

This is a post-print version of:

Rosendal, G. Kristin, 'Regulating the Use of Genetic Resources – Between International Authorities'.
European Environment, Vol 16, No 5, pp. 265-277.

The definitive, editor-formatted version is available at www.interscience.wiley.com

Regulating the Use of Genetic Resources – Between International Authorities

By G. Kristin Rosendal

Senior Research Fellow, Global Environmental Issues
The Fridtjof Nansen Institute
P.O.Box. 326
1326 Lysaker
Norway

Phone: 47 67 11 19 28

Fax: 47 67 11 19 10

E-mail: kristin.rosendal@fni.no

ABSTRACT

The article examines interaction between multilateral agreements and the assessment of implementation efforts. The first aim is to portray how regulations emanating from different international regimes are developed and implemented in an interdependent manner. The second main theme concerns the assessment of implementation measures in a situation of interaction. The focus here is on the high level of interaction between regulations pertaining to genetic resources and technological utilisation of these through bioprospecting. Particular attention is given to where authority stems from in this context of multiple and interacting institutions. What is the most legitimate framework for making authoritative decisions on the use of genetic resources? Empirical evidence suggests a dual development. First, norm diffusion through international institutions increasingly plays a legitimising role in international transactions with genetic resources. At the same time, there is a high correlation between dominating countries and key economic interests in the global economy of life sciences, and these interests wield their authority and power through a different set of institutions.

Key words: biodiversity, genetic resources, institutional interaction, governance, implementation, multilateral environmental agreements

1. Introduction¹

The international transactions with and utilisation of genetic resources create a number of challenges. A large number of stakeholders are involved. Farmers and breeders need access to genetic resources for food production and further development and use of genetic material. The biotechnology sectors need legal protection measures to assure revenues from genetic improvements and investments in genetic material. Countries and communities that provide high levels of genetic diversity and knowledge about their use need guarantees that they will share in benefits derived from the genetic resources. All stakeholders need a high diversity of genetic resources but there are few stakeholders to advocate their conservation and maintenance. The dual theme of this article concerns how various multilateral agreements address issues relating to genetic resources and how regulations emanating from these regimes are being implemented.² The first aim is to portray how these international regimes structure and define discussions pertaining to genetic resources and their technological utilisation through bioprospecting.³ The second main theme concerns the assessment of implementation measures in a situation of interaction. Particular attention is given to where authority stems from in this context of multiple and interacting institutions. What is the most legitimate framework for making authoritative decisions on the utilisation of genetic resources?

The Convention on Biological Diversity (CBD) constitutes an elaborate framework for conservation and sustainable use of biodiversity,⁴ and access to and benefit sharing from genetic resources.⁵ The CBD is aimed at enhancing conservation measures, not least in developing countries. Other international arenas operate with different objectives for regulating related activities. The UN Food and Agricultural Organization (FAO) has developed an international system to secure free access to a list of plant genetic resources, in order to enhance plant breeding and food security. From a different angle, the World Trade Organization and the World Intellectual Property Organization (WIPO) are bolstering the concern for innovation and intellectual property rights (IPR) protection relating to all technological inventions, including those in biotechnology.

¹ Thanks to Shivcharn Dhillon, Peter Johan Schei, Mariel Aguilar Støen, and Morten Walløe Tvedt for valuable comments during the process of preparing this article. Thanks also to Johannes Strippel and the other participants in workshop seven at the NESS Conference in Göteborg, June 2005 for helpful input in discussing the paper. Remaining errors are the responsibility of the author.

² International regimes are “social institutions that define practices, assign roles and guide the interactions of the occupants of these roles within an issue area” (Young, 1994: 3).

³ *Bioprospecting* denotes the search for products, derived from biological diversity, of potential value to for instance the pharmaceutical and agribusiness industries.

⁴ *Biological diversity* is a broad concept that includes the variability among all species and ecosystems, as well as the diversity within species (genetic diversity) worldwide.

⁵ The CBD defines genetic resources as genetic material of actual or potential value.

This article first provides an outline of the rationale for international agreements on three main objectives relating to biodiversity and biotechnology: conservation; access & benefit sharing (ABS); and intellectual property rights (IPR) & innovation. Second, a brief discussion of how various stakeholders view the interaction between these objectives is presented. The next section starts out with a presentation of two broad analytical approaches used to determine whether implementation activities are generally approaching synergetic or increasingly disruptive effects. It proceeds to discuss what has been achieved with a view to reaching the objectives – as interpreted through the different analytical lenses.

2. Values of bioprospecting and biodiversity – and related regimes

2.1 Conservation and Access & Benefit Sharing in the CBD

As international attention to environmental problems peaked in the late 1980s, the issue of biological diversity emerged as one of the greatest challenges. The concern about biodiversity stemmed largely from an increased awareness and scientific agreement that the current rate of species extinction is extremely high compared to natural average rates (Wilson, 1988). This realisation has been repeated and strengthened ever since (Heywood, 1995:232) along with the growing realisation about the rapid loss of genetic diversity in domesticated plants, with risks of reduced food security (FAO, 1998). Of the estimated seven to thirty million species on earth, only 1.9 million have been scientifically described – most of what is lost is scientifically unknown.

In addition to the direct economic value of genetic resources, biodiversity as a whole provides a great range of ecosystem services such as local water and climate regulation, and materials for building and firewood.⁶ Genetic resources constitute important input factors in biotechnology, of basic importance to agriculture-, pharmaceutical- and chemical industries. Several biotechnological inventions build on food and medicinal plants that originate in the south – as well as on traditional knowledge about valuable traits.

The main bulk of terrestrial species diversity is found in tropical areas in poor parts of the world (UNEP 1995). For a hundred years, plant material has been collected free of charge and stored in international gene banks (Mooney, 1983; Keystone, 1990; Barton & Siebeck, 1992). Biotechnology companies also access genetic resources through bioprospecting; the screening of biodiversity and related traditional knowledge in search for commercially valuable genetic and bio-chemical resources.⁷ The development of modern biotechnology coincided with increased privatisation of agricultural and pharmaceutical research in the 1970s, which brought about an economic incentive to introduce patent protection. Coinciding with this, biotechnology made it possible to fulfil the legal patent criteria also for inventions

⁶ There is also a great range of non-economic value attached to biodiversity, such as cultural and intrinsic values (Martens *et al.* 2003).

