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Disruptive Interplay and Strategic Incentives in
the CBD-TRIPS Relationship

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Consolidation, Delimitation and Stalemate

Disruptive Interplay and Strategic Incentives in the CBD-TRIPS Relationship

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Abstract

The relationship between the Convention on Biological Diversity (CBD) and the WTO Agreement on Trade-related Aspects of Intellectual Property Rights (TRIPS) is characterized by a persistent potential for disruptions in implementation, such as 'biopiracy' conflicts, because of the agreements' incompatible provisions on property rights over genetic resources. The lack of consolidation is often explained by attempts to strategically exploit interplay between the two institutions. Countries of the North and the South are said to push for provisions under their preferred agreement in order to circumvent obligations under the other. We develop an alternative explanation based on a conception of international negotiators acting as agents of particular interest groups rather than as representatives of the state as a whole. Using a Two-level Games model of independent negotiations for agreements on functionally interdependent issues, we analyze the incentives for negotiators to delay or prevent consolidation for strategic reasons. Our analysis shows that, under certain conditions, persistent disruption may be due to a strategic dilemma that prevents negotiators from taking initiatives for consolidation.

Key words: international cooperation, institutional interplay, disruption, biopiracy, CBD, TRIPS, genetic resources, intellectual property rights.

JEL-Codes: F51, F53, F59, Q56, Q57

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1 Introduction

The relationship between the Convention on Biological Diversity (CBD) and the WTO Agreement on Trade-related Aspects of Intellectual Property Rights (TRIPS) has been subject to intense political and scientific debate ever since the two agreements came into force in the first half of the 1990ies. At the basis of these discussions are incompatible rules regulating property rights over genetic resources on the one hand, and provisions for the international harmonization of intellectual property rights (IPRs) over biotechnological innovations on the other. Incompatibilities of these provisions are held responsible for problems, conflicts and inefficiencies in the implementation of the two agreements (Bhat 1999; Droege and Soete 2001; Cullet 2001; Dutfield 1999). In most cases these conflicts concern the distribution of benefits from the commercial use of genetic resources. While the CBD entitles holders of such resources to share the benefits arising out of their commercial use, TRIPS does not explicitly recognize these rights and lacks provisions that would allow their implementation. From a reverse angle, the CBD does not consider that legislation on access to genetic resources and on the granting of intellectual property rights should not discriminate between potential users in order to be consistent with the provisions of the WTO and the TRIPS agreement (Rosendal 2006). The conflicts arising out of these issues and resulting impediments to implementation have raised concerns about the impacts of the CBD-TRIPS relationship on the effectiveness of the two agreements, particularly with regard to the conservation and sustainable use of genetic resources. Despite a number of initiatives to consolidate the provisions of the two agreements, little progress has been made to date.¹

An explanation that is often put forward is that states are exploiting the incompatibility between the two agreements in order to circumvent the implementation of costly commitments. This view maintains that industrialized countries of the North, where most of the users of genetic resources are located, use TRIPS in order to maintain access to genetic resources free and unrestricted and to avoid obligations for benefit sharing. Likewise, the poorer countries of the South that are the hosts to most of the world's biodiversity are accused

¹ See WTO documents IP/C/W/368, 370 and 420 (available at: <http://docsonline.wto.org>). Submission 420 refers to more than 25 communications that have been submitted on the subject to date. The need to clarify the relationship has also been recognized by the 2002 WTO Doha Ministerial Declaration (Article 19). A few months later, the World Summit for Sustainable Development Plan of Implementation confirmed the need to address the relationship and mandated the CBD to negotiate an international regime on access and benefit sharing (para 42.o).

of using the CBD to implement discriminative restrictions on access to genetic resources and to avoid their obligations under TRIPS to grant intellectual property rights over biotechnological innovations. This explanation gives an intuitive reason why negotiations over property rights to genetic resources are subject to political controversy. It can also explain to a large extent why the negotiations in two different arenas resulted in the emergence of incompatible property rights regimes; nevertheless, addressing the CBD-TRIPS relationship in terms of a North-South conflict may be inadequate for two reasons.

First, it assumes that states are homogenous actors with a single preference function that allows them to pursue complex objectives simultaneously in different forums. This implies that states are either users (North) or suppliers (South) of genetic resources, ignoring that many, if not all, countries are both and may therefore be affected by internal divisions about the desired outcomes of international negotiations. The recent CBD negotiations on an international regime on access and benefit sharing show that some countries who used to be only providers of genetic resources are increasingly acting as both providers and users. Some countries with fast growing biotechnology sectors, such as Mexico, Brazil, Malaysia and China, have recently changed their positions. While still maintaining a strong position on the general need for a strong international regime, they are now searching for an approach that will secure their rights as providers without compromising their opportunities as users (IISD 2005; 2006). One of the consequences is that coalitions of provider countries find it increasingly difficult to coordinate their positions. The group of Like-Minded Megadiverse Countries, which was expected to be a strong advocate of the international regime turned out to be “as diverse in opinions as in biodiversity” (IISD 2005: 11). This development cannot be captured with an explanation based on a dichotomy labeling countries as either users *or* suppliers of genetic resources.

Second, even if the confrontation was one between user and supplier states, their interests should be sufficiently asymmetric to allow the negotiation of a compromise agreement, at least in the long run. At one point the technology-rich but resource-poor countries of the North and the technology-poor but resource-rich countries of the South would agree on mutually beneficial exchanges of resources and technologies and establish an agreement that prevents free-riding on either side. Young (2002) argues that conflicts about the compatibility of rules in areas of functional overlap are not purely a technical matter, but will also generate conflicts of interest among influential actors in the affected issue areas, as economic actors clash with interest groups concerned about issues such as sustainable resource use and equity in the distribution of benefits. Therefore, we need to consider the possibility that interplay is

not only an unintended consequence of interdependent issues, but that it may also result from conscious decisions of the negotiating actors about the framing of an issue, taking into account the interests of the principal actors involved in the process.

In this paper, we seek to develop an explanation that goes beyond the North-South dichotomy of state interest and accounts for the influence of domestic dynamics in international negotiations. We view the relationship between CBD and TRIPS as a case of persistent disruptive interplay that can be explained by taking into account the influence of domestic interest groups on the ability of negotiators to make proposals for consolidation. The next two sections briefly review the phenomenon of interplay in general and in the relationship between the CBD and TRIPS. Section 4 takes a closer look on the underlying interdependence of property rights over genetic resources. In section 5, we develop a simple Two-level Games model of parallel negotiations leading to agreements with substantial potential for disruptive interplay. We use this model to analyze the incentives negotiators may have to strategically exploit disruptive interplay and to subsequently prevent the reconciliation of disruptive effects. We illustrate the analysis with the CBD-TRIPS relationship, one of the most prominent cases of persistent disruption.

