

COMMUNICATION AND CULTURE - MASTER'S RESEARCH PAPER

MA Master's Research Paper

IN DEFENSE OF TRADITIONAL KNOWLEDGE:

THE CASE OF *BT* BRINJAL AND CHALLENGES TO THE INTERNATIONAL INTELLECTUAL
PROPERTY AGENDA

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Abstract

Theories on the globalization and harmonization of intellectual property law tend to take a state-level approach when discussing the impacts of large-scale harmonization of patent laws on developing countries. This paper uses a case study of the Indian experience of adapting to international treaty-mandated changes to domestic patent law and the 2011 announcement of an IP lawsuit over the alleged biopiracy of genetic material from a traditional Indian plant variety, and connects the experience of an individual country to the wider body of research and theory that exists on the relationship between IP and development for non-Western countries. The paper also provides a discourse analysis of the public reaction, as covered by English-language Indian newspapers, to the lawsuit launched against Monsanto, the Maharashtra Hybrid Seed Company, the University of Agricultural Sciences, Dharward, and the Tamil Nadu Agricultural University by the governmental organization the National Biodiversity Authority over the development of the transgenic *Bt* brinjal crop.

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Introduction

Since making its way onto the global trade agenda following negotiations at the end of the Uruguay Round in 1994, the international regulation of intellectual property (IP) law has assumed a controversial role in the flow of goods and capital across borders. The use of IP laws to privatize and commodify knowledge has been explained in the overall context of the neoliberal push towards privatization, and yet (somewhat paradoxically) intellectual property rights (IPRs) have mandated the introduction of an unprecedented level of new legislation to an era supposedly dedicated to deregulation. As the mechanism by which transnational corporations and developed countries can buy and sell knowledge, the control of intellectual property is closely linked to the control of the global economy. Over the last twenty years, a series of battles have been fought between the existing private sector powers, who wish to continue the quest of privatizing the public domain, and those members of the public fighting to redress existing inequalities in the global intellectual property system.

The existing critical literature, as I will discuss in Section II, tends to focus on the manner in which the global intellectual property system was influenced by corporate lobby groups, and focuses on how TRIPS was created to support the interests of the United States, Europe, and transnational corporations with large IPR portfolios. Though a body of literature exists which examines the flexibility that developed countries have been given when bringing their national laws into conformance with the new international standard, fewer studies have assessed how the international intellectual property infrastructure might be used to serve alternative interests. In light of an ongoing lawsuit launched by a branch of the Government of India against the Monsanto Corporation, can we begin to observe evidence that an agreement so heavily criticized for negatively impacting developing countries might be used for their protection? Although the Indian lawsuit is an unprecedented example of a developing country suing a transnational corporation for intellectual property violation, I propose

that this provides only qualified evidence that TRIPS can support the interests of developing nations. The existing legal infrastructure that allowed India to launch its lawsuit was based on a domestic *sui generis* system in place due to flexibilities offered by TRIPS, rather than the TRIPS agreement itself.

This paper will trace a link between IP infrastructures and the neoliberal ideology of privatization; it will discuss the emergence of activist counterpublics engaged in challenging the dominant ideology that supports the strengthening of IP law; and it will trace the history of struggles against biopiracy in India to investigate the problems that the protection of traditional knowledge pose to both the global intellectual property system and the discourse working to undermine the theoretical foundations. Section I will involve an analysis of the relevant literature on the internationalization of intellectual property laws and the effects that the harmonization of IP legislation are having on developing countries. Section II will provide an explanation of the theoretical framework that will be employed and will cover the methodology used by this paper. Section IV will consist of a history of controversies over plant-related patents in India from 1995 to present, and the changes to Indian domestic patent law that occurred during this period, either in response to the efforts of these groups and actors, or as a result of pressure from lobbyists, the international community, or corporate actors defending the interest of rights-holders.

Section IV will pursue a similar line of inquiry as Section III, with a specific focus on the discourse surrounding a recent controversy over the commercialization of a transgenic pesticide-resistant eggplant variety called *Bt* brinjal, and anxieties over seed monopoly and foreign ownership of IP rights in India. It will provide an overview of the 2011 lawsuit launched by the Indian government's National Biodiversity Authority (NBA) against the biotechnology multinational Monsanto Corporation, the Maharashtra Hybrid Seed Company (Mahyco), the Tamil Nadu Agricultural University, and the Dharwad University of Agricultural Sciences, for the alleged piracy of a traditional

Indian eggplant variety. In this section, the paper will discuss the mobilization of domestic and international actors against the foreign ownership of indigenous plant genes, and will include a discourse analysis of how the concept of intellectual property is used and the issues are framed by each group. The final section of the paper will consist of a conclusion discussing whether the widespread mobilization of Indian interest groups and international NGOs over biopiracy issues might suggest that the existing intellectual property system can be negotiated to serve alternative interests, and whether we may intimate the emergence of a shift in the global balance of power away from neoliberal privatization and towards new defences of public knowledge.

Section I: Literature Review

This section will provide a survey of the existing literature on international intellectual property law, examining both the economic justifications for the globalization of IP rights, and the critical literature that predicts negative social and economic impacts for developing countries. The purpose of this section will be to provide a summary of the debate in order to contextualize the central issues behind India's biopiracy lawsuit. The basic disagreement about the intellectual property system lies between those who adopt a neoclassical economic perspective, which sees intellectual property rights as incentives for innovation and development, and a critical political economic perspective, which maintains that high standards of intellectual property protection can stunt development for those countries that are not already substantially engaged in knowledge production.

Several key terms will be used throughout this paper, including intellectual property rights (IPRs) and their harmonization, traditional knowledge (TK), access to knowledge (A2K), bioprospecting, and biopiracy. Harmonization of IPRs refers to the process of a country updating their domestic intellectual property laws to make them compliant with the TRIPS requirements. Traditional knowledge (TK) refers to knowledge that is held by indigenous communities, which can elude TRIPS-protection due to its oral, public, or non-scientific nature. Bioprospecting refers to the process of Western institutions tapping into traditional communities for patentable information, while "biopiracy" is a term employed by critics to undermine the legitimacy of this practice. Access to knowledge (A2K) is a categorical term used by theorists to describe the disjointed groups that are emerging in opposition to TRIPS and the Western standard of intellectual property protection.

Although the literature concerning the intersection between the globalization of IPRs and the protection of traditional knowledge is spread across disciplines, many scholars working in this field connect their discussion of global intellectual property regulation to the neoliberal economists of the

1980s who helped get IP protection on the global trade agenda. Since the establishment of World Trade Organization's (WTO) Trade Related Aspects of Intellectual Property Rights (TRIPS) Agreement in 1995, a growing number of scholars from disciplines as varied as law, economics, sociology, political science, international relations, geography, post-colonial studies and cultural studies have attuned themselves to IPR-issues, the perceived asymmetries that arise as a result of harmonizing laws on an international scale, the connections between rights-holder lobbyists and government regulatory bodies, the altered nature of private and public domains, and the effects that strict IP laws have on the availability of knowledge on a global scale.

Legal, philosophical and ethical debates surrounding patents and copyright have been ongoing for hundreds of years, with royal grants of patents and privileges for the purpose of exclusivity a practice dating back to the Gutenberg-era printers or even Venetian glass-makers of the Middle Ages (May, 2002). Yet the genealogy of modern thought on IPRs and patents can be traced to 20th century economic texts that borrow from various strands of enlightenment philosophy. The dominant justification of intellectual property law emerges from the neoclassical school of economics. Proponents such as Demsetz (Demsetz, 1967) and later Mansfield (Mansfield, 1982) are concerned with how patents affect market behaviour, and see IPRs as a means to achieve perfect competition and create incentives for research and invention. The neoclassical argument was famously made by Joseph Schumpeter in *Capitalism, Socialism and Democracy* (Schumpeter, 1942, as cited by Lopez, 2009), and later expanded upon by Kenneth Arrow, who argued that firms are discouraged from production unless they are assured protection against reverse engineering and cheap duplication once the invention has been made public (Arrow, 1962). Schumpeter, who saw economies as dynamic and constantly disrupted by innovation and technological change, argued that a temporary monopoly power for innovators was justified on the grounds that only the expectation of deriving profit from inventions

would encourage the continuing progress of research and development.

The neoclassical justification for patents maintains that if no appropriate system exists to protect the rights of the innovator, those involved in creative production will be at a serious disadvantage with respect to their competitors, who only need to cover the cost of reproduction and distribution. According to Demsetz, IPRs act as a form of incentive to offset the negative externalities caused by piracy and free-riding (Demsetz, 1967). The large overhead costs involved in the production of research and development actually puts innovators at a disadvantage. On a global level, this is the argument that is employed to justify the imposition of strict IP laws onto developing societies (Singh, 2002). Those advocating the harmonization of intellectual property laws on an international scale recourse to this line of argumentation, as former World Intellectual Property Organization (WIPO) director Kamil Idris does when he claims that "intellectual property is now one of the most valuable, or often the most valuable, asset in commercial transactions," (Idris, 2002; 7) and that adopting the appropriate IP infrastructure will help developing countries boost their research and development sectors and become as, the title of WIPO director Kamil Idris' book suggests, a "power tool for economic growth" (Idris, 2002).

By contrast, the utilitarian perspective shares the concern with market efficiency, but contends that intellectual property rights should and do operate as a means of maximizing overall social good. Though suspicious of monopolies, John Stuart Mill spoke in defense of patents as, according to Dutfield and Suthersanen, "arguably remaining one of the most efficient means by which to secure beneficial industrial progress at minimum social cost" (2008; 50). Mill's utilitarian perspective maintains that the inventor is entitled to a reward for his intellectual and physical labour, and that the granting of a patent for a limited time can offset the imbalance that exists between initial producers (with high fixed costs) and reproducers of inventions (with low fixed costs). Introducing a legal right to

exclusivity balances things out so that creators are not discouraged from profiting from their own inventions (Posner, 1969; Landes and Posner, 1989). Studies stemming from this perspective are typically concerned with achieving a balance between compensating the inventor and the potential social costs that can arise from high, monopoly-based prices (Nordhaus, 1967; Mansfield, 1986).

Robert Nozick's discussion of patent law in *Anarchy, State and Utopia* makes the point that consumers actually benefit by the granting of a patent to inventors because without the patent, the invention would not exist in the first place (Nozick, 1974; cited in Thompson, 1995).

Contemporary justifications for the extension of IP tend to borrow from both neoclassical and utilitarian philosophies, arguing for the importance of patents on the grounds of market efficiency or economic incentives, though justifications for copyright (less relevant to this present study) still often derive from a Lockean or Kantian natural rights view of IP which contends that authors and inventors have an inalienable right over their creations. This contemporary perspective presents a justification of IP independent of economic incentives, and is the perspective often employed by rights-holders seeking to extend the terms of their protection. Though plant patents are typically justified by invoking instrumental rights, the natural rights argument is occasionally used in controversies surrounding the unauthorized use of patented genes or plant processes, with rights holders arguing that they have some manner of moral right over their own labour, as was the case in the infamous *Monsanto vs Schmeiser* dispute which made its way to the Supreme Court of Canada (DeBeer, 2005). While the name "natural" rights might suggest that intellectual property rights (IPRs) are in some sense inherent and therefore non-ideological rights, James Boyle argues that "the author-vision conjures up a new political economy of wealth supported, and reflexively constituted, by a particular ideology of entitlement" (Boyle, 1996; vii).

IPRs: The Critical Perspective

Though some economists oppose intellectual property laws on economic grounds, arguing that they are either not an effective appropriability mechanism (Boldrin & Levine, 2010), or that they contribute to market inefficiency or "gridlock" (Heller, 2008), the most frequent criticisms of IPRs come from a public rights perspective. These critics argue that information belongs in the public domain, and that because intellectual property is closely related to the harnessing of knowledge and the learning of skills, it is against the interests of a society to put strong enforcement mechanisms in place. Scholars writing about IP from a critical political economy perspective, like Susan K. Sell (2003), Peter Drahos and John Braithwaite (2002), tend to be concerned with the manner in which IPRs reproduce asymmetries in power, and the detrimental role that private business can play in cultural production. These authors challenge what they perceive in neoclassical economics to be a lack of social and ethical considerations and tend to look at intellectual property in a broader context, seeing political, social and cultural forces as integrated elements that are closely related to the study of intellectual property on an international scale.

In an anthology she co-edited that includes contributions from some of the foremost critics of the international IP system, Gaelle Krikorian deconstructs the neoliberal ideologies that underpin free-trade agreements and their relationship to international intellectual property laws. Krikorian argues that for the information economy to function according to neoliberal principles, IPRs are necessary instruments in the privatization of the backbone of the new economic order: knowledge (2010a). The advent of IPRs has been described by critical legal theorist Amy Kapczynski (who co-edited the aforementioned anthology) as "an alchemy that turns immaterial expressions and ideas into tradeable commodities; IP rights effectively give creators the ability to market information while also preventing

it from being imitated and reproduced by others" (2010; 23). As the emergence of new information and communication technologies increased the ability to copy, reproduce and distribute information, new possibilities were opened up for both liberation and control, and information itself became a field of contestation between those who sought to privatize it for financial profit and those who pushed to disseminate it for public consumption.

Some scholars contributing to the emerging body of literature that questions the validity, morality, and economic effects of the international IP system borrow from theories of spatial relations and reconstruction under late capitalist globalization. In his article on intellectual property and networks of capitalist control, Jeffrey Atteberry cites Gilles Deleuze's "Postscript on the Societies of Control," pointing out that control in the societies of late capitalism is intimately linked to intellectual property rights. Atteberry argues that the control of data and information, which according to Deleuze is fluid, immaterial, and difficult to pinpoint resonate with Deleuze's theories (Atteberry, 2010). The control of intellectual property can be described in Deleuze's language, as "ultra-rapid, free-floating" and "undulatory, in orbit, in a continuous network" (Deleuze 1990), as neither information itself nor the regulation of information are confined to a unique physical location. The notion of intangibility and immateriality resonates with those studying the property rights to the intangible and immaterial. Marx's infamous description of capitalism as a system in which "all that is solid melts into air" (Marx & Engels, 2009; 8) assumes a new significance in an era where Indian subsistence farmers growing *Bt* cotton no longer hold ownership over the physical crops they grow on their own soil, using their own hands, because an American company owns a patent on a transgene so infinitesimally small it could never be identified by the human eye.

In addition to changes in spatial relations from physical to conceptual imaginations of geographical and information flows, the existing literature on the globalization of intellectual property

law is also concerned with the the way in which IPRs contribute to the spatial reconfiguration of people under globalization. Krikorian likens this process to a worldwide Marxian division, with countries in the global South constituting a new proletariat class exploited for their raw material and agricultural resources, while the countries in the information economy occupy the roles of the global bourgeoisie (Krikorian, 2010a). Taking into account this view of power distribution, IPRs assume an even greater significance, representing more than just simple capital for multinational corporations, and becoming the mechanism by which this imbalance of power can be institutionally and legally codified. These new "information economies" that emerge under neoliberalism are the result of the simultaneous deregulation of "economies" and re-regulation of "information." By controlling access to knowledge, information economies can maintain their dominance over countries engaged in production, securing their control of what in the information society has displaced the means of production: production designs.

