



## When Modern Science Meets Traditional Knowledge

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A Multi-Level Process of Adaption and Resistance

Thomas R. Eimer



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## **When Modern Science Meets Traditional Knowledge: A Multi-Level Process of Adaption and Resistance**

*Thomas R. Eimer*

### **Abstract**

During the course of bio-prospecting and biodiversity conservation projects, scientists, researchers from the life-science industry, and environmental protection groups attempt to access indigenous and traditional communities' knowledge of the local biodiversity. They confront these groups with the idea that their knowledge can be commercialized. Although the affected communities partly adapt to this view, they insist on their right to decide autonomously and by their own laws whether they are willing to share their knowledge. External actors, however, often reject the right of indigenous self-determination. The evolving conflicts do not only take place on a local level – varying domestic regulatory approaches also shape them. At the same time, a multitude of international organizations also address the issue of access to traditional knowledge, and their activities in turn shape interactions on a domestic and local level. In this paper, the complex interactions that are associated with the access to traditional knowledge shall be regarded as a multi-level process of adaptation and resistance. Empirically, this paper focuses on traditional knowledge policies in India and Brazil. The analysis of the interplay between local, national, and international traditional knowledge regulations in both countries shall serve to explore some possible avenues for further research on processes of adaption and resistance.

### **Zusammenfassung**

Im Rahmen von Bioprospektionen und Projekten zum Erhalt der Biodiversität versuchen Wissenschaftler, Forscher aus Unternehmen des Life Sciences Bereichs und Umweltschutzgruppen, Zugang zum Wissen indigener und traditioneller Bevölkerungsgruppen über die natürliche Artenvielfalt zu erhalten. Sie konfrontieren diese Gruppen dabei mit der Vorstellung, dass ihr Wissen einer kommerziellen Verwertung zugeführt werden kann. Obwohl die hiervon betroffenen Gruppen sich dieser Sichtweise nicht vollends verschließen, bestehen sie darauf, selbst und entsprechend ihres Gewohnheitsrechts darüber zu entscheiden, ob sie ihr Wissen offenbaren und verbreiten wollen. Externe Akteure verweigern ihnen jedoch häufig das Recht der Selbstbestimmung. Obwohl die hieraus resultierenden Konflikte sich zumeist auf der lokalen Ebene abspielen, wird ihr Ausgang wesentlich von nationalstaatlichen Regulierungen bestimmt. Gleichzeitig wird das Thema in zahlreichen internationalen Organisationen bearbeitet, deren Initiativen die Interaktionen auf nationalstaatlicher und lokaler Ebene prägen. In diesem Arbeitspapier werden die konfliktiven Beziehungszusammenhänge, die beim Zugang zu traditionalem Wissen entstehen, als ein Prozess von Aneignung und Abwehr aufgefasst, der in ein Mehrebenensystem eingebunden ist. Empirisch konzentriert sich die Analyse auf die Situation in Indien und Brasilien. Die Untersuchung des Zusammenspiels von lokalen, nationalstaatlichen und internationalen Regulierungen soll dazu dienen, mögliche Forschungszugänge zu Aneignungs- und Abwehrprozessen aufzuzeigen.

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## 1. Introduction<sup>1</sup>

In many countries, most notably many in the southern hemisphere, indigenous groups and traditional communities live in close interaction with their surrounding natural environment. Based on century-old experience, they have learned how to make use of local animals and plants in order to cope with their daily needs. In many cases, the experiences of local communities are embedded in a context of complex socio-cultural practices that are closely associated to cosmological, epistemological, and transcendental convictions (Greaves 1996). Complex belief systems regulate the access, transmission, and diffusion of knowledge within and beyond the communities (Gudeman 1996; Rao 2006). During the last thirty years, however, “traditional knowledge”<sup>2</sup> has aroused the attention of scientists, corporations, and environmental groups (Thompson et al. 2011; Posey 1990; Shiva 1991a). Their varying motivations notwithstanding, external actors only perceive traditional knowledge as utile raw material for their own purposes, whereas they tend to ignore or at least to marginalize its socio-cultural ramifications and associated property rights regulations within the affected communities (Francis 2008; Agrawal 2002). Thus, they often try to access traditional communities’ knowledge without respecting their customary laws, and in many cases, they even ignore national regulations (Hathaway 2004).

Due to the conflict-laden nature of local bio-prospecting and *in situ* conservation projects, vociferous debates on “biopiracy” have arisen in many developing and emerging countries (Dutfield 2011; Cottier/Panizzon 2004). So far, varying national approaches have been developed to regulate the encounter between local communities and external actors. Most notably, the diverging regulations in India and Brazil seem to represent the opposing extreme points on a broad spectrum of alternatives regarding how to reconcile conflicting interests in this policy field. All domestic regulations, however, are shaped by an ambivalent and ambiguous framework of international treaties, conventions, and resolutions (Randeria 2007).

<sup>1</sup> The paper summarizes initial findings from the research project D7 “Patent Protection in India and Brazil” that is part of Research Center (SFB) 700, funded by the German Research Foundation (DFG). Empirical evidence has been obtained by document-based process tracing, as well as through 110 interviews and personal talks during various meetings and conferences at the World Intellectual Property Organization (WIPO) in Geneva. Further evidence was gathered during the course of many project-related interviews in Munich, Brussels, India, and Brazil from 2009 to 2012. All interview partners were ensured confidentiality by not revealing individual names or other information that might endanger their anonymity. A first version of this paper was discussed at the SFB 700 Jour Fixe in December 2011. I would like to thank the participants of this meeting for their helpful comments. Furthermore, I am deeply indebted to Anke Draude, Matthias Kranke, Susanne Lütz, Christof Mauersberger, and an anonymous reviewer for their most valuable suggestions. I would also like to thank Bineet Mundu for his support during the field research in Jharkand (India). Without his help, I would not have been able to conduct an in-depth research on the local level.

<sup>2</sup> This paper focuses on oral traditional knowledge related to biodiversity. While it is acknowledged that traditional knowledge is sometimes stored in religious texts (e.g., Hindu Vedas) and may also refer to cultural practices without any natural substrate (Samaddar 2008; Greaves 1996; Mills 1996), this subject matter is not discussed here for the sake of simplicity. In a similar vein, the paper does not differentiate between “indigenous” and other “traditional communities,” because all these groups face the same conflicts with regard to bio-prospecting activities.

A closer analysis of the interplay between local, national, and international traditional knowledge policies seems to be helpful in shedding some light on processes of adaption<sup>3</sup> and resistance, which is one of the six research goals of the Collaborative Research Center (SFB) 700 for the second funding period. While these terms were initially coined in the context of historical transfer studies (Muhs et al. 1998; Paulmann 1998), science history (Mehrtens 1987), and criminology (Crewe 2007), they are more specifically employed in political theory in order to figure out the normative preconditions for an interpretative absorption of previously unknown conceptual ideas and their creative integration into local social practices (De La Rosa 2008, 2012). This paper takes an empirical starting point in order to learn more about the underlying dynamics of these processes. It focuses on the conflicts that arise due to the appropriation of traditional knowledge and regulatory approaches in India and Brazil. It also examines their respective effectiveness against the background of an international regime complex. Based on inductive reasoning, I attempt to show that insights both from international political economy and postcolonial studies can be useful to understand the mechanisms that act upon processes of adaption and resistance.

