

From biopiracy to bioprospecting: Negotiating the Limits of Propertization

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From Biopiracy to Bioprospecting: Negotiating the Limits of Propertization

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Introduction

Since the 1990s the patenting and commodification of biological resources and traditional knowledge has become a contested phenomenon. This practice comes in many guises: it can be conducted by universities working in collaboration with local communities, by small commercial research companies or by multinational pharmaceutical corporations. Some call it biopiracy while others prefer the term bioprospecting or biodiscovery. The choice of words is significant as it reflects not only different ways to conduct and distribute the revenues from patenting of biological resources, but also different ways to look at the legitimacy of biopatents as such. This chapter takes the Nagoya Protocol – a UN protocol aiming to prevent biopiracy – as an example to discuss how the negotiations over biopatents also reflect different approaches to commodification of nature and the limits of propertization.

Biopiracy refers to an illegitimate appropriation of locally held knowledge by non-local commercial actors. It is most often associated with western biotech companies who forage the fauna of biodiversity rich developing countries to exploit and commercialize biological substances that have been used by Indigenous people for generations. Daniel Robinson gives three defining characteristics of biopiracy: 1. It concerns genetic resources and knowledge associated with those resources; 2. It concerns resources collected from 'farming and Indigenous communities'; 3. It uses patents and other forms of intellectual property rights (IPR) to control and monopolize such resources (Robinson, 2010, p. 18).

The term biopiracy was originally coined by the Canadian environmentalist Pat Roy Mooney in the early 1990s (Mooney, 2000; Robinson et al., 2014) and has been picked up and developed by different environmental and social rights movement. Within activist circles, the 'biopiracy' discourse emerged to criticize how multinational companies patent and

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appropriate genes, breeds and other natural resources whose uses were discovered or known, developed and deployed for centuries by Indigenous communities. In parallel, patents and intellectual property rights have been problematized within academia where scholars such as Deborah Halbert (2005), James Boyle (1997), Rosemary Coombe (1998, 2001) and Peter Drahos (1997; Drahos & Braithwaite, 2002) have emphasized how the current IPR regime limits access to medicine, crops and other crucial resources in the third world and contributes to the misappropriation and privatization of traditional knowledge.

Biopiracy is often regarded as an extension, and in some aspects even an intensification, of a colonial exploitation (Robinson, 2010, 2015). Bringing back useful biological substances from the colonies has a long history, but the expansion of intellectual property rights, and particularly of patents, adds a new dimension to it. In *Terms of Use*, Eva Hemmungs Wirtén points out that 'When today we speak of "biopiracy" ... we think not only of a geopolitical South-North movement of plants, but of a South-North movement of knowledge' (2008: 64). Hemmungs Wirtén puts her finger on the fact that biopiracy, maybe more than any other phenomenon, points to the convergence of material and immaterial propertization: that is, introduction of intellectual property rights means that what is being appropriated is no longer just biological material but also knowledge. She also reminds us of how geographically situated this process is, and indicates how the conditions for property-making are inscribed in a geopolitical structure of power.

Consequently, over the last two decades, biopiracy has become a high ranking global justice issue since it directly relates to neo-colonialist modes of exploitation enforced through international trade institutions and agreements like the Trade Related Aspects of Intellectual Property agreement (TRIPS) which requires all WTO-members to implement certain IPR standards in their national legislation. TRIPS has been described as an instrument for the developed countries to impose their IPR agenda on the developing world (Drahos & Braithwaite, 2002).

Significantly, TRIPS does not acknowledge Indigenous communities' rights to their own traditional knowledge while it enforces western companies' possibilities to patent scientific findings based on such knowledge. As Boatema Boateng (2011, p. 157) notes, patents on plants and human genetic material 'are protected within TRIPS, while local and Indigenous knowledges, such as those included in Ghanaian folklore, are not'. Although not as criticized as the TRIPS agreement, EU's 1998 Biotechnology Directive is another attempt to harmonize the patent laws regarding biotechnological inventions within the EU in order to improve the conditions for the European biotech industries. The Nagoya Protocol can be seen as an instrument to balance the Biotechnology Directive by protecting the interest of the industry's counterpart: the provider communities (Daly, 2015).