The manipulation of regulatory policies to secure the self-interests of Western economies and multinational corporations have been explained by Drahos & Braithwaite (2002), Sell (2003), Correa (2000), Dutfield & Suthersanen (2008) and others in the context of international trade organizations and their corresponding agreements. Peter Drahos & John Braithwaite have analyzed how lobby groups like the Intellectual Property Committee (IPC) and the International Intellectual Property Alliance (IIPA) were actively engaged in getting stricter intellectual property protection onto the global trade agenda and the eventual establishment of TRIPS. As the most extensive multilateral agreement on intellectual property rights to date, TRIPS is considered by Drahos & Braithwaite (2002)¹, to be the foremost example of how neoliberal economic policies have restructured the global economy to serve the interests of multinational corporations.

¹ see also: Oddi, 1996; Shiva 2001; Sell, 2003; Dutfield & Suthersasen, 2008

Comprised of extensive interviews with hundreds of participants who were involved in policy-making, Drahos & Braithwaite argue that TRIPS serves to block access to knowledge and promotes "information feudalism," and promotes a system in which multinational corporations are able to control information like a feudal lord would, and stunt development in emerging and stagnant economies (Drahos & Braithwaite, 2002). Developing countries, who were short-staffed and did not fully understand the terms of the agreement, were pressured to accept its provisions as part of a package in exchange for access to preferential trade status or for other concessions in the WTO trade negotiations, such as lower tariffs on agriculture and textiles (see also Correa, 2000). Like historical feudalism, the contemporary IP regime can perpetuate tremendous inequalities and can even have serious human rights and health implications, especially in countries with public health crises and an average citizenship that is not affluent enough to afford brand name patented medicines.

The influence of the private sector is a common theme throughout much of the critical literature on multilateral IP organizations, and is given particular attention in Susan K. Sell's book *Private Power, Public Law: The Globalization of Intellectual Property Rights* (2003). Sell's work offers an agent-centric macro-level analysis of the social, political and cultural effects of TRIPS. Sell focuses not only on the agency of the IPC, but the broader cultural context of "increased mobility of capital and the ideological shift towards a radical free-market agenda" (Sell, 2003; 17). Sell argues that a state-centric understanding of international relations is insufficient for describing TRIPS, and shifts her emphasis away from blaming developed countries and towards the conclusion that multinational corporations eclipsed states as the most powerful actors in multilateral trade rounds. Her account, alongside Drahos & Braithwaite, tends to emphasize the ways in which TRIPS benefits private interests and leaves little room for national sovereignty.

Within the critical literature surrounding TRIPS there exists a diversity of opinions about its

scope. A second perspective acknowledges the potential negative impacts that TRIPS can have on developing countries, and reinforces the idea that the agreement was shaped by industrialized countries and lobby groups representing the interests of multinational corporations, but disagrees on its rigidity. In his comprehensive analysis of the legal implications of TRIPS for developing countries, Carlos Correa (2000) identifies the specific ways in which TRIPS can be harmful to the economies of developing nations, labels TRIPS a victory for developed countries and for their lobbies, and argues that its universal standards reflect a level of intellectual property more appropriate for economies with a productive research and development sector. Yet Correa differs from the aforementioned authors in that he pays attention to the flexibilities inherent in the TRIPS agreement, and demonstrates how given the right education and drive towards reform, developing countries can exploit these areas to defend their national interests. His book combs through the legal implications of TRIPS and offers policy suggestions for developing countries, pointing out areas in which they can have weaker IPR protection while still remaining TRIPS-compliant.

With respect to patents, Correa argues that TRIPS does not provide a uniform law, but rather a number of minimum standards that increase harmonization while still offering some flexibility to ease the transitional periods, promote innovation and technology transfer in developing countries. Developing countries no longer enjoy the ability to completely shape their domestic patent laws, as they could in the pre-TRIPS environment, but Correa is intent on educating policy makers in less developed countries on the routes they can take to exploit the leeway provided to them. A more recent work, co-edited with Xuan Li, employs a similar strategy with respect to the TRIPS-Plus requirements that are currently being employed as part of bilateral packages between the United States and various developing countries (Correa & Li, 2009).

A further extension of the flexible TRIPS argument not only accepts that the terms of TRIPS

are flexible, but also challenges the idea that the agreement was reached by a process of strong industrialized countries manipulating weak developing ones. This perspective can be considered a rational actor/game theory approach, and is exemplified in Carolyn Deere's study of the implementation process for countries adjusting their domestic patent laws to become TRIPS-compliant (Deere, 2007; see also Cohen, 2002; Blustein, 2010). Looking at the period that begins with the establishment of the WTO in 1995 and continues to 2007, Deere concludes that developing countries exhibited significant variation when it came to reforming their laws, implying that TRIPS was not the one-size-fits-all restrictive deal that some critics characterized it as. TRIPS is often criticized for inflexible rules that it allegedly imposes on the South, but Deere demonstrates that there is a substantial difference between what is stipulated by the laws and what is actually implemented. While acknowledging that developed countries had the upper hand in negotiations, she rejects the simplistic hypothesis that shaping TRIPS was a process of Western domination, instead characterizing the rounds as a game in which a number of players vie for their interests, with significant contestation not only among countries but within them, and between NGOs, IGOs and corporations.

Access to Knowledge, Bioprospecting and the Biopiracy Critique

Despite different narratives about and different solutions to the international intellectual property infrastructure, Amy Kapczynski and Gaëlle Krikorian have categorized much of the critical IP literature as the Access to Knowledge Movement (A2K). Inasmuch as the implementation of IPRs on the global trade agenda has been an exercise in hegemony, promoting a rigid, Westernized understanding of property rights, authorship, and knowledge, the A2K movement is engaged in shaping a counter-discourse that combats the ideological foundations that underpin the global IP regime.

Kapczynski's genealogy of the A2K movement presents a recent history of anti-IP activism while tracing the theoretical roots of this emerging counter-discourse. The movement seeks to challenge the legitimacy of an unprecedented extension of intellectual property rights which benefit a small amount of rights holders at the expense of the public good, the movement, as Kapczynski notes "is challenging the coherence of this account by formulating a series of critical concepts, metaphors, and imaginaries of its own -- concepts such as the 'public domain' and the 'commons' and ideals such as 'sharing', 'openness' and 'access'" (Kapczynski, 2010; 18). Though this may appear to be a conflict over definitions, there is much more at stake than mere semantics; A2K thinkers are involved in a counter-hegemonic discursive battle whereby the very concept of freedom is defined as freedom for many to know, as opposed to freedom for few to profit (Krikorian, 2010a).

Kloppenburg & Gonzales (1994) have detailed how, in a pre-TRIPS environment, civil-society groups and NGOs had been instrumental in allying with traditional communities, educating the public on intellectual property issues, and playing crucial roles in the mobilization towards IP reform, Drahos details the rise in NGOs advocating for the right to produce generic medicines, protection of traditional knowledge, software freedom and access to knowledge, which currently number in the thousands (Drahos, 2010). The A2K movement does not speak with a singular voice, and its goals are constantly being contested and renegotiated. As Krikorian (2010b) points out, some advocates argue for the complete rejection of the IPR system while others maintain that some level of intellectual property protection is necessary, but should be restructured in such a way that promotes access to knowledge and benefit-sharing (Krikorian, 2010b).

Comprised of a diversity of voices advocating a myriad of issues but united in their dissatisfaction with the global intellectual property system, the A2K movement can be characterized as the positive side of two competing stories that we now see emerging. A2K pushes for a new defense of

publicness, contending that today, the commons is being closed off to an unprecedented degree. From the blueprints of the largest machines to the smallest germplasm, knowledge is privatized and the corporate world intrudes on publicness to the extent that the very building blocks of life are subject to proprietary ownership. Yet at the same time, common space is opening up, activists and interest groups are mobilizing in a fight for publicness and social welfare. As Sell reveals in her comparison of A2K activist movements, groups as large as national governments or as small as loose-knit congregations of subsistence farmers, and from NGOs to student bloggers, people are starting to band together to combat the intrusion of intellectual property regimes into public life, at the national, international, and the personal level (2010).

The attempt to unify the divergent perspectives among A2K advocates is problematized by the issue of protecting traditional knowledge from corporate bioprospecting. Traditional knowledge (TK) presents complications to both the dominant neoclassical philosophies of intellectual property *and* the Western activists who adopt a polar, binary oppositional stance in their attempts to combat it. TK resists a simple definition. Dutfield defines it as held by people in traditional communities though it can also persist in urban, Westernized societies (Dutfield, 2001), while Mgbeoji characterizes it as distinct from antiquated knowledge, claiming that it can be either old or new, provided that it is acquired and used by indigenous communities and does not originate from colonialists (Mgbeoji, 2006). Though the 1992 Convention on Biodiversity (CBD) mandates an international commitment to the protection of TK, Rosemary Coombe and Padmashree Sharma have pointed out that the provisions of the TRIPS Agreement often undermine the protection of biodiversity and traditionally-held knowledge (Coombe, 1998; Sharma, 2005).

In the age of globalized intellectual property, TK produces a significant asymmetry, because as Carolan notes, indigenous knowledge is embodied while scientific knowledge is disembodied and

incorporeal. Since traditional knowledge emanates largely from oral culture and is passed-down over generations, it is typically held to be part of an information commons and therefore not eligible for intellectual property protection (Carolan, 2008). As a result of its public character, Western researchers (often funded by the R&D sectors of multinational corporations), go on bioprospecting expeditions to collect traditional knowledge of plants that can be used for agricultural or medicinal purposes, perform tests to isolate the active genes or germplasm, and turn them into proprietary knowledge through a process of patenting. Bioprospecting is defined by Agrawal as "the exploration, extraction and screening of biological diversity and indigenous knowledge for commercially valuable genetic and biochemical resources" (Agrawal, 2001). The expropriation of traditional plant knowledge for valuable pharmaceutical patents is one of the most controversial practices that post-TRIPS global IP law supports. On the one hand, bioprospecting not only brings in substantial revenue, but is responsible for useful, occasionally life-saving, medicines. On the other, it shorthands the communities who initially "authored" the relevant knowledge.

This process was first derisively labelled as "biopiracy" by Canadian activist Pat Mooney and was later popularized by the writer and anti-GMO activist Vandana Shiva (Hamilton, 2006), a term that has gained currency with a number of scholars who have written on this issue, (see Mgbeoji, 2006; Oguamanam, 2008; Robinson, 2010). Critics of bioprospecting decry a process by which the rights of indigenous cultures to their genetic resources and associated traditional knowledge are replaced by monopoly rights of those who exploit these resources. Shiva defines biopiracy as "grounded in processes that can be summarized and symbolized as the second coming of Columbus" and "the ultimate colonization of life itself--of the future of evolution as well as the future of non-Western traditions of relating to and knowing nature" (Shiva, 1997; 5).

She criticizes intellectual property rights for shifting from common rights to private rights, for

recognizing IP only when they contribute to private sector profit, and for refusing to see authorship in nature or traditional cultures. Sampath outlines the fundamental schism in the debate between the "biopiracy" and "bioprospecting" perspectives, the former being concerned with how the international IP system is biased towards Western-style knowledge and against traditional communities, while the latter articulating that bioprospecting can be a source of revenue for traditional communities while promoting the advancement of research and development (2005)².

In the years since TRIPS, the term biopiracy has gained currency, transforming from a pejorative phrase aimed at negating the legitimacy of bioprospecting to a heated issue that has made its way onto the agenda of multilateral conventions (McCalman, 2002; Robinson, 2010). A number of cases have been undertaken that have been labelled "biopiracy," and they range from the Hawaiian taro plant to the acai berry and the Amazonian ayahuasca vine (Robinson, 2010). The stakes for these plants are high, as bioprospecting revenue brings in an estimated US 200 billion to US 1.8 trillion annually (Torri & Herrmann, 2011). Sampath argues that alternative regulation of bioprospecting could result in more equitable distribution of capital, and help alter the global balance of power in favour of developing nations (Sampath, 2005).

Though many A2K advocates focus on deep flaws within the nature of intellectual property itself, many critics nonetheless justify the existence of some level of intellectual property protection as a mechanism to defend traditional knowledge. Dutfield and Suthersanen, who view the internationalization of IP law with a critical eye, nonetheless argue for the importance of TK IP protection to "improve the lives of traditional knowledge holders and communities, to benefit national economies, and to prevent biopiracy" (Dutfield & Suthersanen, 2008; 329). This practice stands in apparent contradiction to those members of the A2K movement whose aim is to challenge the

² See also: Isaac & Kerr, 2003

theoretical basis of intellectual property as a whole, and increase the public domain's control of biological materials. However, biopiracy campaigns that focus on isolated contestations of "bad patents," can be seen to legitimize the philosophies behind intellectual property based on their willingness to engage with organs like the European Patent Corporation (Hamilton, 2006b; Sell, 2010). Meanwhile, the incorporation of TK into some protection regime is sometimes criticized as the Westernization or commodification of traditional or oral cultures (Dutfield & Suthersanen, 2008).

Most activists and theorists critical of biopiracy argue that when it comes to traditional knowledge, fire is needed to fight fire, and some level of IP protection is needed, paradoxically, to combat the inequalities established by the global IPR system. It is argued that if information is held as commons, bigger market players with greater resources will be better able to use and profit off of the commons than the smaller subsistence communities which produced the information (Kapczynski, 2010). As Sell reveals, the biopiracy issue complicates the A2K campaign to increase the commons, as information produced by generations of actors who have no access to scientific or Western knowledge is held to be a public good, and likely to be privatized by multinational corporations. Furthermore, the mobilization of citizens against the issue of biopiracy, and the qualified successes they have had in pressuring the Indian government to respond to these crises of traditional knowledge suggest that the biopiracy issue may challenge the prevailing discourse on the role and agency of state and citizens in the late capitalist, neoliberal era.

The issue of biopiracy has been advanced in India by the formation of NGOs and citizen organizations. National and international NGOs have worked in conjunction with each other and with government bodies to educate and campaign on intellectual property issues, and they have on several occasions achieved concrete successes at the national and international level. As Jack Kloppenburg, Jr. and Tirso Gonzales note, NGOs act as important interlocutors between indigenous communities and

governments, facilitating the provision of information, fund-raising, technical and research assistance, skill transfer, and networking (1994). NGOs working on agricultural and public health issues have helped inform Indian policy makers, who have in turn shaped national patent law to be more amenable to imitation and more protective of traditional plant knowledge. In a comparative study of the implementation of TRIPS in Turkey and India, Ipek Eren-Vural concluded that one of the reasons why India was more successful in exploiting TRIP flexibilities was due to the increased political capacity of NGOs (Eren-Vural, 2007).

The critical literature on biopiracy and bioprospecting reveals how certain discrepancies exist within the international intellectual property system. While TRIPS has mandated that developing countries adopt a higher-level of IP protection to ensure that Western proprietary information is safeguarded against piracy, a wide category of knowledge, and a category that often comprises a substantial amount of knowledge produced within developing countries, has hitherto been unprotected by the international intellectual property system. The central question that the biopiracy issue raises is to what extent NGO campaigning, citizen activism and government mobilization against biopiracy can be constituted as a challenge to the hegemonic intellectual property system as a whole and, more generally, to the neoliberal restructuring of the global economy. The privatization of traditional knowledge (held by the public and developed by public communities) by multinational corporations demonstrates the extent to which neoliberal philosophies have altered the nature of knowledge and information across the globe. Yet biopiracy struggles prove that the infrastructures put in place to preserve the existing power dynamics can be used against themselves, or as Deleuze might put it, these struggles identify a terrain on which "liberating and enslaving forces confront each other" (Deleuze, 1990; 143).