⁷ Screening results from Shaman Pharmaceuticals revealed that of the samples that displayed promising chemical activity, 74% directly correlated with the original ethnobotanical use – i.e. traditional knowledge (Sheldon & Balic, 1995:59).

involving biological material (Bent *et al.* 1987; Crespi, 1988). It has proved difficult to provide similar legal protection of the traditional knowledge about these resources. Developing countries thus claim that their genetic capital is still considered a Common Heritage of Mankind, which is freely accessed by all. At the same time, they fear that they must pay an increasing price for access to improved breeding materials and medicines as these become subject to patent protection. Developing countries' share of all patents in biotechnology is only about one percent (WCED, 1987; reiterated UNDP, 2000). The classical example is the plant *rosy periwinkle* from Madagascar. Building on traditional knowledge, it has become the source of a widely used medicine for leukaemia, and the multinational corporation Eli Lilly is reputed to earn 100 million dollars yearly, while Madagascar has not been able to share in the profits. This and other similar stories angered the developing countries in the biodiversity negotiations and the mood grew steadily in favour of securing an equitable share for poor countries. On the same note, it was recognised by the CBD negotiating parties that developing countries could not be expected to pay the full costs of conservation of biodiversity.

The CBD entered into force in 1993 and aims at conservation and access & benefit sharing. The CBD negotiations originally focused on conservation alone. Soon, however, the negotiators included the contested issue of access and property rights to genetic resources.⁸ The CBD negotiators came up with the compromise of national sovereignty and a threefold objective: i) Conservation, ii) Sustainable use of biodiversity, and iii) Fair and equitable sharing of benefits arising out of the utilisation of genetic resources.⁹ The CBD objective on conservation has been translated into a goal of halting and reversing the loss of biodiversity by 2010. Equitable sharing is regarded as a prerequisite for achieving the two first objectives (Svensson, 1993; Koester, 1997). Without access there will be fewer benefits to share. Without benefit sharing there will be fewer resources conserved for future use. *Prior informed consent* (Art. 15.4) and *mutually agreed terms* (Art. 15.5) are meant to guide access to genetic resources. Hence, the CBD seeks to balance the expanding patent regime by establishing a compromise between access to technology and access to input factors – genetic resources (Koester, 1997; Rosendal, 2000). Although all of 188 states have ratified the CBD, these are still contested issues. Subsequently, the CBD Parties have spent ten years negotiating specific, legally binding language on access and benefit sharing (ABS). The first step, the *voluntary* Bonn Guidelines (2002), make concrete suggestions as to how these principles may be included in bilateral bioprospecting deals and encourage changes in patent legislation – disclosure of country of origin of genetic material – in order to accommodate the balance. It is this interaction with patent legislation that constitutes one of the main reasons why the USA remains one of the very few countries that has not ratified the CBD.¹⁰

⁸ Even though the original move away from FAO had been designed to give it the slip (Rosendal, 1991; Koester, 1993).

⁹ The CBD establishes national sovereignty to counterbalance intellectual property rights. This decision is bolstered by the Stockholm Conference (UNCHE) principle of national sovereignty over natural resources.

¹⁰ The others are Andorra, Brunei, East Timor, Iraq, Somalia and Taiwan.

2.2 Concerns for Innovation and Intellectual Property Rights in TRIPS

Biodiversity is not only being lost at an increasing rate. As the new biotechnologies greatly enhance the potential utility areas of the world's genetic resources, the economic interests linked to these resources are soaring (Rosendal, 2000).¹¹ For instance, it is estimated that U.S. biotechnology generates a yearly income of 13 billion US\$ (Chambers, 2002). One combined effect of growing awareness of loss and value is a greatly enhanced interest in intellectual property rights and access to genetic resources.

An element of the value of biodiversity is that species may contain compounds that can generate valuable pharmaceuticals or other products at some future date. The 'bioprospecting' products may be in the form of genes that are useful to biotechnology, chemicals that are useful as for instance enzymes, and structures and constructions from nature that can be used in industry. As an illustration, fewer than one percent of flowering plants has been thoroughly investigated for their chemical composition (Sheldon & Balick, 1995:46). Microbial diversity and the diversity of marine species are largely unknown and may rival tropical forests in species diversity (Aylward, 1995:105). Beside the commercial bioprospecting for pharmaceuticals, it is estimated that about 80% of human populations rely on locally derived herbal medicines that are related to traditional knowledge of medicinal traits (Brown, 1995).

The World Trade Organization (WTO) was established in 1994, along with the Agreement on Trade Related aspects of Intellectual Property Rights (TRIPS). The WTO negotiation process – the GATT Uruguay Round from 1988 to 1993 – coincided with that of negotiating the CBD. The aim of the TRIPS Agreement is to stimulate technological innovation through harmonisation and strengthening of domestic patent legislation by all WTO members. The industrialised countries advocated it in order to ensure revenue from innovations in all technological fields, including biotechnology. The TRIPS does not create a single, universal patent system. It is to harmonise, strengthen and expand the scope for patent protection in the *domestic patent legislation* in each of the member countries.¹² As increasingly dominating multinational corporations seek patent protection around the world, they depend on each country's patent office to grant patent rights in a uniform manner. The TRIPS Agreement laid down the ground rules for what must be protected by some kind of intellectual property right – including plant varieties and pharmaceuticals.

¹¹ Biotechnology traditionally includes activities such as baking bread and brewing beer, where the interaction of different organisms (such as that between yeast and wheat) combines to create a new product. The concept of 'new biotechnologies' indicates more direct dependency on human intervention (recombinant DNA techniques and genomics).

¹² Patent legislation is of a national character, and patent protection is applicable only in the country where it has been granted. One exception is the European Patent Convention (EPC) of 1973, which applies primarily in the European Communities, and which is administered by the European Patent Office (EPO). National patent legislation is largely drawn from international conventions, administered by the World Intellectual Property Organization (WIPO).