The remainder of this paper is organized as follows. In section 2, I discuss both the similarities and differences of “indigenous” and “modern” knowledge systems in order to carve out the roots of conflicts that arise during bio-prospecting activities. Section 3 shows that a regime complex of international treaties addresses traditional knowledge regulation, and that this regime complex’s intrinsic contradictions both enable and constrain domestic regulatory approaches. Section 4 compares the Indian and the Brazilian regulations with regard to their political priorities and their respective effectiveness. The paper concludes with an interpretation of the empirical results as an ongoing multi-level process of adaption and resistance that is shaped by power relations, material interests, and the struggle for meaningful agency.

## 2. Diverging conceptions and competing interests

Usually, the literature on biodiversity and traditional knowledge tends to contrast indigenous perspectives on nature and knowledge with those of scientists, environmentalists, and corporate actors (predominantly from industrialized countries). In this vein, bio-prospecting activities and *in situ* conservation projects are often portrayed as an encounter between indigenous and “modern” value systems (Posey/Dutfield 1996). Generally, the literature assumes that diverging ontological and epistemological foundations are the main cause for the differences in the property rights regulations, which in turn lead to conflicts between traditional communities and external actors (Misra 2007; Agrawal 2002). While the assumption of competing “knowledge systems” helps to understand the various actors’ motivations, I will argue in the following section that a stylized dichotomy risks obscuring significant overlaps between

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<sup>3</sup> At least in the context of this paper, one might argue that the term “appropriation” would be more precise. However, as the SFB 700 translates the German term “Aneignung” as “adaption,” I will use the official wording in order to avoid unnecessary confusion.

“indigenous” and “modern” conceptions (Ellen 2007). Ironically, the central political conflict in these ongoing processes of mutual adaptation and resistance is neither about diverging belief systems nor about intellectual property rights per se, but rather about the applicability of the shared concept of self-determination.

In order to understand indigenous communities’ perspectives on traditional knowledge, it is of utmost importance to bear in mind that their understanding of “man” and “nature” is determined by their local environmental habitat. The biodiversity of their living environments provides them with sufficient means to sustain a subsistence economy (Gudeman 1996). Indigenous groups and traditional communities’ lifestyles crucially depend on a balanced interaction with local animals, plants, and climate conditions (Varese 1996; Escobar 1998). For most communities, the interrelatedness of their own lives with their natural surroundings implies that an analytical distinction between “man” and “nature” is futile, if not outright inadequate. Rather, they perceive themselves to be an element of nature, which often is interpreted as an expression of spiritual forces. When observing natural phenomena, traditional communities do not understand themselves as something separated or different from nature, as it has become common in modern positivist science (Interview 188). Rather, indigenous research is an introspective process by which the interactions between human beings, animals, plants, and natural forces are perceived as the expression of a transcendental will – a will to whom all existing life forms are subjected (Interview 186; Agrawal 2002).

When researchers from the life sciences sector enter into contact with indigenous groups, they tend to ignore the ontological and epistemological foundations on which traditional knowledge is based. From the perspective of both academic and commercial life sciences, indigenous knowledge contains a wealth of information about potential active ingredients for pharmaceuticals and agronomic improvements (Martinez/Biber-Klemm 2010). Bio-prospectors often denounce the cultural context as old wives’ tales that may or may not have a kernel of truth (Interview 190). From their perspective, traditional knowledge has no intrinsic value; it is only a clue for what they perceive as “real” science (Dutfield 2011; Francis 2008). While most scientists discount the socio-cultural importance of traditional knowledge, environmentalists and preservationists tend to associate it with a different meaning. Environmental groups single out the usefulness of local groups’ experiences for the preservation of nature or as a means to mitigate the effects of the global climate change (Shiva 1991a; Gray 1991). During the course of Clean Development Mechanism (CDM) or Reducing Emissions from Deforestation and Degradation (REDD) projects, they attempt to document traditional knowledge related to the conservation of biodiversity (Feldt 2009; Debbarma 2006; Griffiths 2006). Indigenous communities are not necessarily opposed to the utilization of their knowledge for these purposes, but they claim that the projects must not harm their traditional lifestyle. At this point, indigenous groups often clash with (predominantly) transnational environmental organizations and scientists alike (Interview 303).

A second conflict arises with regard to property regulations and traditional knowledge. Many indigenous groups and local communities do not recognize individual ownership of

knowledge since they associate its creation with transcendental entities. Instead, they apply complex rules in order to regulate the access, control, and dissemination of relevant knowledge (Greaves 1996). Although specific regulations vary among different groups, they are usually based on graduated beneficial interests, usufructuary rights, and entitlements to disposal. The customary law of the Brazilian Terena, for example, stipulates that a shaman is entitled to make use of and advance the group's knowledge about medicinal plants. But the shaman is not free to disclose this knowledge to outside parties without the consent of the community of all villages (Interview 186). During the course of ongoing interactions with external actors, however, traditional communities have often partially adapted to these external actors' worldviews. In many cases, communities are basically willing to sell their knowledge (Interview 142), but they often demand a price that far exceeds external actors' expectations (Interview 185). In other cases, local communities try to exclude certain elements of their knowledge from appropriation (Interview 304) because they consider it to be sacred and thus inalienable (Interview 186). Based on their spiritual convictions, some groups claim that bio-prospectors may only use their knowledge if they do not exploit it commercially (Malayali 2009).

One might assume that external actors should be able to understand that the perception of knowledge and hereto-related intellectual property regulations are complex. Despite the prevailing rationalistic rhetoric in industrialized countries, sources of knowledge in these countries were historically associated with transcendental influences and/or can be traced back to forces that remain outside conscious control (Drahos 1996). As Deborah Halbert, Susan Sell, and Christopher May convincingly show, property rights for intangible ideas are even today at least partially based on socio-mythological assumptions (May/Sell 2006; Halbert 1999). Consequently, modern intellectual property law, not unlike indigenous regulations, also consists of a "bundle of rights" (Deazley 2007; Drahos 1996: 148f) that contains quite different kinds of entitlements (e.g., experimental use) and acknowledges numerous exceptions (e.g., for public use, *ordre public*, and so on). Even the concept of "collective rights" is not entirely alien to external actors. Patents and copyrights, for example, are often granted to companies, although it is usually acknowledged that one or several individuals within a firm develop the ideas (May 2002). Nevertheless, scientists are often not willing to accept that traditional communities have developed their own regulations. This may be because their academic career or the commercial exploitation of their "discoveries" depends on the application of modern intellectual property law (Posey 1990). Environmental groups, in contrast, often refer to supposedly "superior" values (e.g., global climate protection, preservation of biodiversity) in order to justify their disregard for customary laws (Interview 140; 337).

Irrespective of their motivation, many external actors tend to ignore the communities' rules and try to buy single villagers' knowledge without obtaining the consensus of the affected groups (Griffiths 2006; Interview 202). When this happens, the social ties between the members of traditional communities are loosened or even destroyed. This leads to the (often violent) dissolution of communities and incites a socioeconomic and cultural degradation of their individual members (Francis 2008; Interview 122). This is why many indigenous and traditional communities forcefully claim that their customary laws must be respected (Thompson et al.

2011; Greaves 1996; Varese 1996). They demand that they have the right to decide by themselves whether they want to share their knowledge with others, and they require that the decision-making process must follow their own customary rules (Interview 142; 185; 202).