The IPR agenda set down in TRIPS thus protects resources that are likely to be appropriated by western companies while it excludes resources that local and Indigenous groups in developing countries could lay claim to. This points to a neocolonialist logic that defines resources differently depending on their possible proprietors. Boateng concludes:

Countries and groups that seek protection for these kinds of knowledge are also countries and groups that have been historically disadvantaged internationally and whose goods and knowledges have long had the status of raw material. Even where such knowledge is produced in line with Western conventions, it is still often treated as raw material. (Boateng, 2011, p. 157)

According to the conventional criteria defined by western IP law, traditional knowledge and Indigenous use of medical plants are considered to be neither new nor innovative and thus not qualified for protection as IP. When western companies, however, take those substances to the lab and turn them into pharmaceutical or cosmetic products, they become new and innovative. The application of patent definitions thus becomes a mechanism that denies traditional owners the rights to that knowledge and passes it on to other actors who can redefine that knowledge according to the definitions prescribed by IPR (Oguamanam, 2006). Darrell A. Posey argues that this implies that: 'existing values recognized by local communities are ignored and that the knowledge and managed resources of Indigenous and traditional people are ascribed no

value and assumed to be free for the taking. This has been called intellectual *terra nullius*' (Posey, 2002, p. 11). The fact that many of the biopirated patents do not even live up to the requirement of novelty that are central to patent law, in the sense that they have not actually contributed significant new knowledge but simply appropriated knowledge that already existed in traditional communities, indicates that the origin of the inventor can be more important than the originality of the invention.

Biopiracy cases are thus offensive in their blatantly colonial double standards: in the regard that they 'illustrate an epistemological hypocrisy, whereby scientist utilize traditional knowledge and innovations while simultaneously denigrating such knowledge as unworthy of recognition' (Robinson, 2010, p. 156). But they also raise a number of practical problems for the provider communities. They might exclude traditional owners from future use of the resources that are patented: the redistribution of resources creates inequality between developed and developing countries and it can lead to an overexploitation of the biological resource (Robinson, 2010, pp. 102). These practical problems can potentially be addressed through legislation and the following section will look at such an initiative on international level.

The Nagoya Protocol: From Biopiracy to Bioprospecting

The Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization (ABS) to the Convention on Biological Diversity is an attempt to create standards for developing and commercializing biological resources and local knowledge in non-exploitative ways. The Nagoya Protocol traces its origins back to the *Convention of Biological Diversity (CBD)*: a UN convention that entered into force in December 1993 after it was ratified by 30 countries, including Australia and the EU, but not the USA. The overarching goal of the CBD is to sustain a biological diversity of plants and species through international collaboration between developed and developing nations while acknowledges the rights of local communities. Article 1 in the CBD calls for a 'fair and equitable sharing of the benefits arising out of the utilization of genetic resources, including by appropriate access to genetic resources and by appropriate transfer of relevant technologies, taking into account all rights over those resources and to technologies, and by

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appropriate funding' (CBD Article 1). Article 8j further develops the needs to protect Indigenous knowledge from exploitation as it calls for the contracting states to:

respect, preserve and maintain knowledge, innovations and practices of indigenous and local communities embodying traditional lifestyles relevant for the conservation and sustainable use of biological diversity and promote their wider application with the approval and involvement of the holders of such knowledge, innovations and practices and encourage the equitable sharing of the benefits arising from the utilization of such knowledge, innovations and practices;

Article 15 in the CBD further states that any actor attempting to access and exploit a genetic resource must have consent from the holder of that resource, agree on terms on which the resource is to be extracted and how the benefits are to be shared.

A cornerstone of the CBD is that it redefines the ownership of biological resources. Up until the passing of the convention, genetic resources had been defined as a 'common heritage of mankind' – meaning they were 'up for grabs' by multinational biotech companies. As an attempt to stop exploitative acts of bioprospecting, the CBD acknowledges the rights of sovereign states to control genetic resources found within their borders (Hemmungs Wirtén, 2008, p. 71). In this case, the national appropriation of such resources is used as a means to stifle more exploitative forms of privatisation as it lets states set the conditions under which commercial actors may access the resources. Defining the sovereign state as the owner of genetic resources was a key protective strategy of the CBD (Hemmungs Wirtén, 2008). As Robinson and Raven (2016, p. 3) point out (drawing on Boisvert and Caron), the CBD thus 'combines conservation with exploitation'. The privatization of genetic resources through IPR becomes a legal and institutional tool that combines private property rights, state sovereignty and indigenous rights to safeguard those resources against more predatory forms of exploitation.

