claims based upon their knowledge of how to isolate and purify Hoodia in order to safeguard their most recent patented Hoodia inventions. Such claims bolster their corporate identity (i.e., corporate “difference”) to shareholders. They also reinforce their form of Hoodia knowledge as more valuable to neoliberal nation-states, which are increasingly dependant upon patent law and benefit sharing to ensure the commercialization of nature for their bioeconomies. With the emergence of new governmental management over benefit sharing, the San are once again compelled to articulate claims to benefit sharing based on their knowledge of Hoodia as life and found in nature. They become obligated to perform a

“traditional” San indigeneity through articulations of San Hoodia knowledge as more pure, yet this strategy simultaneously positions the San as active producers of valuable scientific knowledge and of potential Hoodia markets. Additionally, within this new legal and scientific terrain of uncertainty, the South African Hoodia Growers Association make benefit sharing claims based upon their knowledge of how to cultivate and grow Hoodia. In a laudable manner, SAHGA proactively seeks to recognize San Hoodia knowledge, in particular San women’s knowledge, and grant them a percentage share of Hoodia plant exports. Yet, such recognition is limited. SAHGA’s overarching goal is to ensure continual access to Hoodia resources and use the San image in their marketing of the plant. Recognition of San Hoodia knowledge is done in such a manner as to reinforce the expertise of SAHGA farmers and their knowledge of how to grow and cultivate Hoodia. Recognition of San identity thus seemingly works to strengthen Afrikaner identity as tied to histories of land, farming, and the complicated production of whiteness and indigeneity within South Africa. Chapter Six therefore revealed the emergence of an epistemic citizenship where lines of exclusion and inclusion are being drawn in new and unequal ways through claims for and grants over knowledge.

Through an ethnographic account of nature (i.e., the Hoodia plant), this project revealed the emergence of new modes of epistemic citizenship where economic and political participation are structured through claims for and grants over ways of knowing. Its contribution is to understand the precise ways in which these lines of exclusion and inclusion are drawn through histories of scientific classification, patent law rules, ethno-pharmaceutical research, and benefit sharing claims at the moment of promise and failure. A key finding is that attention and future research should be given to how contractual benefit sharing agreements offer *possible pathways* to more just and meaningful modes of citizenship for San peoples. Even if benefit sharing

seemingly fails to produce monetary benefits, can it still generate potential routes to future San economic/political participation and recognition?

As it reveals the emergence of epistemic citizenship and some of its precise mechanisms, this dissertation speaks to changes in citizenship more broadly under conditions of neoliberal biopolitics. It offers a challenge to feminist scholars to take into account new alignments of citizenship. Aihwa Ong argues that “components formerly tied to citizenship—rights, entitlements, as well as nation and territoriality—are becoming disarticulated from one another and rearticulated with governing strategies that promote an economic logic in defining, evaluating, and protecting certain categories of subjects and not others.” (Ong 2006, 16) Entitlements are being detached from political membership and national territory. Certain rights and benefits are being distributed to persons with “marketable talents and denied to those who are judged to lack such capacity or potential.” (Ong 2006, 16) Ong’s ethnographic attention is on how distinctions between national and foreign populations are blurred as high-skilled expatriates are given more rights and deemed more valuable than excludable low-skilled citizens and migrants, regardless of territorial citizenship.

In a similar fashion, this project shows how rights are being granted based upon whose ways of knowing matter most to neoliberal economies. Scientists with more valuable knowledge of how to transform *Hoodia gordonii* into a commercialized weight loss product are given more rights through networks of national and international patent ownership laws backed by the enforcement mechanisms of the World Trade Organization and its TRIPs agreement. Benefit sharing also becomes a critical component of neoliberalism. It grants limited recognition and benefits to San peoples and their knowledge in order to ensure access to much needed Indigenous knowledge and resources for researchers. San peoples and knowledges are

simultaneously included and excluded within new alignments of citizenship structured through economic logics. Yet, this research shows that as citizenship itself is increasingly fractured and deterritorialized, the nation-state figures strongly. Granting rights and entitlements to certain forms of knowledge and not others fortifies South African nation-state sovereignty and economic futures. Epistemic citizenship therefore challenges scholars to consider disarticulations and rearticulations of citizenship more generally and how new modes of difference and inequality are being produced.

III. Implications for Indigenous San Peoples

This dissertation sought to understand how San indigeneity and politics are being re-characterized in relation to Hoodia patent law struggles. I hope that this dissertation will prove useful to Indigenous San peoples and the trusted friends who work with them. I do not take a position on whether or not Indigenous peoples should actively negotiate for benefit sharing. Rather, the goal of this dissertation has been to provide San peoples with a detailed account of how power and knowledge operate within aspects of bioprospecting, patent ownership, ethnopharmaceutical research, and benefit sharing. At times it over-determines patent ownership. However, it tried to focus on the relationality of patent law across science, market, and politics in order to build a more robust understanding of patent ownership. For instance, it examined how benefit sharing agreements could be a direct challenge to patent ownership and a way for Indigenous peoples to obtain recognition and compensation for their knowledge. It also suggested a shift in understandings of benefit sharing. Attention should be given to how such contractual agreements offer *possible pathways* to citizenship, recognition, and the economic and political participation it affords. My hope is that my research might facilitate San decision-

making processes regarding benefit sharing as they think through how to strengthen San rights to self-determination over their resources and knowledge.

