

Patents, Biopolitics, and Feminisms: Locating Patent Law Struggles over Breast Cancer Genes and the *Hoodia* Plant

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Abstract: This article suggests three critical inquiries for formulating a feminist analysis of patent law. The first questions how patent law functions as a strategy within neoliberal, biopolitics. The second examines how patent law is structured through biopolitical techniques of governance by examining two conceptions of the public domain I call *open public domain* and *protective public domain*. The third inquiry, drawing upon feminist science studies, asks how women's reproductive and intellectual labor are valued and devalued in various different ways through new patent law technologies. In addition, two recent patent law are struggles are examined. These include an American Civil Liberties Union case against the patenting of breast cancer gene sequences and Southern African San struggles against patents related to the *Hoodia gordonii* plant. In conclusion, I argue that patent law functions within gendered and ethno-racialized forms of neoliberal, biopolitics involving the patenting of women's reproductive and intellectual labor within new bioeconomics.

Women's bodies and minds are storehouses for potential patentable subject matter. They supply oocytes, cells, and DNA for technoscientific research and commercialization.¹ Women, in particular indigenous women, provide human tissues and DNA, as well as knowledge regarding the medicinal properties of local plants and animals.² Women therefore are performing novel forms of labor within new circuits of *biocapital*. In addition, women are primarily responsible for utilizing technological medical inventions to care for themselves and their families. Within contemporary neoliberal conditions, these forms of labor are variegated across social relations of race, class, ethnicity, indigeneity, nation, and citizenship. Some

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groups of women benefit from patented medical inventions, while others contribute to their development with no benefits in return. New forms of feminized labor conditions also increasingly shape men's experiences. Human bodily tissue and indigenous knowledge is additionally extracted, commercialized, and patented from men as well, but in different ways, given the variable mechanisms of power structuring their lives. Thus, questions of gendered social relations should be central to a discussion of patent law within neoliberal, biopolitical conditions.

Critical intellectual property scholarship interrogates patent law from a range of concerns.³ Some scholarship inquires how expansive patent ownership restricts scientific knowledge production. Others examine the diverse implications of patent law for indigenous peoples, while other scholars ask how patent law shifts understandings of nature versus culture and the social versus biological. Such scholarship produces valuable insights into the effect of patent law on society. Yet, there remains a paucity of attention to how patent law constitutes and is constituted by complex gendered social relations.

This article therefore suggests a conceptual shift in the scholarly terrain engaging with patent law in order to open up further space for a feminist analysis. In particular, it discusses three critical, interrelated inquiries for formulating such an analysis. The first is to contextualize and question how patent law functions as a strategy within neoliberal, biopolitical calculations. Considering feminist critiques of biopolitics, it asks how patent law constructs and reinforces gendered and racialized discourses within biopolitical modes of power. The second is to examine how conceptions of patent law and the public domain are inextricably tied to such biopolitical techniques of governance. In doing so, this article discusses two conceptions of the public domain I call *open public domain* and *protective public domain*. These conceptions are then introduced as important theoretical analytics for analyzing how patent law shapes and is shaped by complex gendered social relations. The third is to examine how women's reproductive and intellectual labor are devalued and subordinated through new patent law technologies in order to serve the demands of neoliberal, biopolitical capitalist production. Developing this inquiry further, this article conducts a feminist analysis of two recent patent law struggles. These include the American Civil Liberties Union (ACLU) case against the patenting of breast cancer gene sequences, and the South African San Council's struggle against the patenting of the *Hoodia* plant.⁴ In conclusion, I argue that patent law functions within gendered and ethno-racialized forms of neoliberal biopolitics involving the patenting of women's reproductive and intellectual labor within new bioeconomies.

PATENT LAW AS NEOLIBERAL BIOPOLITICAL STRATEGY

Patent ownership accompanies novel forms of governing the human body within neoliberal conditions. Neoliberalism, as a set of ideologies and practices, empha-

sizes privatization and free trade as privileged modes of governance. It is characterized by modes of deregulation that accompany the reduction of the welfare state. It is also beset by increased regulation, in particular, the control and management of knowledge through patent law. This section situates patent law as a juridical tool and mechanism of neoliberalism where biological and genetic material are privatized for the development of capitalist production. This section also positions patent law within understandings of biopolitics and gendered inequalities.

Within the architecture of neoliberalism, nature becomes a public good best removed from the public domain and privatized in order to ensure its management through free market mechanisms.⁵ For example, cell lines are extracted and isolated from the public domain of the human body, and then patented, giving owners exclusive rights to temporarily control the uses of their invention. Such privatization places human bodily tissue into global circuits of capital, where cell lines and DNA sequences take on value as biocapital.⁶ Patent law also becomes intimately tied to and generative of logics of free trade. This is most clearly articulated by the World Trade Organization's Agreement on Trade-Related Aspects of Intellectual Property Rights. The Agreement links global trade explicitly to the international harmonization of intellectual property rights among member states. Member states are required to uphold the intellectual property rights of other member states or face restrictions on trade relations. The analytics of patent law are also grounded in an ironic logic whereby temporary monopoly protection is said to ensure the free trade and exchange of biological and genetic material by promoting innovation.

As the normative legal argument goes, granting patent rights encourages further innovation through the public disclosure of scientific inventions.⁷ A world without patent rights would mean an economic terrain in which companies kept their innovations as trade secrets and failed to produce public goods sufficiently. Inventors are thus given temporary, exclusive patent rights to control the use of their inventions. In return, they are required to unveil their scientific work by filing a patent specification document, which is open to public gaze. Patent filings therefore become productive features of the scientific process. Scientists, with the help of their attorneys, refer to specification documents to learn new pathways for scientific research and/or to confirm the novelty of their findings. Further scientific knowledge is thus generated, and additional patent rights are assigned to inventions that are entirely new or improvements thereof. Once patent rights expire, then inventions flow back to the public domain and are freely open for use by others. Patent ownership is therefore justified through a market-mediated, temporal trick whereby short-term monopoly protection is said to encourage a future of freely traded materials within the public domain. Critical intellectual property scholars, as will be discussed, contest this normative justification and argue that expansive patent law rights actually stifle the free exchange of creative ideas and materials. Nevertheless, patent law rights are espoused as both a product and generator of neoliberal economic values of privatization and free trade. This is important for understanding patent law as a technology of *biopower* designed to function as a norm signifying value.

Biopower offers a theoretical framework for understanding contemporary forms of governance within a neoliberal order that includes patent law ownership. Foucault argued that, starting in the seventeenth century, mechanisms of power shifted from the sovereign authority to take a life toward the power to foster life.⁸ Power became directed at administering and regulating the biological existence of populations. Bodies became subject to “techniques of power”⁹ through diverse institutions such as schools, churches, hospitals, and the family, which were aimed at managing populations for the development of capitalist production. Power therefore, according to Foucault, transformed into a discursive power that “comes from everywhere.”¹⁰ As a consequence, Foucault claims that the juridical system of law gave way and shifted to law as norm. This does not mean that the law is no longer an important site of inquiry. Rather, the law, whose task is to govern life, begins to operate more as a norm and “the judicial institution is increasingly incorporated into a continuum of apparatuses (medical, administrative, etc.) whose functions are for the most part regulatory.”¹¹ This later point is important for our purposes.

Law remains a crucial site of analysis to consider within biopolitics. Yet, attention must be paid to the discursive and regulatory power of the law and how it is embedded. How does patent law act as an ethico-legal norm privileging certain forms of knowledge production, bodies, and subjectivities over others? How are patent law, scientific knowledge, and the life science industries co-constituted? How is patent law employed as a technique to optimize and manage life in the service of neoliberal capitalism? These questions begin to frame a feminist analysis of patent law that opens up space to consider the multiple and contradictory implications of patent law on different women’s lives.

Critical science studies scholars articulate a more contemporary understanding of biopolitics, which help frame and illuminate patent law. Science in the twenty-first century is a *technomedicine* and *technoscience* shaped by capitalization and intellectual property rights.¹² It involves the “molecularization”¹³ of the body where cells, tissues, and DNA are made visible, isolated, stored and can be transferred to others through new circuits of biovalue mediated by patent ownership. Technologies of the self have shifted to become “technologies of optimization” that not only govern bodies, but also “change what it means to be biological.”¹⁴ New hierarchies structured through an “informatics of domination”¹⁵ no longer stress the perfection of bodies, but rather their optimization. As individuals are obliged to optimize themselves, patent law incites innovations for them to take advantage of. Patent law therefore facilitates the optimization of nature for circuits of capital, so that individuals can optimize themselves.

