

EQUITABLY SHARING BENEFITS FROM THE UTILIZATION OF NATURAL GENETIC RESOURCES: The Brazilian Interpretation of the Convention on Biological Diversity⁽¹⁾

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1. Introduction

The great majority of the world's natural genetic resources is found in developing countries.⁽⁵⁾ These resources offer economic opportunities for the development of products like new medicines. As a consequence of these new economic opportunities, natural genetic resources are more often seen as commodities. This 'commodification' of genes originating from nature could be very profitable. The 1992 Convention on Biological Diversity (hereinafter the Convention) marks the momentum in the international debate on this topic by establishing some basic rules on benefit-sharing to be applied in the countries concerned. This has shifted the focus to the implementation of

these rules.⁽⁶⁾ Today it is being debated how the international rules laid down in the Convention on the sharing of benefits arising from the commercial utilization of natural genetic resources should be interpreted at a national level. The central issue in this debate is the equity and fairness of the distribution of the benefits.

In theory, countries have three main options to interpret⁽⁷⁾ and apply the Convention (or 'implement' in other areas). They can choose an interpretation based on a public or private law approach, while a mixed approach also seems to be possible. If a public approach is chosen, the utilization of genetic resources is either managed by a state's administration itself or is only allowed if a company obtains a licence from the state. The final decision about benefit-sharing is in the hands of the state, although some room for negotiating contracts may exist. The whole issue of benefit-sharing may also be transferred to the parties that conclude a contract, be it on mutually agreed terms. In this way, a private law solution is found. The mixed structure tries to combine the two approaches. There is contracting freedom, but the negotiation space is limited by minimum standards set by public law. In mixed structures, the emphasis can be laid on contracting freedom or on public law requirements.⁽⁸⁾

The Convention on Biological Diversity leaves Contracting Parties room for each of the three options. However, a specification of the rules to be elaborated at the national level is required. According to Article 15, para. 7, 'Each Contracting Party shall take legislative, administrative or policy measures, as appropriate . . . [with] the aim of sharing in a fair and equitable way . . . the benefits arising from the commercial and other utilization of genetic resources with the Contracting Party providing such resources. Such sharing shall be upon mutually agreed terms'.⁽⁹⁾

This paper will focus on the way in which Brazil interpreted and applied the provisions of equitable and fair benefit-sharing provided for in the Convention on Biological Diversity. Brazil is one of the 'biospots'⁽¹⁰⁾ of the world, as the Amazon is an area of very great biological diversity. Besides, Brazil's interpretation of the Convention raised great commotion and resulted in a shift from the initially chosen private law approach towards a more public law approach. Therefore, the Brazilian experience may be an example for other countries.

The initial system that was set up in Brazil will be examined first. In this system, the emphasis was placed on private law. As a result of the legal and societal debate on the contract that was concluded between Bioamazonia (the institution in charge of the Brazilian genetic resources) and the Swiss multinational Novartis, this system was changed. We will analyse both the contract and the resultant changes. On the basis of this investigation, we can comment on the way in which the issue of equity has been specified in Brazil. As a consequence of these changes, the role of public law received more emphasis. Our analysis will specify the legal options and requirements a country has to deal with in the interpretation of the concept of fair and equitable sharing of benefits arising from the utilization of natural genetic resources.

2. The Brazilian private law approach

In implementing the rules of the Convention, the Brazilian Government initially preferred a private law approach. Contracting freedom was the basic idea of this approach. A special organization named Bioamazonia was set up in order to manage the country's natural genetic resources. The emphasis on contracting freedom did not imply that there were no public provisions at all. On the contrary, the Brazilian Constitution (hereinafter the Constitution) was amended and the Convention itself was incorporated as a national legal rule.⁽¹¹⁾