2.3 Concerns for Access to Plant Genetic Resources in FAO

Access to genetic resources is a prerequisite for food security. Genetic resources constitute the building blocks of all development and breeding of plants and animals. Wild relatives of domestic crops provide genetic variability that can be crucial for instance for overcoming disease outbreaks or for adjusting to climatic change. Access to the great variety of seeds that have been collected in international gene banks is also vital for development and breeding (Kloppenburger & Kleinmann, 1987; Kloppenburger, 1988; Harlan, 1995).

The ITPGRFA of the UN special agency for food and agriculture (FAO) has the central objective of ensuring access to seeds for plant breeding: Historically, seeds were regarded as a Common Heritage of Mankind (CHM). The advent of patents and plant breeders' rights brought about monetary restrictions on systematically bred plant material and developing countries put the contested issue on the FAO agenda in 1979. The FAO Parties agreed on an International Undertaking for Plant Genetic Resources in 1983, which established that all seeds should be subject to the CHM principle – freely accessible to all – be they wild, traditional cultivars, or systematically bred material (Rosendal, 1989). Six years later, the Undertaking was renegotiated to waive the CHM principle for patented plant material and in response the contested issue found its way into the CBD negotiations. As the CBD did not solve the problem for already collected plant genetic resources in gene banks, the access issue returned to FAO. In 2001 FAO established the International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA). The Treaty aims to secure access to seeds from a specified list of the most central food plants. This material, it is agreed, must remain freely available and not become subject to patents 'in the form received' from the FAO multilateral system, i.e. international gene banks (Article 12.3). This is meant to secure farmers' rights to use and reuse their seeds and to have access to breeding material.

2.4 Interaction between Objectives

Interaction indicates the idea that effective implementation of one convention may affect the implementation of another (Young 1996:6). A better understanding of synergies and conflict potential of obligations emanating from the various conventions is thus important for achieving improved implementation.¹³ Efforts have been made by Young (1996), Stokke (2001), Rosendal (2001a; 2001b) and Oberthür & Gehring (2006) to outline an analytical approach to analyse such phenomena. Institutional interaction is often considered as an externality; an unintended consequence of institutional developments within separately defined issue areas. However, interaction can also be the result of strategic moves (Rosendal, 2001a: 458). For example, it could be perceived that various negotiating parties to the CBD, FAO and WTO designed the agreement to circumvent each other's regulatory means. On this note, the delineation of institutional scope and the interpretation of whether a case of institutional interaction exists may be politically contentious (Rosendal, 2001a: 458). For this

¹³ Implementation is here confined to the level of output and outcome, i.e. followup activities and behavioural change among the convention parties.

case study, the focus is on deliberate activities; i.e. a case of awareness among the parties that there is interaction and that it needs to be dealt with. Hence, there is recognition that interaction in this case may lead to conflict between the fora – and parties – involved (see also Raustiala and Victor, 2004.)

Access to genetic resources, conservation, equitable sharing of benefits, and IPR systems to boost innovation – are all internationally agreed objectives – but they are not necessarily mutually compatible. Conservation is basically a prerequisite for all the other objectives. This is acknowledged in the three objectives of the CBD. It will become apparent that the situation has not changed much from that characterising the CBD negotiation phase, but some of the strategies to deal with the situation are novel. Let us briefly look into how the post-Rio literature discusses the links between these objectives:

Several scholars maintain that there is a potential conflict between intellectual property rights (IPR) systems and the CBD objective with regard to access and benefit sharing. Since the time of the Chakrabarty case in 1980, patents in biotechnology have become increasingly wide and the patent criterion of inventive step has been lowered (Barton & Berger, 2001; Safrin, 2004). It is speculated as to whether the effect from IPR systems may indirectly weaken indigenous and local groups in their efforts to achieve bilateral agreements on bioprospecting (Gebhart, 1998). The knowledge in its traditional form and the non-systematically bred cultivars hardly fulfil general patent criteria. In effect, it is argued that patenting may be incompatible with the CBD policy objective of equitable sharing of benefits (Hendrickx *et al.* 1993; Crucible Group, 1994; Correa, 1999; Egziabher, 1999). The uneasy relationship between access and patents concerns not only benefit sharing, but also the question of access to improved breeding materials in agriculture and to vaccines and medicines from the pharmaceutical sector.¹⁴ On the other hand, the legislative efforts to achieve the twin objectives of access & benefit sharing are also subject to criticism. Some argue that the emerging legal regimes to regulate access to genetic resources in the South are based on unrealistic expectations of benefits (Kate and Laird, 1999). It is also claimed that they can hinder both bioprospecting and biodiversity conservation, as scientific examination of tropical species is being hindered by cumbersome access regimes (Grajal, 1999). Similarly, it is argued that this type of regulation will reduce access to important genetic material for plant breeding for food and agriculture (Fowler, 2001).

How are these various objectives being implemented? Looking at activities at the international and domestic levels, who lends authority and legitimacy to decisions on the use and control of genetic resources? The answer to these questions will be significant for the future legitimacy of biotechnology and future efforts to conserve biodiversity. The answer also depends on where you look, and the next section briefly reports on the fate of these objectives in international and domestic arenas – and whether state or non-state authorities dominate – as seen from two different perspectives.

3. The State of Implementation

The discussion above indicates that while there are certainly links between access and benefit sharing, conservation and innovation, the causality between them is not clearcut. In the international negotiations, however, the opposing parties tend to operate with rather clearcut opinions about these casual links. Thus, the fate of the various objectives will be important for how the negotiating parties interpret their success and failures and in turn how they will view the legitimacy of carrying out their international obligations.

A variety of perspectives will be helpful in order to look into some of the main barriers and options for achieving a balance between the objectives in case; both in their further development at the international level and in the phase of domestic implementation. First, the development of these objectives is perceived through a realist lens and thereafter through more complex ideational perspectives. The two perspectives, and the scholarly contributions associated with each of them, predict and identify different mechanisms and substantiating factors for assessing these developments.