2 Disruptive Interplay Between International Institutions

As the number of international institutions rises, the phenomenon of institutional interplay is becoming an increasingly relevant factor for institutional effectiveness. Interplay refers to the relationship of an institution to and interactions with one or more other institutions (Young 1996). Interplay can result from functional linkages between the objectives that the different agreements pursue or as consequence of institutional design. Functional linkage occurs when substantive problems that two or more institutions address are interdependent in biogeophysical or socioeconomic terms. They often take the form of side effects or unintended byproducts of actions designed to achieve other ends (Young 2002: 112). Interdependence exists when a choice of one agent limits the choices of another (Paavola and Adger 2005). Similarly, policy objectives are interdependent when the choice of instruments for one objective influences the availability of effective instruments for another objective. Such functional interdependencies exist between the objectives in many fields of international policy, such as trade, environment, security, human rights or development; or within the same policy field when different means are chosen without adequate coordination, for example

when measures taken to protect the ozone layer have negative impacts on climate change (Oberthür 2001).

Within areas of interdependence, mutual influences exist among agreements, as decisions taken in one arena can have a direct influence on decisions taken in another (influence on the output level), or affect the behavior with regard to the implementation of another agreement and thereby affect its effectiveness (influence on the outcome level) (Oberthür and Gehring 2006). The impact of interplay can be positive or negative. It is positive when interdependence opens up possibilities for synergies in implementation, i.e. the exploitation of economies of scale and joint effects in implementation. However, in many cases interplay leads to disruption, meaning that there are substantial limitations for joint implementation of interdependent agreements. Next to obvious rule conflicts and resulting problems in complying with several interrelated agreements at the same time, outcome-level disruption can substantially increase the cost of implementation. Such costs are born in the development, implementation and enforcement of complex legal systems that are prone to conflict and offer manifold loopholes for actor groups to escape from obligations to adapt their behavior to internationally agreed regulation.

Disruptive effects are much more common between agreements in different issue areas than within the same policy field (Oberthür and Gehring 2006). Very often, disruptive interaction between policy fields is an unintended consequence of a lack of awareness of the underlying interdependencies by the negotiators crafting different agreements. This leads to the expectation that actors in different issue areas will seek to consolidate their agreements, e.g. by amending relevant provisions or developing procedures to manage and mitigate negative effects. Disruptive interplay should thus be a temporary phenomenon since both sides stand to gain from coordinated and harmonized implementation. In some cases however, there is persistent disruption over longer time periods, even though actors are obviously becoming aware of the underlying linkages, as well as of possible solutions for reconciliation. The conflicts caused by incompatibility in rules can lead to stalemate in international negotiations, while lack of alignment can delay implementation, give rise to difficult trade-offs in domestic policy making, or require complex and costly legislative systems on the national level to accommodate conflicting provisions. These effects erode the benefits from cooperation. The resolution of such persistent disruptions is thus a fundamental question for the effectiveness and efficiency of international governance in the affected issue areas.

Why do cases of continued disruption occur? In the long run, one would always expect negotiations to lead, if not to a resolution of the conflict, to a compromise settlement that

reduces the potential for conflict on the outcome level. What are the conditions and negotiation scenarios that prevent consolidation?

As noted above, a common explanation is that some states pursue strategic objectives outside of an agreement's agenda. "States deliberately exploit the disruptive potential of functional interdependence in order to circumvent obligations under other agreements, or to improve their negotiation positions in other ongoing processes" (Young 2002: 133). This explanation is intuitively plausible, nevertheless, the motivation for such a behavior is difficult to grasp with a conception of rational, unitary states acting in their self interest. States invest considerable amounts of resources in the negotiation of treaties for international cooperation. It is conceivable that states may seek to achieve a better bargain in a competing forum, but why would they resist mutually beneficial consolidation between conflicting agreements in the long run? Furthermore, the cost of continued efforts to circumvent other agreements could be substantial in terms of lost reputation and credibility as potential partner in other policy fields.

3 Interplay Between the CBD and TRIPS

At the basis of interplay between the CBD and TRIPS are divergent interests in the regulation of property rights over genetic resources. These interests have been driven by two main forces. On one side, there is increasing awareness and scientific agreement that biodiversity is being lost at an accelerating rate and that urgent measures are needed to prevent such loss (Millennium Ecosystem Assessment 2005). On the other side, new biotechnologies have greatly enhanced the potential uses of biodiversity, leading to a sharp increase in economic interests in genetic resources as inputs to biotechnological innovations in pharmaceuticals and plant breeding. Due to this growing global interest in genetic resources, the international discourse on biodiversity conservation has been increasingly marked by the interests of suppliers (primarily indigenous and traditional farming communities in countries with high rates of biodiversity) and users (pharmaceutical and plant breeding industries in industrialized countries) of genetic resources. Supply-related concerns emphasize the need for a mechanism that ensures an adequate compensation to the holders of genetic resources and their participation in the benefit streams that are generated by the commercial use of their resources. Users on the other hand, are predominantly interested in the establishment of legally enforceable intellectual property rights over biotechnological innovations (Dutfield 1999).

There are a number of international instruments that address the various facets of biodiversity management. Property rights issues have been addressed mostly under the CBD and TRIPS.² The CBD is the most comprehensive institutional framework to address the various concerns of biodiversity conservation and sustainable use on the international level. Negotiated under the auspices of the UN Environment Programme (UNEP), it was adopted in 1992 and came into force in 1993. Next to the conservation of biodiversity and the sustainable use of its components, the CBD promotes the fair and equitable sharing of benefits arising out of the use of biodiversity and related traditional knowledge. Particularly the latter objective indicates that the interest in international cooperation is not only driven by the concern for conservation, but also by the increased economic value of genetic resources as basis for biotechnological innovations in the agricultural and pharmaceutical sectors. To this end, the CBD grants its member states “national sovereignty” over genetic resources on their territory and requires users to obtain the “prior informed consent” of the supplying party before accessing its genetic resources. The transfer has to take place on “mutually agreed terms” between the supplying party and the user, including arrangements to realize the suppliers’ right to benefit sharing (Article 15).

The concerns of genetic resource users are addressed by the TRIPS agreement, which requires all WTO members to make intellectual property rights available in all areas of technology, including biotechnology (Article 27.3b). Plant varieties may alternatively be protected by a *sui generis* system, however, the expectation is that such a system meets the basic criteria of intellectual property protection, namely the granting of temporary exclusive marketing rights to allow plant breeders to recoup the investments made in research and development.³ TRIPS came into force with the establishment of the WTO in 1994. Its general objective is to harmonize intellectual property rights systems in order to facilitate trade in

² Other important agreements include the International Union for the Protection of New Varieties of Plants (UPOV) and the International Undertaking on Plant Genetic Resources for Food and Agriculture, which was recently replaced by the International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA). Furthermore, negotiations at the Intergovernmental Committee on Intellectual Property Rights and Genetic Resources, Traditional Knowledge and Folklore under the World Intellectual Property Organization (WIPO) and CBD’s Working Group on Access and Benefit Sharing are expected to lead to the adoption of new international instruments. We focus on the relationship between the CBD and TRIPS for illustrative purposes. A specific analysis of interplay among international institutions regulating property rights over genetic resources would need to include these agreements and processes.