Before 1998, genetic resources could not be regarded as anyone's property.⁽¹²⁾ This situation was changed by an amendment to the Brazilian Constitution in 1998, which implied that '... everybody has the right to an ecologically balanced environment and to protect this right genetic resources are owned by the state'.⁽¹³⁾ The preservation of the genetic patrimony was laid in the hands of the Government, to ensure the protection of the right to an ecologically balanced environment. This is expressed in Article 225, para. 1, subpara. II, and complemented by the declaration that Amazonia and other regions are under Constitutional protection (Article 225, para. 4).⁽¹⁴⁾ This constitutional protection can only be changed by an amendment to the Constitution.⁽¹⁵⁾ Several other, more general Articles concerning the protection of natural resources and the rights and duties of administrative bodies responsible for these resources are also relevant to the protection of Amazonia.⁽¹⁶⁾ The constitutional provisions are complemented by Article 15 of the Convention, in which the sovereignty of the State over natural resources is recognized and according to which the application of the Convention and, more particularly, a fair and equitable sharing of benefits is required.⁽¹⁷⁾ Initially, these provisions were considered sufficiently clear and further legislation on the matter was not deemed necessary.

A further specification of the chosen private law solution was the creation of Bioamazonia. This institution was recognized by the Brazilian Government as the manager of the country's natural genetic resources in the presidential Decree of March 18, 1999. Bioamazonia's mandate is based on the Social Organizations Act, which is the legal foundation of every social organization.⁽¹⁸⁾ Social organizations seek to achieve public aims of collective interest with private law instruments,⁽¹⁹⁾ in the case of Bioamazonia to develop and implement activities related to the protection and preservation of the environment (Article 1 of the Social Organizations Act, which is in the Decree of March 18, 1999). According to Bioamazonia's mandate, it is to manage the genetic resources of Amazonia and establish business relations with companies in order to get financial and non-financial resources for the organization.⁽²⁰⁾ Bioamazonia has a Board and an Executive Director. The Board (consisting for 40% of people from the public sector and for 60% of people from the private sector) has to approve and control the actions of the Executive Director. The Executive Director manages the organization and is its legal representative.⁽²¹⁾ According to the Social Organizations Act, the statutes of Bioamazonia also contain provisions for the presentation of an annual work program with aims, quality and productivity indicators and the remuneration structure of the organization. Apart

from the Social Organizations Act, a further specification of the mandate of Bioamazonia can be found in the contract of management. Bioamazonia works through a contract of management with three Ministries of the Brazilian Government: the Ministries of the Environment, Planning and Finance.⁽²²⁾ The contract of management defines not only the aims and goals of Bioamazonia, but also the extent of the organization's managerial power. Bioamazonia has the power to sign and manage agreements and the possibility to participate in joint ventures (Article 4, para. 5, of the Statute of Bioamazonia).⁽²³⁾ The three ministries, however, control these activities.⁽²⁴⁾

The initial system set up in Brazil can be qualified as a private law regime with a high degree of contracting freedom, although it was limited by the Brazilian Constitution and the Convention. As a result of the system, Bioamazonia received a mandate to enter into contracts. However, this mandate became the topic of debate after Bioamazonia concluded a contract with the Swiss pharmaceutical company Novartis.

3. The private law approach in practice: The Bioamazonia-Novartis contract

Novartis⁽²⁵⁾ is interested in the commercial use of natural genetic resources and has the technology to screen large amounts of these resources and to determine the genetic sequences⁽²⁶⁾ that could be promising (for instance, for the production of drugs). In order to screen new materials, Novartis wanted to have exclusive access to the natural genetic resources in the Amazon region. The company started negotiations with Bioamazonia and after one year, on May 29, 2000, a contract was signed. This contract could be seen as the interpretation and application of the concept of equitable and fair benefit-sharing. Originally, the contract would be valid for three years.