Although struggles against biopiracy tend to offer inconsistent solutions to the problems in the

intellectual property system, I intend will argue in Section V that these inconsistencies are not a fatal flaw of disorganization, but rather, as Hardt & Negri (2004) might suggest, a powerful mechanism for appealing to the multitude, incorporating various publics into a counter-hegemonic discursive battle without having to articulate a single solution to the problem of global IP law. Furthermore, I intend to argue that it is through engagement with transnational activist networks and agencies, some of which hold different perspectives on the ideal role of IP law in the global economy, that these citizen groups are able to better achieve their concrete political goals. Sharing a unifying belief in the brokenness of the IP system allows them to network widely, even if, as will be demonstrated throughout the paper, there are disagreements over the essential value of intellectual property itself.

Section II: Theoretical Framework

The theories used in the sections to follow borrow from several theorists who apply critical understandings of the manner in which power and agency are transmitted through global capital and information flows to the structure of international regulation of IP. As I indicated in Section I, much of the critical intellectual property theory and activism has been aggregated under the banner of Access to Knowledge (A2K), which can be broadly categorized as a critical political economy approach to the study of international intellectual property law, and this frame explores the means by which multilateral IP treaties have historically catered to the interests of Western nations and multinational corporations, and continue to do so (Kapczynski, 2010). The A2K critique of TRIPS holds that the agreement exports a Western understanding of intellectual property, that the formation of the agenda was heavily influenced by lobbyists from industries such as the International Intellectual Property Alliance (IIPA), and that the pro-IP rhetoric masks a defense of rights holders under the guise of modernisation theory-laden economic determinism (Krikorian, 2010a).

The notion that developing countries need to adopt a strong minimum standard of IP protection in order to modernize and diversify their economies is the official stance of the World Intellectual Property Organization, but this position has question by critics, such as Beattie who, in a rephrasing of former World Intellectual Property Organization (WIPO) director Kamil Idris' book title, *Intellectual property: a power tool for economic growth*, claims that TRIPS-style IP rights are a "power tool in the hands of a child" (Beattie, 2006; 6). These critics contend that TRIPS is an affront to the domain of the social or the commons, results in a reorientation of the categories of public and private, and encourages widespread social disadvantages in favour of limited economic advantages for a small number of interested players, and that it may also undermine the economic development of developing nations.

Section V of this paper will explore Indian biopiracy struggles as one example of A2K activism

and connect this exploration to the debate on the stringency of the global IP system. The focus on social movements mobilizing politically and in shaping a counter-discourse to combat the hegemonic narrative on the importance of intellectual property borrows from Michael Hardt & Antonio Negri's meditations on the multitude as a counter-capitalist pluralist movement (Hardt & Negri, 2004). Hardt & Negri's depiction of contemporary global anti-capitalist activism as carnivalesque, dialogic, transgressive, and engaged in the production of contrast and conflict is a pertinent description of the citizens working to oppose the extension of intellectual property laws. In her genealogy of A2K activist mobilization, Amy Kapczynski and Gaelle Krikorian describe it as "either an emerging social movement or as a fundamentally disjointed and dynamic coalition" (Kapczynski & Krikorian, 2010; 549). In analyzing the rhetoric and discourse of national and international activist mobilization on issues related to Indian IP struggles, I wish to explore some of the cracks, discrepancies, and inconsistencies within the rest of the A2K discussion, particularly around the legitimacy of intellectual property on the subject of traditional knowledge.

Hardt & Negri advocate moving beyond traditional conceptions of private and public, as articulated by Jurgen Habermas in *Structural Transformation of the Public Sphere* (Habermas, 1991). Their idea of the "common" displaces traditional divisions between the individual and society, between subjective and objective, between private and public. Changes to the legal system (such as those made by TRIPS and other IP agreements) restructure the dynamics of social control by not only privatizing public space and public goods, but by intruding onto the privacy rights of the individual. There is no singular move towards "publicness" or "privateness", but rather a blurring of the boundaries that encourages a publicness of the social and a privateness of the economic (Hardt & Negri, 2004).

The new distinction between public and private is an important one for those scholars and activists engaged in the defense of the commons, publicly-held information and traditional knowledge.

In one sense, traditional knowledge of medicinal plants is public knowledge held in commons, that is privatized by multinationals engaged in bioprospecting. This simple construction of the public/private division becomes problematized by efforts to protect traditional knowledge by intellectual property law. In order to act defensively against the predatory nature of bioprospecting corporations, certain efforts are made to "privatize" the commons, but in such a way that does not undermine its status as common space. As will be further explored in Section III, India has a number of existing databanks that publish traditional knowledge on plants so that they will be ineligible for patents. Similarly, the Biological Diversity Bill of 2002 forbids foreign corporations to alter genes on traditionally-bred crops and patent those, making Indian traditional knowledge in some sense the private property of the Indian people. Though still eschewing a Western conception of authorship or ownership, in a sense this knowledge becomes "privatized," as it is no longer available for capital gain. They become products of the commons in Hardt & Negri's sense, neither public nor private in the traditional understanding of the terms.

The necessity for altering Habermasian notions of the public and private arises in response to changing understandings of the functioning of capital and informational flows in late capitalism. David Harvey notes that the TRIPS agreement opens up "wholly new mechanisms of accumulation by dispossession," and that the act of biopiracy transforms cultures and art into sellable commodities, entailing "dispossession both past and present of human creativity" (2010; 245). The collapse and conversion of biology into data and commerce, and the movement of that data and commerce through the fluid and incorporeal circuits of the network is central to the functioning of global capitalism. Manuel Castells has characterized the network society as a space of flows, which "dissolves time by disordering the sequence of events and making them simultaneous, thus installing society in structural ephemerality" (Castells, 2004; 37). An analogous statement can be made about the global economy

under the neoliberal policies of deregulation in which a patent granted to Western researchers in Michigan can instantaneously permit control over the use of turmeric gleaned from public knowledge in India, and where the dissolution of trade barriers creates an illusion of the erosion of time, distance and difference while the boundaries between the rich and the poor continue to widen.

When Hardt and Negri employ Deleuze and Felix Guattari's "rhizome" metaphor to describe the "nonhierarchical and noncentered network structure" of the network society, a comparison can be made with their analysis of the globalized marketplace as traversed by tensions that open mobility in every direction (Hardt & Negri, 1999; 299). The rhizome metaphor is one that connotes multiplicity, heterogeneity, and transient connections in which momentary links can form, break up, and reform along new lines at any moment. Deleuze and Guattari use the metaphor to describe the process of deterritorialization and re-territorialization in late capitalism: "capitalism is at the cross-roads of all types of formations, it is neocapitalism by nature. It invents its eastern face and western face and reshapes them both--all for the worst" (Deleuze & Guattari, 1983; 22).

Deleuze and Guattari's rhizome metaphor of decenteredness and heterogeneity is a powerful symbol for how control is exerted at the level of a multilateral agreement such as TRIPS. The line between national governments, corporations, lobby groups, and international organizations becomes blurred as momentary links are formed and dissolved to articulate and defend specific interests. The United States may appear to be a "centre" of power, but even the most powerful nations are unable to act unilaterally. The description of global capitalism as rhizomatic not only accounts for the ubiquity of those Western governments and multinational corporations that have successfully imported their capital and ideologies to almost every conquerable corner of the globe, but also potentially for the impermanence of their hegemony. Though Peter Drahos and John Braithwaite depict the shaping of the TRIPS agenda as an imposition of Western economic interests on developing countries who have little

or no agency, Carolyn Deere's approach envisions the process of countries adapting their national laws to TRIPS as a complex political game in which each player is actively vying for their own interests. According to Deere, Western nations like the United States and the European Union were able to successfully communicate their agenda not because they were in the position to impose it unilaterally, but because they were able to bring more to the negotiating table as a result of their diversified economies.

This might seem like a minor distinction, but it is nevertheless an important one to make. Though the outcome of the *Bt brinjal* lawsuit is, as of this writing, wholly undetermined, the fact that it was even possible in the first place might suggest the beginnings of a shift in focus where developing countries are able to exploit TRIPS flexibilities to defend their national interests, and make use of intellectual property law to their own advantage. Rather than taking a state-actor approach, in which countries represent cohesive wholes articulating a clearly defined agenda, I believe that a close look at the way in which India has adopted the provisions of TRIPS while continuously contesting aspects of them will reveal some of the complexities and problematize any top-down understanding of the functioning of international politics, and bring it into tension with a vision of global capitalism characterized by Enrique Bustamante as a process of "mixture and exchange" (Bustamante, 2004; 804) of global and local impulses.

However, this so called "exchange" between local cultures and transnational corporations fits Deleuze's description of how control functions under late capitalism. Capitalist control does not function by overt domination, it is instead a "self-deforming cast that will continuously change from one moment to the other, or like a sieve whose mesh will transmute from point to point" (Deleuze, 1990; 140) and which consists of "metastable states coexisting in one and the same modulation, like a universal system of deformation" (Deleuze, 1990; 141). A Deleuzian understanding of control as

decentered allows for a more nuanced vision of how power is enacted globally. The fluid, acephalous, late capitalism of "ultra-rapid forms of free-floating control" (Deleuze, 1990; 140) requires some system to legislate the flow of intangible information. Information economies are more concerned with selling incorporeal data than physical goods; and intellectual property laws become an important method for asserting dominance over nations engaged in production and agriculture. If resistance to global capitalism can be achieved through networked activism, citizens must attack the backbone of the Western "information economies": which is the commodification of knowledge.

The narrative of multinational corporations holding secret meetings with important government representatives and privately deciding the future of information is one account of how capital and power are distributed in the global economy, however we may now begin to see its limits. The depiction of national governments and citizens as rendered powerless by faceless proprietary information might be an overly pessimistic stance at a time when citizens and transnational activist groups are engaged in pressuring their national governments to make changes to their national laws, some of which may even contradict the stipulations in the multilateral agreements. It is this tension that I intend to explore in the following sections.

Section III: Methodology

This paper will employ a case study method in an attempt to tie the historical context of Indian struggles with patents on genetic materials to the larger debate about the stringency of international intellectual property law on developing countries and the agency held by nations with respect to their own patent laws. The case study method, according to researcher Robert K. Yin, is able to connect an in-depth example to a wider context (Yin, 2009). A case study method is an appropriate method for investigating the *Bt* brinjal controversy, in that it will measure a ground-level analysis of counter-discursive anti-IP movements against the larger body of theoretical literature that tends to discuss intellectual property issues at the multilateral or state-actor level. The level of detail and specificity that can be included in research conducted with a case study method is often missing in more macro-level surveys that discuss the effects of TRIPS on an international level, that leave less room for discussions of the experiences of individual countries.

The case study, according to Yin, involves several steps including narrowing in on a case, determining if this case is representative, defining research questions, collecting data and analyzing the results (Yin, 2009). Once the case has been defined, the researcher must determine whether the case would best be explained using a single or multiple case study method (Yin, 2009). The case study method can employ either quantitative or qualitative data, or a mixture of both, and researchers are encouraged to use a variety of sources. Because of the historical uniqueness and novelty of the brinjal lawsuit, the vast amount of data and information required to adequately address the case, and the dearth of official documents related to the lawsuit available at this time, a single case method comprised primarily of qualitative data is more suited to this research than a multiple case study approach would be.

In order to provide the necessary context to elucidate a detailed examination of the *Bt* brinjal

case, Section V will include a comparative analysis of multiple cases when assessing the preceding historical biopiracy contestations in India. A detailed examination of the timeline of changes to Indian patent law and the history of issues related to bioprospecting, biopiracy and patents on plant materials and traditional knowledge can give contextual insight into agency that individual governments have in their ability to alter their patent laws to serve their unique national interests, as well as the potential for national and international activists groups to mobilize awareness over issues of IP-related injustice.

Using existing case study literature, archival newspaper articles and primary source material, Section III will trace a general history of legal contestations in India over the legitimacy of foreign patents on genetic materials and traditional knowledge. It will include a characterization of Indian patent law pre-TRIPS, and of the subsequent changes to the national legislature in the aftermath of the international agreement and in response to pressure from citizens, interest groups and foreign multinationals. As a substantial amount of academic and theoretical literature exists on the controversies related to patents on turmeric, the neem tree, and basmati rice, and changes to Indian patent law or IP-related biodiversity policy, this paper will not attempt to assess these cases in considerable detail, and will only provide a cursory outlines of the issues, outcomes and terms of debate in these cases as a means of providing background historical context to contemporary cases that have been less studied.

Yin notes that the case study method often requires that data is collected and analyzed simultaneously (Yin, 2009). The data that will be employed in Section IV will consist primarily of newspaper articles, scholarly literature, and official documents, and a discourse analysis method will be used to analyze the data and assess it with respect to the critical political economic theoretical framework that will be employed. Following Norman Fairclough's Foucauldian analysis of how language functions establish and maintain power in society (Fairclough, 1989), the critical discourse

method will be employed to scrutinize the data collected from newspapers to determine how different sides of the brinjal debate employ discursive tactics to combat each other. The research will analyze the discourse employed by scientists, journalists and activists to trace what W.B. Gallie has called "essentially contested concepts" (1956), and what William Connolly has argued "involve endless disputes about their proper uses on the part of their users" (Connolly, 1999; 10).

The discourse analysis will explore the undercurrent of anxieties over foreign IP ownership surrounding the proposed introduction of India's first transgenic food crop, *Bt* brinjal. This section will involve an examination of the statements issues by relevant actors in this conflict (government bodies, citizen groups, NGOs, and corporations) as well as an assessment of each party made their claims. The overall purpose of my analysis is not so much to provide a justification for the legitimacy of either side as it is to examine the precise nature of the claims and connect them to the wider debate and more general points discussed in the theoretical literature on bioprospecting, biopiracy and traditional knowledge.

A study of over 200 newspaper articles containing the term "*Bt* brinjal", published between late 2009 and early 2012 in *India Business Insight*, *India Mail Today*, *The Financial Express*, and most predominantly, *The Hindu*, as well as statements made by Indian scientists in *Science* during the same period, and publications from Indian and international NGOs aggregated from the website GM-Watch reveal how the fault-lines of the debate are situated across several contested issues, namely farmers rights, scientific consensus, environmental impact, and the influence of foreign elites on national policy. The newspapers were scanned for quotations from the relevant players: government officials, prominent scientists, and NGO representatives. Opinion pieces from the newspapers were also analysed to get a sense of shifting public opinions about the issues at play in the *Bt* brinjal controversy. While the quotations from scientists, government, officials and civil society representatives followed

predictable lines, op-ed columns vacillated between support and condemnation, with shifting interpretations of the aforementioned contested concepts.

Critically studying the discourse employed by those involved in the case will not only provide insight into the reasons behind the legal action, but will also reveal the field of contestation within the Indian public about the legitimacy of the lawsuit. My research advances the suggestion that it is not always the philosophies behind intellectual property laws that is in question. The contestation of specific claims to the proprietary right over certain genes or events of knowledge can in fact serve to legitimize the existence of IP laws as a whole by casting these controversies as isolated incidents of injustice. Worries about intellectual property rights are not always based on an outright rejection of the notion of patents, but rather more anxieties about power and the way in which the patent system can contribute to the formation of monopoly powers. The discourse analysis method is an appropriate means to critically analyze how these arguments about power are framed, and also to reveal the way in which the very act of framing arguments is itself a practice of producing power (Fairclough, 1989; Sell, 2003).