In many cases these resources would be attributed to local communities who had utilized them for generations, and their interests would be safeguarded through so called Access and

Benefit Sharing regulation (ABS). This basically means that companies, universities or other actors who develop knowledge about the uses of biological substances held by local and Indigenous communities must have consent and share the revenues with those communities. This can be done in various ways and the CBD makes no further statements in this regard. Many countries already have national or, in the case of Australia, regional ABS-laws. Internationally, the ABS requirement has been enacted in the Nagoya Protocol, which was adopted by the parties to the CBD at a meeting in Nagoya in October 2010 and entered into force on 12 October 2014, ratified by 50 countries.

The Nagoya Protocol introduces a number of instruments that can be employed to ensure Indigenous Local Communities (ILCs) are involved in the commercial use of resources emanating from their traditional knowledge about local genetic material. Firstly, it calls for Prior Informed Consent (PIC): that is, that no exploitation of traditional knowledge associated with genetic resource may take place unless the ILCs are informed and give their consent in advance. Second, there is a requirement that Mutually Agreed Terms (MAT) are established to ensure any exploitation of resources are conducted in accordance with a set of conditions both parties have agreed to (Tobin, 2013; Robinson, 2014).

It is, however, not mandatory for the states to implement ABS-regulations in their own territory. The Nagoya Protocol merely requires its member states to respect such regulations when and where they are in place – leaving it to each state to decide if it wants to regulate the access to its biological resources. A state can choose not to regulate access and allow the exploitation of biological resources freely and without the consent of ILCs. This is the approach taken by many European countries (Interview, Bodegård).

This dimension of the Nagoya Protocol highlights a limitation as it basically places the rights of Indigenous communities in the hands of the state and its legislators. According to Daly this may 'disadvantage, for instance, neglected Indigenous communities whose governments do not bother protecting their traditional knowledge relating to genetic resources' (Daly, 2015, p. 376). When the same resources are found in different countries, this might also undo one

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country's attempt to regulate access if the same resource is unregulated and freely accessible in another country, creating a 'race to the bottom' where the lowest level of protection sets the standards (Daly, 2015, p. 373).

Another limitation to the Nagoya Protocol is that it does not address the core issue of biopiracy: that is, patents and intellectual property rights in general. While IPR played a certain role in the CBD, it was excluded from the Nagoya Protocol at an early stage. This was primarily a consequence of the organization of the UN where IPR are to be regulated through the World Intellectual Property Organization (WIPO). But it has also been described as a compromise that enabled the parties to reach consensus relatively easy (Interview, Bodegård; Interview, Cotterill & Phillips). One of the reasons that the USA never signed the CBD was that they object to the regulation of patent rights, reflecting how USA has generally had a much more liberal approach on granting patents than most European countries. According to the Swedish negotiator Johan Bodegård, the fact that IPR were included in the CBD in the early 1990s but not in the 2010 Nagoya protocol can also partly be a sign of the times – indicating that IPR has become a more important issue in international politics, and thus also more sensitive, since the early 1990s (Interview, Bodegård, see also Drahos & Braithwaite, 2002).

Bioprospecting, Patents and Legal Hierarchies

The Nagoya Protocol could be described as a way to transform biopiracy into bioprospecting: a term that is sometimes used as an alternative to biopiracy that implies a non-exploitative way of developing and potentially commercializing biological resources. The Indian activist and academic Vandana Shiva, however, discards bioprospecting as 'merely a sophisticated form of biopiracy' (Shiva 2007, p. 308). Shiva argues that bioprospecting is harmful because it denies local communities the self-sufficient use of their local resources:

Bioprospecting creates impoverishment within donor communities by claiming monopolies on resources and knowledge that previously enabled communities to meet their health and nutrition needs and by forcing those communities to pay for what was originally theirs. Thus bioprospecting leads to the enclosure of the biological and intellectual commons through the conversion of Indigenous

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communities' usurped biodiversity and biodiversity-related knowledge into commodities protected by intellectual property rights (IPRs) (Shiva, 2007, p. 308).

Shiva describes how bioprospecting creates two kinds of exclusions, even when proper ABS-procedures are followed and contracts are made and signed. The first is the exclusion of those communities that are not acknowledged as signatories to the agreement. A problem with bioprospecting is that even when contracts are in place, agreements may have been signed with only one or a limited number of local communities that use the resource, while others are neither required to give any Prior Informed Consent or reach any Mutually Agreed Terms. This creates inequity and potential conflicts between different communities (Shiva, 2007, p. 311).