In sum, it seems that the conflicts related to bio-prospecting and conservation projects are rooted in cultural differences with regard to ontological and epistemological assumptions. These basic beliefs are closely associated with differing legal practices connected to the access and dissemination of knowledge. Nevertheless, on a more abstract level, there are also significant intersections between traditional and modern perceptions that could possibly be used to find common ground. Moreover, indigenous and local communities have partially adopted the perspective of external actors, which says that their knowledge may be used for purposes that are outside their own living environment. Thus, these communities usually do not fundamentally oppose scientific, commercial, or preservationist utilizations of their wisdom. However, they insist on their right to decide by themselves whether and under which conditions their knowledge shall be disclosed and disseminated. In some cases, they endorse specific reservations or terms of use that run counter to the interests of researchers or preservationists. Depending on their customary laws, they sometimes demand that the consensus of a larger group has to be obtained. However, most external actors are not willing to negotiate on an equal footing with indigenous groups because they are trying to avoid lengthy discussions that might end with a partial refusal of access or substantial limitations in the terms of use. Thus, the major conflict between traditional communities and external actors is not about diverging epistemological and ontological beliefs per se, but rather about the application of the shared concept of a self-determined conduct of negotiation.

### **3. The ambivalences of the international regime complex**

During the past thirty years, the regulation of traditional knowledge has gathered public attention on a global level (Posey/Dutfield 1996; Schücking/Anderson 1991; Ellen 2007). Although there is no single international treaty that exclusively deals with traditional knowledge, many agreements, conventions, and resolutions touch upon this issue. In the following section, I will show that the international “regime complex” (Raustiala/Victor 2004) mirrors the debate of domestic processes of adaption and resistance. The result is described as a patchwork of ambivalent, inconsistent, and often contradictory prescriptions that are characterized by a considerable variance both in their ratification status and in respect to available enforcement mechanisms.

The most relevant international treaty with respect to traditional knowledge is the Convention on Biodiversity (CBD), which was launched at the Earth Summit in Rio de Janeiro in 1992. The clauses of the treaty are strongly inspired by the sustainability paradigm of the Brundtland Report, which attempts to reconcile ecological, developmental, and economical goals (Bastos 2009: 33ff; Escobar 1998). Whereas the CBD is often praised as a historic compromise between

non-governmental environmental protection groups, economic actors, and industrialized and developing countries, critics speak of a “Christmas tree treaty” (Raustiala/Victor 2004), which endorses a broad range of intrinsically contradictory rules.

The CBD only refers to those knowledge contents that are related to biodiversity. It departs from traditional international law that usually describes these goods as “common heritage of mankind.” Instead, the CBD stipulates that biological resources and associated traditional knowledge must be regarded as property that is owned by the nation-state of its origin (Götting 2004). At the same time, however, indigenous groups and local communities are perceived as “knowledge holders” (Sunder 2007). This means that any attempt to access their knowledge shall depend on their “prior informed consent” (PIC). Moreover, the commercial exploitation of their resources shall only be allowed in the case of a “fair and equitable access and benefit sharing” (ABS) agreement between local communities and bio-prospecting institutions, which also includes the handling of intellectual property issues. However, a clear distribution of rights and obligations between bio-prospectors, communities, and governments is not specified by the convention, but instead left to the signatory states (Posey/Dutfield 1996). The recently agreed upon Nagoya Protocol, an amendment of the CBD, slightly reinforces the procedural rights of traditional and indigenous communities, but generally remains as vague as the CBD itself.

Indigenous lawyers argue that the CBD must be read in the light of further United Nations resolutions and declarations. Most notably in the Brazilian context, they refer to the International Labor Organization (ILO) Convention No. 169 (adopted in 1989). Although the convention does not directly address the regulation of traditional knowledge, it clearly supports indigenous claims for self-determination. Article 7 (§ 1) of the ILO convention reads as follows:

“The peoples concerned shall have the right to decide their own priorities for the process of development as it affects their lives, beliefs, institutions and spiritual well-being and the lands they occupy or otherwise use, and to exercise control, to the extent possible, over their own economic, social and cultural development...”

In recent years, indigenous groups have won another victory on the international level. Against fierce resistance from governments both of industrialized and developing countries, they won the struggle for the UN Declaration of Indigenous Rights (2007) to endorse the protection of traditional knowledge and the concept of “free, prior and informed consent” (FPIC). Both topics are regularly discussed in the context of the UN Expert Mechanism on the Rights of Indigenous Peoples (EMRIP). While indigenous peoples from Latin America can use EMRIP and other international forums as an opportunity to speak to a broad international audience (Interview 140; 186; 202), tribal peoples from India are often denied the possibility to make their voices heard due to travel restrictions and informal intimidations of the government (Interview 314; 263).

Moreover, the international recognition of indigenous self-determination has three major shortcomings. First, with the exception of the UN Declaration, all other treaties have not been ratified by many countries whose consent is necessary to give them substantial weight. The CBD, for example, has not been signed by the United States. Thus, US corporations and scientists are not liable for their extraterritorial bio-prospecting activities within the US jurisdiction. Similarly, Germany, another major home country for the life science industry, rejects the ratification of the ILO Convention. Even India has not signed the convention, which means that its indigenous groups cannot sustain their demands by a direct reference to its clauses. The second weakness of these treaties must be seen in their lack of enforceability. Third, the international secretariat of the CBD strongly supports access and benefit sharing, but it is not willing to recognize prior informed consent as a substantive clause that has to be recognized as a goal in and of itself. Thus, although indigenous groups perceive CBD conferences as a useful forum to make their voices heard, they do not expect an enhancement of self-determination by the CBD (Interview 185). In the context of institutionally related forums and programs like the Forest Carbon Partnership Facility (World Bank) and the UN Framework Convention on Climate Change (UNFCCC), indigenous groups often criticize the lack of any meaningful application of the PIC principle (Thompson et al. 2011; Eastwood 2011).

At the same time, international trade treaties under the umbrella of the World Trade Organization (WTO) and the World Intellectual Property Organization (WIPO) seriously undermine the already weak support of traditional communities' rights. Of utmost importance is the Agreement on Trade-Related Intellectual Property Rights (TRIPS, 1994), which has been ratified by all WTO member states. Although the treaty does not explicitly address traditional knowledge, it stipulates that "patents shall be granted in all fields of technology" (Art. 27). This does not mean that traditional knowledge is directly patentable. For one, it does not meet the necessary requirements (Dutfield 2011). Second, traditional knowledge is per se excluded from patent eligibility because it is not considered to be "novel" in the sense of an invention that is individually accountable. However, the TRIPS agreement is an incentive to use traditional knowledge as a basis for incremental (or even less innovative) further developments. While patented innovations must not be imitated without the consent of the patent holder, TRIPS generally assumes that not-patentable technological knowledge is a public good and free to be used by everyone.

In the field of agricultural techniques, the International Union for the Protection of New Varieties of Plants (UPOV) convention under the umbrella of the WIPO and the agreements under the Food and Agriculture Organization (FAO) follow the same logic (Rikoon 2004; Brush 1996). Apart from some narrow breeders' exemptions, all these treaties postulate a dichotomy between individual inventions (which are to be protected by intellectual property law) and common knowledge (which is deemed to be freely available for all interested parties). The treaties thus clearly favor the life sciences industry – made up of companies mainly from industrialized countries – to the detriment of the countries of the Global South that provide most of the biodiversity-related knowledge (Rosendal 2006). At the same time, the international framework does not leave any space for traditional communities' customary laws and their

graduated usufruct rights (Brush 1996). The situation is aggravated by the fact that TRIPS (and, by the way of endorsement, some important UPOV clauses) can be enforced by the WTO Dispute Settlement Body, which makes it difficult for developing countries to adapt the rules to their domestic needs (Raustiala/Victor 2004).