As a reaction to World War I, idealism dominated the approach to international relations. The subject developed in the two powerful victors, the UK and the USA, both of whom wanted as little change in international order as possible. The mainstream view was that the ideals of democracy and international diplomacy could help in combating misunderstandings like those that had brought about WWI (Hollis & Smith, 1990). E.H. Carr (1962) attacked this liberal idealism for being utopian and normative; and Morgenthau advocated *realism* as a theory which tries to understand international politics as they actually are, rather than as people would like to see them (1960:17). The realist school holds that international law and institutions rarely play more than an epiphenomenal role in the ordering of international relations (Carr, 1962; Morgenthau, 1960; Waltz, 1959). In this view, national interests and the struggle for power dominate the international system. States are perceived as essentially unitary, rational actors (URA model), acting in a context of anarchy, and with state autonomy as their overriding concern. In the realist perspective, states engaged in international collaboration will also be worried about cheating, and about relative gains – the fear that other parties might gain more from the arrangement than they do (Grieco, 1988). For this case, countries with a high level of technological development are best served with a system that grants them free access to genetic resources and at the same time provides harmonised intellectual property rights to reap benefits from technological innovation. This system is primarily sought bolstered through WTO and WIPO. According to the realist interpretation, developing countries are likely to remain at the losing end of bioprospecting agreements, both at the international level and in bilateral terms – accepting the conditions spelled out by those who have more power to negotiate. The proposition here is that the objectives primarily associated with Third World interests will lose out.

¹⁴ "Fatal imbalance. The Crisis in Research and Development for Drugs for Neglected Diseases", September 2001. MSF Access to Essential Medicines Campaign and the Drugs for Neglected Diseases Working Group.

One challenge to the realist school came from the growing interdependence between states. This was seen to reduce their autonomy. Most analysts agree that structural (state) power remains an important factor in analysing international relations, as interdependence is often asymmetrical. An important difference is that institutionalists and regime theorists start out with the hypothesis that institutions matter – thereby increasing the focus on non-state authority in international relations (see Hansenclever *et al.* 1996; Keohane & Nye, 1977). Interest-based studies within this tradition explain compliance by looking at how institutions may mould the interests of the parties by altering their cost/benefit calculations (see Young, 1989; Underdal, 1980 and 1998). The more ideational-based approaches highlight learning processes and the generation and acceptance of common international norms and ideas (Franck, 1990; Haas *et al.* 1993; Young, 1991).¹⁵ These approaches point to the role of non-state actors such as multinational corporations, grassroots movements and scientific communities in formulating and advocating common norms and ideas in specific sectors of international relations. Obligations may be agreed upon, as well as followed, for normative reasons or due to learning processes. On the same note, from a more constructivist angle, Barnett and Finnemore (2004) point to the rational-legal authority, based on knowledge, that provides international organisations with power independently of the states that created them. They argue that international organisations classify the world, promote and fix meanings, and diffuse norms, in order to legitimate and facilitate their own expansion and intervention in the affairs of states and nonstate actors (p. 33). Applied to this case, these perspectives point to a growing concern for legitimacy in international transactions with genetic resources. In this light, the normative sway for increased benefit sharing with developing countries cannot be disregarded. According to ideational interpretations, international regimes such as the CBD and FAO may successfully promote and diffuse equity norms. The corollary is of course, which forum turns out to be stronger in advocating ‘its’ agenda, and whether this can be traced back to the states that established the regime in the first place. In this study of complexity and interaction it will be possible to shed light on this question.

3.1 Implementation seen through the realist lens: ‘Forum shopping’

While a central tenet with institutionalists is to regard issue linking as instrumental in generating more co-operation between states, realists predict that it will rather be used to obstruct co-operation. According to Pistorius (1993), such obstructive issue linking characterised the early phases of the genetic resources issue in the FAO, CBD and TRIPS. This resulted in only symbolic victories for developing countries when negotiating the FAO Undertaking and later the CBD, while dominating countries secured their interests through WTO’s TRIPS. Pistorius coined this activity ‘forum shopping’; the act of undermining the regulations emanating from one regime by moving the issue to another forum. In the

www.accessmed-msf.org

¹⁵ Reaching a common understanding for access and benefit sharing norms is not unproblematic. With the large geographical scope and the increasing number of sectors in society engaged in solutions to global environmental problems, the development of common norms and ideas is hard to pin down (Rosendal, 2000).

implementation phase, there are still indications that support his analysis. Interaction can be the result of strategic moves (Rosendal, 2006).

Let us start with how the incentives for innovation and investment returns are doing in international fora: At first glance, there are several indications that the TRIPS agenda is not overly persuasive worldwide. The WTO Doha Round is fraught with contentious North-South issues; of which TRIPS is only one among many that remains unresolved. The TRIPS Agreement is in itself open ended; leaving it to the WTO member states to attend to socio-economic concerns. Plants and animals may be exempted from patenting altogether (Article 27(3) (b)).

The TRIPS agenda is however taking hold through different fora altogether, most strongly through bilateral trade agreements. The USA and EU have signed a great number of bilateral trade agreements with developing countries. These bilateral agreements are frequently referred to as 'TRIPS plus' agreements as they demand stronger and wider patent protection compared to TRIPS (Dutfield, 2001). 'TRIPS plus' agreements tend not to include any transition period, while the period of protection for industrial designs is prolonged (El-Said, 2005). In addition, 'TRIPS plus' agreements tend to limit the grounds for allowing the use of compulsory licensing of medicine, which threatens access to affordable medicines, and they do not allow for plants and animals to be excluded from the patent laws of signatory countries (Choudry, 2005).

Another important forum that reflects the TRIPS agenda is the World Intellectual Property Organization (WIPO). WIPO has 180 member states and this arena is also used to negotiate standardisation of patent criteria in the members' domestic legislation. The dominant parties in this arena seek to strengthen patent protection to a greater degree than did TRIPS (Tvedt, 2005). The draft Substantive Patent Law Treaty (SPLT) aims to achieve international harmonisation on patent applications, core terms and patent criteria. The WIPO negotiations, as well as the 'TRIPS plus', indicate the importance of 'forum shopping' to secure the interests of developed countries and multinational corporations in the patent question.