While the methodological approaches of single case study and discourse analysis are useful ways of understanding the brinjal lawsuit, they also have their shortcomings. Critiques of the discourse analysis method have been summarized by Antaki, Edwards & Potter (2003), who note that the researchers employing this methodological approach are often criticized for "under-analysis through ... survey ... [and] taking sides ... [and] isolated quotation" (5). Martyn Hammersley, as cited by Edward Haig, claims that critical discourse analysis is an insufficient method in the production of knowledge, and rests on "shaky foundations" (Haig, 2004; 134) which practitioners "take for granted as if they were unproblematic" (Haig, 2004; 136). The case study method has also been criticized for lacking rigor, and some have argued that a single case can never be representative, and is insufficient evidence

to meaningfully contribute to a wider theoretical framework (Neale, Thapa & Boyce, 2006). Although these criticisms caution researchers not to be overambitious in drawing conclusions from data gleaned from case studies or discourse analysis, the detail that a single case study method provides can nevertheless contribute insight into the wider body of theoretical literature on the globalization of intellectual property laws.

By deconstructing the language and rhetoric of each side, I hope to reveal the complexities of advocating for the intellectual property protection of traditional knowledge in an era of one-size-fits-all international intellectual property laws. Ultimately, the purpose of examining the case of India in this way is to position it with respect to the claims made by many critics of TRIPS, particularly Peter Drahos & John Braithwaite, that the intensification of international patent law was not only at the behest of Western nations under the influence of multinational corporations, but continues to serve those interests.

Section IV: A History of Indian Patent Controversies

This section will cover a case history of patent conflicts in India that have arisen since the establishment of the TRIPS Agreement. The first conflict that will be examined is the discrepancy between India's previously existing domestic patent law of 1970 and the TRIPS requirements. The Indian Patent Act will be closely scrutinized for provisions that are inconsistent with TRIPS and more supportive of an understanding of knowledge that is in conflict with the Western legal linkage between information and proprietary ownership. The purpose of this analysis will be to reveal how the Indian Patent Act inscribes an understanding of the role of patents that is not only divergent from the Western IP model, but may have contributed to a widespread public sentiment against intellectual monopoly. This section will also provide a history of biopiracy-related patent contestations over turmeric, basmati, and neem plants. These histories were included in order to situate the present lawsuit within the larger tradition of public movements in India against Western IP monopolies. Furthermore, this section will conclude with a discussion of various governmental and non-governmental bodies that have been established within India with the intention of preventing further controversies surrounding bioprospecting practices.

Since the signing of TRIPS in 1995, India's relationship with international intellectual property laws have been fraught with conflict. Many of the clauses stipulated by TRIPS necessitated major changes to the Indian Patent Act of 1970, and presented a wider scope of patent coverage that was at odds with India's regulation of intellectual property. The discrepancies between the laws provided two significant areas of conflict: the new mandatory minimum protections for Western inventions stifled the reproduction and distribution of generic pharmaceuticals than contributed significantly to both the Indian economy and public health (Eren-Vural, 2007), and the harmonization of intellectual property laws coincided with an increase in bioprospecting expeditions, in which Western companies could

make use of the international IP system to reproduce Indian traditional knowledge on medicinal plants without sharing the profits with the communities in which that knowledge originated (Sampath, 2005).

In an effort to bridge the chasm between the Indian Patent Act of 1970 and the TRIPS Agreement, India opted to exploit the maximum leeway offered by the WTO Agreement to suit its own national economy (Correa, 2000), which commentators have argued is better suited to a more limited level of intellectual property protection (Sahai, 1993; Dasgupta, 1999). Though TRIPS imposes minimum levels of protection for foreign rights-holders, the Indian government has nonetheless made steps to protect traditional knowledge and biodiversity. Furthermore, coalitions between international NGOs and Indian interest groups have been active in contesting certain patents that they believe are overtly exploitative of knowledge gleaned from Indian subsistence farmers or traditional communities (Coombe, 1998; Sunder, 2005).

The main difference between the Indian Patent Act and TRIPS is that India's patent law was more defensive of policies that were in the general public interest, while TRIPS is protective of private industry. The UNCTAD had praised the 1970 Indian Patent Act for being one of the most progressive patent laws, encouraging the development of a domestic industries while offering Indian citizens cheap access to patented inventions (Mehrotra, 1987). As Graham Dutfield and Uma Suthersanen have noted, the Indian government has made greater official commitments to protecting traditional knowledge than any other nation has (Dutfield & Suthersasen, 2008; 331). Pre-TRIPS patent laws in India were more lenient towards reproducers of knowledge, allowing for the success of mass producers and exporters of cheap generic medicines that had become such a large industry within the country that by 1986, "98% of domestic demand for pharmaceuticals ... (was) met by local production" (Eren-Vural, 114, 2007).

Whereas the purpose of TRIPS was to harmonize and streamline the global regulation of IPRs in order to defend the interests of transnational companies, the Indian Patent Act of 1970 was

established to promote the growth of domestic manufacturing (particularly in the pharmaceutical industry) and keep costs low to benefit consumers (Mehrotra 1987; Sahai, 1993; Ganguli, 1995; Sahai, 2000; Chaudhuri, 2002; Kumar, 2003; Eren-Vural, 2007). The difference between the two patent laws is evident in how each system defines the term "invention." Section 5.1 of TRIPS defines an invention as any product or process, "in all fields of technology, provided that they are new, involve an inventive step and are capable of industrial application" (TRIPS, Section 5.1). Although the agreement does offer some leeway for countries to determine their own *sui generis* regulatory systems with respect to the patenting of higher-order life forms, the agreement nonetheless promotes a restrictive policy on intellectual property that brings most inventions, discoveries, and bodies of knowledge under the umbrella of proprietary control (Correa, 2000).

The Indian Patent Act contains clauses detailing several broad categories that, for ethical or social reasons, were not to be considered inventions, and therefore would be excluded from patentability. The list includes inventions which are:

"frivolous or which claim anything obviously contrary to well established natural laws" (3a); "an invention the primary or intended use of which would be contrary to law or morality or injurious to public health", "the mere discovery of a scientific principle or the formulation of an abstract theory" (3c); "a method of agriculture or horticulture" (3h), "any process for the medicinal, surgical, curative, prophylactic or other treatment of human beings or any process for a similar treatment of animals or plants to render them free of disease or to increase their economic value of that of their products" (3i) (Indian Patent Act, Chapter II, Section 3.1a-i).

Furthermore, any invention relating to atomic energy, and any process patent related to pharmaceutical production or the production of substances by chemical processes are excluded from invention (IPA, II, 4-5).

TRIPS, by contrast, offers no specific description of items that are not patentable, only the equivocal terms of novelty, inventiveness, and capability of industrial application. This is advantageous to rights holders in that it offers no concrete terms that would justify the denial of a patent. Although both laws ultimately place the approval of patents at the discretion of those working in the patent

office, the Indian Act's clearly-defined list of inventions not patentable puts the burden of proof on those claiming patent protection, while TRIPS's more ambiguous terms put the burden of proof on those who might contest a patent that has already been approved.

Furthermore, the conditions of "novelty", "inventive step" and "industrial application" are enforced with the intention of eliminating conflicting or overlapping patent claims, rather than preventing the privatization of knowledge that would be injurious to public health. Since the Indian Patent Act gives no precise definition of what constitutes an affront to "morality" or "public health," the granting of almost any suspect foreign patent would be up to the discretion of the patent office, or if contested, a judge. Such a clause would give grounds for dismissing any foreign patent that could be deemed harmful to the Indian people either socially or economically, and permit Indian companies to manufacture generic versions of inventions that would be patentable in other countries (Chaudhuri, 2002).

The very act of including a clause preventing the patenting of inventions that are "injurious to public health" introduces a concern for publicness into a law that exists to protect the private ownership of ideas. The implication of Chapter II of the Indian Act goes against the grain of the neoliberal dogma of privatization that Gaelle Krikorian argues has been a defining characteristic of international IP law from the 1980s onwards (Krikorian, 2010b). While the Indian law acknowledges the role of monopoly rights in the encouragement of invention, and recognizes that certain types of inventions should be privatized to promote scientific research and economic development, it does not necessarily hold private interests to be the ultimate beneficiaries of the patent law. In the realms of medicine, agriculture, and technological development, public interest concerns trump the rights of patent-seekers, both foreign and domestic.

Though Section 5.2 of the TRIPS agreement offers the ability for members to exclude

inventions within their countries "the commercial exploitation of which is necessary to protect *ordre public* or morality," it offers no universal exclusion for specific inventions that have been deemed so. Instead, it provides member states with the ability to establish "an effective *sui generis* system" that regulates the protection of inventions which member countries have determined may have negative environmental or health consequences. TRIPS offers the potential to exclude human, plant, or animal life from patent protection, but necessitates that microbiological and non-biological processes are subject to patent protection, and that plant varieties are protected "either by patents or an effective *sui generis* system or by any combination thereof" (TRIPS, Section 3.b). Though both agreements offer provisions for exempting the patenting of knowledge that might encourage economic development against the public interest, there is a difference in emphasis. The Indian Act clearly outlines a number of categories that are specifically denied patentability based on their potential negative social consequences, whereas TRIPS offers the ability for countries to write alternative legislation that offers limited exemptions for a select few items, many of which (like human, animal, and plant life) would likely not meet the criteria of novelty and inventiveness in the first place.

While India's 1970 patent law prioritizes public health and morality over the privatization of knowledge, TRIPS has its own implicit value hierarchy that is in line with the way that it views knowledge wherein that which is moral is that which encourages the flow of invention by means of guaranteeing financial rewards. The prohibition of patents on plant, animal, and human life that is present in the Indian Act and accounted for in the flexibility of TRIPS section 3.b is arguably undermined by the TRIPS clause that there can be no exemption of bacterias, microorganisms, or individual genes from patent law. As evidenced by the 2004 *Monsanto vs. Schmeiser* case, in which Monsanto-owned genetically-modified canola genes were discovered on the property of a Saskatchewan farmer who had never legally procured Monsanto canola, cross-pollination of genes can

blur the distinction between the ownership of one gene within a plant and the plant itself (Breakey, 2010; Robin, 2010).

Since it is impossible to effectively contain genes within plants and plants within nature, the ownership of a genetically-altered gene can, to an extent, negate the exclusion of plant life from patents. Additionally, while India's *sui generis* system has opted to exclude plants from patentability, TRIPS mandates that some form of intellectual property protection must exist for plant varieties (TRIPS, Section 5, 3a). Indeed, in assessing conflicting clauses between TRIPS and the UN's 1992 Convention on Biological Diversity, KC Agrawal has argued that "by distorting the meaning of novelty to myopic, culturally reduced industrial interests, the implementation of TRIPS will systematically negate the wider historical contribution made by communities in developing countries to the planet's biodiversity, as well as undermine their rights" (Agrawal, 2001; 443).

Early Indian commentators assessing the differences between TRIPS and the Indian Patent Act of 1970 expressed anxieties over the effect that the new patent system would have on their economies. In 1987, N.N. Mehrotra argued that without major changes to science and technology policies, and the character of the science and technology infrastructure, it would be "highly unlikely that international patent protection can become any motivating force for Indian research and development" (Mehrotra, 1987; 1464). By blocking certain patents that may be wrapped up in the inventive process, the GATT-mandated changes to Indian patent law, the author concluded, would likely stifle Indian development. Similar concerns were raised in 1993 by Suman Sahai, who suggested that even if India opted for a *sui generis* system that placed the maximal number of limits on patents on living organisms, TRIPS requirements necessitate that biofertilizers and biopesticides fall under the scope of patent protection. The author predicted that the changes would contribute to the monopolization and increased costs of natural fertilization and pest management practices that have been used by traditional communities for

generations (Sahai, 1993).

The minimum term of protection for a patent is twenty years under TRIPS, (TRIPS, Article 33) while only fourteen years under the Indian Act, and five to seven years on process patents related to food, chemicals, and medicines (Indian Patent Act; Chapter VIII, 53a,b.). Not only do the shorter terms guarantee that inventions will end up in the public domain sooner, but the difference in length of terms within the Indian Act implies that patent laws should be written in order to achieve an optimal relationship between the encouragement of invention and the safeguarding of the public interest. TRIPS treats all patents as alike, while the Indian Act inscribes different rules for different types of patents based on the economic and social effects they anticipated the laws would have.

Further discrepancies between the two laws exist with respect to the provisions in the Indian Act for exclusive marketing rights (Chapter IVa, Section 24a); compulsory licensing (IVa, 24c), and the revocation of patents in the public interest (XII, 66). Under the Indian Law, the authority of the national government was not undermined in the granting of patents to foreign rights holders. Chapter XVI delineates circumstances in which patents can be circumvented if they are deemed to stunt investment or not meet the "reasonable requirements of the public" (XVI, 86.1). Under the Indian Act the government had the ability to request compulsory licensing for patented inventions after three years, meaning that "any person who is interested in working the patented invention in India may require the patentee to grant him a license" for use (Chapter XVI, Section 88.1), with any patents on "substances used or capable of being used as food or as medicine or drug" (87.1a) and "methods or processes for the manufacture or production of chemical substances including alloys, optical glass, semi-conductors and inter-metallic compounds" (87.1iii) automatically receiving compulsory licensing status after three years of protection.

Chapter VIII of the Patent Act placed further limitations on the extent of patents, offering the

government the ability to circumvent patents, allowing for the importation or manufacture of patented objects for its own use (VIII, 47.1), for the purpose of experimentation, research, and education (47.3). Section 47.4 stipulates that pharmaceutical patents could be subverted by the central government for the purpose of distributing patented medicines to government-run hospitals or medical institutions. Essentially, these laws emphasize that patents must be put to use. Suman Sahai argued that these clauses existed to "encourage and maintain a continuous flow of inventions," ensure "that a useful invention must be put to use," and prevent patent gridlock or excessive rent-seeking (Sahai, 1993).

The most pertinent clause, Section 89 of Chapter VIII, allows the controller to revoke patents for "non-working", meaning that the patent office has the ability to remove a patent on the grounds that "the reasonable requirements of the public with respect to the patented invention have not been satisfied or that the patented invention is not available to the public at a reasonable price" (VII, 89.1). Beyond encouraging economic growth, these clauses also emphasize different interpretations of the purpose of inventions. The Indian Patent Act implies that an invention is only considered as such if it is made public (otherwise the patents can be revoked) whereas under TRIPS, inventions are that which can be made private (otherwise, as in the case of traditional knowledge, they are not afforded protection.)

The case histories of contestations in India over bioprospecting-derived patents reveals how traditional knowledge sits in an uncomfortable position within the international intellectual property system. Because no single author can claim to be the originator of the knowledge, and because in the earlier stages of the internationalization of intellectual property law most TK had not been published in journals accessible to the West, knowledge produced by traditional communities received little protection from TRIPS. As a country that is rich in biodiversity, with unique flora and a wealth of traditional folk knowledge of how to exploit plants for medicinal purposes, as well as a highly

productive and export-oriented agricultural sector, India became a focal point both for Western researchers in search of "new" medicinal plants and for critics protesting the practice (Sampath, 2005).

A study conducted in 2000 by India's National Institute of Science Communication and Information Resources found that nearly "80% of the 4,896 references to individual plant-based pharmaceuticals patent office related to 7 plants from India" (Carolan, 2008). Patent contestations over the appropriation of indigenous plants by multinational corporations, heated battles for the right to produce generic medicines, the establishment of databanks of biological information, and the exploitation of TRIPS flexibilities have all been part of India's battle to protect their traditional knowledge, biodiversity, public health and economic development from restrictive intellectual property laws that serve the interests of foreign multinationals (Park & Menghaney, 2010).