³ The expression *sui generis* indicates an idea, an entity or a reality that cannot be included in a wider concept. In intellectual property law, rights may be *sui generis* to owners of a small class of works, such as intellectual property rights in mask works, ship hull designs, databases, or plant species. *Sui generis* systems for plant variety protection may thus deviate from the wider IPRs applicable in a country, such as patents, trademarks or copyrights.

goods and services that require a legal protection of intellectual property rights. With regard to genetic resources, TRIPS focuses on the protection of new knowledge, while the aim of the CBD is to secure the ownership rights of those who have contributed to the development and conservation of existing genetic resources, and who continue to safeguard the ecosystems needed for the conservation and development of genetic resources in the future (Dutfield 1999).

The TRIPS agreement does not explicitly recognize the CBD provisions on access and benefit sharing. Its provisions are much more tailored to the situation prevailing before the CBD came into force, when genetic resources were essentially managed as open access resource.⁴ Furthermore, the general WTO principles of national treatment and most favored nation treatment make it difficult to discriminate between users adhering to the CBD principles and those who do not when designing legislation for access and use of a country's genetic resources. Theoretically a violation of the TRIPS agreement in that sense could be pursued in front of the dispute settlement mechanism of the WTO and eventually lead to economic sanctions against the supplying country. In practice this has not yet occurred, however, the anticipation of economic sanctions may lead countries to give priority to TRIPS even though it may be much more in their interest to fully implement the mechanisms of the CBD.

An effective implementation of the CBD requires legal action by supplier as well as user countries. On the supplier side, countries need to regulate access to genetic resources in such a way that it is only granted to users who comply with the conditions of prior informed consent and benefit sharing, while preventing access by those who do not. These regulations could be supported by user countries through legislation inhibiting the import of genetic resources if it does not comply with these criteria (Rosendal 1999; Rosendal 2006). So far there have been little efforts by user countries to do so.⁵ As TRIPS does not provide for access restrictions on the basis of criteria other than those referenced in Article 27, supplier countries may find themselves in violation of TRIPS when trying to implement the CBD. In contrast, the CBD states that IPR regulation should be applied in a way that does not run counter to the

⁴ While access was unregulated for genetic resources in general, FAO resolution 6/81 declared that plant genetic resources for food and agriculture should be regarded as "common heritage" to which access should remain free and unrestricted. In 1991, one year prior to the negotiation of the CBD, this status was changed by FAO resolution 3/91 placing genetic resources under the sovereignty of the state on whose territory they are found. This concept of national property was embraced by the CBD by placing the state as principle actor responsible for the conservation of genetic resources.

⁵ With the exception of Denmark, Switzerland and a few other European countries who require the disclosure of origin of genetic resources in patent applications.

objectives of the CBD (Article 16.5). In a strict sense, any user country providing for the application of IPRs to genetic resources or their commercial derivatives without providing for benefit sharing would therefore be in violation of the CBD.

The incompatibility of the two agreements thus arises out of their different systems for the definition of property rights over genetic resources on the one hand, and the establishment of intellectual property rights over their commercial use on the other. For many countries that are predominantly suppliers of genetic resources the joint implementation of these provisions has turned out to be a complicated challenge that often leads to conflicts over the use of their genetic resources. This does not mean that a full and non-disruptive implementation of the two instruments is impossible; however, it does require complex legal and regulatory systems that are beyond the capacity of many developing countries. In any case, the transaction costs caused by these incompatibilities are likely to offset the desired incentives for genetic resource conservation, regardless of a country's capacity to establish legal procedures to address conflicts arising out of the different property rights systems.

A way out of this dilemma would be an amendment of the TRIPS agreement to recognize the suppliers' rights as defined by the CBD, thus obliging users to provide information about the origin of a genetic resource, a proof of prior informed consent and of mutually agreed terms in patent applications (Correa 2003; Carvalho 2005). Submissions in this regard have been made repeatedly by supplier countries, without much success.⁶

The main question that we seek to explore is why to date there have been no serious negotiations aiming at a reconciliation of TRIPS and the CBD and why initiatives in this regard have so far not been successful. What are the constraints that prevent reconciliation?

4 Incompatibility of Property Rights Systems

In order to understand the interplay between the CBD and TRIPS with regard to their provisions on property rights over genetic resources, it is necessary to understand the nature of the interdependence of the different property rights systems envisaged by the two agreements. In institutional economics the concept of interdependence refers to agents with competing interests in scarce environmental resources. Since they cannot simultaneously realize their diverging interests, their conflict must be resolved by defining (or re-defining) resource endowments or entitlements to resource use (Paavola and Adger 2005). This can be

⁶ See footnote 1.

done by specifying private property rights as in the so-called ‘Coase Theorem’ (Coase 1960) or by establishing environmental regulations which create other kinds of rights. Concern about environmental scarcity or adverse environmental impacts is, however, not the primary force that drives the definition of property rights. The main force is the discovery of new technologies that allow the creation of greater value in novel products, which spurs the demand for the creation of new property rights. Harold Demsetz has argued that “property rights develop to internalize externalities when the gains of internalization become larger than the cost of internalization. Increased internalization in the main, results from changes in economic values, changes which stem from the development of new technology and the opening of new markets, changes to which old property rights are poorly attuned” (Demsetz 1967: 350).

In general terms, the development of the CBD and TRIPS can be interpreted as a process of property rights definition over two different types of genetic resources driven by two different concerns. While the CBD seeks to define property rights over “raw” genetic resources in their natural state – driven by concerns for their conservation and sustainable use; TRIPS establishes new forms of intellectual property rights over “worked” genetic resources that are built through improvements in the plant genome (plant breeding), or other innovations drawing directly on biological information (Raustiala and Victor 2004). In other words, the CBD seeks to develop a property rights system that secures the resource base, whereas TRIPS aims at the protection of the rights of those who invest in the development and marketing of commercial applications of these resources. According to the Coase Theorem, the attainment of maximum social welfare (efficiency) is invariant to the initial assignment of property rights, so long as property rights are well defined and the individuals involved are able to transact with one another to re-allocate the property rights efficiently (Coase 1960). This requires that property rights are defined in such way that they can be transferred fully or in parts between all actors involved in the creation and marketing of an economic good. The theorem however, is unrealistic in two points. First, it is based on the assumption of zero transaction costs. The initial allocation is irrelevant only as long as the transfer of property rights and the transfer of associated resources or goods are costless. When the activity involves two or more individuals that are separated in space or time, the costs of transacting between them might be too high to obtain efficiency. Then the final outcome crucially depends on the specific nature of the initial allocation of the rights.