An interesting aspect of these negotiations concerns representation. In the national delegations to CBD and ABS talks, there are a variety of actors, including Ministries of Environment and Foreign Affairs, as well as NGOs. The delegations to WIPO largely consist of technical experts; patent lawyers from national patent offices tend to dominate (Tvedt, 2006). In turn, these negotiations become very technical and lack inclusion of socioeconomic and environmental concerns, in spite of the great impact that the outputs may have on all sectors of society. This framing effect of technical terminology brings us to the lessons from Barnett and Finnemann (2004), who direct our attention to how international organisations may mould negotiation outputs. The WIPO Secretariat helps pave the way for these negotiations, much as they try to do in the parallel WIPO negotiations on traditional knowledge and folklore. It should, however, be noted that the WIPO Secretariat has been less successful in promoting an international regime based on the latter negotiation efforts. In spite of the great knowledge and expertise provided by the WIPO Secretariat on these

matters, the member states cling to national sovereignty and want to retain rule making on traditional knowledge at the domestic level.¹⁶ This would seem to strengthen the assumption of the realist view, that in the end it is the powerful states that decide how far the influence of international regimes is allowed to go. This ‘double check’ goes for the different effects of the two WIPO fora and also when we look into effects of different international regimes: The outputs from TRIPS and the SPLT have direct effects on national patent legislation, partly under threat of trade retaliations. In comparison, the norms and principles emanating from the CBD on ABS, WIPO on folklore and traditional knowledge, as well as the FAO principle of ‘farmers rights’ in the Treaty on Plant Genetic Resources (Bjørnstad, 2004) remain subject to national jurisdiction.

The north-south conflict is very apparent in the WIPO negotiations on SPLT. Even countries with rapid technological development, such as India and Brazil, strongly oppose the aims of SPLT, while industrialised countries are in favour. Even those with a weak technology base, such as Norway, remain reluctant observers. Asymmetrical power relations are still the name of the game. International transactions with genetic resources are left to bilateral agreements between the users and the providers of these resources. The developing countries generally have low negotiating power in bioprospecting deals, stemming from lack of capacity and the very nature of genetic resources. First, only a few developing countries have the necessary administrative capacity to monitor bioprospecting deals (Svarstad & Dhillon, 1995). Genetic resources are not sold in bulk such as oil and minerals – their value lies in qualitative traits. Second, negotiating power is likely to remain low because biological material does not necessarily follow political borders. In effect, it is difficult to determine which stakeholders should be the beneficiaries of bioprospecting deals. The rosy periwinkle, for example, is also found in Jamaica; hence the most widespread narrative used for enhancing access and benefit sharing has been found to be flawed. Hence, the country of origin and who should benefit are open questions (Fowler, 2001). Third, the countries that try to enact stringent ABS regulations may face a situation where companies turn elsewhere. There is now an increased interest in doing bioprospecting in the ‘North’, as the pharmaceutical sector turns to prospecting hitherto unknown marine resources and doing bioprospecting in their ‘own backyard’ (Støen, forthcoming). Here, the multinationals can operate without ABS regulations, as no developed country has established such a regime.

In summary, the bilateral framework so far inherent in the CBD is not helpful in terms of empowerment of poor countries in bioprospecting deals. Moreover, while the CBD does include a number of important norms and principles aimed at empowerment and equity, the CBD is poorly equipped with enforcement mechanisms compared to the WTO system. The acquisition of benefits is dependent on the existence of appropriate policies and institutions in the country providing genetic resources as well as compatible and appropriate legislation in the accessing (user) countries (Hendrickx *et al.* 1993; Rosendal, 2000; Fauchald, 2001;

¹⁶ Personal observation by author when attending as observer the World Intellectual Property Organisation’s (WIPO’s) Intergovernmental Committee on Intellectual Property Rights, Genetic Resources, Traditional Knowledge and Folklore (Traditional Cultural Expressions) (IGC-GRTKF), 8-10 February 2006.

Svarstad & Dhillon, 2000). Hence, seen from a power-based perspective – ‘looking the truth of power straight in the face’¹⁷ – the developed countries have succeeded in retaining free access to genetic resources.

3.2 Implementation in the ideational view: Legitimate norms and learning

We have now looked at what may be seen as realist expectations of how “power decides”: The objectives pursued by dominant actors, both states and non-state actors in terms of multinational corporations, will win through in the implementation phase. It may, however, also be argued that there is some scope for norms and learning to seep through in the implementation of these diverging goals. In the following, I apply ideational perspectives and focus on the spreading of norms to other negotiation fora and on the development of relationships between providers and users of genetic resources in bioprospecting deals. As we have seen in the previous section exemplified by the role of the WIPO Secretariat, the relationship between power and knowledge comes in many guises.

At the international level, there is a great deal of activity directed at resolving the ABS-IPR controversy. There is an increasing awareness that broad patent claims in biotechnology inventions may actually lead to reduced innovation and a number of initiatives are emerging to respond to this problem. The aim is to find options that do not hamper research and development within basic research. One such option is the Biological Innovation for Open Society (BIOS) initiative.¹⁸ Another option is ‘certificates of provenance’, a concept currently emerging in the CBD ABS negotiations. The concept refers to the “history of custody of the material, described since its access, including the changes it has suffered” (Fernández, 2004). It aims to develop a tracking mechanism so that benefit sharing can be achieved in practice. While the WTO and WIPO primarily aim at strengthened IPR systems, the CBD objective of benefit sharing is taking central stage in a number of international arenas including UNESCO and UNCTAD.¹⁹ In addition, there is the parallel – albeit apparently weaker – negotiation in WIPO in the Intergovernmental Committee on Intellectual Property Rights, Genetic Resources, Traditional Knowledge and Folklore. Moreover, the evident difficulties involved in the revision process of TRIPS in the Doha Round indicate that the stakeholder views on ABS are becoming increasingly accepted as legitimate.

¹⁷ Morgenthau, 1960:16.