Human beings thus become “nature’s author or inventor”¹⁶ as they seek to generate and utilize technoscientific inventions. New forms of subjectivity also emerge as individuals engage in self-techniques to manage their risk and susceptibility for disease. For example, individuals are compelled to take advantage of genetic counseling and screening. In so doing, they form new biosocial relations of “somatic expertise”¹⁷ with medical professionals, while also developing new modes of genetic

and biological citizenship by lobbying politicians to support genetic causes. Such relations and modes of citizenship also work to contest patent law ownership and its privileging of scientific expertise, as individuals become patent owners themselves (e.g., PXE International) and/or file legal claims against patents on their human tissue (e.g., *Moore*¹⁸). Furthermore, such technologies of optimization are sustained by a “moral economy of hope”¹⁹ where the promise of future innovation to treat and/or cure disease is used to stimulate further innovation. Economies of hope similarly drive the approval of patent law rights. Inventors, in filing their applications, only have to demonstrate a potentiality and promise of industrial application for their creations. Approval of a patent then serves as a promise to investors that the invention is worthwhile to finance and develop. Patent law therefore enables technologies of optimization through discourses of hope and promise.

Feminist science studies scholarship demonstrates that contemporary biopolitics is itself highly gendered and racialized. Contemporary biopolitics is now aimed at the individual and enhancing the quality of life. In particular, it depends upon women’s reproductive and intellectual labor. As Rose argues, “responsibility now falls not on those who govern, but on those who are responsible for a family and its members.”²⁰ Although he fails to elaborate, Rose explicitly notes that it is women in particular who are responsible for the medical needs of their families and children.²¹ In contrast, feminist science studies scholars have produced valuable and extensive insights furthering this point. For example, women are often obliged to take advantage of genetic screening to ensure a “normal” child.²² Women’s bodies also become sources of raw material called upon to “donate” or “gift” their eggs for the advancement of reproductive technologies and stem cell research.²³

Bodies are also governed through demands for what might be called “epistemic donations.” For example, indigenous women are often compelled to “donate” their epistemic knowledge regarding traditional plants and healing practices for pharmaceutical research. Such forms of governance may lead to important medical advances that benefit individuals and groups of women. The problem, however, is that individuals are obliged to take advantage of medical technologies to ensure their health without being given the necessary resources in which to do so, such as adequate health insurance and education. Biopolitics is accompanied by neoliberal strategies of governing that have reduced governmental support for public health care, while shifting the burden (and guilt) to individuals.²⁴ Thus, many women are left with fewer options to care for their families. In addition, those women who can afford a range of medical care for their families are obliged to do so, and if they fail to utilize all available options then they are left to blame for burdening the welfare state. Biopolitics is therefore variegated and relational, governing different groups of women in variable ways.

As a mode of biopolitical governmentality, neoliberalism involves explicit market calculations as to whose ways of living, being, and knowing are deemed more valuable than others. Neoliberalism, according to Ong, involves “technologies of subjection,”²⁵ whereby political strategies are designed to regulate populations differ-

ently in order to optimize productivity. Such strategies are increasingly carried out through spatial practices engaged with market forces. For example, global tissue economies increasingly seek out cheaper forms of reproductive labor by enlisting women from the former Soviet Union, China, and South Africa to donate oocytes for use in fertility clinics and experimental research.²⁶ Thus, the optimization of some women's bodies is at the expense of other women's bodies. The United States historically relies on the experimental bodies of women such as Henrietta Lacks from the racially poorest areas of the United States.²⁷ It also depends upon the appropriation of medicinal plant knowledge from indigenous women in India.²⁸ Such practices differ and historically shift, but nevertheless express a continuity of inequality where only certain women's bodies and minds became sites of extraction.

Privatization through patent law may or may not occur in all these instances. Yet, patents can potentially be assigned to products or processes associated with the cell lines extracted from Henrietta Lacks, the chemical compounds derived from indigenous women's medicinal knowledge, or the embryonic stem cells donated by South African women. Technologies of subjection are therefore at work. Some women's bodies and minds are treated as raw material necessary for the development of new medical technologies, which may or may not benefit them. Their human tissue (with its genetic information) and/or indigenous knowledge become the subject of patent ownership. Patent law therefore privatizes some women's bodies and their knowledge over others, while promising innovations that may only be accessible to certain groups. A feminist analysis of patent law therefore must analyze how it is intertwined with technologies of subjection within neoliberal biopolitics. A useful analytical for beginning to develop such an examination is the notion of the public domain.

CONCEPTIONS OF THE PUBLIC DOMAIN

Recent attention in what I consider to be "critical intellectual property studies" has turned to the public domain as a conceptual analytic for thinking through patent law and modes of scientific and cultural production.²⁹ Boyle has theorized the public domain as "outside" of property law or "property's opposite."³⁰ According to his characterization, creative works in the public domain are not controlled by intellectual property rights and are accessible to all. This is different from a "commons" where creative works are controlled by intellectual property rights, but still remain accessible to all because owners freely license their inventions. Critical intellectual property scholars, however, differ in their theorizing of the public domain.

I have argued elsewhere that critical intellectual property studies tends to produce four conceptions of the public domain.³¹ Expanding upon my earlier work, here I critique two of these conceptions by demonstrating more fully how they function in support of biopolitical modes of governing. The preceding discussion also articulates how these conceptions help in structuring a feminist analysis

of patent ownership. Theorizing of the public domain functions as an important analytic for examining patent law struggles across a variety of geopolitical contexts and for understanding how different women are impacted differently. This section introduces and critiques two conceptions of the public domain, which will then be used in the final section to think through two specific patent law struggles.

Open Public Domain

Some critical intellectual property scholarship focuses on bolstering an open public domain. It argues that expansive patent ownership rights are obstructing scientific knowledge production and the fundamental practice of “open science.”³² Scientific ideas and materials formerly in the public domain are now privatized. Scientists are forced to negotiate licensing fees, material transfer agreements, and database access agreements with patent owners. This slows down scientific research, rather than incentivizing it. Stricter patent laws have therefore curtailed the culture of open access and sharing within scientific practice. Scholars point out that patent laws have even restricted access to research ideas and practices for experimental purposes.³³ The domain of material and ideas publically available to scientists is thus shrinking and curtailing research, rather than incentivizing it. Scholarship in this area responds to this problem by arguing for expanding the public domain. What is needed is an open public domain that is committed to “a system of open science, where results are shared, criticized and, ultimately, utilized to push forward the frontiers of knowledge.”³⁴ Patent ownership rights should therefore be scaled back in order to promote a more robust public domain where materials and ideas can be freely accessible and open to scientists. Theorizing of an open public domain, however, has its limitations.

The first is its uncritical acceptance of neoliberal, biopolitical values and its privileging of a certain type of creativity. Conceptions of an open public domain provide a valuable critique against expanding patent law ownership, but can be read as essentially arguing for a free trade model. Creativity, as the argument goes, is best promoted by encouraging the free exchange of materials and ideas supported by a robust public domain. This is considered an alternative to incentivizing creativity by granting temporary patent law ownership. Open sharing of scientific materials and ideas is said to encourage the exchange of ideas among scientists, leading to more and more innovation. Greater value, they argue, should be placed on bolstering an open public domain versus expanding patent rights. Publicly available science databases are commonly cited as ways of promoting a more open public domain such as the GenBank at the National Center for Biotechnology Information. Sharing of DNA sequence information through GenBank, for example, is based upon an open public domain model and is considered the best way to advance genomic research.

Yet, upon critical examination, conceptions of an open public domain emerge aligned with neoliberal, biopolitical strategies. Nature is now optimized through logics of free trade and competition. It is assumed that an open public domain

can bolster circuits of biocapital even further than patent ownership, ensuring the unrestricted trade of human bodily tissue for scientific experiment and commercialization. This engenders more scientific innovations for individuals to choose from in their self-governing efforts at optimizing themselves. Theorizing of an open public domain might question the privatization of scientific ideas and materials, but it does not challenge market logics entirely. In fact, it relies faithfully on market values of freedom and openness to promote innovation. Yet, only certain forms of creativity emerge and prosper in such an economic terrain, primarily an inventiveness that remains mediated by and through market mechanisms.