3.1 Contents of the contract

Legally speaking, the contract was perfect, because the representatives of Bioamazonia and Novartis had the power (conferred by their respective mandates) to agree on the terms of the contract. In short, the contract specifies the transfer of natural genetic resources, micro-organisms and biological resources ('compounds' as they are called in the contract) from Brazil to Novartis. The contract stipulates the obligations and rights of both parties and regulates the sharing of benefits.⁽²⁷⁾ In Figure 1, the obligations and rights are explained and in Figure 2 the benefits are described. The contract also contains a provision for 'conflict resolution' according to which the parties should enter into new negotiations in the event of a conflict.⁽²⁸⁾ A conflict became manifest as the Board of Bioamazonia used its power (Article 4, para. 8, of the Social Organizations Act)⁽²⁹⁾ and refused to accept the part of the contract related to rights and obligations and the sharing of benefits. This refusal was not surprising, as the media had paid much attention to the contract and legal scholars and other members of the Brazilian society had made many critical remarks.

Figure 1. Obligations and rights in the Bioamazonia-Novartis contract

Bioamazonia is obliged

- to collect 30,000 micro-organisms;
- to screen these organisms;
- to deal with the indigenous people;
- to send information to Novartis;
- to send 10,000 promising micro-organisms to Basle for further research.

Novartis is obliged

- to pay 2 million Swiss Francs as a 'donation' (euphemism used in the contract);
- to train Brazilian researchers to carry out the bioprospection of the 30,000 micro-organisms;
- to pay for every selected promising organism 250 Swiss Francs (so, altogether 2.5 million Swiss Francs), to be paid in dollars at the end of the year;
- to pay to Bioamazonia, in the event of a discovery, a fixed amount of money (4.1 million Swiss Francs) for marketable new inventions based on the micro-organisms;
- to pay to Bioamazonia, in the event of a discovery, a fixed amount of money (5.2 million Swiss Francs) if Novartis decides to commercialize an invention. In addition, Novartis is obliged to pay 0.5% of the net annual sales of the invention.

Bioamazonia has the right

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Novartis has the right

- to select 10,000 micro-organisms for further research out of the 30,000 micro-organisms studied by Bioamazonia.;
- to do further research on those 10,000 micro-organisms (monopoly situation).
- to unilaterally change the object of the contract from micro-organisms to biological resources;
- to unilaterally extend the time horizon of the contract for research on a specific micro-organism;
- to decide the moment to pay at the end of the year. (This means that Novartis can choose a moment the dollar rate is low.)

Figure 2. Benefit-sharing in the Bioamazonia-Novartis contract

Bioamazonia will receive

- the possibility to build up research capacity;
- an amount of 2.5 million Swiss Francs for 10,000 organisms.

Novartis will receive

- information about 30,000 micro-organisms based on traditional knowledge;
- 10,000 micro-organisms, to be kept for further research at the Novartis headquarters;
- property rights over those 10,000 micro-organisms;
- world intellectual property rights over any characteristic of those 10,000 micro-

organisms and derived compounds;
- the possibility to concede sublicences to third parties.

3.2 Societal reactions to the contract

The scientific community was the first to protest against the contract. NGOs and the indigenous people also became involved. Generally speaking, these parties based their complaints on the lack of involvement in the negotiations and regarded the contract as non-equitable.

The Brazilian scientists complained about the new model of natural genetic resources management. The Government had transferred management control from the public to the private sector. Two arguments against this situation were put forward by the scientists. Firstly, they stated that Bioamazonia should have concluded a contract with a Brazilian scientific organization. The Brazilian natural scientists' community considered themselves competent enough to do research on genetic resources without the involvement of companies like Novartis. They pleaded for a clear state policy to support national research efforts. According to them, research capacity was already adequate in Brazil to carry out bioprospection and biotechnological experiments.⁽³⁰⁾ The 'Centro de Informação sobre Drogas Psicotrópicas' of the Federal University of São Paulo, for instance, had developed a new drug from the 'no-de-cachorro' plant.⁽³¹⁾ Secondly, the scientists argued that Bioamazonia would not receive a fair amount of money on the basis of the concept of biofraud. This concept is used to qualify contracts allowing the possibility of extracting natural genetic resources without paying the real costs of the transaction to all the stakeholders involved. Moreover, the scientists feared that the contract would open the doors to biopiracy, the illegal transfer of natural genetic resources from one country to another,⁽³²⁾ in short, the robbery of natural genetic resources.⁽³³⁾ Since the 1980s, biologists have been aware of the problem of biopiracy.⁽³⁴⁾ Both biofraud and biopiracy imply that an equal sharing of benefits arising from the utilization of natural genetic resources will not occur.