I can offer two primary sites where further inquiry by the San might be directed. Given my responsibility and accountability as an attorney, my focus is on legal strategies. I do not suggest however that the law is the best site to make change. Nevertheless, I want to highlight some spaces of legal inquiry if the San desire to go in that direction. One site is around the issue of prior informed consent and the other is around what is considered “fair and equitable” benefit sharing. I will first consider prior informed consent. Prior to interviewing members of the †Khomani San, I met with a †Khomani San leader named Datum Olyn who requested that I sign a San Research and Media Contract (“Research Contract”). Portions of this contract are affixed below:



Media and Research Contract (general purpose) of the San of Southern Africa

Between

the San Organisation

Details

South African San Council

20 Weideman street

Upington

Bank account _____

and

the Applicant for media or research with the San Organisation

Details

Laura Foster, Ph.D. Candidate, Department of Women's Studies

University of California, Los Angeles ("UCLA")

Box 951504, 2225 Rolfe Hall, Los Angeles, CA 90095-1504

5. PAYMENT

The Contractor shall make payment to the San as follows (fill in and delete as applicable):

- 5.1 To WIMSA in respect of facilitation of the project, the sum of
1000 R (subject to discussions with WIMSA)
- 5.2 To the San Organisation, the sum of (SASI)
500 R lot [signature]
- 5.3 Other (specify):
5% of royalties to account later
designated.

All payments to the San are to be paid into the bank account specified by the San above, unless otherwise agreed.

payment to individuals for time in amount negotiated with them.

Figure 10. Excerpt from San Research and Media Contract signed and agreed to by Laura Foster (on file with author)

The purpose of the agreement is “to ensure that all San intellectual property” is controlled and protected by the San. It asks researchers to respect the culture and dignity of the San and represent them in a way that is not “harmful or detrimental.” In turn, the San agree to cooperate with the researcher during completion of the project. Interestingly, ownership of the material is negotiable. In my talks with Mr. Olyn, he suggested that I should retain ownership (i.e., copyright) of the final product. He was aware that as a graduate student I was bound by certain rules and regulations regarding copyright established by my academic institution. Such rules raise a considerable topic for discussion; however it extends beyond the scope of this dissertation.

In light of this Research Contract, more emphasis should be placed on agreement as an intervention into the scientific research process. I would suggest that it acts as counter-hegemonic legal strategy in response to long histories of San genocide, displacement, and violence at the hands of European colonial settlers, rival ethnic groups, and Afrikaner farmers. It contests histories of researchers who have intentionally and unintentionally contributed to violence against the San through studies depicting them as ahistorical, primitive, and savage. The Research Contract enables the San to reclaim and maintain some control over their knowledge, resources, and how they are represented. It also binds a researcher such as myself to the ethical and moral frameworks of the San and their vision of what constitutes ethical research. In signing the agreement, I agreed not to disclose any valuable San knowledge of medicinal plants. I also offered to share a portion of any future book royalties. These technical provisions, however, are not the most significant feature of this agreement.

The Research Contract also acts as a vehicle for engagement and a sustained relationship with the San. Mr. Olyn initially regarded me with deep suspicion. His first words over the phone

to me were, “Who are you? What do you want?” When I introduced myself again, he yelled into the phone, “You researchers, always coming around here, asking questions, talking to people, and nothing happens.” My first reply was to absolutely agree with him. My second was to explain that I had already met with their lawyer and was prepared to sign a Research Contract. When I met with Mr. Olyn face to face, he assertively lectured me on how researchers have stolen their knowledge and given the San nothing in return. He went over the Research Contract in detail with me. He explained the importance of representing the San respectfully, keeping their medicinal knowledge secret, offering financial donations, and sharing my knowledge in return. He stressed that the purpose of the Research Contract was to maintain a relationship over time with the researcher. I was expected to report back my findings in a way that is meaningful and respectful to the San. Thus, the Research Contract enabled Mr. Olyn to assert agency over me as a researcher. In response, I willingly agreed, listened, and conveyed my own knowledge of San histories. I can only assume that in doing so, I began to reassure him.