Second, while Coase predicts that the efficiency of property rights does not depend on their initial allocation, the distribution of benefits certainly does. These distributional effects are

relevant when the initial allocation is not given by a fact of nature, but subject to negotiation. Gary Libecap argues that since property rights define “the distribution of wealth and political power, [...] the distribution of wealth and power inherent in the proposed rights structure will be a source of dispute” (Libecap 1989: 215). Furthermore, “[t]he calculation of individual expected net gains will determine who will be the actors of change, who will be its opponents, and the range of political bargaining that will occur in the process of altering PR institutions” (Libecap 1989: 216).

The first intervention leads to the recognition that the specification and initial allocation of property rights does matter for the overall efficiency of the property rights system because it affects the scope of transaction costs and determines who will bear these costs. The second point adds to this that the expected benefits of the definition or re-definition of property rights will attract exactly those actors who stand to gain or lose from the changes under negotiation. Each group of actors will opt for the arrangement that is most beneficial for them. This further leads to the conclusion that actors who are affected by property rights changes in different ways will most likely opt for different property rights arrangements.

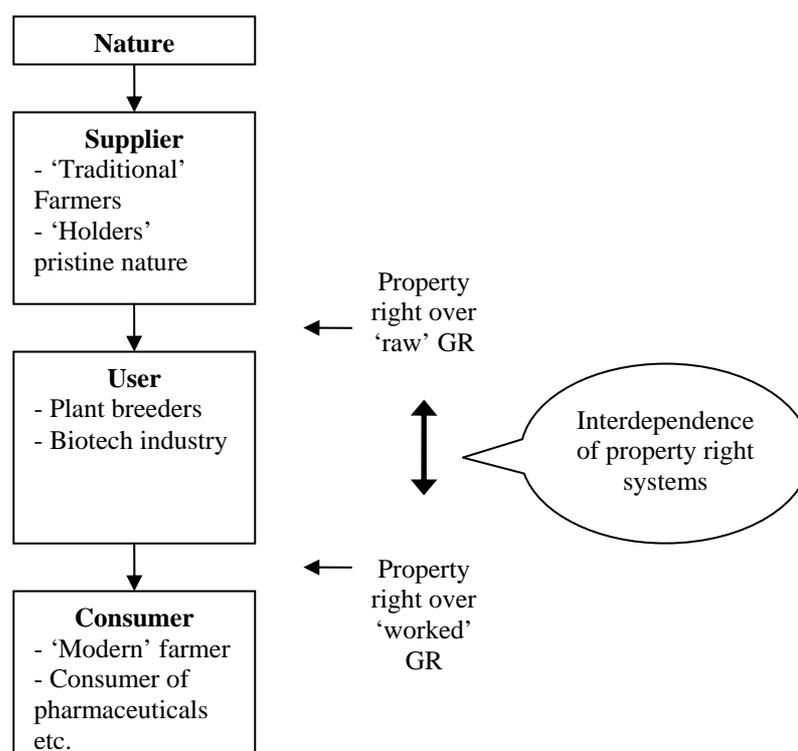


Figure 1: The Vertical Industry Chain of Genetic Resource Use

Source: based on Swanson and Goeschl 2000

Suppliers and users of genetic resources can be pictured to be part of a *vertical industry chain* that makes use of genetic information. A vertical industry model depicts the chain of production required to move the product from the stage of an initial idea through production and into the hands of the consumer. In very general terms, industries that use genetic resources, such as plant breeding or pharmaceutical firms consist of at least four stages (see Figure 1) (Swanson and Goeschl 2000).

- At the basis of the chain ‘new’ genetic resources develop naturally through the process of ‘natural selection;’ only those organisms which are able to survive under a given environment remain and reproduce.
- The next stage of the industry consists of the individuals who observe the natural process of selection and aid in the dissemination of its information. ‘Traditional farmers,’ for instance, make discriminative choices that lead to a further selection of desirable traits among those plant individuals that have survived natural selection. Other actors make choices that affect the development of medicinal plants, while yet others decide whether to conserve natural ecosystems or to convert them to other uses. All these actors affect the supply of genetic resources since their creation and conservation depends on the choices they make. Whether they act in fact as suppliers depends on the definition and initial allocation of property rights at this stage of the industry.
- The ‘biotech industry’ makes use of the accumulated stock as well as the continuous flow of genetic resources to develop new products. Plant breeders use the set of varieties that farmers have created over long periods of time to produce ‘improved’ varieties that deliver high yields under the conditions of ‘modern’ agriculture. Others use genetic information to develop substances or materials that become part of new medicines, or other biotechnological innovations.
- The consumers of biotechnological products are on the one hand ‘modern farmers’ who make use of the improved plant varieties to produce food and other products destined for final consumption. Other biotechnological products may either be consumed directly or serve as intermediate input other production processes.

At each stage of the industry chain, property rights must be defined in such a way that resources or intermediate products can be transferred smoothly from one stage to another. Different branches of biotechnological industries may include additional intermediate stages, such as gene banks or firms specialized in bioprospecting or basic research. Nevertheless, the

most relevant transfers requiring international regulation of property rights occur between suppliers and users on the hand (transfer of 'raw' genetic resources), and between users and consumers on the other (transfer of 'worked' genetic resources).

The main challenge is now, to define and allocate property rights that can be redistributed efficiently along the industry chain. The idea behind the Coase Theorem is that the allocation of the property rights at some stage of the industry chain will lead to their efficient distribution, simply because the initial rights holder will value the rights less than the most efficient rights holder. Society wants the rights to be in the hands of the agent who is best able to generate a flow of highly valued goods and services from them, and it is this value that will warrant the highest bid. Therefore, the initial allocation of the rights is irrelevant, so long as the costs of moving them toward the highest bidder are not prohibitive. In the case of genetic resources, TRIPS places the property rights in the information generated within the industry at the user stage, where they are implicit in the exclusive marketing rights to biotechnological innovations given to the industry by means of intellectual property rights. According to the Coase Theorem, the predicted outcome would be that users become the 'managers' of the entire industry chain by distributing the property rights across the industry in a manner that creates incentives for the efficient supply of genetic resources (Swanson and Goeschl 2000). The rights holder would allocate property rights at those levels of the industry that are seen as important to the maximization of the value of the industry.