Privatization through patenting is also not entirely abandoned; it is just deferred. Proponents of an open public domain seem more concerned about patent ownership rights locking up creativity at the temporal stage of its initial inception. An open public domain is meant to incentivize a market-mediated creativity that will eventually lead to patentable products, thus patent law ownership remains sought at a later stage. Uncritical acceptance of values of free trade and privatization unfortunately cloud a discussion of inequality, namely who has access to patented scientific technologies and patent ownership rights.

Second, conceptions of an open public domain also fail to account for modes of power and inequality. Values of openness and sharing can be important in facilitating scientific discovery and access to needed medical care and technology. Yet, such cultures of open science have not been available to everyone. In terms of scientific discovery, female scientists have historically been marginalized within science. In particular, lesbian women and women of color scientists have been excluded from the free exchange of scientific ideas and materials due to continued discrimination against them in the science professions.³⁵ Scientific cultures of sharing and borrowing have also led to the violent exploitation of indigenous peoples, their knowledge, and their lands.³⁶ Given these histories and their contemporary residues, only some female scientists may benefit from an open public domain, and indigenous peoples may in fact be harmed.

Patent inventorship and ownership itself is also structured by histories of gendered and racialized exclusion. Women have historically been less likely than men to be U.S. patent owners.³⁷ Laws of coverture, cultures of domesticity, and bias in the U.S. Patent and Trademark Office partially explain this inequity.³⁸ Additionally, the majority of patent owners who are female have historically been middle-class white women.³⁹ Histories of slavery and Reconstruction-era laws preventing people of color from pursuing certain occupations may explain why fewer women of color own patents than white women.⁴⁰ Unfortunately, women continue to lag behind men in terms of patent ownership today. A 1995 report shows that female scientists hold fewer patents than male scientists in both the academic and commercial sectors.⁴¹ By remaining faithful to the free trade of scientific ideas and materials to encourage future innovation, an open public domain model fails to recognize gendered and racialized relations of power structuring technoscientific production and patent ownership.

Third, an open public domain model obscures recognition of gendered and racialized modes of knowledge production, thereby reinforcing Eurocentric, masculinized styles of thought. Intellectual property law was historically justified through metaphors of men giving birth to wisdom and knowledge.⁴² These metaphors drew upon and contributed to the collusion of masculinization and whiteness with rational knowledge production. Male intellectual labor was privileged over the mere bodily capacity of women's reproductive power.⁴³ Patent law is thus historically embedded within explicit gendered discourses privileging the mind as associated with men, over the body as linked to women and people of color.

This mind/body dualism persists within contemporary patent law. Dan Burk argues that the distinction between tangible and intangible property within intellectual property law means that it is fundamentally about protecting the original idea of the author and inventor.⁴⁴ Extending these arguments further, I would suggest that patent law, in protecting intangible ideas, places value upon scientific creativity characterized by reason and rationality, which are epistemologies associated with masculinization and whiteness.⁴⁵ An open public domain thus fails to recognize that the creativity it seeks to promote is always and already gendered and racialized. Its attention to market-mediated creativity also obscures the importance of and lack of protection for practices of indigenous peoples' knowledge.

Protective Public Domain

Responding to the emphasis on an open public domain, critical intellectual property scholarship also offers an alternative conception of a *protective public domain*.⁴⁶ Such scholarship is aligned with the theorizing of an open public domain. It similarly advocates the expansion of the public domain by limiting intellectual property (IP) rights, enlarging fair use, and requiring compulsory licensing.⁴⁷ In contrast, however, scholarship promoting a protective public domain insists upon exceptions for indigenous individuals and groups who have been traditionally excluded from asserting authorial rights over their knowledge, resources, and culture. It is therefore critical of the expansion of a public domain based upon values of sharing and openness, which can produce harm to indigenous peoples.

Theorizing of a protective public domain takes into account histories of colonialism and imperialism, while seeking to expand notions of authorship beyond its individualism to fully consider indigenous forms of collective knowledge production and creativity.⁴⁸ It stresses the need to consider how, given social hierarchies, information within the public domain is not equally accessible and open to all, thus the need for some elements of protection.⁴⁹ In contrast to an open public domain, a protective public domain challenges articulations of indigenous peoples' knowledge as raw material and recognizes the inventiveness and dynamism of indigenous traditional knowledge.⁵⁰ It is also a flexible concept of the public domain. Conceptions of a protective public domain require flexibility in order to

provide an adequate balance of protection and access to different forms of indigenous traditional knowledge (e.g., artworks versus medicines) in a variety of geopolitical contexts.⁵¹ Coombe thus suggests an “ethics of contingency” recognizing that protection might mean different things to different marginalized groups.⁵² A protective public domain therefore recognizes inequalities and works to protect indigenous peoples’ knowledge from being exploited as raw material.

In contrast to an open public domain model, conceptions of a protective public domain challenge neoliberal, biopolitical modes of governing by placing value upon indigenous peoples’ forms of knowledge and creativity. Normative conditions and discursive framings of free trade and privatization are contested by shifting some control over to indigenous communities. Scholarship in this area argues that free and open sharing of indigenous peoples’ knowledge can be responsible for continuing a legacy of colonial exploitation of their traditional resources.⁵³ Giving indigenous peoples some control over their own knowledge practices is one way to counter this history.⁵⁴ By granting indigenous communities more control through a protective public domain, neoliberal values of freedom become disrupted.

Alternative legal protections are suggested, such as contractual arrangements allowing groups to decide for themselves when, where, how, and to whom they want to grant access to their knowledge.⁵⁵ For example, models for benefit-sharing contracts are proposed, which would require scientists to give indigenous communities money and resources in exchange for access to and possible ownership over indigenous resources. Prior informed consent agreements are also advocated to allow communities to dictate the terms of granting such access to potentially patentable resources. Indigenous peoples’ knowledge becomes privatized in new ways through these contractual arrangements, yet the primary goal of privatization becomes one of protection, rather than profitability *per se*.

By shifting some control to indigenous communities, a protective public domain produces fissures within neoliberal, biopolitical modes of governing by interjecting an alternative ethic of production. Even when such contractual arrangements bring profits to indigenous communities, these “strategies of indigenous incorporation”⁵⁶ serve to challenge Western scientific and capitalist logics. For example, benefit-sharing agreements designed around a protective public domain model theoretically engender a space whereby scientists are expected to negotiate and consult with indigenous communities and to recognize the importance of indigenous epistemologies of science, which run counter to Western philosophies of science undergirding new bioeconomies.

Theorizing of the protective public domain offers the most potentially liberating space right now for indigenous peoples, but more work is yet to be done. In its current theoretical framing, a protective public domain insufficiently addresses complex gendered social relations. It fails to recognize that many indigenous women have fewer opportunities because of the encroachment of patriarchal models of family and governance into their communities from histories of colonialism and new demands of neoliberal globalization. Little attention is paid to

how indigenous peoples' knowledge is gendered and whether or not benefit-sharing agreements serve the interests of indigenous women in the same way as indigenous men.

Some might argue that attention to gendered social relations is not necessary because indigenous communities do not exhibit gendered hierarchies. They might also perceive a gendered analysis of patent law as an imposition of Western feminism. These are legitimate concerns. Western feminism has been used to reinforce indigenous peoples as "Other."⁵⁷ Its close association with the imperial process means that many women, including Native American and African women, refuse to align themselves with feminist movements.⁵⁸ Yet, Native American feminist scholar, Andrea Smith, reminds us that complex processes of both patriarchy and sexism are integral to colonialization.⁵⁹ This means that practices of decolonization must directly address the elimination of sexism. Likewise, theorizing of the public domain and a feminist analysis of patent law should explicitly address complex gendered social relations, sexism, and patriarchy. Such an analysis however must proceed with caution. Gender may not be significant to specific struggles over indigenous peoples' knowledge. Nevertheless, a feminist analysis of patent law asks to what degree it may or may not be relevant.