Further, the definition of what an ILC actually is, is also unclear. The Nagoya Protocol gives no instructions on how to define which ILCs hold the rights to certain resources. The term ILC is in itself a compromise. Some countries, India most notably, objected to the references to Indigenous people, arguing that all peoples of India are Indigenous. The Nagoya Protocol finally adopted the term Indigenous Local Communities as a way to include, but not limit the legislation to, Indigenous communities (Interview, Bodegård). This means that although the problem of biopiracy predominantly concerns Indigenous peoples, the Nagoya Protocol nevertheless acknowledges non-Indigenous communities as potential providers of biological resources.

This is something that the Nagoya Protocol leaves to the national legislators to define – potentially subjecting Indigenous communities to the power and discretion of the state (Arry in Robinson, 2014). The protocol acknowledges that several different local communities can have entitlements to the same resources, but gives no clear directions on how to resolve such situations, beyond the vague statement that the parties shall 'cooperate [...] with a view to implement this protocol' (Nagoya Protocol, Art 12). If the object of the protocol is to utilize the (fair and equitable) exploitation of such resources then this formulation could be seen as encouraging all parts to not obstruct the patenting process.

The second exclusion that Shiva refers to takes place when a commercial actor files for a patent on 'knowledge'. In the discourse of the Nagoya Protocol, the ownership of intellectual property is often discarded as secondary. Ben Phillips who negotiated the Nagoya Protocol for the Australian government argues that the crucial importance with an ABS regime is not who owns the IP but how the revenues are divided. He argues that, IP should be owned by the actor(s) who can best exploiting the resources and finance that exploitation – as long as there are agreements that ensure a fair share of the revenues to all relevant parties (Interview, Cotterill & Phillips). These would ideally include long-term contracts that ensure the ILC is rewarded properly if the value of the patent increases.

Shiva, on the other hand, sees the allocation of IPR as crucial. Even when the providers are well compensated, abstaining from the ownership of IP remains unequal:

Over time this excludes the donor community itself as marketing systems and IPR regimes combine to make the community that provided biological resources and knowledge dependent on purchasing proprietary commodities from the corporations that monopolize the biodiversity and knowledge. For example, farmers who contributed seed in a bioprospecting venture are forced to buy proprietary seed from the seed industry (Shiva, 2007, p. 311-312).

Although there are cases where the local communities have been acknowledged as IPR-holders (Robinson, 2010), in many cases it is a one time trade off where local communities sign-off long time benefits for short time profits.

Shiva concludes that there is little difference between bioprospecting and biopiracy since, the former's 'impact on biodiversity and Indigenous cultures and local economies is the same as outright piracy. Reclaiming the intellectual commons through asserting collective intellectual property rights represents the real model of equitable benefit sharing since only the commons ensures equity and sharing' (Shiva, 2007, p. 313). Accordingly, the only way to overcome the inequalities of bioprospecting is to fundamentally change the IP system rather than creating such ad hoc solutions focused on access and the sharing of benefits.

Further, Shiva argues that the analogy to prospecting of minerals and fossil fuels that is inherent to the term bioprospecting is fundamentally misleading since oil and fossil fuel only get a value when it is extracted, while 'living resources are not useless unless exploited by global commercial interests for global markets' (Shiva, 2007, p. 307). This metaphor of prospecting further discards the existence of local communities as it suggests that 'prior to prospecting the resources lie buried, unknown, unused and without value. However [...] local communities know the use and value of biodiversity. The metaphor of bioprospecting thus hides the prior uses, knowledge and rights associated with it' (Shiva, 2007, pp. 309).

No ABS regime could address the problems that Boateng and others point to regarding the commodification of natural and cultural resources. This problem goes beyond the issue of fair benefit sharing since both biopiracy and bioprospecting decontextualizes resources – where certain plants and the associated knowledge are taken out of their social and cultural context (Posey, 2002). Oguamanam argues that traditional medical knowledge is often part of a holistic therapeutic system interwoven with a groups culture, religion and belief system, and by 'placing emphasis on active substances, intellectual property, especially patents, reifies scientific knowledge and undermines the sociocultural context of traditional therapeutic practices'(Oguamanam, 2006, p. 146). This means that a 'capitalist orientation of conventional intellectual property rights is in apparent conflict with the communal nature of ownership and the sociocultural structure of indigenous societies'. (Oguamanam, 2006, p. 157).