However, in parallel to the definition of property rights at the 'user' stage of the industry, the CBD has created property rights at the 'supplier' stage. This is implicit in the notion of national sovereignty over genetic resources and the provisions that access should be subject to prior informed consent and on mutually agreed terms. This effectively allows states to define property rights over raw genetic resources in their own terms. They may, for instance, decide to transfer the initial property right to local communities by requiring their prior informed consent as a precondition for granting access at the national level. This parallel allocation of property rights creates uncertainty and monitoring problems at both stages of the industry. While suppliers have little means to control the use of their genetic resources once access has been granted, users face the risk of losing their investments into the conservation of genetic resources in supplier countries as a result of national access legislation in those countries. Moreover, if they should discover and commercialize a new valuable substance in a sample, they cannot rely on an exclusive use right since the supplier may decide to sell the same genetic information to other users.

The reason for this mutual inability to control lies in the nature of genetic resources as information resource. The public good characteristics of information resources require that property rights to new information embodied in innovative products include an extended exclusive right of control over its subsequent use and marketing. Since both stages of the industry generate new information in the form of raw and worked genetic resources, the transfer of property rights must include a mechanism that ensures the recognition of these control rights across all stages of the industry. The parallel allocation of initial property rights through TRIPS and the CBD implies different pathways for their reallocation along the industry chain. Under the CBD, suppliers would develop mechanisms to control the subsequent use and marketing of their information resources upstream, whereas under TRIPS, users would make downstream investments in the provision of such resources for their exclusive use. Both pathways may eventually lead to similar mechanisms for the exchange of genetic resources, however with different allocations of benefits. Obviously, two systems cannot exist at the same time, particularly if they imply opposite allocations of benefits, without giving rise to fundamental disputes about whose right to benefit prevails in a given situation. The high number of disputes over the commercial use of genetic resources, often entitled 'biopiracy' cases, illustrates this problem. In addition, the risk to become subject to such a dispute most likely leads actors on both sides to shy away from making desirable investments and performing the transactions needed to conserve and use genetic resources.

In summary, property rights arrangements over raw and worked genetic resources are interdependent in the sense that the choice of a property arrangement on one side substantially narrows down the choices available on the other side that would yield a generally efficient outcome. The incompatibility of the two systems defined by the CBD and TRIPS is to a large extent responsible for the disruptions occurring in the implementation of the two agreements. It has two main effects: First, it raises transaction costs of international transfers of genetic resources because it necessitates the creation of costly legal interfaces between the different systems; and second, it prevents desirable transfers of genetic resources and investments in conservation because the coexistence of the two systems leads to legal insecurity of property rights.

The principle question is now, whether actors in the two processes are aware of this incompatibility and its consequences, and if so, what prevents them from negotiating a consolidated agreement that would realize remaining gains from cooperation through the securing of property rights and their efficient transfer.

5 A Stylized Model of Negotiations in Different Arenas on Interdependent Issues

In this section we develop a stylized model to analyze the incentives for strategic behavior in cases of disruptive interplay between international institutional arrangements. We base our explanation on the dynamics of domestic decision making as determinants of international negotiation strategies. Following the Two-level Games model of international negotiations developed by Putnam (1988) and others, (e.g. Milner 1997; Keisuke 1996; Tarar 2001) we conceptualize the international negotiator as actor whose decision making is constrained on two sides – on the international level to the set of solutions that represent agreeable compromise and on the domestic level to the set of solutions that domestic actors will support (Putnam 1988; Milner 1997). We view governments as complex organizations where sub-actors pursue multiple and to some extent conflicting objectives, and where policy decisions are a weighted aggregate of sub-actor preferences (Underdal and Hanf 2000).

Furthermore, we assume that negotiations in different issue areas are dominated by different actors. “Because of the move to international cooperation on previously domestic policy issues it is no longer foreign ministries that dominate international diplomacy: instead, a number of domestic agencies, often with quite distinct agendas, increasingly play active roles” (Slaughter 1997). Negotiators report to different ministries and are each confronted with the interests and demands of a particular set of domestic interest groups. They are appointed by their governments or delegated by national agencies but they act as agents of particular groups. Their domestic support is determined by the impact of international regulation on specific sectors of society and the strength of the intermediate actors in this sector, rather than by general voting behavior. Many international organizations can therefore be seen as convening structures of horizontal networks of national officials. “Specialized international organizations, such as those negotiating and administering most multilateral environmental agreements, have long been a forum for meetings of the relevant national ministers” (Slaughter 2004). Governments are fragmented in their representation within the different regimes involved and thus solutions that emerge in one forum often do not map well onto the interests represented in other forums (Raustiala and Victor 2004).

In our case, representatives of environment ministries dominate the CBD. They are supported by environmentalist groups on the one hand, and organizations and networks of suppliers on the other. Supplier groups dominate in resource-rich developing countries, while environmentalist groups play an important role in industrialized countries. The interests of

these two groups converge to some extent on the issue of access and benefit sharing, since most environmental groups view market based mechanisms that allocate a share of benefits to suppliers as effective means to provide incentives for genetic resource conservation. Supplier groups for their part support access and benefit sharing as means to achieve a more equitable distribution of benefits from the use of genetic resources.⁷

Trade negotiators, industry groups and intellectual property lawyers are concentrated in the negotiations at the TRIPS council, where they represent the interests of 'knowledge-based' industries, such as enterprises in software and computer businesses, entertainment, pharmaceuticals, plant breeding and many others. Their main concern is the establishment and international recognition of standards for intellectual property protection over knowledge-based innovations (Raustiala and Victor 2004: 291).

It is important to note that interest groups on both sides have developed powerful international networks that coordinate the activities of domestic groups, provide forums for information exchange and strategy development, and actively participate in international negotiations. Under the CBD, supplier NGOs such as the International Indigenous Forum on Biodiversity (IIFB) or the Coordinating Body of Indigenous Organizations of the Amazon Basin (COICA) are able to effectively influence negotiations. Since the official delegations of many biodiversity-rich countries include representatives of domestic indigenous and supplier organizations, the proposals made by IIFB and COICA are often endorsed by such countries. At the CBD's seventh conference of the parties, for instance, a threat by indigenous organizations to withdraw their support if their demands were ignored resulted in the inclusion of references to indigenous rights in the negotiating text (IISD 2004). Access for such NGO networks to negotiations is easier under the CBD and they generally have a stronger standing than in the TRIPS council. Therefore, the extent of direct lobbying at the international level can be expected to be stronger at the CBD than at TRIPS.

Suppose that in the initial situation no property rights over raw or worked genetic resources are defined on the international level. Access to raw genetic resources is unregulated resulting in an open access situation, while there is no form of universally recognized intellectual

⁷ Supplier and environmentalist groups thus agree on the principle of access and benefit sharing, but not necessarily on its terms. They place different priorities on the realization of actual transfers of benefits towards suppliers. Countries with strong environmentalist movements, such as most EU countries, New Zealand or Canada, support benefit sharing as one among other mechanisms encouraging conservation, whereas countries with strong supplier organizations, such as many Latin American or African countries, put much more emphasis on provisions ensuring that benefits will reach suppliers, including access subject to the prior informed consent of supplier groups and on the basis of mutually agreed terms. (see IISD 2005; 2006)

property right over biotechnological innovations. Since both raw and worked genetic resources have the character of a public good, they are both likely to be supplied at a sub-optimal level. On both ends of the industry chain substantial gains can be achieved through the definition and enforcement of transferable property rights over genetic resources and their products. International transferability of property rights over raw genetic resources is essential, because the actors engaged in their supply and use are located in different countries, necessitating international rules and standards for how property rights are defined, transferred and enforced across country borders.