For almost fifteen years, both indigenous groups and governments from developing countries have demanded that TRIPS should be amended to endorse the recognition of traditional knowledge related to biodiversity. They turn to the CBD in order to substantiate their claims (Raustiala/Victor 2004). In 2004, Brazil forged the coalition of the “Friends of Development” in order to advance a rather technical amendment to TRIPS: patent offices in industrialized countries shall introduce a “disclosure requirement,” by which patent applicants must provide information regarding whether and which biological and associated knowledge resources have been used for their invention. Brazilian authorities argue that such a disclosure requirement is necessary to enforce domestic laws beyond their own jurisdiction (see section 4.3 of this paper). In the context of WIPO and WTO negotiations, however, trade diplomats from industrialized countries have continued to strongly reject this claim. The most vociferous opponents are from the US, Germany, Great Britain, and France (Interview 187). These countries’ governments are strongly lobbied by their domestic life science industries (Interview 033; 055; 063).

All in all, it seems fair to say that the international regime complex related to traditional knowledge appears quite fragmented. On the one hand, human rights treaties and conventions reflect indigenous demands for self-determination with regard to the disclosure and utilization of their knowledge. Environmental treaties like the CBD and related initiatives have at least rhetorically adopted the parlance of prior informed consent, even though the relevant international organizations seem reluctant to put the concept into practice. On the other hand, international commercial law seriously undermines the demand for indigenous self-determination as it imposes the intellectual property regulations of industrialized countries on a global level. So far, the life science industries in industrialized countries and their respective governments have impeded any mutual rapprochement between the two competing approaches.

#### **4. Varieties of domestic regulation: India and Brazil**

The previous section illustrated that the international regime complex regarding traditional knowledge does not provide a coherent guideline on how to reconcile the competing values and interests in this policy field. Thus, it comes as no surprise that national regulations vary to a large degree. This study focuses on India and Brazil because these countries have adopted largely dissimilar approaches that are accordingly affected by the international framework conditions in different ways. In the following section, the regulations in India (4.1) are compared to those in Brazil (4.2). The section concludes with an evaluation of the effectiveness of both models against the background of the global regime complex (4.3).

#### 4.1 Ignoring self-determination: The Indian approach

The most striking characteristic of the Indian debate on traditional knowledge policies is the complete absence of indigenous voices at the federal level. Usually, this is explained by a lack of capacity within the affected communities. In view of the dominant actors, tribal peoples are not directly represented because they do not speak English or Hindi, and they cannot afford the financial means to travel to New Delhi in order to express themselves (Interview 136; 270). However, it seems that is only half the story. Field research on a local level reveals that there are many members from tribal communities and traditional healers who do not lack the relevant linguistic capacities (Interview 308; 307; 304). However, political repression by the local government and violent threats by private landlord armies often prevent indigenous groups from organizing collectively to make their voices heard (Interview 281; 303; 308). From the side of the Indian central government, the local oppression is increasingly reinforced by paramilitary means like the operation “Green Hunt” (Johnston 2012) and other initiatives that officially serve to “combat terrorism” (Interview 297; 298). On the federal level, Indian authorities try to thwart critical voices during the run-up to internationally recognized meetings, even though they are not able to smother all protests. As one interview partner told me, “Here [in New Delhi], people do not disappear. In the states, it’s different” (Interview 314).

Due to violent oppression on the local level and a more subtle discrimination on the federal level, it is nearly impossible for tribal and traditional communities to voice their perspectives on traditional knowledge policies. Tribal representatives in the Indian parliament are frequently co-opted or bribed by the local elites of their electorate.<sup>4</sup> Even if they try to defend tribal peoples’ interests, leaders of their political parties often hinder them (Interview 141). Outside the parliament, groups that advocate for civil rights for tribal peoples are cut off from international financial aid by governmental regulations (Interview 330). Although there are a few Indian non-governmental organizations that try to endorse indigenous interests in the debate on traditional knowledge, these groups are often dependent on the financial support of transnational environmental organizations. These transnational organizations, however, cancel their funding as soon as local NGOs openly support tribal peoples’ concerns that run counter to their own political priorities (Interview 145). Due to the lack of an indigenous representation on the federal level, a common position of tribal peoples toward the regulation of traditional knowledge cannot be ascertained. However, empirical evidence on the local level and conversations with practitioners in the field seem to indicate that many communities are basically willing to engage with external actors. However, they insist on their right to decide by themselves whether and with whom they want to share their knowledge.<sup>5</sup>

4 Indian electoral law has specific reservations for delegates from ethnic and social minorities (scheduled castes and tribes). However, the candidates have to be voted in by a majority within their constituency (Singh/Saxena 2011), which makes them dependent on the financial support of local elites (Interview 298; 303; 325). Moreover, elections in India are often overshadowed by violent conflicts that privilege those candidates who enjoy the support of powerful industrialists or other members of the elite (Spivak 2005; Interview 141).

5 Some healers, for example, are willing to share the basic concepts of their knowledge, but withhold specific applications of local plants. Other healers try to avoid a commercial utilization of medical

In the absence of a political representation of tribal peoples, the Indian debate on traditional knowledge is characterized by fragments of the international discourse on the one hand and a reflection of the country's colonial past on the other. Key decision-makers from India regularly take part in conferences at the WIPO, CBD, and WTO (Interview 143). In the case of academics, their studies are often strongly inspired by these conferences, and they focus on how the various conventions should be implemented (Interview 132; 135). According to some sources, a large part of the Indian legislation on biodiversity regulation is based on studies that were financed by international organizations (Kohli/Kothari 2003). Other political actors (e.g., parliamentarians) are closely connected to transnational environmental organizations like the International Union for the Conservation of Nature (IUCN) and export-oriented multi-corporation enterprises (Interview 135; 141). Although these decision-makers do not entirely agree with the prescriptions of international (non-governmental) organizations, they usually adopt the conviction that traditional knowledge can be used to sustain environmental, economical, and developmental goals (Interview 138; 135; 140; 328; 339).

This perspective often goes hand in hand with postcolonial attitudes. India's biodiversity is regarded as a national asset that has to be protected against the intrusion of foreign "bio-pirates" (Interview 131; 134; 328). The most prominent representative of this position is without a doubt Vandana Shiva, whose writings have a considerable influence on the national debate in India. In this context, the TRIPS agreement is often portrayed as a resumption of colonial dictatorship by different means (Shiva 1991b; 2001). Politicians, practitioners, and academics claim that industrialized countries compel India to protect their industrial inventions from imitation while at the same time "plundering" India's biodiversity (Shiva 2001). Under these circumstances, traditional knowledge is considered to be of national importance (Mukherjee 2004; Kaushik 2004), and its richness becomes an asset to be used to compete with the former colonial rulers (Dutfield 2004).