PATENT LAW AND GENDERED FORMS OF REPRODUCTIVE AND INTELLECTUAL LABOR

Given the variable impact of patent ownership on women's lives, developing a feminist analysis of patent law is a complex endeavor. Patent ownership rights benefit some women and their families, but not others. Patentable subject matter derived from human bodily tissues and plant knowledge are extracted from the bodies and minds of some women, while other women become the beneficiaries of such acts of corporeal and incorporeal appropriation leading to patented medical technologies. Social relations of gender, race, class, ethnicity, indigeneity, nation, citizenship, and colonialism all shape and are shaped by a politics of patent law. Understanding patent ownership as embedded within neoliberal, biopolitical modes of governing clarifies how different groups, and their genetic information and knowledge, are being regulated through such privatization. It enables understandings of how the benefits, appropriations, and exploitations of intellectual properties and patent ownership are distributed unequally.

In particular, an analysis of the public domain can illuminate how women's reproductive and intellectual labor is operationalized, in variegated ways, within new bioeconomies regulated by patent ownership. For example, stem cell researchers deploy oocytes taken from certain women participating in the fertility industry. Cancer researchers study the *BRCA1* and *BRCA2* gene mutations from women with family histories of breast cancer. Additionally, pharmaceutical companies appropriate indigenous women's medicinal plant knowledge with the hope that it

may lead to the next blockbuster drug. Women's bodies and minds are thus put into service and animated for scientific production as new meanings around reproduction and labor emerge. The material conditions and scientific realities of these examples differ, however the specter of patent ownership resides within each. Material derived from women's bodies and minds has the potential to become the object of patent ownership and control by inventor scientists. Yet, patent ownership does not haunt everyone equally. Many women will likely benefit from and take advantage of such patented inventions. Such patented technologies may be utilized in the performing of gendered caretaking work for the health and well-being of their families as obliged through constraints of biopower. The histories, interests, needs, and stakes of each of these groups of women differs dramatically, but a link between them is their labor.

Women are performing new modes of work within bioeconomies structured by patent law rights. Analyzing patent law struggles through the lens of their labor and work enables an examination of how those conditions of labor are diverging, converging, and contradicting as mediated by patent law. To be sure, materials and ideas are also extracted from the bodies of men. Indigenous women in particular share much of the same struggles as the men in their communities against patent law rights. Histories of individual and structural systems of power, however, make it necessary to address gendered social relations and forms of labor within new bioeconomies. Emphasizing conditions of labor admittedly evokes Marxist theories of alienation and Marxist-feminist conceptions of the sex-gender system. Marxist-feminists bring attention to the ways in which females become sources of raw material in the sex and gender division of labor through producing children and conducting domestic work, which results in hierarchal social relations subordinating women.⁶⁰ Feminist critiques by "women of color" also demonstrates how forms of labor and the sex and gender system differ according to race, nationality, sex, and class.⁶¹

Waldby and Cooper argue that examining women's participation in the bioeconomy as labor helps establish connections between the appropriation of women's reproductive and intellectual labor.⁶² I would argue that it also helps with understanding how patent law ownership structures such forms of labor in different and inequitable ways. I would also contend, however, that the line between reproductive and intellectual labor is blurred and unstable. Women who "donate" oocytes for fertility or stem cell research give up their genetic information, knowledge produced by their body for telling cells how to work. Women who "share" their indigenous medicinal knowledge give up their reproductive labor concerning the cultivation and dissemination of plants. Such practices can be understood as forms of labor, albeit variegated. A focus on labor is thus also meant to encourage a distributive justice approach that allocates the burdens and benefits of patent ownership by ensuring the protection of women whose bodily tissue and medicinal knowledge is characterized as public domain material and transformed into patentable subject matter.

In this section, I further develop such understandings by conducting a feminist analysis of two seemingly different patent law struggles. The first involves the patenting of breast cancer genes; the second concerns the patenting of a succulent plant. Although dissimilar, each case represents an important site of inquiry for a feminist analysis and politics of patent law ownership.

Breast Cancer Gene Patents and a Women's Right to Health

In May 2009, the ACLU and Public Patent Foundation filed a complaint against Myriad Genetics, the University of Utah Research Foundation (UURF), and the U.S. Patent and Trademark Office (USPTO) in the District Court of the Southern District of New York. Myriad and UURF hold several patents on breast cancer susceptibility genes issued by the USPTO. Plaintiffs brought the case, *Association for Molecular Pathology, et al. v. USPTO, et al.*, in order to overturn the patenting of DNA containing *BRCA1* and *BRCA2* gene sequences used in the treatment of breast cancer.⁶³ The question at issue for the court was whether or not “isolated human genes and the comparison of their sequences” are patentable subject matter under 35 U.S.C. §101. Ruling on a motion for summary judgment, the court held invalid all 15 claims contained in the seven patents related to the *BRCA1* and *BRCA2* genes. The court reasoned that the isolated DNA at issue was not “markedly different” from a product of nature, namely that of the “native DNA” found within human cells. Ruling against Myriad Genetics, the court therefore put into question the USPTO’s practice of issuing patents on human genes.

However, in July 2011, the U.S. Court of Appeals for the Federal Circuit overturned the lower court decision and ruled in favor of Myriad Genetics. The court concluded that isolated *BRCA1* and *BRCA2* genes do in fact have a markedly different chemical structure than native DNA because they are cleaved and isolated from the covalent bonds that structure them in the human body.⁶⁴ Most recently, the U.S. Supreme Court granted a writ of certiorari and remanded the case back to the U.S. Court of Appeals for the Federal Circuit for further consideration in light of the Court’s 2012 decision in *Mayo Collaborative Services v. Prometheus Laboratories, Inc.*⁶⁵ Scholars are closely monitoring the case as its eventual judicial outcome may invalidate similar patents and stands to potentially alter practices of biotechnology. Given the Supreme Court’s decision to strike down the patents in *Mayo*, the ACLU is hopeful that their initial victory will be restored.

What is interesting about this case, for our purposes here, is its positioning as an issue of women’s rights. It is no coincidence that the plaintiffs strategically filed a case stemming from breast cancer gene patents. Such patents present a most suitable claim for the goal of overturning human gene patents more generally. Challenging the patents as an issue of women’s rights to health generates additional stakes for the court. If it validates the Myriad patents, then the court appears to threaten the lives and health of women. Powerful in its discursive framings, these legal decisions bring questions of biopolitics, patents, and gender to the forefront.

Women are obliged to take advantage of medical technologies to learn their susceptibility to risk and to treat disease. Yet, as medical technologies are mediated by market considerations, women are given limited choices in making those decisions for themselves and their families. A full range of medical technologies is not always made available to individuals, even to those whom can afford it. In regards to breast cancer, Myriad maintains a monopoly over genetic testing for the disease through restrictive patent licenses. This monopoly hinders other companies from developing alternative technical approaches to genetic testing for breast cancer.⁶⁶ Women are therefore given a “choice” to get tested for *BRCA1* and *BRCA2* genes, but their decisions are limited by Myriad’s patent ownership restricting the range of testing available to women. The legal claim against Myriad aims to overturn their patent claims on DNA sequences in order to facilitate the production of additional technical approaches to breast cancer genetic testing.

A coalition composed of the ACLU and several women’s health advocates has launched a powerful and valuable campaign in support of women’s rights to health. Yet, the case provides a limited intervention in support of women’s health because of its biopolitical framing and appeals for an open public domain. Addressing this limitation should not be understood as a criticism of the actors challenging Myriad’s patents. Their work is an important act of feminist solidarity, mobilization, and resistance to the law. Rather, it is a critique aimed at the law’s power to codify dissent into its own language and force oppositional discourses into narrow parameters.⁶⁷ The plaintiffs filing the complaint and advocates submitting amicus briefs are thus compelled to make their arguments within an acceptable language intelligible to the law, a language of neoliberal, biopolitics and an open public domain.

Centered on the metaphor of genes as information, the initial 2009 ACLU complaint argues that Myriad’s *BRCA1* and *BRCA2* patents restrict the flow of information regarding breast cancer research. Women are prevented from receiving genetic information regarding their susceptibility for the disease because testing can only be done through Myriad laboratories. The complaint points out that many women, particularly women of color, cannot afford the testing. This is because patent law provides Myriad with a temporary monopoly over breast cancer testing involving *BRCA1* and *BRCA2* genes, allowing Myriad to keep costs high and to be selective in the types of insurance they accept from patients. The legal complaint also argues that gene patents restrict information sharing among researchers, precluding them from developing alternative tests. Female patients at risk for breast cancer are unable to obtain more meaningful genetic testing, and female scientists are hindered from doing breast cancer research. Thus, women’s labor and participation (and health) in the bioeconomy is curtailed. The ACLU argues therefore for overturning genetic sequence patents and keeping them in the public domain. *BRCA1* and *BRCA2* gene sequences should not be patented, and should remain freely available in the public domain for scientific research.