When the strict individualistic definition of property that permeates western law is applied to Indigenous resources a moral conflict arises, where 'the appropriation and propertization of life forms and sacred plants appear offensive to traditional culture' (Oguamanam, 2006, p. 157). This reflects what Boateng calls 'normalization of intellectual property law as a universal form and the structure of the current international regulatory regime' (2011, p. 16): this is a process where IPR takes precedence as the only model of regulating the circulation of knowledge and culture.

The question, however, is whether the construction of an Indigenous intellectual property right could address this problem. Oguamanam is concerned that such an expansion of IPR risks subordinating traditional knowledge to western knowledge regimes. He argues that, the 'proposal for indigenous intellectual property is still couched within the western scientific or epistemic frame,' where 'Indigenous knowledge and interests may be further eroded' (Oguamanam, 2006, p. 173). From a critical legal perspective one can also question whether a submission to 'white' law can ever be liberating for Indigenous people. Saskia Vermeulen concludes that although the Nagoya Protocol is an important step towards respecting indigenous rights it can also contribute to excluding customary law since it is part of a formal legal doctrine whose 'identity is based on a network of exclusions ... for customary law to become part of the law, the law as a concept needs to be challenged' (2013, p. 199).

Kimberly Suiseeya (2014, p. 103) argues along a similar line when claiming the Nagoya Protocol is not likely to be anything more than 'minimally different from status quo' since without 'a radical shift of power dynamics or powerful interests. Both Suiseeya and Vermeulen feel that the Nagoya Protocol fails to challenge the inherent discrimination in the western legal discourses, but rather simply provides an ad hoc solution that guarantees ILCs a minimum level of rights with an overarching legal order that is structurally biased against them.

In contrast, Brendan M. Tobin argues that the Nagoya Protocol is the first legally binding international instrument that requires states to 'take into consideration' Indigenous peoples' 'customary law' in its national legislation (2013, p.147). According to Tobin, the Nagoya Protocol actually acknowledges other legal regimes than western law: 'the Nagoya Protocol implementations may therefore be seen as requiring states to adopt measures supporting intercultural legal pluralism' (2013, p. 147).

This essentially reflects a hierarchy of legal systems that is deeply embedded in our colonial history where local customary rights have always been subdued by the legislation of the colonizers, claiming universal jurisdiction across its extended territories. Colonial law might

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be history but local legislation is nevertheless largely regulated through multi- and international treaties and agreements that still reflect globally asymmetrical power relations. Today, it says something about a (post)colonial legal hierarchy that the best way to make customary law count seems to be to codify it in national legislation – which in many ways, simply protects the colonial state.

Competing Property Regimes

Before concluding, I will return to the logic of prospecting and competing property regimes. Both the terminology and logic of prospecting assumes that the unpatented resources are unregulated – bringing forth the colonial images of small groups of prospectors making new discoveries. The reality is, however, that Indigenous peoples have carefully tended to both the traditional knowledge and the biological resources that exist on their territories. In so doing, they have developed rules, norms and practices for how to use and manage those specific resources. Rules that often rely on a vast body of knowledge developed over generations. This can be characterized as what the legal scholars Abraham Bell and Gideon Parchomovsky call 'localized property regimes': local, and often informal, property system that exist, for instance in customary rights within Indigenous communities, parallel to the property regimes codified in national and international law. These localized property regimes have emerged and apply within a specific sociocultural context and are often specifically adapted for the particular resource at stake (Bell & Parchomovsky, 2013).

The Indigenous Maori people in New Zealand for instance have elaborate customary laws on a range of issues – including the attribution and circulation of natural and cultural resources – that have to some extent coexisted with the colonial law since the signing of Waitangi Treaty between the Maori people and the British colonizers in 1840 (Waitangi Tribunal Report, 2011). Localized property systems are not unique to Indigenous communities: They can also exist in certain business sectors, subcultures or local and cultural non-Indigenous communities (Bell & Parchomovsky, 2013, p. 518).