The Indian approach to traditional knowledge regulation mirrors the convictions and interests of the prevailing decision-makers. Its main focus is on the prevention of piracy (Kaushik 2004; Damodaran 2003; Venkataraman 2009; Interview 129; 339). On the basis of the National Biodiversity Act (2002) and the Biodiversity Rules (2004), foreign bio-prospectors must apply for an allowance if they attempt to access local communities' knowledge or to acquire intellectual property protection (e.g., patents) for inventions that are based on traditional knowledge.<sup>6</sup> They have to address their request to the National Biodiversity Authority (NBA) in Chennai (Damodaran 2003), whereas Indian bio-prospectors can directly go to the State Biodiversity

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experiences or insist that external actors must be (morally) worthy to receive their knowledge (Interview 281; 296; 304; 314).

<sup>6</sup> It is important to note that the described procedures are not applicable in the agricultural sector. India has not ratified the UPOV convention. However, the Protection of Plant Varieties and Farmers Rights Act (PPV & FR Act, 2001) mandates that the state can grant property rights for uniform, stable seeds. Traditional communities may try to apply for protective rights at the Plant Variety Authority but usually their breeding practices do not meet the requirements of the UPOV definitions. In the case of agricultural bio-prospecting, the PPV & FR Act does not endorse any requirements related to prior informed consent.

Boards (SBB) in order to accelerate the approval procedure. Domestic bio-prospectors must only contact the federal office if they want to share their intellectual property rights with foreign partners. In order to prevent illicit bio-prospecting activities, the NBA observes patent applications both in India and outside it (Kaushik 2004; Rao 2006). Wherever it sees an illegal utilization of traditional knowledge, the authority is entitled to engage in an opposition procedure in order to prevent patents that rely on biopiracy.

The NBA (or in the case of domestic applicants, the SBB) decides autonomously on the approval of bio-prospecting projects. According to the law, the NBA or the SBB shall take into account the objections or defence from local Biodiversity Management Committees (BMC), which are supposed to represent the interests of traditional groups at the community (*Panchayat*) level. However, neither the NBA nor the SBB are under any obligation to follow the local recommendations. Moreover, federal or state authorities are entitled to decide autonomously on the modalities of benefit-sharing agreements with the local communities whose knowledge will be accessed. In the case that there are several communities involved, the NBA may unilaterally decide to channel financial contributions into a national biodiversity fund whose means are deployed for the overall development of tribal areas (Kaushik 2004).

At first glance, the institutionalization of bio-prospecting control seems quite impressive. However, the reality of the law “in action” looks quite different. Despite the explicit top-down approach (Randeria 2007), the NBA and its subordinated administrative units are characterized by serious institutional weaknesses (Interview 133). The NBA itself is poorly staffed and is ill equipped to fulfill its tasks (Interview 137; 138; 144; 270). In a recent report, the Comptroller of Auditor General (CAG) issued a devastating critique both of the NBA and of the Ministry of Environment and Forests (MOEF), to whom the NBA is subordinate. According to the CAG report, the NBA has neither established clear standard operating procedures nor has it implemented any provisions against illicit bio-prospecting activities. What is more, the NBA is accused of having granted various access permissions on a non-statutory basis. The report further observes severe coordination problems between the NBA and the MOEF that lead to the suspension and further to the non-implementation of substantive legal requirements (CAG 2010). Regarding the subordinated regional units, many SBB have not been installed or only exist on paper. With the exception of Kerala, local biodiversity management committees have only been sporadically established, and their relationship to other community bodies has not been defined for the time being (Interview 136; 141; 270). Thus, it seems fair to say that the whole monitoring structure for bio-prospecting activities appears fragile at best. And there is no institutional safeguard mechanism to ensure that indigenous and local communities’ perspectives are taken into account (Interview 273; 333).

However, at the same time, there is a vast multiplicity of initiatives that document and catalogue biological resources and the associated traditional knowledge all over the Indian sub-continent (Venkataraman/Latha 2008). The most prominent and internationally recognized project is the Traditional Knowledge Digital Library (TKDL), which is under the auspices of the Council of Scientific and Industrial Research (CSIR). As yet, the project is focused on writ-

ten traditional knowledge that is extracted from Hindu religious writings (*Upanishads*, *Vedas*, and so on). However, the project plans to extend its scope to include the oral traditions of tribal peoples (Interview 328). Apart from the TKDL, there are two further prominent projects. One is the National Innovation Foundation, which is administered by the Ministry of Science and Technology and which documents agricultural and practical knowledge of local villagers. Another large-scale project consists of documenting ecologically relevant knowledge (People's Biodiversity Register). It is organized by the Center for Ecological Science in Bangalore. Apart from these comparably well-known initiatives, many non-governmental organizations, corporations, and hybrid entities are involved with documenting activities on a local scale. In some cases, the projects are financed by international organizations (World Bank, UN Development Program) or foreign development organizations (Interview 138; 144; 146; 317).

Although most activities are officially administered by non-governmental organizations, they are usually at least indirectly supervised by the Indian authorities (Interview 317; 298). From the perspective of both governmental officials and activists, the various documentation projects can serve several purposes at the same time. First, the collected data may be used by Indian scientists within the public research institutes and universities. Most notably, the CSIR and its various institutes use the knowledge of local and indigenous communities to develop pharmaceutical innovations (Interview 327; 334). Second, the collected knowledge may help boost the economic development of local villagers (Interview 311). The Honey Bee Network, for example, actively supports the commercialization of traditional knowledge-related goods and techniques (Gupta et al. 2003). Third, it is expected that Indian corporations can use the catalogued data to develop products for the export industry (Kaushik 2004). The documentation of the knowledge can also serve as a defensive protection against patent applications outside India. Indian corporations or public authorities may use the registers in order to oppose patent claims on the ground of "prior art", if the alleged "invention" was already described in the catalogues (Kaushik 2004). Fourth, from the perspective of environmental groups, documenting knowledge is a chance to gather relevant data for preservation priorities and climate protection programs (Interview 140; 337).

Generally, the legal status of the various documentation projects remains unclear for the time being (Misra 2007; Debbarma 2006). Whether indigenous interests and their customary laws are acknowledged depends on the concept of the various documentation initiatives (Francis 2008). While many projects' standard operating procedures (handbooks, guidelines) mention the necessity of the knowledge holders' consent, they do not elaborate on any concrete measures, which often leads to a neglect of a substantial consultation of the affected communities (Interview 139; 329). Many non-governmental organizations, whose activities are informally sponsored by corporations, completely ignore the CBD requirements of prior informed consent and deny any substantial benefit-sharing (Sharma 2006; Interview 122; 141). Some transnational environmental groups openly claim the right to ignore customary laws because of the supposedly "superior importance" of climate protection (Interview 140; 144; 337). In the case of some internationally funded projects that are technically operated by Indian govern-

mental authorities, the procurement of indigenous consent to the documentation initiatives is not even foreseen (Interview 311).

In sum, it seems that Indian decision-makers have adapted the international discourse that the exploitation of traditional knowledge should serve economic, developmental, and ecological goals. Although top-down monitoring activities are poorly institutionalized, a multitude of rather uncoordinated initiatives are aimed at documenting traditional knowledge in order to exploit it for economic and preservationist purposes and to prevent foreign bio-prospectors from patenting hereto-related inventions. At the same time, Indian decision-makers resist the idea that indigenous groups should decide for themselves whether they want to make use of their knowledge for these goals. As one interview partner put it, tribal communities “need to be educated, because the whole world could benefit from their knowledge” (Interview 334). Although the affected communities might disagree with this view, their possible resistance is stifled by political oppression and by discriminatory policies that are supported by the tacit acquiescence of international organizations and transnational environmental NGOs.