Similar arguments are made in the initial amicus briefs filed on behalf of the plaintiffs. A coalition of women’s health advocates assert that gene patents “pre-

vent women at risk for breast cancer and ovarian cancer from obtaining the information they need about their own bodies to take steps to improve their health outcomes, and possibly save their own lives and the lives of their children.”⁶⁸ Thus, they argue, it is critical that genetic sequence “knowledge and information are maintained in the public domain.”⁶⁹ In developing a feminist analysis of patent law, one must think carefully how this case leaves neoliberal, biopolitical values unchallenged.

Contemporary biopolitics, as discussed above, obliges women as the primary caretakers to engage in technologies of optimization for themselves and their families. Mechanics of neoliberal, biopolitics argue that patent law is crucial for providing new medical technologies to assist women in the self-management of their health. The ACLU case disputes such claims regarding patent ownership, while leaving biopolitical assumptions intact. The ACLU complaint argues that gene sequence patents actually prevent women from making decisions regarding their health and the well-being of their families. Myriad’s patent ownership rights enable the company to maintain a monopoly control over breast cancer research and testing. Populations of women therefore become regulated differently through legal “technologies of subjection” as high costs and insurance restrictions mean that only some women at risk for breast cancer can obtain testing.⁷⁰ The case therefore argues that excluding gene sequences from patentable subject matter and placing them in the public domain would promote women’s right to health by giving them alternative testing technologies and better breast cancer research. The case however does not go far enough to challenge the styles of thought driving contemporary bioeconomies. The goal of the case is to facilitate women’s access to genetic testing, thus it reinforces biopolitical obligations for women to donate bodily tissues and utilize medical technologies. Biopolitical values are thus simultaneously challenged, while also being upheld.

The legal complaint and amicus briefs make it clear that the plaintiffs are not against patents entirely. In fact, they explicitly agree on patents for genetic testing innovations. What they disagree on is patents over DNA sequences. Foundational to their legal claim is an open public domain model, one in which patent ownership is not suspended, but merely temporally deferred. Faith remains in a neoliberal model of free trade and competition. The ACLU engages within an economy of hope, placing their faith in an open public domain where freely accessible *BRCA1* and *BRCA2* genes will engender research and genetic testing alternatives, while reducing costs and increasing availability for women to receive testing. The foundational assumptions of the case therefore remain within modes of biopolitical governance. Its aim is to give women more testing alternatives, further entrenching women within a field of biopower compelling them to undergo genetic testing and assessing their potentiality as “pre-patients” for breast cancer.⁷¹

Ensuring alternative genetic tests for breast cancer is a worthwhile goal. Concerns over equality and access to such tests continue to be salient. Yet, women are obliged to seek genetic testing within an inequitable terrain that fails to provide

the material resources for all women to receive such testing. It remains unclear if testing technologies will in fact materialize once Myriad's gene patents are invalidated. Even if more testing options do become available, there is uncertainty as to whether or not women will have adequate insurance and levels of income to take advantage of them. It is also unclear if more testing options will lead to more meaningful information for patients and better practices of genetic counseling.

Neoliberal, biopolitics governs the health of populations through narrowly constrained choices involving limited technologies. Resources are devoted to genetic screening, while cancer causing carcinogens remain within the very cleaning products and food supplies women consume on a daily basis. In other words, Western epistemologies of science emphasizing genetic research are upheld through normative scripts of scientific knowledge production, while basic public health initiatives are not prioritized. Therefore the ACLU case, while admirably striving for increasing genetic screening technologies, remains within a field of biopolitics regulating women's bodies and labor within an uneven terrain. Women's rights to health and conditions of labor continue to be constrained.

Alternatively, an amicus brief filed by a coalition involving the Indigenous Peoples Council on Biocolonialism (IPCB) opts for a different approach.⁷² Taking into account the effect of gene patents on indigenous peoples, the amicus brief subtly evokes a protective public domain model. It claims, "gene patents privatize genetic ancestry, making indigenous peoples and patients into 'treasure troves' to be exploited for economic gain."⁷³ The brief notes that indigenous peoples' bodies are transformed into laboring bodies, supplying patentable blood and tissue samples for scientific research, which may not benefit and may even harm their communities. Genetic sequence patents infringe the legal rights of indigenous peoples, making them increasingly vulnerable to patenting of their cell lines. The brief argues that gene sequence patents, therefore, should be considered the "common heritage of humanity" and part of the public domain, thus not considered patentable subject matter.⁷⁴

At first glance, this line of argument seems to adopt an open public domain model, arguing for gene sequences to be openly and freely accessible. Yet, the amicus brief summons up a protective public domain by focusing its attention on problems of informed consent. It references instances where researchers applied for patents on cells lines from indigenous peoples without their consent.⁷⁵ It also mentions the recently settled case between the Havasupai Indians and Arizona State University where researchers used Havasupai DNA for research objectives beyond the scope of the initial informed consent documents.⁷⁶ Attention to issues of informed consent is grounded upon a protective public domain. Authors of this brief are not arguing for genetic sequence information to be freely open and accessible to researchers. They are arguing for genes to be in the public domain, but within a public domain offering protections for indigenous peoples in the manner of prior informed consent agreements based upon indigenous peoples' own styles of thought and ethical frameworks. This would shift control to indigenous

peoples, allowing them to better govern the manner in which genetic research is conducted on their DNA. Such a shift boosts recognition of indigenous forms of governance prescribing protocols for DNA research and the epistemologies informing such protocols.

In terms of women's rights, the brief does not explicitly mention indigenous women. However, filing an amicus brief and entering into coalition with the ACLU and women's health organizations indicates a shared concern over women's rights to health. A separate IPCB brief, however, becomes necessary. Arguments based only on an open public domain would fail to protect indigenous women. Indigenous peoples, including indigenous women, require some control over how their DNA might be accessed and utilized. Arguments based upon a protective public domain model, in which alternative ethical-legal frameworks such as indigenous governance protocols of prior informed consent arise, are more likely to advance indigenous women's rights to health. As caretakers of their families, indigenous women might obtain more control over how scientific research is conducted and more input into how such research might benefit the health of their communities.

Authors of the other amicus brief would likely agree that informed consent and protections are important, yet their legal arguments leave this issue unaddressed. In developing a feminist analysis of patent law, it is important to discern the differential assumptions underlying coalition efforts against gene patents. Examining these points of departure and similarity within the ACLU political mobilization can inform strategies for future coalitions among women's health advocates and indigenous peoples. It can also help make connections to related political campaigns such as patents on indigenous peoples' plant knowledge.

Hoodia Plant Patents and Indigenous Women's Rights to Self-determination

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. 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 1996, South Africa's Council for Scientific and Industrial Research (CSIR) obtained patent rights to *Hoodia's* chemical compositions, and then in 1998 the CSIR granted an exclusive license to Phytopharm to develop *Hoodia* for global commercialization and sale as an anti-obesity product.⁷⁷ Phytopharm, in cooperation with Unilever, 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. However, the journey of *Hoodia* did not stop there. It also flowed through networks of indigenous peoples and nongovernmental organizations working within and against transnational intel-

lectual property policy. Traveling through these spaces of global governance, *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. In 2003 the South African San Council publicly condemned CSIR's patenting of *Hoodia* 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 *Hoodia* for weight loss. Expectations of a financial windfall to the San, however, have plummeted since Unilever announced in late 2009 they were dropping all plans to develop *Hoodia* products.

Struggles over the patenting of *Hoodia* are much more complex than this brief account. Yet it does begin to suggest potential paths of inquiry for developing a feminist analysis of patent ownership and related benefit-sharing agreements. For example, how is San knowledge and cultivation of the plant gendered? How did San women participate in the benefit-sharing negotiations? How do San women benefit from the contractual agreements with CSIR? How is *Hoodia* marketed in gendered ways? How does the patenting of *Hoodia* place U.S. women in relation to San women? Based on qualitative research in 2009 in South Africa, narratives from social actors closely involved in political organizing around the patenting of *Hoodia* reveal some answers to these questions.⁷⁸ A more comprehensive analysis of these narratives of course is needed, but an initial discussion suggests sites for feminist analysis of patent law located around questions of labor.