As soon as the details of the Bioamazonia-Novartis contract became public, various NGOs expressed their dissatisfaction with the agreement and the conditions stipulated.⁽³⁵⁾ In addition, they wanted to prevent the use of public resources (invested in independent scientific research) for private aims.⁽³⁶⁾ Furthermore, they were concerned about the illegal export of natural genetic resources from the country and the unfairness of the transactions.⁽³⁷⁾ For example, the 'Instituto Socioambiental', a Brazilian NGO based in São Paulo, represented by Mr Andres Lima, feared that the Novartis-Bioamazonia deal would leave the door open to uncontrolled biological exploration and utilization of natural genetic resources.⁽³⁸⁾

The indigenous people's movement was shocked too. The indigenous people wanted to have their share in the development of knowledge by the companies and in the possible benefits this knowledge might generate. Therefore, they wanted to have guarantees that no extraction of knowledge would be possible without compensation.⁽³⁹⁾ The indigenous people saw the possible violation of their rights as a source of unfairness. For hundreds of

years, they had been the reservoir of knowledge of the use of plants and animals. Not only had they developed a strong relation with animals and plants,⁽⁴⁰⁾ but they also claimed to have traditional ownership rights. However, as a result of the expropriation of their land,⁽⁴¹⁾ these rights were often not recognized.

4. Legal arguments against the private law approach

In addition to these societal reactions, the private law approach was criticized by legal scholars. Their arguments against this approach strengthened the criticisms against the contract voiced by the scientific community, the NGOs and the indigenous people.

In order to understand the criticisms, we need to classify them. The criterion for classification is based on the public-private and strongest-weakest criticisms. Therefore, the first four criticisms mentioned below are related to public law and the last two to private law.

According to the legal scholars, the contract violated Brazil's sovereignty rights over its natural genetic resources and they specified that the benefit-sharing was unfair. Besides, they argued that the use of traditional knowledge was unlawful and stated that Bioamazonia had operated beyond its legal mandate. Finally, they underlined that the contract violated not only Brazil's sovereignty, but also the (intellectual) property rights of the stakeholders involved.

4.1 Violation of Brazil's sovereignty rights (Article 225 of the Constitution and Article 15 of the Convention)

According to the legal scholars, the contract violated two sovereignty rights of Brazil: the right to control the exploitation of its resources and the right to determine the access to its genetic resources.⁽⁴²⁾

The right to control the exploitation of resources is specified in the Brazilian Constitution (Article 225, para. 4) and in the Convention on Biological Diversity (Article 15, para.1 and Article 3). Brazil was faced with a violation of this right, because the contract transferred natural genetic resources to Novartis. Novartis had acquired the property rights over natural genetic resources (compounds) and hence Brazil could no longer exercise the right to control the exploitation of its resources. Legal protection at the national level was not possible. So far, there is no international tribunal that could oblige Novartis to return the natural genetic resources. In essence, this was the main criticism expressed by the legal scholars in Brazil. The contract conflicted with the old Latin-American tradition of sovereignty right protection.⁽⁴³⁾ This tradition is also manifest in the so-called 'Calvo Clause', according to which foreigners and their properties are subjected to the laws and judicial jurisdiction of the State in which they invest or operate.⁽⁴⁴⁾

The exclusive right of access to Brazil's natural genetic resources obtained by Novartis for a period of two years was also considered a violation of the country's sovereignty rights. According to the contract, Novartis could ask for an extension of its exclusive access to the natural genetic resources.⁽⁴⁵⁾ Granting such an extension to Novartis would imply that Bioamazonia or any other Brazilian organization was no longer allowed to share these genetic resources with third parties (for instance, for scientific research). Again Brazil's sovereignty rights were violated.