¹⁸ BIOS proposes to use the communications and data transfer opportunities of the internet to build information connections throughout the world, so that an innovator working on a crop improvement in a developing country can become aware of an advance elsewhere. An aim is to build a legally and normative ‘protected commons’ of intellectual property, on a precedent of ‘open source’ software development.
<http://www.cambia.org/daisy/cambia/583.html>

¹⁹ UNESCO is developing model provisions on the protection of folklore. UNCTAD’s Biotrade Initiative assists developing countries to “develop an institutional environment to facilitate trade and investment, in products and services of biological diversity, as a means to attain the objectives of the CBD”.

It may also be interpreted as an effect of the CBD that close to fifty developing countries and regions around the world are in the process of enacting various types of ABS legislation.²⁰ Moreover, in their trade agreement with the US, Bolivia, Colombia, Ecuador, Peru and Venezuela claim the need to subject the granting of IPRs to respect national legislation on ABS and respect for traditional knowledge. They maintain the need to improve patent search practices in order to enhance novelty and prior art – this to avoid traditional knowledge being patented by multinationals (Ruiz, 2005:20). Brazil, Costa Rica, India, Nepal and the African Union (53 African countries) have also moved to incorporate disclosure of origin requirements. Developing countries still operate largely through the G77 coalition, as seen in their concerted call for certificates of legal provenance in the ABS negotiations under the CBD. This norm diffusion is not, however, affecting implementation efforts to enact compatible legislation in user countries. Only Denmark, Belgium and Norway seek to incorporate disclosure of origin of genetic resources as part of legislation governing biodiversity or access to genetic resources. Norway is one of the few developed countries to add this criterion to domestic patent legislation – but it is rather doubtful whether this will have any legal effect (Tvedt, 2005).

Interestingly, there are more examples of norms affecting behaviour in the private sector. The Royal Botanic Gardens Kew in the UK states that net profits derived from the use of genetic material shall be shared equally with the country of origin. The International Cooperative Biodiversity Groups, funded by the US government, include royalties, advance payment, and technology transfer in their benefit-sharing packages in bioprospecting deals (Laird, 2000:97). These and several other examples (Kate & Laird, 2000) indicate a growing urgency to emerge as a legitimate buyer of genetic material in line with the CBD objectives. The principle of equitable sharing of benefits is becoming increasingly accepted among private sector users of genetic resources.

4. Concluding remarks

We have seen that the ABS issue is increasingly being followed up by the public and private sector as well as being dealt with in several international fora. Is this an indication that the CBD is emerging as the authoritative forum for generating and spreading norms concerning use of genetic resources? Will we see an increasing reconciliation between the objectives of ABS and IPR? Or does this simply confirm the old truism that our theoretical perspective determines our empirical findings and conclusions?

Various types of institutionalist perspectives shed light on how the objectives of access and benefit sharing (ABS) are advancing. First, these norms receive increased legitimacy within the private sector and second, they are advocated through UN arenas where developing countries have more negotiating power through one-country-one-vote. The power

²⁰ <http://www.biodiv.org/programmes/socio-eco/benefit/measures.aspx> Accessed 9 February 2006.

of developing countries is issue-specific and mainly tied to the negotiation phase, when the specific topics are on the table. Although a comparison between specific regime-areas and the wider idea of *international society* may seem far-fetched, these ideational traditions share the rejection of the Hobbesian (realist) view that lack of a common sovereign prevents the possibility of international rule making and rule enforcement (Bull et al., 1990:54). This is indeed an important element in the assumption that regimes matter and against this background the realist view could be easily refuted: There are ample examples of international rule making.

If, however, we take the realist advice and start looking at where the authority behind these rules stems from, there may still be lessons to learn. It is widely accepted that international regimes cannot regulate activities within states, only between them. In effect, the CBD objectives for traditional knowledge and indigenous people, the WIPO negotiations on folklore and traditional knowledge, as well as the farmers' rights in ITPGRFA are still subordinated to national sovereignty. However, this legal obviousness does not apply to IPR legislation. The upshot would seem to be that international rule making does not go further than dominating states want it to. The realist perspective illuminated ways in which industrialised countries, pushed by strong multinational corporations, have succeeded in advancing their goals for strengthened intellectual property rights (IPR) and patent systems within domestic legislation. In more comprehensive negotiation fora that deal with high salient issues such as economy and trade (WTO and WIPO), structural power provides the dominant states with more influence over negotiation outputs. These agreements are supported by stronger compliance mechanisms, which give them a stronger pull in the implementation phase. From a state-centred perspective it may come as no surprise that the compliance mechanisms are stronger in the WTO than in the CBD. So far, the lack of compatible ABS legislation in user countries indicates that these norms have had little practical political effect.

However, to conclude along this line would be to disregard the contrafactual situation. What would the contents of bioprospecting deals have looked like in the absence of the CBD? Most likely, there would have been even less efforts to achieve prior informed consent, mutually agreed terms and inclusion of local and indigenous stakeholders. Moreover, the call for disclosure in IPR legislation in order to stop misappropriation of traditional knowledge is increasing and can hardly be ignored. More case studies of bioprospecting deals with a variety of actors are needed to increase our knowledge about these issues.

Against this backdrop, it may be argued that the ideational perspectives that regimes and international organisations matter tend to give too much weight and credit to the agenda setting phase, when norms can be seen to influence the topics of negotiation. In effect, it may tend to disregard how structural power and interests still decide in the implementation phase, in line with the realist proposition. Still, it would seem that these different perspectives are compatible rather than competitive, as they illuminate different aspects of international relations and are 'activated' at different phases of regime formation and regime

implementation. Although implementation efforts constitute the proof of the pudding and remain low, the incremental steps of norm diffusion cannot be disregarded.