Attention has focused on increasing awareness of women's contributions to indigenous knowledge and practices as a means of supporting indigenous peoples' rights to self-determination.⁷⁹ Such acknowledgment becomes important in the case of *Hoodia*. Some members of the ꞤKhomani San articulate gendered forms of knowledge regarding *Hoodia*. Responding first that both men and women have similar knowledge of *Hoodia*, they go on to explain that ꞤKhomani San women use the plant to ease breast-feeding and to treat gassiness in babies. Gendered narratives of *Hoodia* thus suggest a relationship between the plant and the reproductive labor practices of ꞤKhomani San women. In addition, both ꞤKhomani 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. ꞤKhomani San knowledge regarding *Hoodia* is therefore described in complex gendered ways that necessitates further study.

In contrast, the herbal supplement industry espouses masculinized, market-mediated narratives of *Hoodia* as used by San male hunters. Activated through neoliberal circuits of capital dependent upon narratives of difference, the industry brings into service the script of the San male hunter in order to sell *Hoodia*. Through this globalized circulation of the hunting narrative, ꞤKhomani San women's reproductive and intellectual labor around *Hoodia* becomes obscured. Lawyers and

environmental activists working on behalf of the community also tend to describe *Hoodia* as an appetite-suppressant used by San male hunters. Through their adoption of the hunting narrative, lawyers and environmental activists unwittingly contribute to the invisibility of ꞆKhomani San women's labor as they travel within their respective transnational professional circuits articulating masculine, market-mediated narratives of *Hoodia* as used by San male hunters.

Given how San women's labor is obscured, recognition of their knowledge and practices becomes a valuable counterhegemonic strategy. Such acknowledgment can work to disrupt neoliberal mechanisms constructing what counts as valuable knowledge regarding the plant. Whether it is the patentable knowledge of *Hoodia* chemical compositions by CSIR scientists or the indigenous knowledge of the plant by the San male hunter, both are strategically deployed to serve the interests of biocapital production. Recognizing the subjugated knowledge of ꞆKhomani San women can act as a countermeasure against this deployment. As Chandra Mohanty points out, "[u]ncovering and reclaiming subjugated knowledges is one way to lay claim to alternative histories."⁸⁰ It also enables a broader feminist examination of ꞆKhomani San women in relation to other women. ꞆKhomani San women use *Hoodia* as a biodiverse resource in the caring of their families. Thus, they are similarly engaged and obliged to care for the health of themselves and their communities. Yet, their obligations are more deeply constrained. Neoliberal modes of governing in South Africa remain structured by histories of colonialism and apartheid. This ensures the continued exploitation of the San as inexpensive surplus labor for local farms and scientific research, while failing to provide them with sufficient food, water, shelter, education, and health care.⁸¹ Acknowledging ꞆKhomani San women's knowledge produces understandings of the biopolitical conditions in which their labor functions, while providing insights for improving their rights to self-determination. A transnational feminist inquiry emphasizing relationality can also be directed toward examining the marketing of *Hoodia* as a weight-loss product.

Patent ownership signals biocapital value, inciting new circuits of production, which employ gendered and ethno-racialized narratives to sell products. Knowledge of CSIR's patenting of *Hoodia* stimulated its inception as a weight-loss product for the herbal supplement industry. Commercialization of *Hoodia* then generated a stream of global images marketing *Hoodia* to consumers through magazines, web sites, and e-mail communications. Tracing the commercial advertising of *Hoodia* reveals how the plant is marketed through stereotypical images constructing and reinforcing Eurocentric and gendered hierarchies. Deconstructing how patent law functions in this manner, and the circulation of images it engenders, is vital for a feminist transnational analysis of women's reproductive and intellectual labor.

For example, *Hoodia* is advertised as a "natural," "authentic," "tribal," "South African" weight-loss remedy evoking colonial narratives of the Other. Advertisements contain stereotypical images of seemingly, white Western women's bodies embodying 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 in “tribal” dress and sporting hunting bows. 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. On one level, images of white women’s bodies operate as symbols of beauty, which works to exclude women whose bodies do not fit this ideal image of appearance, thinness, and whiteness. 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. Deconstructing these narratives contributes to a feminist analysis of the relationality of women’s labor within new bioeconomies and informs a discussion of benefit-sharing agreements and patent law as value system.

Patent ownership acts as a legal conduit—firing up, sustaining, and securing the flow of norms and values passing through and shaping channels of biocapital markets. Rose contends that contemporary bioeconomies mediated through forms of biopower involve a new molecular style of thought whereby tissues and molecules are stripped “of their specific affinities to a disease, to an organ, to an individual” and regarded as “delocalized” in order to be mobilized into new circuits of biocapital.⁸² Patent law optimizes nature by isolating and purifying genetic and biological material from its natural or “native” state. Codified through patent ownership, norms of delocalization and fragmentation are therefore incited to travel within mechanisms of neoliberal, capital production.

Contractual benefit sharing can act as a circuit breaker within patented flows of capital. Indigenous peoples can negotiate benefit-sharing agreements to temporarily stop the currents of patent ownership from flowing too strongly in the directional favor of scientists, corporations, and universities. Such agreements may not stop patent rights from being assigned to inventor scientists, but they can disrupt the operation of patent law as a medium for ethical norms and values, which privileges Western scientific knowledge production and signals what is new, novel, and ready for capital consumption. Benefit-sharing agreements fall within the scope of a protective public domain. Proponents of benefit-sharing agreements contend that genetic and biological materials derived from indigenous peoples should not be freely accessible within an open public domain. Indigenous peoples’ knowledge, resources, and culture should be safeguarded through new legal technologies such as benefit-sharing contracts and, as noted in the ACLU case, prior informed consent agreements. Benefit-sharing agreements can be important not only as a means of protection, but as a strategy of resistance against hegemonic practices of science.

Contractual benefit sharing, in theory, provides a channel for indigenous ethical models to travel and interject upon scientific knowledge practices in various ways.⁸³ Scientists are forced to recognize a different style of thought connecting and reconnecting the affinities between the organ, the body, the individual, the land, and the community. For example, †Khomani San men and women describe

the *Hoodia* plant as “life.” The patenting of plant properties, therefore, to the ꞤKhomani San, involves the ownership and commodification of a being rather than inert raw material.⁸⁴ In negotiating a benefit-sharing agreement with scientists and patent owners, the ꞤKhomani San introduce their own epistemologies of relationality into the debate over the patenting genetic and biological materials. This should include ꞤKhomani San women’s reproductive and intellectual labor and the explicitly gendered knowledge practices related to *Hoodia*. By introducing indigenous epistemologies, important questions arise, challenging the new molecular style of thought within contemporary biopolitics. Where do the borders between a plant and its molecular properties begin and end? Where do the boundaries between ancestral DNA, tribal members, sacred lands, and symbolic plants start and stop? Who draws the lines and for whose benefit? These questions go to concerns over how benefit sharing might change science by introducing indigenous ethical frameworks as intervention into dominant neoliberal paradigms of scientific knowledge production.

The scope of this challenge does not amount to a “radical rupture” of scientific practices of bioprospecting or the neoliberal, biopolitical modes that govern such practices.⁸⁵ The degree to which San epistemologies actually travel and create lasting institutional change within science remains unclear. Social actors closely involved in *Hoodia* negotiations tend to agree that the benefit-sharing contract brought recognition to the San peoples, yet they disagree on whether or not it changed scientific practices within CSIR or its partners. I would argue, however, that a protective public domain and its associated contractual arrangements opens up space for multiple points of resistance against biopolitical modes of power, albeit in limited ways. The San may choose to enter into a benefit-sharing agreement and become stakeholders in the commercialization of *Hoodia*, whereas Native Hawaiians may forego benefit sharing and contest the patenting of the taro plant entirely.⁸⁶ Although their strategies differ, each one makes up an important node within a “swarm of points of resistance.”⁸⁷ In contrast to an open public domain, a protective public domain offers space for resistance against expanding patent laws in order to safeguard and reclaim indigenous knowledge, resources, and culture as well as recognize indigenous women’s contributions.