As mentioned above, according to the Coase Theorem any initial allocation of property rights between suppliers and users will be efficient as long as they are fully defined and fully transferable. The initial allocations that meet these criteria are depicted as a transformation curve in Figure 2. All points on the curve yield maximum benefits from an internationally recognized system of property rights arrangements. The position on the curve represents the distributional effect of different initial allocations. An arrangement that is located on the upper left part of the curve will channel a large proportion of benefits to users, whereas a position on the lower right distributes the majority of benefits to suppliers. At the Status Quo (SQ) no international regulation on property rights exists on either side. Both users and suppliers will benefit from the definition and enforcement of property rights but they prefer different distributions of the resulting benefits. Their preferences are illustrated by indifference curves and each side has its optimum where the transformation curve touches the outermost indifference curve, i.e. in U^* for users and S^* for suppliers.

If both sides engage independently in the negotiation of international agreements for property rights regulation, and if they are unaware of the interdependence of property rights arrangements, they will seek solutions that maximize their own utility. Representatives of users will choose the WTO as forum where they meet with their counterparts from other countries to adopt an international treaty on intellectual property rights (TRIPS, situated at U^* in Figure 2). At UNEP, representatives of environmental ministries meet to negotiate a broad convention on the conservation and sustainable use of biodiversity, including provisions on access and benefit sharing (CBD, at S^*). At these points both sides expect to receive maximum benefits from international cooperation.

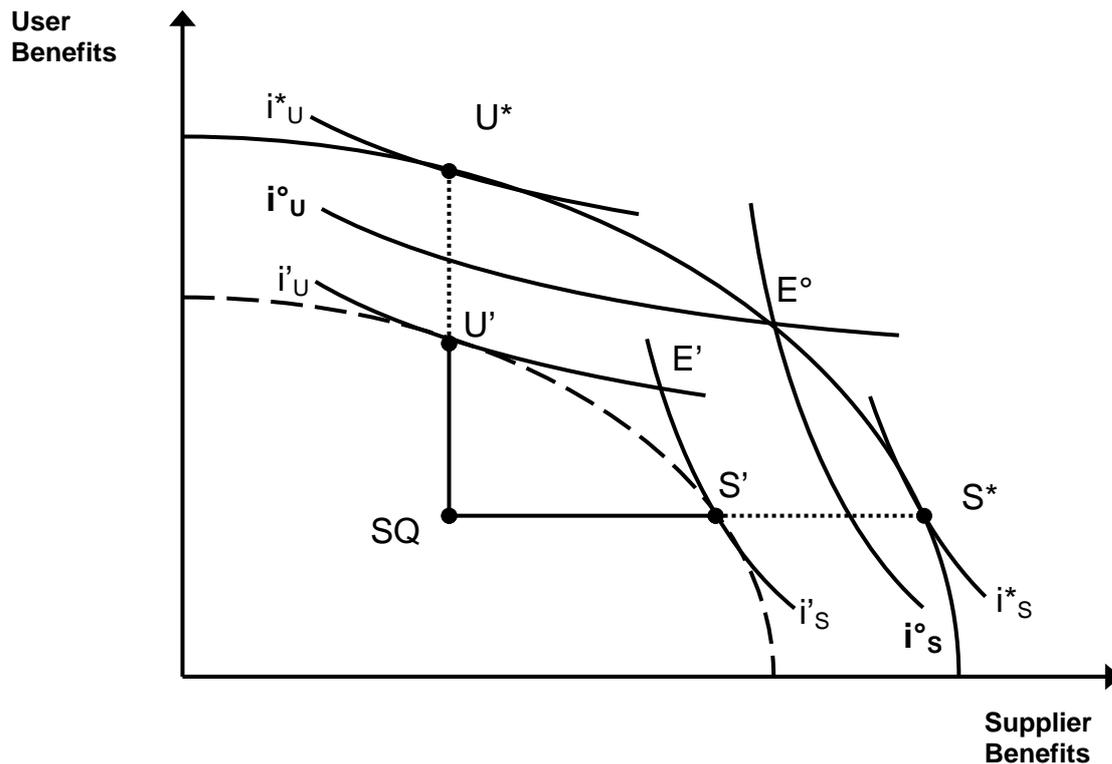


Figure 2: A Stylized Model of Negotiations in Two Arenas on Functionally Interdependent Issues

Source: compiled by the authors

Ratification of the two agreements by national parliaments should not be a problem, given that at this point the negotiators themselves are unaware of the incompatibilities and will therefore promote the agreements with the support of their constituent groups. Furthermore, the interdependent provisions of the two agreements come as parts of larger package deals that deviate attention from potential overlaps. As implementation proceeds, constituents on both sides will gradually realize that they are not receiving the benefits they were expecting. The incompatibilities between the agreements raise transaction costs and diminish the scope of cooperation. Both sides receive far less utility than expected. The ‘real’ utility levels are those at U' and S' .

The negotiators now have a problem. Since they are acting as agents of the constituent groups, they will now be held accountable for the outcome. The negotiators ‘promised’ benefits corresponding to U^* and S^* , but they ‘delivered’ only U' and S' . The constituents will each view ‘their’ agreement as a legitimate recognition of their claims at the international level. User groups, for instance, will perceive CBD provisions as an unlawful distortion of their genuine right to receive IPR protection over their innovations. Both sides are not

prepared to accept that the other agreement should reduce their benefits. This ‘contract illusion’ on the side of the constituent groups creates a dilemma situation for the negotiator. From the perspective of the ‘real’ benefits that are generated in U’ and S’ it would be desirable to negotiate a consolidated agreement that moves international regulation back to the transformation curve and realizes remaining benefits from cooperation. Such an agreement, depicted by E° in Figure 2, would make both sides better off in real terms (yielding benefits equivalent to $i^\circ_U > i'_U$ and $i^\circ_S > i'_S$). The constituents however will perceive such an agreement as a loss compared to the (illusory) benefits they are expecting ($i^\circ_U < i^*_U$ and $i^\circ_S < i^*_S$).