I would, however, argue that *all* property rules are created by and limited to certain social contexts. This is the case with the property regimes codified in western law as well, which

grew out of a particular historically and geographically situated process. As both Sonja Shillings, Sean Andrew Johnson and Marshall and Da Rimini discuss in their contributions to this volume, the western understanding of property that is usually taken for granted as universal natural rights, emerged with the modern European state as part of a complex ideological system of liberalism and colonialism. The significant difference between a universalized western property regime and local property regimes is one of power and subordination since the social system that spawned western law and the property regime in supports, has come to dominate the world through colonialism and subsequent neoliberal globalization. Viewed in such a historical context, bioprospecting can thus be seen as an enduring (neo)colonialist practice where a globalized property regime takes precedence over local property systems, just like the law upheld by the colonial state takes precedence over customary rights.

As Robinson and Forsyth point out 'customary' law is rarely static. Although customary laws might have ancient origins, they are 'in fact, often contemporary, as they have adapted and changed over time in response to demands and opportunities' (Robinson & Forsyth, 2015, p. 3). Consequently, there is a risk that attempts to codify customary law and indigenous rights of property in national or international legislation may fixate the customary property regimes and disregard 'the complex, tiered, socially organized, and semi-exclusionary rights customarily applied in these countries' (Robinson & Forsyth, 2015, p. 5). The contract based solution provided by the Nagoya Protocol could indeed ensure a flexibility that respects the heterogeneity and fluidity that characterizes customary law. On the other hand, Robinson and Forsyth also caution against 'systems based on concepts of ownership of traditional knowledge by particular individuals or communities' since that might be at odds with the 'widely shared nature of much traditional knowledge' (Robinson & Forsyth, 2015, p. 10).

The crucial question thus centres on property, and particularly intellectual property which is paradoxically absent from the Nagoya Protocol although it is the core of the problem that the protocol tries to address. In an article on the patenting of plants and botanical innovations Brad Sherman points out that:

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one of the defining features of modern patent law is that the invention is able to be treated as a separate and distinct object which is unconnected to the environment where it was produced. Importantly, it is this decontextualization of the invention that enables patents to circulate so freely and quickly, for them to become part of the commercial currency, to appear on the balance sheets of companies, and to be traded around the world. (Sherman, 2008, p. 565)

Sherman puts his finger on the particular power that patents have to decontextualize a resource from its local property regime and incorporate it into the property regime of global capitalism. One problem that emerges in this transformation is that the resources only receive value when they, as Sherman puts it, 'become part of a commercial currency'. In so doing, this disregards the value that such resources already hold in the local property regimes – a value that is the rationale of that regime in the first place. The objective of the ILC might not be to create a value that is valid within the capitalist property regime, but to enforce a value that is essential to maintain the local property regime and the social and cultural system that it underpins. The assumption that those local resources have to be incorporated in the formal property regime to have a value denies the worth they have in their original social structure and thus renders that structure invisible. Or as Kathleen McAfee (1999, p. 138) formulates it: 'the only values that count are the values of those knowledges and practices to people *other than* those who now have them and use them'.

Conclusion

On an ideological level, there are deep disagreements over what a document like the Nagoya Protocol actually achieves. Potentially, the Nagoya Protocol may certainly give local and Indigenous communities a better share of the profit, and a properly enforced PIC requirement can also help them maintain control over their traditional knowledge and protect it against inappropriate exploitations. As such, the Nagoya Protocol can be seen as a way to ensure that extracting and propertizing resources is conducted in a way that benefits all parts and respects local natural and cultural values. An alternative interpretation is that it is simply a strategy to promote property creation at the expense of local natural and cultural values. The Nagoya Protocol has been accused of contributing to a 'neoliberalisation of nature' as it promotes privatization, commodification and marketization of natural resources (Robinson, 2014).

Biopatents thus raise questions that are crucial for our understanding not only of Indigenous rights and traditional knowledge but also for the construction of property and property rights as such. First of all, biopiracy epitomises the arbitrary distinction between material and immaterial resources: that is, between substance and knowledge. As the example of traditional knowledge highlights, the knowledge of the land and the uses its biological resources are part of a holistic sociocultural system from which they cannot always easily be separated. Secondly, it highlights how different property regimes relate to each other and what structures of power are inherent in those relations. The most important question that biopatents raise is, however, not who can share the profit from the property creation, but what can be defined as property. The negotiations over biopiracy and biopatenting are thus, essentially, negotiations over the frontiers of propertization.

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Interviews

Interview with Melissa Cotterill and Benjamin Phillips, 26 February 2016

Interview with Johan Bodegård, 27 April 2016

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