Examining *Hoodia* in this manner stretches critical analyses of patent law to address complex gendered relations. It takes us beyond a doctrinal legal examination to ask how patent law operates as an ethical norm, a conduit for gendered values and norms to travel through neoliberal, biopolitical channels of governance. How does the patenting of *Hoodia* privilege Western scientific knowledge production over indigenous peoples’ knowledge of the plant? How might models of benefit sharing increase recognition for indigenous epistemologies regarding *Hoodia*, including San women’s knowledge? How might benefit sharing provide a space for developing new modes of governance advancing San women’s rights to self-determination? How does the patenting of an object enable the production of new circuits of biocapital powered by familiar configurations of

sexist, racist, and colonial representations of women's bodies? How does patent law place groups of women in relation to each other, simultaneously creating new hierarchies and spaces for political coalition? These questions offer guideposts for future research examining the sociolegal and cultural significance of patent law on the lives of indigenous peoples, women, and their families. This focus on recognition, governance, and gendered relationality is not meant to supplant the important question of whether or not benefit sharing has actually transferred monetary income to indigenous peoples. Rather, it contributes to the valuable work already produced around this question.⁸⁸ Attention to questions of monetary transfer, however, can obscure understandings of benefit sharing more broadly and its relationship to patent law as value system. For example, even in the midst of failure, when *Hoodia* benefit sharing resulted in no money to the San, several ǀKhomani San articulated the contractual arrangement as a success and as a pathway toward political and economic recognition. Such an understanding is important for developing robust IP policy that responds to the needs and concerns of indigenous women and men. Examining the links between the patenting of *Hoodia* and breast cancer genes is one step toward developing a feminist analysis of patent law.

CONCLUSION

An important focal point connecting, disconnecting, and unsettling the ACLU case with the patenting of *Hoodia* is the question of women's labor. Waldby and Cooper suggest that liberal regimes of property can be challenged by explicitly recognizing women's egg donation for fertility and stem cell research as a form of reproductive labor.⁸⁹ Contemporary property law is grounded upon Locke's assertion that when one mixes their labor with natural resources a property relation arises.⁹⁰ Such notions of property are used to deny the property rights of tissue donors by characterizing them as "naturally" occurring, while advancing the rights of scientists who manipulate the tissues in the laboratory.⁹¹ Waldby and Cooper therefore argue "to understand the production of reproductive tissues explicitly as work confounds this distinction, and links up reproductive labor with other forms of subordinated and devalued labor in the husbandry and ordering of natural resources, especially by indigenous peoples."⁹² Forms of women's reproductive and intellectual labor are therefore connected through similar mechanisms within neoliberal bioeconomies. This understanding is crucial to a feminist analysis of patent law.

The extraction of *BRCA1* and *BRCA2* genes for breast cancer research can be linked to indigenous women's knowledge of natural resources such as *Hoodia*. Both include forms of gendered labor that are characterized as naturally occurring "raw material" found in the public domain and available for patenting. Discourses of feminization shape what is to be considered valuable knowledge worthy of patented ownership, versus knowledge that should be relegated to the public domain

as raw material. Patent law is meant to stimulate innovation, but not all forms of creativity and labor are considered worthy of promoting. Creativity that is new, novel, and industrial is what is prized for supporting biocapital production and biopolitical forms of governing. Less “valuable” forms of creativity and labor are to remain in the public domain. Neoliberal mechanisms actually depend upon the location of gendered and indigenous reproductive and intellectual labor within the public domain to ensure access to such knowledge and resources. By constructing these forms of knowledge and labor as naturally occurring and devaluing them, it ensures the flexible and strategic use of gendered and indigenous forms of creativity at a low cost. Therefore, drawing upon Waldby and Cooper, I would argue for a feminist analysis of patent law addressing women’s participation in these new circuits of patented biocapital as distinct forms of labor.

Patent law impacts different women differently, thus it requires a nuanced feminist approach. Focusing on issues of women’s labor serves as a pivotal focal point for examining the variable implications of patent ownership. For example, obtaining patent ownership can be an achievement for a female life scientist fighting against sexism and racism within her profession. It can also be an accomplishment for indigenous women wanting to control their traditional knowledge. In fact, the World Intellectual Property Office, in recognizing this, has developed specific programs devoted to issues of women, inventorship, and intellectual property.⁹³ Yet, patent ownership can also be considered a violation of women’s human rights. The ACLU case asserts that breast cancer gene patents threaten women’s rights to health. Indigenous women’s social movements also assert patent law as a violation of indigenous women’s rights.⁹⁴ Furthermore, patent law’s impact can be ambivalent. Such is the case of *Hoodia*, where benefit sharing gives the San some recognition, but is limited in its power to create real structural changes benefiting the San. Considerations of and objections to patent law are thus varied.

One way to address each of these particular concerns is to frame a feminist inquiry around the devaluation of women’s reproductive and intellectual labor. Both female scientists and indigenous women may desire patent ownership as a way to legitimize their labor and knowledge practices, which have been devalued and discriminated against. In contrast, women at risk for breast cancer and other indigenous women may condemn patent ownership in order to stop the exploitation of women’s bodies and knowledge as “raw material” for privatization. In the case of breast cancer gene patents, women’s labor may include making decisions on behalf of their family to obtain genetic testing. The ACLU lawsuit aims to stop the patenting of DNA material. Patenting of indigenous knowledge also involves women’s labor. As in the case *Hoodia*, San women participate in the cultivation and dissemination of knowledge regarding the plant and are responsible for the health of their families. The goal of the *Hoodia* benefit-sharing agreement is not against the patenting of *Hoodia*, but to ensure San men and women receive compensation from the successful commercialization of patented inventions related to the plant. The political strategies may differ in these cases, but

they each attempt to respond to the exploitation and devaluation of bodies, labor, and knowledge within neoliberal, biopolitics.

A focus on labor does not conflict with an emphasis on noncommodification. A feminist analysis and politics of patent law through labor can generate understandings of patent law struggles and their differing gendered social relations and inequalities. A focus on labor exposes the unequal ways in which global capital and related processes of commodification move and circulate. It also produces insights for critical discussions regarding gender and distributive justice. How might knowledge holders be compensated for their labor contributing to intellectual properties? How might methods of compensation be structured to reduce gendered social inequalities? More importantly, is distributive justice through allocation of monetary interests the appropriate strategy toward justice? A critical feminist analysis of intellectual property rights through a lens of labor can begin to address the divergences, convergences, and contradictions within and across a variety of patent law struggles, while keeping possibilities open for political coalition and mobilization against the encroachment of patent ownership on the lives of women and their families.

ENDNOTES

1. Waldby and Cooper, "The Biopolitics of Reproduction,"
2. Shiva and Moser, *Biopolitics*.
3. Rai and Eisenberg, "Bayh-Dole Reform"; Biagioli and Galison, *Scientific Authorship*; Dreyfuss, "Protecting the Public Domain of Science"; Boyle, *The Public Domain*; Brush and Stabinsky, *Valuing Local Knowledge*; Coombe, *The Cultural Life*; Hayden, *When Nature Goes Public*; Brown, *Who Owns Native Culture?*; Greene, "Indigenous People Incorporated?"; Pottage, "The Inscription of Life in Law"; Kang, "An Exploration into Law and Narratives"; Strathern, "The Patent and the Malangan" and "Cutting the Network."
4. Although the term *Hoodia* more accurately refers to the *Hoodia gordonii* plant itself, the plant is commonly referred to and has taken on meaning within broader intellectual property struggles as *Hoodia*. The South African ǀKhomani San refer to the plant as both *Hoodia* and *!xhoba*.
5. Hayden, *When Nature Goes Public*, 48.
6. Sunder Rajan, *Biocapital*.
7. Merges and Duffy, *Patent Law and Policy*.
8. Foucault, *The History of Sexuality*, 138.
9. Foucault, *The History of Sexuality*, 141.
10. Foucault, *The History of Sexuality*, 93.
11. Foucault, *The History of Sexuality*, 144.
12. Rose, *The Politics of Life Itself*, 11; Haraway, *Modest_Witness*, 49–118.
13. Rose, *The Politics of Life Itself*, 13–15.
14. Rose, *The Politics of Life Itself*, 17.
15. Haraway, *Simians, Cyborgs, and Women*, 161.
16. Haraway, *Modest_Witness*, 90.
17. Rose, *The Politics of Life Itself*, 29.
18. *Moore v. Regents of the University of California*, 51 Cal. 3d 120, 793 P.2d 479, 271 Cal Rptr. 146 (1990).
19. Rose, *The Politics of Life Itself*, 27.
20. Rose, *The Politics of Life Itself*, 64.
21. Rose, *The Politics of Life Itself*, 29.