The violation of sovereignty rights implies that the essence of the State is impaired, as sovereignty is the founding principle of the State. Sovereignty as the foundation of the State is regarded in the Brazilian Constitution as a basic principle of the State (Article 1, para. O, subpara. 1) as it is in several international conventions, such as the Convention on Biological Diversity. Therefore, a contract disposing of the resources of a country⁽⁴⁶⁾ violates the right to control the exploitation of a resource and the reciprocity of the transactions affecting the essence of the State itself, as they threaten its sovereignty.

4.2 Unfair benefit-sharing

A comparison between obligations, rights and benefits specified in or resulting from the contract shows the disparities between the parties (Figures 1 and 2). Benefit-sharing was considered unfair, for instance by Professor Suzana Camargo Vieira, because the disparities in rights, obligations and benefits evoked the criticism that one party would gain from the transaction without a reason. These disparities also showed the non-equitableness of the transaction. The first complaint about benefit-sharing concerned the payment structure elaborated in the contract (clause 5, paras. 2 and 3, annex 1). More specifically, the amount of money and the moment Novartis had to pay were criticized. The amount of money (250 Swiss Francs) Novartis had to pay in exchange for a single compound and the percentage of the royalties from new inventions the company had to pay to Bioamazonia were said to be very low. Actually, 250 Swiss Francs was no more than the Brazilian annual minimum salary.⁽⁴⁷⁾ Moreover, only Bioamazonia would receive payments. No money would go to the indigenous people: they would be contributors only. Therefore, Professor Camargo and other Brazilian scholars opposed the contract, basing their arguments on the different economic powers, the disparities between benefits, obligations and rights for both parties to the contract and the lack of equivalence in those three elements.

4.3 Unlawful use of traditional knowledge (Article 231 of the Constitution and Article 15 of the Convention)

The third argument against the contract is closely related to the second argument. According to the contract, Bioamazonia was to investigate the characteristics of original compounds. One of the sources of the characteristics of original compounds is the traditional knowledge associated with these compounds. Therefore Bioamazonia should contact indigenous communities to be allowed to collect this knowledge. However, the contract hardly contained any provisions for the protection of traditional knowledge. The principle of 'prior informed consent' to use this knowledge is protected by the Convention

and the Constitution (Article 15 of the Convention in relation to Article 231 of the Brazilian Constitution) and was not included in the contract. Prior informed consent means that allowance should be given by all parties and non-parties involved in a transaction, in this case Brazil, the indigenous people and the local communities.⁽⁴⁸⁾

4.4 *Détournement de pouvoir* (abuse of power)

Another legal argument used against the contract concentrated on the mandate of Bioamazonia. The representatives of Bioamazonia disposed of goods, which, according to the Constitution and the Convention, belong to the patrimony of the State.⁽⁴⁹⁾ By doing this, Bioamazonia was accused of having transgressed the mandate based on the Social Organizations Act and the management contract with the ministries. According to these rules, Bioamazonia should manage the natural genetic resources.⁽⁵⁰⁾ However, management does not imply the disposal or sale of bioprospection rights.⁽⁵¹⁾

The disposal of the resources mentioned in the contract was seen as a clear deprivation of Brazilian public goods, which are part of the Brazilian patrimony. This conduct also challenged the equity of the contract.

4.5 Violation of property rights (Article 5, para. 0, subpara. XXII of the Constitution and Article 1228 of the Brazilian Civil Code)

The contract was also criticized for violating the property rights (being part of their patrimony) of landowners, the owners of the land where the resources were found.⁽⁵²⁾ Not only the State of Brazil owns property in the region of Amazonia, but also individuals (among others, the indigenous people) own large parts of the region of Amazonia. These landowners were no party to the contract, so the extraction of natural genetic resources implied that their property rights were violated. The Brazilian Constitution and the Brazilian Civil Code guarantee these property rights. Article 5, para. 0, subpara. XXII, of the Constitution guarantees the 'right to own property'. In Article 79 of the Brazilian Civil Code the protection of property rights over goods is laid down and in Article 1228 the procedure to acquire these rights. As the Convention did not introduce a special legal status for natural genetic resources, the right to own property has a firm constitutional and legal basis and property cannot be acquired, transferred or interfered with without a legal reason. As Bioamazonia did not have any property rights, the transfer of these rights was therefore considered illegal.