List of References

- Aylward, Bruce 1995. "The role of plant screening and plant supply in biodiversity conservation, drug development and health care", in Swanson, Timothy (ed.) *Intellectual property rights and biodiversity conservation*. Cambridge: Cambridge University Press.
- Barnett, Michael N. & Martha Finnemore. 2004. *Rules for the World. International Organizations in Global Politics*. Ithaca, NY: Cornell University Press.
- Barton, John and Peter Berger. 2001. Patenting Agriculture. *Issues in Science and Technology Online*, Summer 2001. <http://www.issues.org/17.4/barton.htm> Accessed 8th June 2006.
- Barton, John & W.E. Siebeck. 1992. Intellectual Property Issues for the International Agricultural Research Centres. What are the Options? *Issues in Agriculture*, no. 4. Washington D.C.: Consultative Group on International Agricultural Research.
- Bjørnstad, Svanhild-Isabell. 2004. "Breakthrough for 'the South'? An Analysis of the Recognition of Farmers' Rights in the International Treaty on Plant Genetic Resources for Food and Agriculture". FNI Report 13/2004: Lysaker.
- Bent, S.A., R.L. Schwaab, D.G. Conlin, D.D. Jeffery. 1987. *Intellectual Property Rights in Biotechnology Worldwide*. N.Y.: Stockton Press.
- Brown, Katrina. 1995. Medicinal plants, indigenous medicine and conservation of biodiversity in Ghana. In Swanson (ed). pp. 201-231.
- Bull, Hedley, Benedict Kingsbury & Adam Roberts (eds) 1990. *Hugo Grotius and International Relations*. Oxford: Oxford University Press.
- Carr, E.H. 1962. *The Twenty Years' Crisis 1919-1939 (1939)*. London: Macmillan.
- Chambers, Jasemine. 2002. Patent Eligibility of Biotechnological Inventions in the United States, Europe and Japan: How Much Patent Policy is Public Policy? *34 GEO. WASH. INT'L. L. REV.* 223: 237-39.
- Choudry, Aziz. 2005. "Corporate conquest. Global geopolitics. Intellectual property rights and bilateral investment agreements." *Seedling*. January, pp. 7-13.
- Correa, Carlos M. 1999. *Access to plant genetic resources and intellectual property rights*. Rome, FAO Commission on Genetic Resources for Food and Agriculture: 28.
- Crespi, R.S. 1988. *Patents: a Basic Guide to Patenting in Biotechnology*. Cambridge: Cambridge University Press.
- Crucible Group. 1994. *People, plants and patents. The Impact of Intellectual Property on Biodiversity, Conservation, Trade and Rural Society*. Ottawa: International Development Research Centre.
- Dutfield, Graham. 2001. Biotechnology and Patents: What are developing countries doing about article 27.3(b)? *Bridges* 5(9): 17-18, ISSN: 1562-9996
- Egziabher, Tevolde B. G. 1999. The TRIPs Agreement of the WTO and the Convention on Biological Diversity: The need for co-ordinated action by the south. *Third World Resurgence* 106: 4-7.
- El-Said, Mohammed. 2005. The road from TRIPs-minus, to TRIPs, to TRIPs-plus: Implications of IPRs for the Arab world. *The Journal of World Intellectual Property*. 8(1): 53-62.
- FAO. 1998. *The State of the Worlds Plant Genetic Resources for Food and Agriculture* Rome: FAO.
- Fauchald, Ole Kristian. 2001. Patenter og allmenningens tragedie (Patents and the tragedy of the commons). *Lov og Rett. Norsk juridisk tidsskrift* (Norwegian Journal of Legal Affairs). 40: 399-412.
- Fernández, José Carlos. 2004. "Elements for the design of a certificate of legal provenance". International Expert Workshop on Access to Genetic Resources and Benefit Sharing. Record of Discussion. Cuernavaca, Mexico, October 24-27.
- Fowler, Cary. 2001. Protecting Farmer Innovation: The Convention on Biological Diversity and the Question of Origin. *Jurimetrics*. 41(4): 477-488.
- Franck, Thomas M. 1990. *The Power of Legitimacy among Nations*. New York: Oxford University Press.
- Gebhart, Martina. 1998. Sustainable use of biodiversity by the pharmaceutical industry? *International Journal of Sustainable Development*. 1(1): 63-72.
- Grajal, Alejandro. 1999. Biodiversity and the Nation State: Regulating Access to Genetic Resources Limits Biodiversity Research in Developing Countries. *Conservation Biology*. 13(1): 6-10.
- Grieco, Joseph M. 1988. "Anarchy and the limits of cooperation: a realist critique of the newest liberal institutionalism". *International Organization*. 42(3): 485-507.
- Haas, Peter M., Robert O. Keohane & Marc A. Levy (eds). 1993. *Institutions for the Earth. Sources of Effective International Environmental Protection*. Cambridge, MA: MIT Press.