Again, I would suggest that more emphasis should be placed on the Research Contract. The process of signing and upholding the Research Contract is what is important. It gives the San a chance to shape and control the research process. It is a site where Indigenous peoples can ask researchers to “go beyond the IRB” and adhere to Indigenous peoples’ ethical principles and expectations of research. My suggestion though is nothing new. The UN Permanent Forum on Indigenous Issues takes account of prior informed consent as a way of protecting Indigenous peoples’ knowledge, heritage, and culture.⁴³⁴ Free, prior and informed consent is also codified

⁴³⁴ “An Overview of the Principle of Free, Prior and Informed Consent and Indigenous Peoples in International and Domestic Law and Practices” Department of Economic and Social Affairs, Secretariat of the Permanent Forum on Indigenous Issues, PFII/2004/WS2/8 (2004).

throughout the Declaration of the Rights of Indigenous Peoples.⁴³⁵ The San Media and Research Contract seems to stand in as a form of prior informed consent. What is remarkable is its focus on ongoing engagement, relationship, and communication. It moved outside the language of “consent” that is often embedded in values of legal liability. Rather, its focus was on engagement and relationship with research subjects. I would suggest that the San take pride in this Research Contract and consider even more creative ways to intervene and shape the research process.

As for my own engagement, during the time of writing this dissertation some ꞤKhomani San have asked me to proofread grant proposals, to comment on feminist organizing materials, and to make further donations. As a researcher, I continually struggle over this relationship and I assume that I have made some mistakes along the way. Responding to explicit requests seems the best way to proceed thus far, yet I am still learning. With the completion of this dissertation, I am tasked with reporting back my findings and sharing my research with the San. I am also accountable to re-negotiate the terms of the Research Contract, particularly if 5% remains a satisfactory percentage of eventual book royalties to give back to the San. Devising an appropriate way to do this will be the next challenge.

A second site where further inquiry might be directed is at the regulations regarding access and benefit sharing. In my conversation with relevant members of South African Department of Environmental Affairs and Tourism (DEAT), I learned that the Regulations on Bioprospecting, Access, and Benefit Sharing were in the making. DEAT was still thinking through how to implement the new laws. A few benefit sharing agreements had been submitted to DEAT in compliance with the laws, but several of those were incomplete and missing the appropriate paper work. There are two provisions under the new regulations, however, that I would like to highlight. My suggestions here are also not new. Indigenous peoples and the San

⁴³⁵ United Nations Declaration on the Rights of Indigenous Peoples, Articles 10, 11, 19, 28, 29, 32 (2007).

have already considered and discussed many of these points. The legal terrain however is changing. The South African government now regulates benefit sharing. Thus, I point to some specific legal provisions for interrogation.

The first is Section 17 of the Access and Benefit Sharing regulations. This section specifies that before the Minister approves a benefit sharing agreement he must be satisfied that the agreement is “fair and equitable to all parties.”⁴³⁶ To make that determination, the Minister may consult others and invite public comment. If the San go forward with additional benefit sharing agreements, this may offer a space for San peoples to re-imagine what fair and equitable might look like. One might be able to frame a fair and equitable benefit sharing through ethics of Indigenous peoples’ rights, rather than its current framing through an ethics of conservation, which displaces San agency. Second, a benefit sharing agreement must follow the general format provided in Annexure 8. This requires a resolution from the indigenous community confirming that they have full knowledge of the bioprospecting project and that they consent to it.

The process of adopting this resolution and negotiating a benefit sharing agreement allows for a discussion on what a fair and equitable benefit sharing agreement might look like. For instance, does it emphasize milestone payments to ensure the San will receive some money even if the research fails? Does it allow for the San to develop their own industries around the resource? Does it require researchers to undergo training on San histories prior to commencing their bioprospecting project? Does it include the San as active, ongoing participants in the scientific research process? Does the research contribute to the health and well being of the community? Does it allow the San to control how their image, knowledge, and culture is represented?

⁴³⁶ South African Bio-Prospecting, Access and Benefit Sharing Regulations of 2008, § 17.

This is also the moment where a discussion of gender equality may be appropriate. Is the agreement fair and equitable to San men and women alike? Does the distribution of monies satisfy the interests and concerns of both San women and men? These are just a few questions that may go towards re-defining what a fair and equitable benefit sharing agreement might look like. The San have already considered many of these questions through their experience with Hoodia benefit sharing. I merely point out the specific legal provisions that may now be interrogated and challenged.

Debra Harry and Le`a Malia Kanehe of the Indigenous Peoples' Council on Biocolonialism caution Indigenous peoples' against benefit sharing, its acceptance of western legal frameworks, and its lack of respect for Indigenous laws and customs. (Harry and Kanehe 2005) They note that, "[f]or Indigenous peoples, who are often the most marginalized and economically poor peoples of the world, the promises of benefit sharing agreements may be alluring. By virtue of their right of self-determination, it is of course, the prerogative of Indigenous peoples to make their own decisions about benefit sharing agreements." (Harry and Kanehe 2005, 8) The goal of this dissertation has been to provide research that may facilitate that decision-making process by studying the precise ways in which power functions within the intersections of bioprospecting, patent law, benefit sharing, and Indigenous knowledge. Thus, this research considers the ways in which benefit sharing is conceived as a potential pathway and a means in which new conceptions of citizenship are and could be further re-imagined. Benefit sharing creates fissures to further re-conceptualize citizenship through Indigenous peoples' own conceptions of relationship to nation. Then again, it is limited and the potentialities of benefit sharing, as a pathway to future change, have yet to make themselves known.

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