#### **4.2 Enhancing autonomy: The Brazilian approach**

In Brazil, the processes of adaption and resistance that are associated with the regulation of traditional knowledge are dominated by the antagonism of two camps that have opposing views about the specific modalities of access conditions. Scientists most notably from public research institutions perceive biodiversity-related traditional knowledge as a mine of information that should be explored in order to enhance pharmaceutical and agronomic research (Interview 171; 174; 190). Regarding the latter research field, they are strongly supported by the *agronegócio*, i.e., Brazilian agricultural corporations, as well as by the Ministry of Agriculture (Interview 183; 192). The supporters of facilitated access regulations often refer to TRIPS, UPOV, and the FAO treaties. They claim that the commercial utilization of traditional knowledge assets could be helpful to enhance Brazil’s competitiveness on the world market, but they also use ethical considerations (healthcare, world food situation) to substantiate their arguments (Interview 219; 192; 183).

To a certain degree, multinational pharmaceutical and agricultural corporations support the scientists interested in traditional knowledge for agronomic research. International firms sponsor the conferences of scientists, corporations, non-governmental organizations, and politicians in order to influence public opinion and pressure the Brazilian government. Transnational environmental groups like Greenpeace and the World Wide Fund for Nature (WWF) partially support these moves, as long as the demand for an economic exploitation of traditional knowledge is linked to a sustainable preservation of nature or to the mitigation of climate change (Interview 196; 200; 213). However, the relationship between Brazilian and transnational actors appears quite ambivalent. International environmental groups are often met with distrust as their influence on Brazilian politics is perceived to be illegitimate (In-

terview 194; 199). Brazilian scientists and corporate actors often complain that multinational firms “just take the knowledge and run away” (Interview 220).

The rather loosely organized supporters of a facilitated access to traditional knowledge face a solid and strong opposition from a network of indigenous and traditional communities. Although these groups widely disagree on the question of whether traditional knowledge should be sold or not, they are nonetheless unified in their fight for self-determination. Their claims are not confined to traditional knowledge, but also include land rights and human rights in a broader sense (Interview 186). This linking of various issues is helpful in forging a coalition among different ethnic groups across and even beyond the Brazilian territories; the Brazilian groups are closely linked to other Latin and North American indigenous peoples (Interview 188; 196; Varese 1996). Moreover, indigenous representatives regularly take part in UN conferences, which helps to pressure the Brazilian government. At the same time, indigenous and traditional communities are supported by Brazilian non-governmental organizations and left-wing politicians whose political careers often originated in social movements (Interview 182; 223). Under the Lula government, many of these activists have been appointed into the public administration. Despite finely nuanced differences, traditional communities, activists, politicians, and bureaucrats within this coalition agree on the concept of *socioambientalismo* (social environmentalism), by which ecological and social priorities are placed over short-term economic gains (Santilli 2005).

In the year 2000, the *socioambientalistas* benefited from a window of opportunity. A public-private partnership between a Brazilian research institution and a multinational pharmaceutical company (Novartis) aroused widespread public attention as the contract granted intellectual property rights from a bulk of genetic resources to the foreign firm. When the involved Brazilian scientists publicly opposed the one-sided treaty, Brazilian media scandalized the project to a degree that President of the Republic Fernando Henrique Cardoso felt compelled to intervene (Bastos 2009: 110ff). Due to time pressure, Cardoso drew on a legislative initiative that had been already advanced in congress by Marina Silva, a left-wing senator and former activist of the *seringueiros* movement (Interview 182). The president enacted a decree (*medida provisória*) in an attempt to calm widespread protests against what was perceived as a particularly serious case of “biopiracy” (Kleba 2006). After a series of amendments, the decree no. 2.186/2001 still serves today as the basis for the regulation of traditional knowledge in Brazil (Guedes/Amstalden Sampaio 2004).

The decree draws on the Brazilian Constitution (1988) and on the Convention on Biodiversity to declare that biological resources and associated traditional knowledge are state property (*bens da união*). Nevertheless, indigenous groups and traditional communities are granted perpetual, unalienable usufruct rights. Moreover, the decree and the Brazilian constitution stipulate that their customary laws and their tribal decision-making procedures shall be respected in any case of access to their resources (Santilli 2005: 186ff). The Brazilian government has refrained and continues to refrain from a generalized traditional knowledge documentation program because of indigenous groups’ opposition. There are a handful of small-scale ini-

tiatives to catalogue traditional knowledge that are predominantly organized by indigenous communities themselves (Sunder 2007), foreign donors, and non-governmental organizations (e.g., GIZ). However, these initiatives are institutionally under the control of the FUNAI (*Fundação Nacional do Índio*), the governmental authority for indigenous policies (Interview 191; Guedes/Amstalden Sampaio 2004).

Perhaps the most important element of the Brazilian regulation is the establishment of a rigorous authorization process for the access to traditional knowledge (Azevedo 2005). The *Conselho de Gestão do Patrimônio Genético* (Council for the Management of Genetic Heritage, CGEN) organizes the procedures under the auspices of the Ministry of Environment. The CGEN is an inter-ministerial group in which various departments (agriculture, environment, science and technology, culture, defense, and so forth) are formally represented. When Marina Silva became minister for the environment under the Lula government, the council was opened to civil society and indigenous as well as to corporate representatives. While these groups are on equal footing with governmental actors in the rather deliberative technical subcommittees, they have only an observer status in the council's monthly general assembly that decides on individual requests for bio-prospecting activities (Azevedo 2005).

Bio-prospectors must apply for several authorizations in order to access traditional knowledge. In a first phase, they must obtain the prior informed consent of the affected communities. Therefore, they have to inform the community in clear language about their research goals, the geographical and temporal extension of their project, and the expected (e.g., economic) outcomes. The community is then free to make a decision according to its own rules. Depending on the case, the CGEN can oblige potential bio-prospectors to hire an anthropologist, who must learn the relevant indigenous languages and study their customs in order to confirm that the decision is based on the free will of the community. The bio-prospector has to display evidence before the CGEN that he has fulfilled these conditions. It is only if the CGEN accepts the consent of the accessed community that the project may enter into the second phase. In this phase, the applicant must travel back to the community and negotiate access and a benefit-sharing agreement. Once again, the communities' consent must also be approved by the CGEN. The authority does not control for the content of the agreement (e.g., royalty shares, other compensation measures) but only refers to the formal requirement of the affected group's self-determination. When the second agreement has been accepted by the CGEN (often more than two years after the initial request; Interview 218), the applicant may start its bio-prospecting activities.

During the past few years, Brazilian authorities incrementally made the procedures less rigorous and installed supplemental contact points. However, as soon as traditional knowledge is affected, the strict authorization process prevails (Cottier/Panizzon 2004). Additionally, Brazilian authorities attempt to prevent companies from avoiding the approval procedure by strict controls. IBAMA (*Instituto Brasileiro do Meio Ambiente e dos Recursos Naturais Renováveis*), for instance, a governmental environmental protection agency has caused a stir within the past few

years due to its large-scale crackdowns on alleged offenders. The Brazilian public prosecution department (*Ministério Público*), the Brazilian military forces, and the intelligence service are also all involved with the persecution of illegal bio-prospecting activities (Interview 173; 189; 191). To a locally varying degree, governmental authorities cooperate with indigenous and traditional communities in order to prevent illicit research projects within the Brazilian Amazon and alongside its frontiers. Although civil society organizations are sometimes involved with these activities, they usually lack the monetary resources to participate in a long-term manner (Interview 173).