In 1995, two Indian scientists working at the the University of Mississippi Medical Centre were granted a patent on the use of turmeric, an edible root that had been used for centuries as a traditional herbal remedy (Curci, 2010). The healing properties of turmeric were commonly known in India, where it has been used for medicinal purposes, yet the U.S. Trade and Patent Office (USTPO) approved a patent to the American University for the application of turmeric after it had been scientifically proven, and subsequently published in a Western journal, to ease the healing of wounds. Two years after the patent had been granted, India's Council of Scientific and Industrial Research filed a complaint that questioned the "novelty" of the invention, and the patent was eventually revoked once the Indian government proved that prior knowledge of the healing properties of turmeric had been published through an "appropriate" channel, meaning a peer-reviewed journal (Robinson, 2010). Although the patent was successfully appealed, the case did nothing to discourage the wider practice of biopiracy, and in 1999 a new patent for turmeric was granted by the USPTO for the treatment of skin disorders (Shiva, 2001).

Ikechi Mgbeoji has criticized the subtle racism of an intellectual property system that refuses to recognize empirical knowledge derived from traditional communities as prior art, and only validates knowledge that has been produced or published in a Western context (Mgbeoji, 2006). While the plaintiffs were able to prove that this knowledge was not novel, they were able to do so only by citing a published study. Traditional communities, especially those living a lifestyle that is unchanged by modernity, often do not have access to journals, nor the know-how or funds to publish their knowledge (Oguamanam, 2008). As a result of this, as well as the oral nature of much traditional medicinal knowledge, a paradox exists where knowledge can be codified and well-established over many generations within communities and yet still not be considered prior art according to American patent law.

A second IP-related controversy in India erupted after an American company successfully patented a strain of rice that was argued to be distinct enough from Indian basmati rice to be eligible for protection, but similar enough to claim to be identical for marketing purposes (Dasgupta, 1999). The Texan company RiceTec Inc. was granted a broad patent with 20 claims covering a strain of rice that was allegedly developed by researchers claiming an "instant invention of a novel rice line", but which was argued to have been originally developed by Indian subsistence farmers (Shiva, 2001b). Among the claims in the patent were protection for the plant itself, the seeds, and the grains, and the method of selecting the grains (Robinson, 2010). RiceTec's "new" fragrant rice was developed so that Americans could domestically produce a strain of rice that was not only biologically close to the Indian variety, but which was to be marketed under the names Texmati, Kasmati, and Basmati to suggest the similarity to consumers (Dasgupta, 1999).

A wave of dissent quickly mobilized in India to oppose the patent. Many believed that the ability for an American company to patent and potentially undercut the market of one of India and Pakistan's

leading agricultural exports was in violation of the TRIPS Agreement. Several Indian NGOs mobilizing to oppose the patent, including the Center for Food Safety, the Research Foundation for Science, Technology and Ecology, as well as Vandana Shiva's own Navdanya organization, formed a loose coalition with international groups like RAFI, GRAIN and the Third World Network (Hamilton, 2006). The counter-movement succeeded in getting the attention of the Indian government, and in 2000, the Agricultural and Processed Food Products Export Development Authority in India applied for a re-examination of the patent. In 2002, the USPTO issued a reexamination certificate and cancelled claims 1-7, 10, and 14-20 of the patent (Robinson, 2010). The patent was successfully contested as a result of having proven that the patent met neither the grounds of novelty nor inventiveness. However, being as the word "basmati" was not registered as a geographical indicator and instead was a descriptive term, meaning "fragrant", RiceTec was still able to market their rice with the claims that it was similar to the Indian staple crop (Srivastava, 2003).

The basmati case raises issues that are central to the discussions of and problems with biopiracy. The case also illustrates the power that concerned citizen groups are capable of exerting through mobilization, campaigning and educating the public and government officials on intellectual property issues. It suggests the power that local activist groups can have when allied with international non-governmental organizations and governmental bodies. Perhaps most importantly, it demonstrates that even though the global intellectual property system maintains a structural imbalance that favours the West, the legal and institutional infrastructure can still be used to defend the interests of developing countries and traditional knowledge, in the instance where Western researchers have been granted patents on discoveries with questionable novelty.

However, it also reveals some crucial asymmetries in the global intellectual property system. As Carlos Correa has pointed out, though the TRIPS Agreement has established an unprecedented level of

international intellectual property law, certain flexibilities still exist that allow countries to implement their own national laws which can exclude certain types of knowledge from patentability (Correa, 2000). As mentioned above, India has opted for a *sui generis* system that prohibits the patenting of higher life forms, whereas the United States patent system offers no such limitations. This type of disjunction between systems allows for Western researchers to cherry-pick traditional knowledge that is in the public domain in one country and transplant it to the private sector in their home country, and then apply for international patents, undermining India's national authority to exclude plants from IP ownership (Sampath, 2005).

Furthermore, the case was only successful because activist organizations were able to convince the Indian government to oppose the RiceTec patent based on the terms already stipulated by the TRIPS Agreement. The wider issue of the impact of intellectual property law on food security, developing economies, and biodiversity was not addressed. Despite the Indian government declaring satisfaction with the reconsidered patent, the more radical claims that underscored the protest were not addressed. A statement entitled "No Patents on Rice! No Patents on Life!", issued on May 15, 1998, by the Peoples' Movements & NGOs in Southeast Asia to the World Trade Organization declares that "WTO member states must recognise that farmers' and community rights have precedence over intellectual property rights and that IPRs destroy biodiversity" (GRAIN Press Release, 1998). In a 2001 interview with the *New York Times*, Dr. S.A. Siddiq of the Indian Council of Agricultural Research lambasted the Indian government for limiting their contestation to the economic effects that the American patent would have on Indian basmati exports, and accused the government of being "complacent" about the "threat to India's traditional plant wealth" (Rai, *New York Times*, 2001). These more sweeping critiques of the global IPR system's negative effects on development and biodiversity were not resolved by the alterations to the RiceTec patent.

Perhaps the most widely publicized IP dispute in India to date has been over patents related to the neem tree. Vandana Shiva, who has worked extensively on Indian biopiracy issues, notes that numerous neem-related patents were filed by American and Japanese companies like W.R. Grace, the Native Plant Institute, and the Terumo Corporation (Shiva, 1997). The neem tree had been used traditionally as a biopesticide as well as for other diverse purposes like soap and candle-making, restoring nutrients to soil, nourishing plant growth and animal health, treating illnesses and diseases like malaria and cancer, and as a toothpaste (Robinson, 2010). Robert Larson, an American citizen who learned about neem's beneficial qualities in the 1970s, obtained a patent for his neem-based pesticide Margosan-O, which he transferred to the Grace corporation in 1988 (Aoki, 1998). The Grace corporation proceeded to establish a manufacturing base in India (Shiva, 2001).

The neem patent was met with popular resistance in India, with over 500,000 Indian farmers protesting the price increases at the Indian office of Cargill Seeds on Gandhi's birthday in October, 1993 (Aoki, 1998). A public campaign was launched by a large coalition of domestic environmental groups and international NGOs from over 40 countries to raise awareness about the issue (Koul & Wahab, 2004). In 1995, a coalition involving Vandana Shiva, Magda Aelvoet of the Belgian Green Party, and the International Federation of Organic Agricultural Movements (IFOAM) contested the neem patent at the European Patent Office on the grounds of its questionable "non-obviousness" (Hamilton, 2006). The campaign against the Grace corporation was met with mixed success. In Europe, the patent was invalidated in 2000 once it was proven that pre-existing traditional knowledge on the use of the neem tree seed contradicted Grace's claims that theirs was a novel invention (Hamilton, 2006). Yet in the United States, the patent remained valid due to the "geographical limitations" of the traditional knowledge, given that foreign traditional knowledge is only grounds for prior art if that knowledge has appeared in a scientific publication that is accessible to American researchers (Curci,

2010).

Grace justified their patent on the grounds that the industrial processing of the neem seeds constituted an "inventive step," and that the dearth of available published scientific knowledge on the neem tree qualified it as a novel invention. The patent filed was understood to be "inventive" even though the initial association between neem and pesticides was the result of generations of passed-down traditional knowledge (Shiva, 2001). The implication here is that knowledge is only truly "knowledge" if it has passed through the appropriate gateways, and gained acceptance by the Western establishment. Communities such as those which had been using the neem plant for hundreds of years may be aware of its properties, but without the ability to articulate in Western, scientific language the precise mechanism by which it functions, their information does not constitute an "invention" in the way that the global intellectual property system defines the term.

The contestation of patents filed by American corporations related to plant-based medicinal or agricultural knowledge can be understood as the result of an externally-imposed patent system that is in conflict with not only the preceding decades of Indian patent law, but with a wider understanding of what constitutes knowledge in traditional communities (Ogumanam, 2008). The differences are particularly stark with respect to the areas of agricultural and medicinal biotechnology, as most inventions within this entire vast field would have remained in the public domain under India's patent law (Chaudhuri, 2002). Biopiracy cases bring this conflict to the forefront, because they highlight the manner in which TRIPS constructs knowledge as Western and scientific, while rejecting all other forms of knowing as mere informational noise, useful only when it can be expertly converted into proprietary information.

In the wake of the neem, turmeric and basmati cases, and the increased public awareness of the biopiracy issue, several databases have been created to establish a means by which TK can be legally

recognized as prior art. The Indian Council for Scientific and Industrial Research (ICSIIR) of the Ministry of Science and Technology has, in conjunction with the Ministry of Health and Family Welfare, developed the Traditional Knowledge Digital Library (TKDL), a database which documents existing public domain literature on subjects like herbal medicines and yoga (Robinson, 2010). Established in India to protect the archived written TK related to Ayurveda and unani, the TKDL extends to the patent offices of 170 countries. It is a digital version of traditional medicinal knowledge that contains 1,40,000 pages of information in CD-ROM format, delivered to patent offices so that Indian TK can be cross-referenced during the approval process for any new patent (Sharma, 2002). Although the database was primarily conceived of as a defensive mechanism, Madhavi Sunder cites the database as evidence of traditional communities moving towards affirmative IP rights that are "voiced in terms of identity politics, survival, and human rights" (Sunder, 2006; 272). These rights, Sunder argues, are less based on neoclassical justifications for patents as incentive, but rather on the ideology of wealth redistribution or the movement towards reparations for past colonial injustices.

Organizations like the Honeybee Network, associated with the Society for Research and Initiatives for Sustainable Technologies and Institutions (SRISTI) also maintain that recognition of TK should go beyond a passive defense against biopiracy and seek active IP protection to the economic benefit of traditional communities (Coombe, 1998). The Honeybee network maintains a database that documents over 10,000 inventions, processes, and practices from farmers in 2,300 villages (Coombe, 1998). Though the primary purpose is to help impoverished farmers share information amongst each other, the Honeybee Network attributes the information to individuals and communities to offer them the possibility of seeking patent protection should they choose to (Varma, 1999).

Although the global patent system has been accused of engendering the commodification of all types of knowledge, Honeybee's Anil Gupta argues that the "denunciation of IPRs by indigenous

people has been overstated and is often inaccurate" and that IPRs can offer individuals "recognition, possibility of economic benefit, or provision of means to convey and disseminate knowledge to develop indigenous knowledge and conserve biodiversity" (Coombe, 1998; 109). Although the TKDL was created in response to perceived injustices in the global intellectual property system, Sampath argues that the Indian knowledge databases might work in conjunction with the intellectual property system to provide revenue and benefit-sharing to those impoverished communities whose ways of life are crucial to the preservation of biodiversity (Sampath, 2005).

But despite the potential that these databanks present to protect indigenous knowledge from biopiracy, traditional knowledge networks are not uncontroversial. Devinder Sharma labelled the TKDL "another tool for biopiracy", arguing that while the database allegedly exists to safeguard against excessive bioprospecting, the database will provide an extensive list of Indian traditional knowledge to those who wish to plunder it (Sharma, 2002; 2416). Companies would need only to make minor alterations to the archived knowledge in order to obtain patent protection from offices such as the USPTO which have proven themselves to be very flexible on the criteria of novelty and non-obviousness (Sharma, 2002). The worry is echoed by Rosemary Coombe, who points out the limitations that groups such as the Honeybee Network have in promoting the ownership rights for holders of TK. Before knowledge gets published in the Honeybee newsletter, the group must assist the individual or community responsible for the knowledge in gaining IP protection, but Coombe notes that "in most cases, however, the innovation will not have reached the point of patentability because the capacity for industrial application remains to be ascertained, and there is little investment capital available to explore the possibility" (Coombe, 1998; 113).

These databanks suggest alternative understandings of "privateness" and "publicness" that are oppositional to the Western, neoliberal sense of the terms. Placing TK in these databases

simultaneously privatizes information (in the sense that it is not as easily eligible for patents by foreign bioprospectors) and guarantees that it remains in the public domain. Though the turmeric, basmati, and neem cases have been labelled by activists and advocates as victories in the battle against biopiracy, they were in fact quite limited disputes over the legitimacy of specific patents. As Chris Hamilton argues, none of these cases did anything to challenge the foundations of the intellectual property system: they were simply examples of erroneously-filed patents that in the most successful cases were corrected, not fights against structural inequalities within the IP system itself (Hamilton, 2006b).

In addition to TK knowledge databases, the Indian government also created a government body to regulate the protection of biodiversity, the traditional communities that depend on biodiversity, and the knowledge generated by those communities. Proposed in 2000, the Biological Diversity Bill protects the intellectual property of indigenous knowledge, requiring that non-Indian citizens, or companies of any national origin obtain clearance from the National Biodiversity Authority (NBA) before working with biological resources (Biological Diversity Bill, 2000, Chapter II.3 Regulation of Biological Diversity; Agrawal, 2001), transferring the results of research (Chapter II, 4.), or applying for intellectual property rights (Chapter II, 6). With a mandate to protect biodiversity and honour the provisions of the UN Convention on Biological Diversity (CBD), the establishment of the National Biodiversity Authority could be read as an effort to counteract certain aspects of TRIPS. The creation of the NBA was a signal that in spite of international agreements that limit the power of the nation-state, national governments can still institute legislation to protect the interests of their publics. Once instituted, however, these bodies become subject to both controversy and circumvention, not only internationally but within the bureaucratic structure of the national government.

All in all, the history of patent controversies in India following the TRIPS Agreement reveals a period of turbulence and public distrust of Western IP interests. Substantial conflicts between the

Indian Patent Act of 1970 and the TRIPS Agreement set the stage for cultural clashes over what constitutes "inventiveness," what types of knowledge are suitable for privatization and what types of knowledge should remain collaboratively produced and publicly maintained. Furthermore, patent contestations over turmeric, basmati, and neem demonstrate the political capacity of both Indian and international interest groups dedicated to combating what they perceive to be an unjust system, while the establishment of TK databases and the National Biodiversity Authority present efforts at the state level to protect traditional knowledge from further biopiracy. It is in the context of this heated struggle, and these historical examples, that the current debate over the introduction of the *Bt* brinjal crop must be understood.