What can the negotiator do in such a situation? Theoretically there are three strategies by which the negotiator can attempt to solve the problem:

- *Admit*: The negotiator can decide to play with open cards and try to persuade the constituents that their expected benefits are unrealistic, but that they can make some improvements by accepting the existence of the other agreement and moving towards consolidation. This will lead to an adjustment in the expectations of the constituent groups, i.e. the contract illusion disappears. If this strategy is chosen by negotiators on both sides it will open the way for the (re-) negotiation of consolidated agreements, leading to an outcome similar to E° in Figure 2. This strategy is risky, however, since the constituents might not be willing to adjust their expectations or believe that the negotiator is pursuing a personal agenda rather than representing their interests when proposing such a strategy. They can threaten to withdraw support or pressure for the replacement of the person who is negotiating on their behalf.
- *Ignore*: The negotiator can pretend to remain unaware of the underlying incompatibilities of the agreements and adopt the view that the other agreement contains badly defined provisions that lead to unnecessary and illegitimate interferences. The constituents are more likely to accept this view and will support the negotiator’s efforts to clarify the relationship between the agreements with a view to clearly mark their claims. On the international level, the negotiator can push for the introduction of special savings clauses and collision rules that determine which agreement prevails in different situations. If both sides choose this strategy, the result will be a legal delimitation of the two agreements. This has some positive effect on the outcome since uncertainty and transaction costs in case of conflict are reduced, however a substantial proportion of the potential gains from

cooperation will remain unexploited, since the underlying incompatibilities are not removed. The outcome in this case will be a gradual movement towards E' in Figure 2.

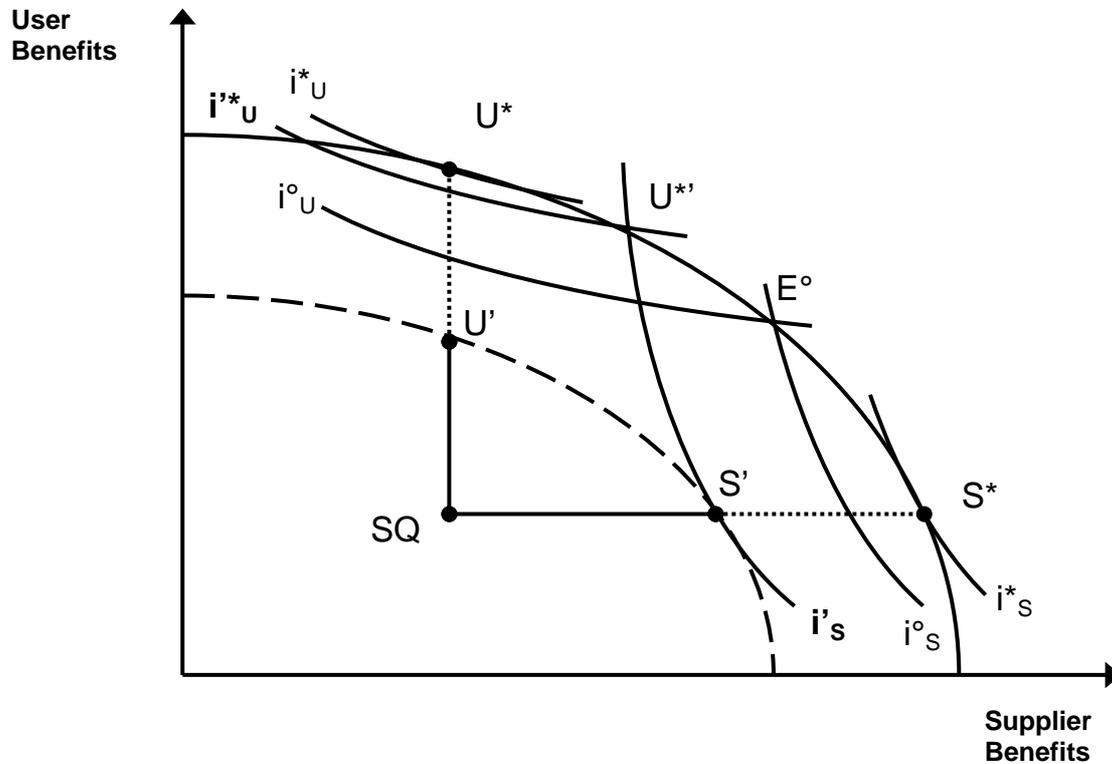


Figure 3: Strategic Gains

Source: compiled by the authors

- *Reinforce*: Finally, the negotiator can actively support the expectations of the constituents, thereby maintaining or even increasing the extent of contract illusion. At the same time she can try to persuade the constituents of the other side that their agreement is the only cause of the disruptions because their expectations are unrealistic. In this case, the negotiator speculates on the reduction of contract illusion on the other side. If, for instance, the TRIPS negotiators succeed in persuading supplier and environmental groups that the 'real' utility of their initial agreement (i'_S) is the maximum possible gain they can expect from international cooperation, they could reap most of the remaining, yet unexploited, benefits by proposing 'consolidation on their terms'. This case is depicted in the point U^* in Figure 3. Since in this case suppliers accept any agreement that maintains their initial utility of i'_S , users can move to the point where i'_S intersects with the transformation curve ($U^{*''}$), at which users receive a benefit only slightly below their initial expectations but

significantly higher than under the initial two agreements. Obviously, this strategy will only be successful if negotiators of the supplier side chose ‘admit’. If they choose ‘ignore’, users may be able to achieve some advantage, but most of this will be offset by a failure to reach the transformation curve. The worst outcome can be expected when both sides choose ‘reinforce.’ Then neither delimitation nor consolidation is possible and the outcome is stalemate (see Table 1).

Table 1: The Negotiation Dilemma in Functionally Interdependent Agreements

		Negotiator Agreement A		
		Admit	Ignore	Reinforce
Negotiator Agreement B	Admit	Consolidation	Some gains for A	Strong gains for A
	Ignore	Some gains for B	Delimitation	Some gains for A
	Reinforce	Strong gains for B	Some gains for B	Stalemate

Source: Compiled by the authors

The strategy choices of the negotiators depend on two factors: (1) the expected reaction of their own constituent groups and their standing against the negotiator (or the respective domestic agency); and (2) the anticipated strategy choice by the negotiators of the competing agreement. A strong constituent group increases the risk a negotiator faces when choosing ‘admit,’ while it strengthens her position when choosing ‘ignore’ or ‘reinforce.’ A weak constituent group, on the other hand, is more likely to be persuaded. The negotiator may perceive it less risky to choose ‘admit,’ but at the same time this would send a signal of vulnerability and increase the chances of being persuaded if negotiators on the other side choose ‘reinforce.’ This means that a negotiator will choose admit only when she can be sure that the other side does the same. In this case however, she would be tempted to choose reinforce to exploit the weakness of the other side’s constituents. Therefore, it is unlikely that either side will unilaterally choose admit in order to open up a way for consolidation. If the own constituent group is perceived to be strong and the other seen as relatively weak, negotiators may attempt to choose ‘reinforce.’ Once they become aware that the other side does not choose admit, however, they will be inclined to switch to ‘ignore’. As Table 1 shows, interdependence between two independently negotiated agreements creates a

consolidation dilemma for the negotiators. The most desirable outcome for all parties can be achieved only if both sides choose ‘admit’ simultaneously.