- Hansenclever, Andreas, Peter Mayer, & Volker Rittberger. 1996. Interests, power, Knowledge: The Study of International Regimes, *Mershon International Studies Review*, 40: 177-228.
- Harlan, Jack R. 1995. *The living fields. Our agricultural heritage*. Cambridge, Cambridge University Press.
- Hendrickx, F., Veit Koester & Christian Prip. 1993. Convention on Biological Diversity. Access to genetic resources: A Legal Analysis. *Environmental Policy and Law*, 23(6).
- Heywood, Vernon H. 1995. *Global Biodiversity Assessment*. Cambridge: Cambridge University Press.
- Hollis, Martin, & Steve Smith. 1990. Explaining and understanding international relations (Oxford: Oxford University press).
- Kate, K. t. and Sarah A. Laird. 1999. *The commercial use of biodiversity. Access to genetic resources and benefit-sharing*. London: Earthscan Publications Ltd.
- Kate, K. t. and Sarah A. Laird. 2000. "Biodiversity and Business: Coming to Terms with the Grand Bargain." *International Affairs*. 76(2): 241 – 264.
- Keohane, Robert O. & Joseph S. Nye. 1977. *Power and Interdependence*. Boston, MA: Little, Brown & Co.
- Keystone International Dialogue on Plant Genetic Resources. 1990. *Final Consensus Report*. Madras Plenary Session, Keystone, Colorado.
- Kloppenburg, J.R. & D.L. Kleinman. 1987. The Plant Germplasm Controversy. *BioScience*. 37(3).
- Kloppenburg, J.R. 1988. *First the seed*. Cambridge: Cambridge University Press.
- Koester, Veit. 1997. The Biodiversity Convention Negotiation Process and Some Comments on the Outcome. *Environmental Policy and Law*. 27(3): 175-92.
- Koester, Veit 1994. "Implementation Issues in the Biodiversity Convention" in *Implementing Environmental Conventions, Scandinavian Seminar Publications*, Papers from the Second High-level Nordic Policy Seminar (Copenhagen: Erling Olsens Forlag).
- Laird, Sarah A. 2000. Benefit-sharing 'best practice' in the pharmaceutical and botanical medicine industries. In *Bioprospecting. From biodiversity in the South to medicines in the North*. Hanne Svarstad and Shivcharn S. Dhillon (eds). Spartacus forlag: Oslo. pp. 89-99.
- Martens, Pim, Jan Rotmans and Dolf de Groot. 2003. Biodiversity: Luxury or necessity? *Global Environmental Change*. 13: 75-81.
- Mooney, Pat R. 1983. The Law of the Seed. Another Development and Plant Genetic Resources. *Development Dialogue*. Dag Hammarskjöld Foundation, Uppsala. 1-2.
- Morgenthau, Hans. 1960. *Politics among Nations*. New York: Knopf.
- Oberthür, Sebastian and Thomas Gehring (eds.) 2006. *Institutional Interaction: Enhancing Cooperation and Preventing Conflicts between International and European Environmental Institutions*. Cambridge, MA: MIT Press.
- Pistorius, Robin. 1993. Paper to International Conference on the Convention on Biological Diversity, African Centre for Technology Studies, Nairobi, Kenya, January 26-29.
- Raustiala, Kal and David G. Victor. 2004: The Regime Complex for Plant Genetic Resources. *International Organization* 58(2): 277-309.
- Rosendal, G. Kristin. 1989. *A Sustainable Development for Plant Genetic Resources: The Output of the Debate in FAO; a Sisyphean Victory for an Environmental Organisation?* R: 010-1989. Lysaker: Fridtjof Nansen Institute.
- Rosendal, G. K. 1991. International Conservation of Biological Diversity: The quest for effective solutions, *FNI Report*, R: 012-1991 (Lysaker: Fridtjof Nansen Institute).
- Rosendal, G.Kristin. 2000. *The Convention on Biological Diversity and Developing Countries*. Dordrecht: Kluwer Academic Publishers.
- Rosendal, G.Kristin. 2001a. Overlapping International Regimes: The case of the Intergovernmental Forum on Forests (IFF) between Climate Change and Biodiversity. *International Environmental Agreements: Politics, Law and Economics*. 1: 447-468.
- Rosendal, G.Kristin. 2001b. Impacts of Overlapping International Regimes: The Case of Biodiversity. *Global Governance*. 7 (1): 95-117.
- Rosendal, G.K. 2006. "The Convention on Biological Diversity: Tensions with the WTO TRIPS Agreement over Access to Genetic Resources and the Sharing of Benefits", in Oberthür, Sebastian and Thomas Gehring (eds.) *Institutional Interaction in Global Environmental Governance – Synergy and Conflict among International and EU Policies*. Cambridge (MA), MIT Press, pp. 79-103.
- Ruiz, Manual. 2005. A Review of the IP Negotiations in the US – Andean Free Trade Agreement. *Bridges*. 9(2): 20.
- Safrin, Sabrina. 2004. Hyperownership in a time of biotechnological promise: The international conflict to control the building blocks of life. *The American Journal of International Law*. 98:641-685.
- Sheldon, Jennie Wood & Michael J. Balick. 1995. Ethnobotany and the search for balance between use and conservation. In *Intellectual property rights and biodiversity conservation*, edited by Timothy M. Swanson. Cambridge: Cambridge University Press. Pp. 45-64.
- Stokke, Olav S. 2000. Managing Straddling Stocks: The Interplay of Global and Regional Regimes. *Ocean and Coastal Management*. Vol. 43. pp. 205-34.

- Svarstad, Hanne & Shivcharn S. Dhillon. eds. 2000. *Bioprospecting: From biodiversity in the South to medicines in the North*. Spartacus forlag: Oslo.
- Svensson, Ulf. 1993. The Convention on Biodiversity – A New Approach. In *International Environmental Negotiations; Process, Issues and Contexts*, edited by Sjøstedt, Svedin & Hägerhäll Aniansson. FRN Utrikespolitiska Institutet, Stockholm, Report 93:1.
- Swanson, Timothy. 1995. *Intellectual property rights and biodiversity conservation*. (ed) Cambridge: Cambridge University Press.
- Tvedt, M.W. 2006. Elements for Legislation in User Countries to Meet the Fair and Equitable Benefit-Sharing Commitment. *Journal of World Intellectual Property*. 9(2): 189-212.
- Tvedt, M.W. 2005. How will a Substantive Patent Law Treaty Affect the Public Domain for Genetic resources and Biological Material? *The Journal of World Intellectual Property*. May.
- UNEP. United Nations Environment Programme. 1995. *Global Biodiversity Assessment*.
- Underdal, Arild. 1980. *The Politics of International Fisheries Management: The Case of the Northeast Atlantic*. Oslo: Universitetsforlaget.
- Underdal, Arild. 1998. Explaining Compliance and Defection: Three Models. *European Journal of International Relations*. 4(1): 5-30.
- UNDP. United Nations Development Programme. 2000. *Human Development Report*. New York: UNDP. Chapter 2.
- Waltz, K.N. 1959. *Man, the State and War*. New York: Columbia University Press.
- WCED. World Commission for Environment and Development. 1987. *Our Common Future*. Oxford: Oxford University Press.
- Wilson, E.O. (ed). 1988. *Biodiversity*. Washington D.C.: National Academy Press.
- Young, Oran R. 1989. *International Cooperation: Building Regimes for Natural Resources and the Environment*. Ithaca, NY: Cornell University Press.
- Young, Oran R. 1991. Political leadership and regime formation: on the development of institutions in international society. *International Organization*. 45(3): 281-308.
- Young, Oran R. 1994. *International Governance – Protecting the Environment in a Stateless Society*. Ithaca, NY: Cornell University Press.
- Young, Oran R. 1996. Institutional Linkages in International Society: Polar Perspectives. *Global Governance*. 2(1): 1-24.