Section V: Monsanto, Greenpeace, and the Discourse of the Bt Brinjal controversy

This section will outline the controversy surrounding the proposed introduction of the first genetically-engineered (GE) food crop in India, the *Bt* brinjal crop. It will trace a case history detailing the timeline of events that begins with the genetic engineering of the organism, through the establishment of a moratorium against it, and ending with the National Biodiversity Authority's announcement that they would be pursuing legal action against Monsanto, the Maharashtra Seed Company, and the two Indian universities involved with the crop's development. Over 200 newspaper articles pertaining to the controversy were analyzed in order to determine the central arguments and discursive strategies employed by both sides of the debate, and to reveal the ways in which either side constructed fears of foreign influence and monopoly power.

The National Biodiversity Authority's decision to launch a biopiracy lawsuit against Monsanto and the Maharashtra Hybrid Seed Company (Mahyco) has been hailed by activists and commentators as a landmark moment for developing nations asserting their sovereignty in the face of TRIPS; but to characterize it as "India suing Monsanto", as it has occasionally been referred to by the press, (Pentland, *Forbes*, August 8, 2011) is an oversimplification. Certainly, it marks the first instance of a government body taking a multinational corporation to court for misuse of traditional knowledge. But *Bt* brinjal has been fraught with conflict and incited debate within government since the moment of its proposed introduction. Opposition to the transgenic crop has never been unilaterally supported by government officials, and even while a legal case was being pursued by one arm of the government, another arm (the Biotechnology Regulatory Authority of India) was being created to streamline the crop's commercial release (Menon, M, *The Hindu*, 2012).

An examination of the discourse employed by government officials, Indian scientists, civil society advocates, and public opinion as expressed through op-ed pieces in Indian newspapers, reveals that the lawsuit can be understood as a means of addressing underlying geopolitical anxieties about the threats that IP-ownership of genetically modified foods may pose to Indian national sovereignty. Although Purkayashtha & Rath argued that the public discussion of the *Bt* brinjal controversy did not adequately address the underlying issue of seed monopolies (Purkayashtha & Rath, 2010), concerns about IP had been a pervasive undercurrent to the discourse since the crop was first slated for commercial release, and the lawsuit served to bring those anxieties to the front of the table.

In 1997, Rameshwar P. Sharma and a number of scientists from the National Research Centre for Plant Biotechnology and the Indian Agricultural Research Institute published a paper in *Molecular Breeding* announcing that they had successfully inserted the *cryIAc* gene into an eggplant to create a variety that would be inherently pest-resistant (Sharma et al, 1998). The gene was sourced from the same soil bacterium, *Bacillus thuringiensis*, that had been used in the transgenic *Bt cotton* crop that transformed the structure of Indian agriculture, and is to date the only genetically-modified plant to be commercialised in India (Yamaguchi, 2007; Kolady & Lesser, 2012). The gene codes for a insecticidal protein with a high level of toxicity to insect pests of the *lepidoptera* order (Sharma et al, 1998), the genus comprising the largest-scale pest for brinjal crops, the eggplant fruit-and-shoot borer (EFSB), which can cause losses of up to 70% of annual brinjal crops (Kolady & Lesser, 2008).

In 2000, Mahyco announced that it was to release a commercial version of the modified brinjal plant. The crop was expected to have transformative success in India, whose high level of eggplant-growing subsistence farmers had no hybrid brinjal varieties on the market with traditionally-bred high levels of EFSB resistance. The *cryIAc* gene was provided by Monsanto, who worked in partnership with Mahyco to develop India's first genetically-modified food (Shelton, 2010). In 2003, Cornell

University, and the United States Agency for International Development (USAID) became involved in the project, and the *Bt* technology was subsequently transferred to two Indian universities, the Tamil Nadu and the Dharward University of Agricultural Sciences, and sub-licensed to the Indian Institute of Vegetable Research, to develop open-pollinated varieties of the transgenic crop to lower costs for subsistence farmers intent on maintaining seed-saving practices (Shelton, 2010).

In 2006, Mahyco submitted an application to the Genetic Engineering Approval Committee (GEAC), the Indian regulatory body that oversees developments in biotech, to gain approval for the commercial release of the transgenic crop (*India Business Insight*, 27 May 2006). A report from the *Indian Business Insight* detailed that the independent panel in charge of reviewing the application was calling for precaution, and that it had reached no conclusion about the crop's safety due to insufficient tests (*India Business Insight* 4 November, 2009). After field trials had been conducted, the GEAC nevertheless approved its commercial release, and in 2009, *Bt brinjal* was slated to become the first genetically-modified food crop available commercially in India (Shelton, 2010).

The news of the commercialization of *Bt brinjal* was met with a wave of controversy that began with an intense public outcry and led to state bans and eventual national action. The state governments of Andhra Pradesh, Kerala, Chattisgarh, Karnataka, Bihar, West Bengal, Orissa, and Uttarakhand unanimously opposed the introduction of the crop (Ramesh, *The Hindu*, Sept 2010), while organizations consisting of farmers, students, and environmental groups conducted consistent protests against any release of the GMO (*The Hindu*, Feb 6, 2010; Feb 7, 2010; Feb 9, 2010) On February 9, 2010, the Minister of Environment & Forests Jairam Ramesh introduced a moratorium on the release of the brinjal (Shelton, 2010; Apel, 2010; Kolady & Lesser, 2012), explaining that the public reaction had been so intense that he had no choice but to oppose the commercialization of the GM crop until further scientific studies had been conducted to unequivocally demonstrate the safety of the product (Ramesh,

2010; Bagla, 2010a).

Ramesh's decision was immediately condemned by scientists and other government officials as a regressive move against development that was done to appease meddling NGOs (Apel, 2010). In response, Ramesh emphasized that the moratorium was not a unilateral move to stifle scientific development, but rather an attempt to balance economic development with broader social concerns, stating: "I am not against bio-technology. The moratorium is limited to *Bt* brinjal and not a moratorium on genetic engineering or genetic modification" (Srinivasan, *The Hindu*, December 27, 2010). The press at the time portrayed Ramesh alternately as a people's hero or a foolish radical (Kurmanath, *The Hindu*, July 12, 2011), while most news reports at the time pointed out how divided the Indian government was as a result of his decision (Jayaraman, *Nature Biotechnology*, 2010). Ramesh himself stated to the press that he was "fighting a lonely battle" with "no friends" in government except for the Prime Minister, Manmohan Singh (*The Hindu*, February 26th).

Friendship aside, Singh, who had made public statements in favour of pursuing biotechnology (Bagla, 2010a) assembled a meeting on February 24, 2010, between Ramesh, Agriculture Minister Sharad Pawar, and Science and Technology Minister Prithviraj Chavan to discuss the Environment Minister's controversial action (Parsai, *The Hindu*, Feb 24, 2010). The GEAC quickly began consulting with prominent Indian scientists to establish the requisite tests that would secure the crops release, while more than 540 scientists mobilized to petition the Agriculture Minister to put pressure on Ramesh to reverse his decision (*The Hindu*, April 24, 2010). When in the following year the GEAC recommended a "limited release" of the transgenic crop, Ramesh's opinions about the crop had solidified and the moratorium continued in spite of the GEAC's recommendation (*India Business Insight*, May 2011).

In response to pressure from the Karnataka Biodiversity Board and the Indian NGO the

Environmental Support Group (ESG), the National Biodiversity Authority began an investigation of Monsanto and Mahyco for biopiracy, gathering evidence for possible legal action (*Mail Today*, Aug 12 2011). On June 20th, 2011, the NBA decided that it had sufficient grounds for launching a lawsuit against both companies, as well as the Tamil Nadu and Dharwad Universities, for misuse of India's traditional knowledge (National Biodiversity Authority, Proceedings of the 20th Authority Meeting, 20th June, 2011). The charges pertained to the acquisition of nine local eggplant varieties, which were used as the basis for the GMO without the requisite permission from the NBA (*Mail Today*, Aug 12, 2011). The ESG had argued that "not only have various private and public sector agencies blatantly violated the provisions of the BD act, but they seem to have been encouraged to do so because of the weak monitoring and regulation by the Karnataka Biodiversity Board" (Saldanha & Rao, Environmental Support Group letter to Karnataka Biodiversity Board, Feb 15, 2010). Both Monsanto and Mahyco denied the claims, arguing that the brinjal had been indigenously developed, with the local varieties accessed by the Universities using the proper channels (*India Business Insight*, Sept. 5, 2011).

After approximately two years of intense public discussion surrounding *Bt* brinjal, the piracy lawsuit publicly addressed a core underlying issue that can be observed throughout media accounts of the event: the pernicious influence of intellectual property monopolies and the extent to which Indian's sovereignty is jeopardized by multilateral frameworks such as the TRIPS Agreement. From the beginning of the public discussion to the present, statements made by activists, scientists, and op-ed journalists betray a tension in which advocates make use of the same rhetorical devices to drum up underlying fears about the shadowy influence of foreign pressures undermining Indian autonomy. Although the terms of the debate shift between arguments over food security, farmers rights, scientific consensus, and economic independence, worries about the intellectual property implications of *Bt* brinjal exist as a crucial undercurrent. The notion of questionable safety of genetically-modified

organisms is often underscored by a subtextual worry that links the real threats to safety with the monopolization of Indian agriculture and the widening reach of the global intellectual property system. The lawsuit over traditional knowledge piracy can be seen as a form of sublimation, which was ostensibly about a minute and specific challenge over the questionable use of a single crop, but which captured the attention of the public in part because it brought latent anxieties over foreign ownership of seed to the foreground of media discourse.

The notion of farmers rights is one of the most hotly contested terms of the debate, with both those in favour of and those opposed to the introduction of *Bt* brinjal vying to declare themselves the true spokespeople for Indian subsistence farmers. In a lexical analysis of material sampled from 95 interviews conducted with government actors, civil society advocates, industry representatives, journalists, scientists and farmers about the introduction of *Bt* cotton to India, Tomiko Yamaguchi found that "actors in many groups find the concept of farmers more useful as a touchstone in making their case for or against GM crops than concepts such as scientific research" (Yamaguchi, 2007; 92). An analysis of newspaper articles and press releases pertinent to the *Bt brinjal* controversy supports Yamaguchi's finding that the concept of farmers is a useful tactical tool for both proponents for and opponents of GM agricultural technologies.

Advocates for the introduction of the transgenic brinjal crop framed the notion of farmers rights in three ways: promoting the farmer's right to choose between traditional and GMO crops, helping farmers improve their overall lives by raising incomes and reducing the stress caused by crop destruction, and allowing farmers access to state-of-the-art technology. Andrew McConville, the Syngenta Asia Pacific Corporate Affairs Head, was quoted in *The Hindu* as stating that "farmers should be given a choice to go for an agricultural practice best suited for them" (*The Hindu*, March 3, 2011), while Kiran Mazumdar-Shaw, chairperson of Karnataka's Vision Group of Biotechnology, argued that

"It is up to farmers to opt or desist from cultivating *Bt* brinjal. If there are no tangible benefits, there will be no takers for *Bt* brinjal. Let the farmers decide" (*The Hindu*, Feb 5, 2010). Here, blocking the introduction of biotechnology is constructed as an affront to the farmer's right and ability to ultimately decide for themselves which farming practices they should be allowed to pursue.

A second recurring argument is based on a more vague appeal: that *Bt* technology will improve farmers lives, by either raising their incomes, eliminating emotional stress, or both. Kameshwar Rao, a prominent Indian scientist and the secretary for the Foundation for Biotechnology Awareness and Education (FBAE) was quoted as stating that "the introduction of *Bt* brinjal should not be delayed in the country, and commercialization of the crop should be allowed for the benefit of farmers," (*Food Chemical News*, Oct 29, 2010). He also stated that "allowing *Bt* cultivation will enable millions of brinjal farmers to earn more and lead better and happier lives" (*The Hindu*, Sept 7, 2011). Raju Barwale, managing director of Maycho, claimed that GM technology "will help millions of brinjal farmers who have been suffering from the havoc caused by the BFSB and will help farmers tackle this pest in an environmentally-friendly manner and increase yields and farm income" (October 15, 2009, *Financial Express*). A similar public statement was made by Samir Brahmachari, director general of the Council of Scientific and Industrial Research, who argued that thousands of farmers would benefit from a technology that would hamper the same pests which cause Rs 1,000 crore worth of losses to the brinjal crop annually (*Financial Express*, Jan 20, 2010).

A third, related, appeal to the defense of farmers' interests pertains to the farmer's right to access technology. The scientists' petition to repeal the moratorium includes a statement that the Ministry of Environment and Forests "appears to see no urgency in delivering the fruits of modern biotechnology to poor farmers" (*The Hindu*, April 24, 2010). An opinion piece in the financial express adopts a similar line of argumentation, claiming that the brinjal has come to symbolize "the Indian farmer's right

of access to technology," and demands to know why "the Government stubbornly block(s) farmers' access to frontier technologies?" (Joshi, *The Hindu*, Feb 10, 2010) With this argument, the notion of poor, backwards subsistence farmers is counter-posed against the wonders of modern technology to present an emotional argument against a government whose regressive policies stand in between the Indian farmer and the path to modernity.

Likewise, the defense of farmer's rights was also a popular rhetorical tool for those attempting to block the introduction of the *Bt* technology. Vandana Shiva described the moratorium as a "victory for farmers" (Parsai, *The Hindu*, Feb 9, 2010) while groups such as the Organic Farmer's Association of India (OFAI), and Dharward Organic Growers Association, rallied in opposition to the genetically modified crop (*The Hindu*, Aug 16, 2010; *The Hindu*, Oct 21, 2010). The discourse of the anti-*Bt* camp closely mirrors that of the scientists and lobbyists advocating the introduction of transgenic crops, with both groups claiming a defense of the farmer's right to choose, the economic interest of farmers, and the improvement of their mental and cultural lives. Here, however, the introduction of *Bt* technology was construed as a *restriction* to farmer's freedom, because of both the perceived threat to indigenous brinjal varieties that the transgenic crop allegedly posed, and because of the possibility that genetically-modified eggplants would keep farmers tethered to the global intellectual property seed monopolists.

A 2011 press release from the Coalition for a GM-Free India claimed: "it is also clear that farmer's and consumer's rights are at stake here and we still don't have a liability regime in this country to relate to this irreversible technology", and the same press release also asked: "What about IPR issues especially with farmer's varieties in public sector bodies being converted to GM?" (Kuruganti & Radhakrishna, 2011). Miguel Brazanga of the OFAI accused Monsanto and Mahyco of "brainwashing people into buying products of multinational seed companies, and people become slaves of these products" (*The Hindu*, Oct 21, 2010); while a day of protest entitled *Monsanto, Quit India!* argued that

the Indian public was engaged in a "new freedom struggle" to "protect the rights of farmers over their seed and natural resources" (*The Hindu*, August 10, 2011).

The concept of farmer's rights is an emotional appeal used by both camps to promote their own perspectives and to deflect the claims made by the other side of the debate. Statements made by Op-ed journalists on the relationship between genetically modified crops and farmers' rights varied widely during this period. One journalist opined that the voices of brinjal farmers "went unheard" (*Financial Express*, 10 Feb 2010) in Ramesh's decision to impose a moratorium, while another (publishing before the moratorium) argued that it was farmers' lobby groups that were responsible for the introduction of *Bt* cotton on the market, and lamented that because "brinjal has no such organised grower's lobby," farmers voices are at risk of being drowned out by activist protests (Damodaran, *The Hindu*, 2009).