Under these circumstances, the outcome will almost always be delimitation, in some cases preceded by a certain period of stalemate during which negotiators on one or on both sides might test their ability to influence the supporters of their opponents. In the long run, delimitation is the dominant equilibrium. This tendency is reinforced by the fact that negotiators do not determine their strategies alone, but will have to adjust to the positions taken by their counterparts from other countries. Even if a large number should be willing to choose admit, those who face particularly strong or particularly weak constituent groups will always veto this choice.

In game-theoretic terms, ‘delimitation’ is the result of dominant non-cooperative strategies. The cooperative outcome, which would yield a higher total utility, cannot be achieved because both sides have incentives to unilaterally switch to a non-cooperative strategy (reinforce) to reap a higher share of the benefits from cooperation. In the absence of external influences that would change the strategic structure of the situation, delimitation is the maximum outcome that can be achieved in situations of disruptive interplay due to functional interdependence. The consolidation of functionally interdependent agreements can thus be prevented by the strategic situation that is created in cases in which negotiations take place in isolation of each other and in which negotiators act as agents of different sets of constituent groups rather than as representatives of the whole state.

6 Discussion

Our model rests on the assumption that negotiators and constituents are unaware of the interdependence of the issues they are negotiating until agreements on both sides have been adopted. This implies that initially incompatibilities and interactions between the agreements are unintended. A study by Oberthür and Gehring (2006) shows that in all cases of institutional interplay resulting in disruption the interaction was unintended. Negotiators may however have anticipated institutional interaction to a certain extent, but decided not to avoid it because the cost of doing so was considered higher than the benefits. In the case of the CBD-TRIPS relationship, interaction was clearly anticipated during the negotiation process, leading even to some minor adjustments in the two agreements (Rosendal 2006).⁸

⁸ These are the *sui generis* option for the protection of new plant varieties in TRIPS Article 27.3b, and the CBD Article 16.5 stating that the IPR should not run counter to the objectives of the convention. Both clauses have been introduced

Nevertheless, these changes did not resolve the underlying interdependence of property rights and thus contributed little to reduce the potential for disruption during implementation.

This raises two questions. (1) To what extent can negotiators assess the impact of interdependencies before agreements are adopted? (2) What are their ex-ante expectations to make strategic gains in efforts to consolidate agreements after adoption? If they underestimate the disruptive potential of interdependencies they may not consider it worthwhile to make efforts to align treaties before adoption. If, on the other hand, they expect a high degree of disruption and at the same time think that the constituents on the other side are relatively weak, they may expect to make significant gains after the agreements have been adopted. In this case, they may be tempted to accept a higher level of interdependence than necessary. In other words, negotiators with (seemingly) strong constituent groups may be inclined to strategically postpone consolidation in order to open up room for (re)negotiation on more advantageous terms after the adoption of the agreements has 'locked in' the interdependence and made disruptive losses a reality. This would represent an interesting variant of Putnam's argument that the negotiator can use international pressures to "do what they privately wish to do, but are powerless to do domestically" (Putnam 1988: 457). The negotiator could use the combination of a strong constituent group that expects a high level of utility and the negative effect of disruption as leverage to force the other side to accept an agreement on his terms. In this case he would use the strength and expectations of his own constituents as argument that any less favorable consolidation would be difficult to implement, while he can point towards the disruptive losses to argue that no consolidation would be even worse. When pursuing such a strategy the negotiator would seek to maximize contract illusion among his constituents already before the adoption of the initial agreements and maintain it as high as possible during the consolidation phase.

The strategy will, however, only be successful if the negotiator assesses the weakness of the opponent's constituents and his ability to influence his own supporters correctly. Any overestimation of his capabilities will inevitably lead to stalemate, followed by delimitation. The defense strategy by the negotiators of the targeted agreement will be to push contract illusion on their side, since this is the most effective way to prevent persuasion among their constituents. This has the effect that constituents on both sides maintain unrealistic

towards the end of the negotiation processes. In the case of TRIPS the adjustment seeks to provide some flexibility to accommodate the concerns of suppliers, whereas the introduction of CBD Article 16.5 clearly represents an effort to delimit the scope of IPR protection (Rosendal 2006).

expectations about their benefits from cooperation, making an alignment of the two agreements even less likely.

The rhetoric of contract illusion is evident in the high number of reports, policy papers and studies that are published in the context of negotiations. In the CBD-TRIPS case, an abundance of papers exists that highlight the dangers of biopiracy on one side, and the negative welfare effects of strict access and benefit sharing provisions on the other. Yet very little is known about the ‘real’ economic benefits that are to be distributed. On both sides actors have incentives not to disclose information in this regard in order not to weaken their negotiation positions. The effect is that high uncertainty prevails over the benefits each side can realistically expect as well as over the loss due to disruptive interplay.

7 Conclusion

Our analysis reveals, that stalemate or lack of consolidation in cases of disruptive interplay between international institutions is not necessarily due to the constellation of large negotiation blocks that can be assumed to have broadly similar interests, such as the ‘North’ and the ‘South’. Persistent disruption is more likely a consequence of heterogeneous domestic interests that are ‘transmitted’ to the international level via different networks of government agencies and their negotiators. Contract illusion on the side of the constituent groups can induce a situation in which negotiators are unable to initiate consolidation, because such initiatives will either lead to a loss of support from the constituents or be exploited by the negotiators of the competing agreement. Moreover, negotiators may be tempted to strategically postpone consolidation to the implementation phase when they can expect to negotiate consolidation on terms favoring the interests of their constituent groups.

The conceptual approach viewing negotiators in specialized international agreements as agents of particular domestic interest groups, rather as representative of the state as a whole, allows a deeper analysis of the domestic determinants of developments in international regulation. For instance, our findings merit a more detailed analysis of the conditions under which negotiators can take promising initiatives to resolve stalemate or make proposals for reconciliation. In the recent negotiations for an international regime on access and benefit sharing under the auspices of the CBD, the negotiators of some countries have reported on their submissions and positions in other processes, including at the TRIPS council and various

forums of the World Intellectual Property Organization (IISD 2005).⁹ This could be an indication for efforts to coordinate negotiations in different issue areas on the national or regional level. A deeper analysis of the constituent-negotiator dynamics in these countries could reveal, if and how changes in the influence of and coalitions among domestic groups affect the chances for resolving cases of disruptive interplay on the international level.

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⁹ These include a proposal by Switzerland to amend WIPO's Patent Cooperation Treaty to require the disclosure of origin in patent applications, India's initiative to call for amendment of the TRIPS Agreement to allow for disclosure requirements, and the EU's support for a requirement to disclose the origin or source of genetic resources under both TRIPS and WIPO.

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