22. Bumiller, "The Geneticization of Autism"; Roberts, "Race, Gender, and Genetic Technologies"; Franklin and Roberts, *Born and Made*.
23. Franklin and Roberts, *Born and Made*; Waldby and Cooper, "The Biopolitics of Reproduction."
24. Roberts, "Race, Gender, and Genetic Technologies," 799.
25. Ong, *Neoliberalism as Exception*, 6.
26. Waldby and Cooper, "The Biopolitics of Reproduction," 59.
27. Skloot, *The Immortal Life of Henrietta Lacks*.
28. Waldby and Cooper, "The Biopolitics of Reproduction"; Shiva and Moser, *Biopolitics*.
29. Lange, "Recognizing the Public Domain"; Lange, "Reimagining the Public Domain"; Litman, "The Public Domain"; Benkler, "Through the Looking Glass"; Samuelson, "Enriching Discourse on Public Domains"; Boyle, *The Public Domain*.
30. Boyle, *The Public Domain*, xiv; Boyle, "Foreword."
31. Foster, "Situating Feminisms, Patent Law, and the Public Domain."
32. Boyle, *The Public Domain*; Rai and Eisenberg, "Bayh-Dole Reform"; Reichman and Uhler, "A Contractually Reconstructed Research Commons"; Dreyfuss, "Protecting the Public Domain."
33. Dreyfuss, "Protecting the Public Domain."
34. Dreyfuss, "Protecting the Public Domain," 464.
35. Hynes, "Toward a Laboratory of One's Own"; Subramaniam, "Snow Brown and the Seven Detergents"; Zuckerman, "The Careers of Men and Women Scientists."
36. Schiebinger, *Plants and Empire*; Shiva, *Biopiracy*.
37. Khan, "Not for Ornament," 164.
38. Merritt, "Hypatia in the Patent Office," 295–305.
39. Merritt, "Hypatia in the Patent Office," 304.
40. Merritt, "Hypatia in the Patent Office," 304.
41. Whittington and Smith-Doerr, "Gender and Commercial Women's Patenting in the Life Sciences," 355.
42. Halbert, "Feminist Interpretations of Intellectual Property," 449.
43. Pollack, "Towards a Feminist Theory of the Public Domain," 606–07.
44. Burk, "Feminism and Dualism in Intellectual Property," 186–90.
45. Haraway, *Simians, Cyborgs, and Women*; Harding, *Whose Science? Whose Knowledge?*; Traweek, *Beamtimes and Lifetimes*.
46. Coombe, *The Cultural Life* and "Fear, Hope, and Longing"; Chander and Sunder, "Romance of the Public Domain"; Sunder, "The Invention of Traditional Knowledge"; Long, "Traditional Knowledge."
47. Coombe, "Fear, Hope, and Longing."
48. Coombe, "Fear, Hope, and Longing."
49. Chander and Sunder, "Romance of the Public Domain," 1341.
50. Sunder, "The Invention of Traditional Knowledge," 110–12.
51. Long, "Traditional Knowledge," 322.
52. Coombe, *The Cultural Life*, 297–99.
53. Schiebinger, *Plants and Empire*; Coombe, "Fear, Hope, and Longing."
54. Greene, "Indigenous People Incorporated?"; Conklin, "Shamans Versus Pirates in the Amazonian Treasure Chest."
55. Chander and Sunder, "Romance of the Public Domain," 1365–70.
56. Greene, "Indigenous People Incorporated?," 213.
57. Moreton-Robinson, *Talkin' Up to the White Woman*; Ouellette, *The Fourth World*; Green, *Making Space for Indigenous Feminism*.
58. Jaimes and Halsey, "American Indian Women"; Tripp, *African Women's Movements*.
59. Smith, "Native American Feminism, Sovereignty and Social Change," 98.
60. Haraway, *Simians, Cyborgs, and Women*, 137–48.
61. Haraway, *Simians, Cyborgs, and Women*, 137–48.
62. Waldby and Cooper, "The Biopolitics of Reproduction," 67.
63. Association for Molecular Pathology, et al. v. USPTO, et al., 09 Civ. 4515 (S.D.N.Y., 2010).

64. Association for Molecular Pathology, et al. v. USPTO, et al., 653 F.3d 1329 (Fed. Cir. 2011) (ruling in favor of Myriad Genetics based on decision that *BRCA1* and *BRCA2* genes were in fact markedly different from native DNA).
65. Association for Molecular Pathology, et al. v. Myriad Genetics, Inc., et al. 132 S.Ct. 1794 (2012) (petition for writ of certiorari granted, judgment vacated, and case remanded to U.S. Court of Appeals for the Federal Circuit); Mayo Collaborative Services v. Prometheus Laboratories, Inc., 132 S.Ct. 1289 (2012).
66. Kane, "Molecules and Conflict," 330.
67. Kang, "Law and Narratives," 245.
68. National Women's Health Network et al., "Brief for Amici Curiae—Association for Molecular Pathology v. USPTO and University of Utah Research Foundation," (2009): 1.
69. Network et al., "Brief for Amici Curiae," 3.
70. Ong, *Neoliberalism as Exception*, 6.
71. Rose, *The Politics of Life Itself*, 19–20.
72. Authors of the brief in addition to IPCB are the International Center for Technology Assessment, Greenpeace, and the Council for Responsible Genetics. The International Center for Technology Assessment et al., "Brief for Amici Curiae—Association for Molecular Pathology v. USPTO and University of Utah Research Foundation," (2009).
73. Technology Assessment et al., "Brief for Amici Curiae—Association for Molecular Pathology v. USPTO and University of Utah Research Foundation," 4.
74. Technology Assessment et al., "Brief for Amici Curiae," 11.
75. Examples cited include researchers studying the Guyami of Panama, the Hagahai of Papua New Guinea, and the Melanese of the Solomon Islands. Technology Assessment et al., "Brief for Amici Curiae," 19.
76. Amy Harmon, "Indian Tribe Wins Fight to Limit Research of its DNA," *New York Times*, 21 April 2010, (<http://www.nytimes.com/2010/04/22/us/22dna.html?ref=us>) accessed 8 May 2010.
77. Wynberg et al., *Indigenous Peoples, Consent and Benefit Sharing*.
78. The †Khomani San are just one community among a network of San peoples across Southern Africa, which also include the San tribes of the Khwe and !Xu in South Africa. Research involving San communities was limited to interviews with members of the †Khomani San in Upington and Andriesville, South Africa because of the presence of several individuals closely involved in *Hoodia* negotiations.
79. Appleton et al., "Claiming and Using Indigenous Knowledge"; Swaminthan, *Gender Dimensions in Biodiversity Management*; UNEP, "Women and Biodiversity."
80. Mohanty, *Feminism without Borders*, 196.
81. Becker, "The Least Sexist Society?" and "Towards a SASI Gender Strategy."
82. Rose, *The Politics of Life Itself*, 15.
83. Hayden, "Bioprospecting's Representational Dilemma."
84. Wynberg, "Rhetoric, Realism and Benefit Sharing."
85. Foucault, *The History of Sexuality*, 96.
86. Ritte and Kanehe, "Kuleana No Holoa [Responsibility for taro]; Harry and Kanehe, "The BS in Access and Benefit Sharing (ABS)."
87. Foucault, *The History of Sexuality*, 96.
88. Finger and Schuler, *Poor People's Knowledge*; Dutfield, *Intellectual Property, Biogenetic Resources, and Traditional Knowledge*.
89. Waldby and Cooper, "The Biopolitics of Reproduction," 67.
90. Locke and Laslett, *Two Treatises of Government*.
91. Waldby and Cooper, "The Biopolitics of Reproduction," 67.
92. Waldby and Cooper, "The Biopolitics of Reproduction," 67.
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