The only transgenic crop to be successfully introduced to India was Monsanto's *Bt* cotton, which resulted in similar public debate despite its approval and release. Tomiko Yamaguchi's discourse analysis of *Bt* cotton suggests that appeals to science are less useful as a strategic tool than the defense of farmer's rights. He argues that contestations over claims to scientific truth and accusations of the manipulation of scientific findings for political purposes is a recurring rhetorical strategy employed by both sides of the debate. In newspaper articles and press releases, those advocating for the dismissal of transgenic crops tend to emphasize a lack of consensus among scientists surrounding the safety of the technology, a purported conflict of interests amongst the regulators, and the independence of their own scientific studies. By contrast, articles criticizing the ban on *Bt* brinjal tend to hint at a scientific consensus supporting the safety of genetically-modified crops, to appeal to the neutrality of the scientific method, and to attack opponents for allowing their ignorance or emotions to stand in the way of scientific progress.

The primary discursive strategy for GM proponents with respect to science involves playing up

the distinction between their own scientifically-motivated stance and the politically-motivated stance of the opposition. Robert T. Fraley of Monsanto issued a public statement claiming that Monsanto was "waiting to see how the Government works to ensure science-based clearance of *Bt. brinjal*. We consider the moratorium on *Bt. brinjal* a step back. The science-based approach has become more politicised" (August 20, 2010). Ram Kaundinya, the CEO of the biotechnology company Advanta, is quoted in the *Hindu* as stating that "scientific data is the casualty in biotech arguments which are pegged on emotional appeal" (Srinivasan, R, *The Hindu*, 22 July, 2011).

By emphasizing both the neutrality of science and the alleged consensus among scientists, advocates are able to dismiss any claims that their own decisions are politically motivated, without having to do so explicitly. The Prime Minister Manmohan Singh dismissed the opposition against *brinjal* for being on "unscientific grounds" (*Financial Express*, Jan 20, 2010), while Kameswara Rao complained that although the GEAC approved the release of the transgenic crop, the Environment Minister "has based his decision on public opinion and not on scientific reason" (*The Hindu*, April 24, 2010) and that in doing so he had "sent a powerful message to the world that India's decisions on matters of science and technology will not be made on the basis of science and biosafety, but on the decibel strengths of ideologically motivated, anti-science activists" (*ibid*).

The dismissal of activists as "anti-technology" is a charge that recurs throughout the discourse. Portraying opponents as Luddites shifts the terms of debate from the specific to the general, redirecting focus away from the political and health issues surrounding the crop towards a broader discussion of the importance of modernization. This is complemented by statements like the one made by Nat Kav, Associate Professor of Biotechnology at the University of Alberta, speaking to the Dr. G.R. Damodaran College of Science, "We have to look at the end product rather than the details of technology" (*The Hindu*, Feb 14, 2010). The focus on the "end product" rather than the "details" exhibits another move

from the specific to the general as a strategy employed to get the public on-side, a rhetorical strategy also observed by Carmen Schifellite in his analysis of the emergence of and ensuing debate surrounding sociobiology and "selfish gene" theory, where proponents of the theory employed reductionist accounts of the interplay between genes and environment, and making use of macro-level arguments to simplify the debate (2011; Chapter 3, pp. 40-53)

In spite of attempts to strategically draw boundaries between those motivated by "science" and those motivated by "politics," an observation of the discourse employed by these scientists reveals that the narratives they construct about the brinjal debate tend to also be framed within the context of geopolitical autonomy. The opposition to *Bt* brinjal is portrayed as an impediment to the development of a nascent Indian scientific sector, and paradoxically contributing to a increased reliance on foreign influences. Kameshwar Rao was quoted as saying "This is bad for the country's agricultural and biotechnology future. Our scientists have lost their credibility, companies will be unwilling to invest more money, and it will take us a long time to pick up the pieces again."(Chandran, *Financial Post*; Page FP3, February 17, 2010). Raos's argument is framed in terms of national sovereignty, implying that developments in the biotechnology sector are positively correlated to India's domestic economic interests. Further statements by scientists and op-ed journalists lambasted activist pressure as an obstacle to governmental bodies whose purposes are to streamline the flow of science, technology and information.

By contrast, opponents of GM tend to criticize the scientists for being politically-motivated themselves, and for being subject to the influence of lobbying interests. Following news in 2010 that the GEAC was favoring a limited release of *Bt* brinjal, Kavita Kuruganti of the Coalition for GM Free India accused their report of being "a biased, political position paper by the science academies." (*The Hindu*, Sept 27, 2010). The accusation of bias in the GEAC is one that has been echoed by Ramesh

himself, who had made a comment in the midst of the moratorium scandal suggesting that a more appropriate name for the group would be the "Genetic Engineering Appraisal Committee" (Srinivasan, *The Hindu* Feb 12, 2010). Accusations of political bias among scientists were a common theme amongst opponents of *Bt* brinjal; and in this context, the renowned soil scientist K.P. Prahakaran Nair claimed that the The Indian Council of Agriculture Research (ICAR) "is hand in glove with Monsanto," while the NGO GM watch published several press releases in 2012 arguing that *Bt* brinjal regulators in India had a "strong pro-GM bias ... making its value questionable", and that "the group is heavily tilted towards known GM crop proponents" (May 25th, 2012).

Conversely, when citing their own scientific studies, such as those conducted by the New Zealand epidemiologist Lou Gallagher and the Australian researcher Dr. Judy Carmen (Carmen, 2010), opponents of transgenic foods reiterate the word "independent", to emphasize their position outside of the domain in which mainstream scientific research and corporate interests are believed to co-exist. Although an opinion column in *The Financial Express* echoed the statements made by Indian scientists, claiming that "globally accepted scientific research is unanimous in its support for the commercial release of brinjal" (Wagner, *Financial Express*, July 13), opponents are quick to cite the lack of agreement among scientists surrounding the safety of transgenic foods. In his report detailing the reasons for the moratorium, Ramesh wrote that there was "no clear consensus within the scientific community itself" (Ramesh, *The Hindu*, Feb 9, 2010). The minister also cited a statement made by preeminent scientist and father of the Green Revolution M.S. Swaminathan, claiming that GM food should be based on strong principles of bioethics, "there will be serious public concern in India, as well as many developing countries, about their ultimate nutritional, social, ecological and economic consequences" (Ramesh, 2010).

Criticisms pertaining to scientific studies on the safety of transgenic organisms are entangled with

concerns over biodiversity and environmental degradation, another contested concept with meanings that shift depending on who is positioning it. Opponents claim to be exercising a precautionary principle, arguing that insufficient evidence exists to prove that the toxicity of *Bt* brinjal will effect only the EFSB, or that cross-pollination with traditional crops will threaten India's national biodiversity. One opinion column provides a list of the pervasive fears surrounding transgenic crops that include "mutations, disease and deformity in man, animal and other life forms" and asks, "Since we do not ignore a bomb threat call, how can we presume the safety of GM foods without conclusive proof" (Upadhyay, *The Hindu*, 2010).

Fears about transgenic crops cross-pollinating with open-pollinated, heirloom varieties and limiting the genetic pool of Indian plant life also recur in discussions about the potential negative impacts of *Bt* brinjal. In a correspondence between Jairam Manesh and M.S. Swaminathan, the scientist warns of the "extinction of the gifts of thousands of years of natural history" (Ramesh, *The Hindu*, Feb 9, 2010), while the Kerala Biodiversity Board Chairman V.S. Vijayan stated "our concern is the contamination of biodiversity; cross-pollination can cause irreversible damage" (*The Hindu*, Feb 6, 2010). Likewise, a report issued by Greenpeace warns of the emergence of super-pests, super-weeds, and the elimination of traditionally-bred varieties (May, 2012).

The most predominant ecological argument advanced by those opposing the moratorium is that stifling the introduction of *Bt* brinjal will contribute to an over-reliance on pesticides that is more harmful to environmental and human health than genetically-modified foods are. Bhaskar Balakrishnan's March 3, 2010 column in *The Hindu* states that "those who advocate this are closing off the non-pesticide option and , in effect, arguing in favour of pesticide-based production of brinjal" (Balakrishnan, 2010). In its most extreme iterations, opponents of biotechnology are even accused of being puppets of the pesticide industry. One *Financial Express* column accuses environmentalists of

being "egged on by the insecticide producers of Europe" and claims that the anti-*Bt* protests are led by "European insecticide producers and NGOs backed by them" (Joshi, *The Hindu*, Feb 24, 2010).

Like the issues of farmer's rights and scientific neutrality, the anti-pesticide argument put forth by GM advocates is framed in the context of financial interests and economic independence for India. Balakrishnan's column similarly warns that the foreign pesticide industry will profit from the moratorium, while one *Financial Express* columnist bemoans how the "the obstruction from environmental NGOs that are using falsehoods, scare stories and pseudo-science to pressure governments to block proven agricultural technology" is a "new obstacle" to overcoming "huge subsidies for North American and European agriculture" (*Financial Express*, July 13 2011).

Underlying each of these contested concepts lurks the spectre of foreign elite actors manipulating India's political, scientific, and economic processes. Taking the form of either Western activists or multinational corporations, the presence of foreign influence is continually evoked by both sides in the discourse surrounding *Bt* brinjal. For proponents of the crop's release, the protest movements are caricatured as organized by European and North American middle classes disconnected from the realities of the Indian farmer and with a disproportionate influence on policy. One opinion piece describes the opposition as "sundry NGOs, left-wing activists" (*Financial Express*, 10 Feb 2010), while another quotes Dr. Norman Borlaug criticizing Greenpeace members for being "utopian people who live on Cloud 9 and do not understand the needs of farmers in the third world" (Wagner, July 13, 2011).

Opponents to transgenic brinjal, such as Vandana Shiva and the Coalition for a GM-Free India, use similar rhetoric to construct a *David vs. Goliath* narrative of subsistence farmers battling the intellectual property giants Monsanto in an ethical fight over the future of agriculture and the defense of heirloom foods and seed-saving. One Yoga guru who spoke out against genetically-modified foods

warned that they are "killing our traditional varieties and letting foreign companies take over our country" (*The Hindu*, Feb 9, 2010). The vice-president of the farmer's organization All India Kisan Sabha accused the transgenic brinjal of being a "conspiracy hatched by the capitalist countries" (*The Hindu*, Feb 8, 2010, Hindu), while another declared that "*Bt* brinjal was a subtle weapon of imperialism of capitalist forces" which have "totally gobbled up the farming sector and small farmers have no place in the economy" (Parsai, *The Hindu*, Feb 26, 2010). Even the former Prime Minister of India, H.D. Deve Gowda, pressured Prime Minister Singh to block the crop's commercialization, lest farmers "be made scapegoats by bowing to pressure from multi-national corporations" (*The Hindu*, Feb 6, 2010).

Arguments range from extremist sentiments about the extent of Monsanto's control to more subtle pleas for consideration of the wider political economy implications of the crop's release. Phrases like the "octopus-like reach" of the "foreign seed companies" (Srinivasan, *The Hindu*, March 1, 2012) or warnings such as that given by Kerala's Chief Minister, V.S. Achuthanandan, that biotechnology could "lead to the death of local seed varieties and allow multinational monopoly houses to take control of the country's farm sector" (*The Hindu*, Feb 3, 2010) present loud alarms about the potential for foreign rights holders to claim intellectual property protection for India's traditional knowledge; but even advocates of GM crops do not dismiss outright concerns over the possibility of IP seed monopolies. Dr. Clive James, a representative from the International Service for the Acquisition of Agri-Biotech Application argued that "the Chinese have made a conscious choice of developing their own and not relying on the proprietary technology of multinationals ... as its policy makers believe there are unaccepted risks of being dependent on imported technologies for food security" (Kulkarni & Damodaran, *The Hindu*, Feb 18 2012). The report also suggested that China's model was one for India to follow, where biotechnology could be pursued without the country surrendering their economic sovereignty.

Purkayashtha & Rath have argued that wider political economy considerations involving intellectual property monopolies were not adequately addressed in the predominantly technological discourse surrounding the debate over *Bt* brinjal in India, and that arguments from both sides tended to downplay the role of Monsanto and seed ownership in discussions about the potential consequences of the crop's introduction (Purkayashtha & Rath, 2010). Not only have intellectual property issues been a fundamental undercurrent to the discussion since the beginning, but the figure of Monsanto has been an important rhetoric tool used by both sides as a means to dismiss the other's argument. Anti-GM protest groups have continually evoked the shadow of multinational seed monopolies to drum up fear about the potential introduction of the crop, but GM advocates have also made use of the Monsanto name to dismiss opposition, by claiming that opponents are overreacting to the presence of a multinational corporation and arguing that it is Monsanto's presence *alone* that is being opposed. Ram Kaundinya was quoted as saying "That these are multinationals is more cause for opposition than the technology itself" (Srinivasan, *The Hindu*, July 22, 2011), while one article stated that "one of the main problems facing GM aubergine in India is its association with the controversial company Monsanto" (*South China Morning Post*, March 9, 2010). One writer has argued that the activist's efforts have been entirely counter-productive in this regard, claiming that instead of pursuing a middle-ground that could have led to rational regulation in the public interest, "the activists instead trained their guns on the technology itself, thereby ironically helping perpetuate Monsanto's monopoly" (Damodaran, *The Hindu*, Oct 30, 2009).

Counter-accusations against the credibility of the opponents has been a discursive tool used by biotech advocates throughout the course of the the debate. The same activists fighting to prevent the foreign hand of multinational corporations from threatening India's agricultural autonomy are accused by GM advocates of being swayed by foreign interests themselves. One opinion column in the *The*

Hindu lamented that "dispersed farmers would probably be no match for the likes of Greenpeace and Vandana Shiva, who are better placed to influence both middle-class opinion and government policy in the particular instance" (Damodaran, *The Hindu*, 2009). The alleged role of Greenpeace in influencing Ramesh's decision to declare the moratorium is one of the more popular strategic devices for those dismissing opponents to biotechnology. In an interview with *The Hindu*, Ram Kaundinya raises the question of where Greenpeace's funding comes from, leaving open the implication that their opposition to GM foods may be politically, rather than environmentally, motivated (Srinivasan, 2011).

Accusations that foreign interests mobilized the protest movement are not merely the lowly grumblings of conspiracy-minded opinion-columnists. In 2012, when asked about the reasons behind the brinjal moratorium, Prime Minister Singh responded: "There are NGOs, funded from the United States and the Scandinavian countries, which are not fully appreciative of the development challenges that our country faces" (Bagla, 2012a). This was before he extolled the benefits that biotechnology could offer the Indian people and the need for a more streamlined bureaucracy to facilitate technological transfer and development. The implications were strong enough that Ramesh issued a public statement distancing himself from the international NGO: "Greenpeace, a foreign-funded NGO, accused me of propagating the line of Monsanto during a public hearing in Bangalor. So on *Bt* brinjal, I can confidently say no NGO influenced my views" (*The Hindu*, Feb 26, 2012).

Singh's evocation of a foreign presence behind protests was not well-received by all members of the press. One columnist wrote that "the idea that NGOs with foreign links are fuelling the protests seem more expedient than convincing" (*The Hindu*, Feb 27, 2012). Yet another claimed that the PM had created "a smokescreen behind which to undermine both nuclear safety and food safety of 1.2 billion Indians," and wrote that "it is ironic that a Prime Minister who has been instrumental in opening up the economy to foreign corporations now accuses civil society of being controlled by a

foreign hand" (Aich, *The Hindu*, March 1, 2012). The journalist's response to the PM assertion by an invocation of a foreign hand of his own reveals how deeply entrenched the notion of political economic sovereignty is in the discussion of *Bt* brinjal.