Apart from command-and-control structures, Brazilian regulations also draw upon an incentive system for legal bio-prospecting. According to Brazilian patent law, inventions that are based on traditional knowledge are principally patentable. However, patent applicants are required to disclose the location and the conditions under which they have been able to access the knowledge. Moreover, during the patent application procedure at the latest, prospectors must procure a certification from the CGEN. With this they prove that they have abided by the rules and procedures of the authorization process. After some initial irritation, the Brazilian patent office and the CGEN eventually developed mutually agreed upon standard operating procedures regarding how they should coordinate with each other (Interview 163; 172). It is generally expected that the legal conjunction of patent law and access conditions will help enforce Brazilian traditional knowledge regulations at least within domestic jurisdiction.

All in all, the Brazilian approach is quite contested despite (or perhaps because of) its inherent compromises. Scientists and corporate actors claim that the regulations are ill suited to cope with cases of widespread traditional knowledge or to deal with resources that cannot be attributed to a single indigenous or traditional community (Interview 174). Moreover, these actors are not willing to adapt to the lengthy decision-making procedures that are associated with the recognition of indigenous and traditional groups' customary rights. They complain about the time-consuming application procedures, which from their point of view seriously impede their research activities (Interview 171; 190). Government officials show a partial understanding for these claims, although they also confess that they "have learned a lot" from indigenous representatives during the course of their longstanding interactions (Interview 201). Indigenous and traditional groups, for their part, have partly adapted to the idea that their knowledge may be perceived as a negotiation matter. However, they criticize the adopted processes for not adequately ensuring their representation (Interview 186). They demand that their observer status within the CGEN should be transformed into official membership with voting rights. Moreover, they ask for more rigorous enforcement measures, especially in the wilderness of the Amazon forest (Interview 188). Despite their different normative agendas, however, all sides in the process recognize that the Brazilian approach is an attempt to reconcile the varying interests in the ongoing process of mutual adaption and resistance.

### 4.3 Selective effectiveness in a global context

The previous subsections have illustrated that processes of adaption and resistance take a quite different course in India and Brazil. The Indian approach is characterized by rather weak monitoring structures on the one hand and enormous efforts to document and catalogue traditional knowledge on the other. While this approach is expected to serve economic and ecological goals, the self-determination of traditional communities is left to the arbitrariness of the individual projects and initiatives. Brazilian regulations, in contrast, are based on a strongly institutionalized authorization procedure by which economic and ecological priorities are balanced with the interests of the affected communities. The envisaged reconciliation of interests is supported by strict controls and an incentive system for patent applicants within Brazilian jurisdiction.

It is nearly impossible to evaluate the effectiveness of both the Indian and the Brazilian approaches with regard to the prevention of illicit activities. Within both countries, many actors complain about ongoing rampant biopiracy by researchers and corporations from industrialized countries. In many cases, domestic researchers are also involved with illegal bio-prospecting activities (Hathaway 2004), or multinational companies cooperate with domestic firms to assess the relevant knowledge without the approval of the authorities (Interview 329). Interview partners from research institutions report that they are regularly bribed by multinational companies to extract biological resources and the associated knowledge (Interview 171; 174). Thus, it comes as no surprise that the estimated number of unreported cases is expected to be very high in both countries. Moreover, there are serious indications that the problems are increasingly aggravated by rather uncontrolled REDD and CDM initiatives in both countries (Thompson et al. 2011; Eastwood 2011; Griffiths 2006). However, despite these similarities, it seems that the Indian and the Brazilian approaches are differently shaped by the context of the international regime complex on traditional knowledge regulations.

In the long run, the Indian approach of documenting traditional knowledge may be of use to prevent patents that use illegally accessed knowledge within the industrialized countries. Indian authorities or non-governmental organizations can use the documentation to show that a claimed invention is nothing really new, and that it merely reproduces traditional knowledge. So far, several patent applications in Europe have been withdrawn because the Indian government was able to use data from the Traditional Knowledge Digital Library in order to show the claimed invention was based on century-old Hindu knowledge (Kaushik 2004). Some US patent applications were also successfully opposed reasoning the same way. In the future, data from the Peoples' Biodiversity Registers (see section 4.1) will also be fed into a national database and thus help to serve the same goals (Interview 137).

One might argue that the documentation projects can thus act as a deterrent for foreign biopirates who will not be able to patent their "stolen" discoveries. However, a patent application based on foreign biopiracy can sometimes – ironically – be helpful for Indian corporations. In some cases, when foreign biopirates revealed their discoveries through a patent application,

Indian firms used their applications as an indicator for a promising market opportunity. They then opposed the patent application and commercialized the already documented knowledge themselves (Interview 138).<sup>7</sup> In other cases, Indian firms offer transnational companies the chance to collect herbal raw material after its pharmaceutical value has been illegally discovered by unauthorized bio-prospecting activities (Interview 335). Given the weak institutionalization of the National Biodiversity Authority and the corruption of the forest bureaucracy (Gopalakrishnan 2010), it seems unlikely that tribal peoples would end up being compensated for the utilization of their knowledge (Interview 122). Under these circumstances, it seems understandable why it is mainly the domestic and multinational industry actors in India that support the current regulatory approach (Interview 266). At the same time, indigenous populations' frustration about their demands for self-determination continually being ignored is likely to increase their sympathy for terrorist (Naxalite) groups (Interview 138; 141).

The Brazilian approach, in contrast, is seriously impeded by the context of the international regime complex. The tying together of traditional knowledge and patent regulations on a domestic level is helpful in deterring *Brazilian-based* researchers from illegal bio-prospecting activities. However, multinational corporations have proven to generally disregard these rules (Hathaway 2004). The lack of documentation of traditional knowledge assures them that neither the affected communities nor Brazilian authorities can procure any evidence that the corporations have made use of traditional knowledge. As long as they are not required to declare the origin of their discoveries before the patent offices in industrialized countries, they are under no obligation to submit to the approval of the Brazilian CGEN.

Brazilian regulators admit that due to the lack of an internationally binding enforcement mechanism, they have hardly any chance to persecute illegal bio-prospecting activities beyond the reach of Brazilian jurisdiction (Interview 189; 199). This enforcement problem has two far-reaching consequences. First, it is quite a tedious task for Brazilian authorities to protect their traditional communities against the violation of their customary laws. Second, the lack of international acceptance puts the Brazilian regulations under domestic pressure. Brazilian scientists and corporations rightfully claim that they are seriously disadvantaged in the context of a global market. Whereas they are compelled to adhere to strict authorization procedures, foreign competitors can ignore these rules, at least as long as they do not attempt to apply for a patent in Brazil (Bastos 2009: 92ff). That is why Brazilian researchers and industry representatives vociferously advocate for an easing of access conditions, even if they admit that the recognition of indigenous self-determination should be maintained (Interview 171; 174; 220).

To be sure, the implementation of a "disclosure requirement" in international patent law treaties – as the Brazilian government demands (see section 3) – would not solve all the problems that are associated with the Brazilian regulatory approach. Most notably, this would not ad-

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<sup>7</sup> In fact, Indian corporations also cooperate with multinational pharmaceutical firms in the commercialization of traditional knowledge (Mukherjee 2004). Their privileged access to Indian authorities and traditional knowledge databases are sometimes used as a bargaining chip when negotiating about the terms of transnational joint ventures (Interview 335).

dress illegal bio-prospecting activities in the context of climate preservation initiatives, since these initiatives are not necessarily linked to patent policies. Nevertheless, the lack of an internationally agreed linkage between patent and traditional knowledge protection clearly favors the economic and, to a lesser degree, the ecological utilization of traditional knowledge. At the same time, it destabilizes the Brazilian focus on the self-determination of traditional communities and indigenous peoples with regard to the preservation of their customary laws and the associated lifestyles (Bastos 2009: 92). Due to the prevailing power structure on the international level, however, it appears improbable that a worldwide regulatory U-turn can be expected in the near future.

## 5. Conclusion

Although the empirical evidence of this paper remains admittedly limited, the paper nonetheless allows for some tentative conclusions that might be helpful for further studies on processes of adaption and resistance. The most relevant implications refer to (1) the identification of agency, (2) the intersection between values and interests, (3) the localization of the relevant processes, and (4) the role of power relations. As the following discussion will show, the conclusions of this study resonate with some insights that can be derived from postcolonial theory and international political economy.

1. Processes of adaption and resistance have both a substantive and a procedural dimension.

Most discussions on the dynamics of norm transfers directly focus on substantial issues (human rights, environmental protection, and so on). Although content certainly matters, this study indicates that scholars should not neglect the *procedural* dimensions of interactive processes. As it is most prominently expressed in postcolonial studies, the question of meaningful agency must be addressed in the first instance (Spivak 2004). For various reasons, external actors often ignore indigenous groups and traditional communities' perspectives. Sometimes, they outright disallow these groups from having the right to decide by their own customs and rules on the adaption of previously unknown conceptual ideas. They interpret the possible resistance of local communities – to, for instance, sharing traditional knowledge – as an indicator of “backwardness” that has to be overcome by “education” and “awareness-raising” (Interview 334; 270; 274).

In a normative perspective, these attitudes reveal the continuation of colonial sentiment, even if they are inspired by supposedly benevolent intentions (Spivak 2005; Bhahba 1992). In empirical research, the question of agency must be carefully addressed in order to ascertain whose preferences are acknowledged during the course of political decision-making processes. The missing articulation of marginalized interests has a tremendous impact on the range of considered policy options, as Bachrach and Baratz have shown in their analysis of local politics in

the United States (Bachrach/Baratz 1962). It can be assumed that their insights are even more important if and when political oppression comes into play.

2. Processes of adaptation and resistance are rooted in socio-cultural perceptions and economic interests.

So far, processes of adaptation and resistance are mainly addressed from an (implicit) constructivist perspective. Both the objects and the subjects of norm transfers are mainly analyzed under the question of whether there are normative congruencies that might facilitate the adoption of or explain the resistance to new concepts (e.g., Acharya 2004; Muhs et al. 1998; De La Rosa 2008). At first glance, the results of this study confirm the prevailing perspectives. The debate on traditional knowledge and its regulation certainly refers to widely diverging conceptual ideas. However, as I have shown in the previous sections, material interests should not be neglected, as they can also (at least partially) explain relevant actors' behavior.

At least from a Marxist perspective, indigenous belief systems with regard to traditional knowledge can be interpreted as an ideological super-structure that is associated with primitive forms of accumulation (Subramanian 2004). In this vein, external actors' attempts to commercialize indigenous knowledge could be perceived as an attempt to integrate subsistence economies into a modern capitalist society, as it has been argued by Karl Polanyi with regard to Australian aborigines (Polanyi 1978: 87ff) and by Christopher May in his interpretation of English peasants' expropriation during the Modern Age (May 2002: 72ff). But even if one does not subscribe to historical materialism, it seems hard to deny that the managerialist international discourse on traditional knowledge can be (and actually is) used to defend the exploitation of indigenous peoples, be it for the sake of scientific and industrial progress, preservationist goals, or climate protection (Spivak 2005; Escobar 1998). Whether one assumes that all ideational concepts can ultimately be traced back to economic structures or whether one prefers to analyze ideas distinct from material interests, in each case it seems that both aspects have to be considered in the analysis of processes of adaptation and resistance.

3. Processes of adaptation and resistance are inter-spatial and inter-temporal.

Currently, the analysis of processes of adaptation and resistance usually focuses on local interactions, where previously developed international norms are assumed to be integrated into social practices (De La Rosa 2012). This perspective seems to be informed by an "imaginative geography" (Said 1985), which implicitly follows a top-down approach. International norms are assumed to remain constant, with the result that research can focus on their impact on more or less narrowly circumscribed local target audiences. As this study has shown, such an approach appears overly simplistic. The encounter between indigenous groups in the Brazilian Amazon and external scientists, for example, crucially depends on processes of adaptation and resistance that take place in Berlin (Germany) and Washington, DC, where several ministries decide about their position toward the Brazilian government's proposals at the WTO or the

WIPO. In order to get the whole picture, empirical analysis must address the dynamics of different national and local debates as well as their interactions with international negotiations and transnational communications. As it is most prominently expressed in postcolonial theories, these dynamics cannot be adequately accessed by simple models of distinct and implicitly hierarchically subordinated geographical entities (Said 1985; Bhabha 1992).

Moreover, one has to keep in mind that the perception of temporal distances may differ according to subjective experiences. The adaption of the international discourse by Indian decision-makers, for example, is explicitly associated with the thread of a continuation of colonial practices, which most representatives from industrialized countries assumed have been historically overcome. When studying processes of adaption and resistance, it seems that scholars should take “asynchronous temporality” (Ernst Bloch) into consideration. Events that are assumed to belong to the bygone past in one place may provoke quite unexpected effects in another location.

#### 4. Processes of adaption and resistance are shaped by power constellations.

The empirical evidence of this study illustrates that processes of adaption and resistance rarely take place in a deliberative atmosphere of mutual argumentative persuasion. Rather, it seems that powerful actors attempt to constrain the range of possible alternatives for action in order to achieve results that correspond to their own priorities. Indian regulations do not provide tribal peoples with the opportunity to decide freely about the disclosure of their knowledge, and the Brazilian approach to open up a policy space for indigenous groups is constrained by the industrialized countries’ veto on an amendment of international patent law. At least in the context of this study, direct coercion is not the only, and not even the most common way “to influence somebody to do something that he would not have done otherwise” (Weber 1925: 604). Rather, it seems that the capacity to shape the contingency space as well as the anticipation of such a capacity by potentially subordinated actors can be regarded as an important factor in the course of processes of adaption and resistance. These rather indirect mechanisms resonate well with Susan Strange’s notion of “structural power” in the realm of international political economy (1996). It seems that this concept may also apply to local constellations, at least if they are related to international conflicts.

However, power alone is not a reliable predictor of the concrete outcomes of processes of adaption and resistance. Apart from insurgencies, tribal groups in India can withhold important aspects of their knowledge, or they can even provide wrong information to external actors (Interview 304). In the case of Brazil, it seems at least imaginable that Índios and traditional communities will uphold the pressure to maintain autonomy-enhancing regulations against the headwind of international organizations and transnational groups. At least in some cases, the communication of alternative perceptions has an emancipative force by itself and may open up a policy space for those people whose voices are usually ignored by the hegemonic discourse (Bhabha 1992; Cox 1983). Though, we need further research to learn more about the conditions under which this is likely to happen.

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- Interview 055:* Representative of a German Ministry, 19 September 2008, Berlin. Conducted during the research project No. 10.07.1.104 (Fritz-Thyssen-Stiftung, 2007-2009)
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