Rather than having been introduced to the public imagination by the biopiracy lawsuit in June 2011, fears about the negative effects that intellectual property ownership would have on India's agricultural system have been present since the beginning of the debate. Following the moratorium, Ramesh defended his decision by asserting that "We do not want GM food to end up as a private monopoly" (*The Hindu*, March 23, 2010). In the published statement announcing the moratorium, Ramesh wrote that "very serious fears have been raised in many quarters on the possibility of Monsanto controlling our food chain if *Bt*-brinjal is approved . Indeed it would not be an exaggeration to say that public concerns about *Bt*-brinjal have been influenced very heavily by perceptions of Monsanto itself" (Ramesh, Feb 9, 2010). Ramesh went onto state that India must learn to benefit from Monsanto investments "without jeopardising national sovereignty and also develop countervailing power to it," (Ramesh, *ibid*) and noted that a lack of publicly-funded biotechnology efforts left India susceptible to monopoly concerns. His report pointed out that the Material Transfer Agreement between the Tamil Nadu Agricultural University and Monsanto in 2005 put forth "worrisome questions on ownership (both of products and germplasm) and what TNAU can do and not do" (Ramesh, *ibid*).

Section VI: Discussion

The *Bt* brinjal discourse exemplified in statements made by scientists, biotechnology lobbyists and opinion-page journalists reveals a field of contestation over the concepts of farmers rights, scientific consensus, and environmental impact. Although much of the discussion around the moratorium pertained to technical concerns over the adequacy of safety tests, underlying each of these claims were anxieties over losses to Indian sovereignty as a result of the involvement of foreign actors. Both sides of the debate rhetorically use defences of farmers rights to advocate their oppositional stance. This is similar to Yamaguchi's findings in his study of *Bt* cotton, in which he stated that "GM crop controversies in India reflect elite actors' attempts to compete for a shared social identity with farmers, thus constructing a context for the particular public policy prescriptions they support" (2007; 87). My analysis suggests that defences of farmers were constructed as either the right for farmers to save seeds in the face of multinational corporate IP monopolists, or the right for farmer's to gain access to frontier technology without being impeded by the meddling influence of foreign NGOs. Opponents tend to overstate farmer resistance to transgenic crops and downplay the role that elite actors, such as foreign NGOs, have had in mobilizing the Indian government to take action on the issue.

Proponents of *Bt* brinjal defended it as an environmentally-friendly technology, by arguing that it would assist farmers in reducing their pesticide output, but also that it would undermine the influence that the foreign pesticide industry has on India's agricultural economy. Opponents to the crop's introduction presented worries that transgenic crops developed with Monsanto's assistance would cross-pollinate with native plants and pollute the country's biodiversity. Here, the diminishing boundaries between the corporate and the natural, between native and foreign plant varieties, conflate fears of ecological invasion, the erosion of natural borders, with fears of globalization, the erosion of natural borders.

Even when the debate rested on advocating a position of scientific neutrality that defined itself in contradistinction to political and emotional arguments, the discourse never transcended politics. In constructing themselves as rational, and scientifically neutral, GM advocates defined their opposition as foreign, left-wing interest groups clouded by emotional arguments, and manipulated by the foreign hand of the international protest community. The argument not only attempted to construct the science behind transgenic crops as neutral and outside of politics, but presented an account of the entire scientific industrial complex of India as operating somewhat independently of foreign involvement while being at risk of losing having their nascent R&D infrastructure losing its competitive edge. Scientists downplayed the public fear of Monsanto's involvement in *Bt* brinjal's development, while simultaneously arguing that actions against biotechnology left India's scientific infrastructure economically and politically weakened.

By shifting the grounds of the debate to two camps that are, rather simplistically, either pro-science or anti-development, the worries about ownership monopoly are oversimplified. Purkayastha & Rath have argued that by turning the focus away from the structural realities of the transgenic crop industry, which is controlled by a small handful of multinational corporations, and turning the focus onto the influence that foreign lobby groups allegedly had on the popularization of anti-biotech sentiment, the *Bt* brinjal debate has largely closed itself off to discussions of potential open-source pro-GM alternatives such as public domain biotechnology (Purkayastha & Rath, 2010). Yet even though GM advocates tended to downplay monopoly fears, they were careful to never overtly defend Monsanto or employ either natural rights-based or incentive-based defences of seed ownership. The fact that advocates never mounted any *defense* of IP suggests that public opinion about Western intellectual property laws is strong enough in India that the more effective strategy was to argue that GM crops ultimately best serve India's national interests, and that opponents are merely succumbing to

North American and European environmentalist ideology.

By contrast, the issue of seed monopoly is at the centre of anti-GM discourse, at times to the point of simplifying the issue by overplaying the reliance of India's biotechnology industry on foreign actors. Writers opposing the introduction of *Bt* brinjal often conflated Mahyco with Monsanto, harpooning any research done by public-private partnerships as indistinguishable from the economic interests of multinational corporations. At the extremes of the debate, Greenpeace becomes the scapegoat for the pro-GM perspective, existing as a stand-in for anti-GM forces portrayed as money-hungry, hapless, foreign fools who either do not understand the benefits of GM technology or are misleading the public into anti-GM sentiment by using fear tactics, and creating a fictional narrative of the dangers of transgenic crops to support themselves financially with public donations to stop the problem. On the other end of the spectrum, Monsanto is portrayed as responsible for all genetic modification, controlling Indian agriculture from afar, manipulating scientists to speak in favour of GM crops while poisoning the environment and creating terminator seeds that will keep Indian subsistence farmers tethered to the companies intellectual property seed monopoly.

Although much of the brinjal debate that appeared within newspapers up to and following the biopiracy lawsuit is ostensibly more about GMOs than it is about IPRs, the debate rests along familiar theoretical foundations. Both sides of the debate employ the utilitarian rationale, attempting to maximize social good and strike a counterbalance between economic interests and social benefits. The difference primarily lies on to what extent the influence of a foreign multinational monopolist like Monsanto will negate increased crops yields and decreased pesticide use, and whether or not the science behind GMOs can even be trusted, since the spectre of the foreign hand has been argued to penetrate India's own national regulatory system.

The *Bt* brinjal case appears to confirm arguments advanced by Kloppenburg & Gonzales (1994)

and Drahos (2010), that NGOs can become important advocates for defending traditional knowledge in the face of a multilateral agreement that is hostile to its protection. The debate reveals that alliances between local, national, and international civil society organizations can, in the right political climate, exert an influence on national governments. Even in the face of increasing privatization and the diminishing of national powers in the face of multilateral agreements serving corporate interests, certain actions can still be taken at the domestic level to protect TK. However, it also reveals how international NGOs can themselves be derided as an unwanted foreign influence that, like multinational corporations, are argued to threaten India's own political authority.

The influence of the private sector in governing matters pertaining to intellectual property regulation, as described by Susan K. Sell (2003) and Drahos & Braithwaite (2001) can be observed throughout the debate. The fear of the private sector is apparently such a strong sentiment within India that it became a tactic used by both sides of the debate. Unpopular changes to the national patent law in the name of TRIPS-compliance, and a history of biopiracy controversies have resulted in a climate of general anxiety over the possibility of foreign monopolies over Indian agriculture and agricultural knowledge. Opponents to the crop's introduction lambasted the influence of the private sector in the regulatory committees, and not without reason. The committee established to review the crop's safety included five GM lobbyists or developers, included one funded by Mahyco (Kuruganti & Radhakrishnan, *Coalition for GM-Free India* Press Release, April 2011).

Yet while anxiety over seed monopoly is pervasive, the discourse also reveals that opposition to TRIPS is not ubiquitous. While some agents, like the Environment Minister Jairam Ramesh, err on the side of civil opinion when attempting to negotiate a middle path between environmental protection and economic development, widespread disagreement exists both among government officials, scientists, and members of the public over the extent to which the minister acted in the public interest. The

divided government, with the emerging possibility of two competing regulatory bodies, adds insight to Carolyn Deere's observation that even binding restrictive international agreements are subject messy implementation. The same argument can be made at the national level: the National Biodiversity Authority's mandate is to honour the provisions of the CBD, and protect TK knowledge from foreign bioprospecting interests, which at times requires anti-business actions such as the biopiracy lawsuit against Mahyco and Monsanto. Yet at the same time, the Indian government was tabling a bill facilitating the creation of the Biotechnology Regulatory Authority of India, whose aim was to streamline the process of introducing genetically-modified crops, and whose jurisdiction would ultimately clash with the BDA.

While TRIPS can still be seen as a system which presents high levels of IP protection that do not suit the needs of developing countries, certain actors within India are nonetheless making efforts to use the existing intellectual property system to defend traditional knowledge. While a case history of Indian biopiracy issues reveals how companies have been taken to court for TK-related patent contestations, the NBA's lawsuit against Mahyco and Monsanto is the first time a corporation has been sued by an arm of a National Government for the piracy of traditional knowledge. The *Bt* brinjal lawsuit reveals how the existing intellectual property system, so criticized by political economists for serving Western interests, can be used to serve alternative interests. Yet the debate surrounding the GM crop problematizes an overly simple state-actor approach by revealing how fraught with conflict governments can be. Likewise, it complicates the very notion of "national interest," and ultimately suggests that commentators must be cautious of reductionism when discussing state opposition to IPR protection.

Conclusion

This paper has presented a case study of the ongoing Indian *Bt* brinjal controversy as a lens through which to view counter-movements that are emerging in opposition to Western intellectual monopolies. The public outrage at Monsanto's involvement in the development of the country's first genetically modified food crop, and the subsequent lawsuit launched by the NBA against Monsanto and Mahyco provide examples of state-level and civil society-level reactions, in one developing country, to the global expansion of Western-style IPR protection. The literature review section presents a summary of the theoretical perspectives on the relationship between intellectual property rights and economic growth. The neoclassical model understands IPRs as an effective appropriability mechanism to create incentives for innovation and foster development (Lopez, 2009). From this angle, the global harmonization of intellectual property laws through agreements like TRIPS is a necessary step to aid developing countries in becoming competitive in the world economy. In contrast, scholars from the critical political economy school tend to emphasize how these international agreements are better suited to the needs of the interests that shaped them. The *Bt* brinjal controversy lies at the faultlines of this debate. Some members of the state and the public believe that TRIPS-style IP protection is necessary to encourage foreign investment and strengthen the Indian economy, while others believe that the Indian economy must be protected *from* stricter IP laws that have been widely criticized for catering to Western countries and corporations.

The third section of this paper examines why a critical political economic perspective is a useful approach to take when studying the relationship between multilateral IP agreements and developing countries, as it allows for considerations of power exertion and encourages an understanding of how corporations and private interests play a large role in shaping public policy. The personnel comprising the panel review boards in charge of assessing the safety of the *Bt* brinjal crop, including a Mahyco

GM crop lobbyist, demonstrate the extent to which the private sector can infiltrate state bodies to assert its influence. Yet as the discussion reveals, private sector involvement can also be a liability in a country with a long history of public awareness about the potential downfalls of stronger IP legislation.

The fourth section of the paper assesses why a case study method is an appropriate methodological choice for this research. While the existing literature is extensive and the potential effects that TRIPS could have on developing countries have been well-studied, the bulk of the literature presents a macro-level analysis of global intellectual property. Larger scale analyses of the shaping of TRIPS, the relationship between the internationalization of IP and development, and of the philosophies that underpin IP theory provide useful visions of how to understand theorize the globalization of IP, but these wider theoretical frameworks may have a more limited application to the experiences of specific countries. Although numerous case studies do exist on the relationship between TRIPS and individual developing economies, there are fewer accounts of movements mobilizing in opposition to piratical IP practices and successfully influencing government policy. The *Bt brinjal* lawsuit provides an important and as yet understudied landmark in the history of clashes between private and public interests over the internationalization of IP law. The discourse analysis method provides insight into how anxieties over corporate intellectual monopoly are framed publicly, and gives researchers an entry point into the terrain of contestation between the two opposing camps in India, and how contested concepts can become sites within which language is used as an instrument of power.

The fifth section summarizes the history of biopiracy struggles in India to provide the context that is necessary to understand how and why the 2011 lawsuit was possible. Tracing nearly two decades of biopiracy conflicts reveals a country with mounting public distrust of the international IP system and the manner in which it criminalizes certain types of reproduction (such as the production of generic pharmaceuticals) while it encourages other types of reproduction (the biopiracy of indigenous

knowledge). The sixth section examines the key concepts and terms of debate that were used in public discussions of the *Bt* brinjal moratorium and the biopiracy lawsuit. Even though the debate over the moratorium focused on concepts such as food security, farmers rights, and the neutrality of science, worries about a foreign multinational corporation gaining an intellectual monopoly on one of the country's most important and symbolic staple food groups ran as an undercurrent throughout the discussions. The NBA's lawsuit against Mahyco and Monsanto was the result of a combination of this undercurrent to the public protest against the GM food crop alongside pressure from domestic civil society groups, international NGOs, and certain actors within the government.

Although much of the critical political economic literature on IP and development takes a state-actor approach, the findings in this paper problematize the very notion that states can act unilaterally, that they can be discussed as cohesive units, or that they can be singularly effected by multilateral agreements. Jairam Ramesh's decision to introduce the moratorium was widely opposed by other Indian politicians, and while the National Biodiversity Authority was gathering evidence to launch its historic biopiracy lawsuit, a new bill (BRAI II) was put forward in parliament to undermine the NBA's authority to do so. Similarly, public sentiment against the brinjal crop was not uniform. The anti-IP protest movement in India conforms to Amy Kapczynski's description of the A2K movement on the whole as a loose-knit congregation of opposition with a multitude of goals and grievances, momentarily aligning to combat what they perceive to be an economically-oppressive and neo-colonialist regime. The findings of this paper also confirm the power that civil society groups can have when they mobilize public opinion and place pressure on governments. These findings may open up further research avenues to investigate whether citizens and states are regaining some lost authority after decades of neoliberal globalization.

Although this paper presents an account of an understudied event pertinent to the understanding

of the interaction between developing countries and global intellectual property laws, it reveals the need for a more in-depth look at the case. One principal shortcoming is a paucity of different types of data to support the arguments. Newspaper articles, which present information that has been filtered through the editorial process, are likely to present only a fraction of the debate. Further studies consisting of open-ended interviews with relevant scientists, policy-makers, civil society members, and activists, would provide a richer tapestry of detail from which to build a more reliable theory. A greater engagement with quantitative data, perhaps including tables illustrating the frequencies of terms or concepts used across the news articles, might have presented a more easily demonstrated analytical break-down of the research.

Although, at present, the case has not yet gone to court and the outcome of the lawsuit is far from clear, the *Bt* brinjal case nonetheless sends an important signal, warning corporations with large patent portfolios that their actions will not go unchallenged. While unclear outcomes and fraught parliamentary and political opinions should caution us not to overstate the importance of this lawsuit in ending the practice of biopiracy, it demonstrates that IP laws might be used to serve alternate interests. This does not negate the claims made by Peter Drahos & John Braithwaite (2002) or Susan K. Sell (2003) that TRIPS was created to defend the IP portfolios of Western nations and multinational corporations, but does reveal that the asymmetries of power inscribed in institutions like the WTO are subject to constant contestation, and renegotiation, if not at the institutional level, or even the legal implementation level, then at the level of citizen actors.

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