No contract can violate the property rights of those that are no party to the contract. Being merely a matter of private law, however, this violation does not affect the existence of the State as such. Nevertheless, it does affect the equitableness of the contractual relation.

4.6 Violation of intellectual property rights⁽⁵³⁾

According to the contract, the intellectual property rights over future products and related processes would belong to Novartis. The Brazilian legal community interpreted this

situation as a transfer of the intellectual property rights from Brazil to Novartis. This transfer and the consequential protection of the natural genetic resources by patents were interpreted as a violation of Brazil's intellectual property rights over its resources.⁽⁵⁴⁾ The contract would transfer part of the country's patrimony to an international company. The Brazilian legal community had already faced earlier biopiracy cases in which companies obtained patents over Brazil's natural genetic resources without payment to the country.⁽⁵⁵⁾ The Bioamazonia-Novartis case also got a biopiracy label as the legal scholars considered the payments insufficient.

The loss of the intellectual property rights over possible new inventions or processes was another important argument against the contract. The contract did not reconsider Brazil's intellectual property rights in the preservation and protection of resources. Moreover, those rights were protected by the Constitution of Brazil.

Summarizing, we may state that the fairness and equitableness of the contract was questioned with strong arguments. As a result of the societal and legal debate, the Brazilian Government changed its policy. More emphasis was laid on a public law solution.

5. Brazil's public law solution

Since 1996 the Parliament of Brazil had already discussed four draft proposals for a law on the access to and the benefit-sharing of natural genetic resources, but no consensus could be reached. Especially Senator Marina Silva played a pioneering role as a defender of the rights of regions and people that are dependent on natural genetic resources.⁽⁵⁶⁾ Following the rejection of the Bioamazonia-Novartis contract by the Board of Bioamazonia in June 2000 and the discussions among the various actors and critics, the Brazilian Government finally opted for a public law solution by enacting a so-called 'Provisional Measure'.

According to the Brazilian Constitution, the President of Brazil has the right to enact a legal rule in cases of great importance and urgency. This legal rule should be considered a draft law to be approved or rejected by the legislative power.⁽⁵⁷⁾ By enacting the Provisional Measure, the Government changed its policy from a private-law- oriented solution of the problem to a more public one. Henceforth the assessment of benefits and the possible sharing thereof were to meet legal requirements and could no longer be left to negotiating private parties only.

The Provisional Measure changed the initial situation by establishing a 'Council for the Administration of the Genetic Patrimony' (hereinafter the Council). 'Genetic patrimony' is defined as information of genetic origin under the protection of law through the Provisional Measure. This information is considered a good belonging to the State. This implies that the State has all the rights over its natural genetic resources. The Brazilian State can use those resources irrespective of their specific location, be it on public territories or on privately owned land. Bioamazonia will be the implementing actor for

the State. However, the newly formed Council will check the activities of Bioamazonia and has three crucial rights:

- 1) the right to elaborate guidelines on benefit-sharing for contracting parties;
- 2) the right to authorize commercial and non-commercial contracts (which are called contracts on benefit-sharing in the Provisional Measure) as well as any kind of research;
- 3) the right to authorize all deliveries of elements of the genetic patrimony.

Chapter 7 of the Provisional Measure stipulates the obligation to share benefits between Bioamazonia and a contracting party. This sharing should be equitable and fair, a requirement which is explicitly laid down in Article 25. In addition, the Provisional Measure further specifies this principle by providing a list of possible benefits. Benefits resulting from the economic utilization of genetic resources could include royalties, access to the transfer of technologies, licences for products as well as process and education. Contracts should contain provisions for the sharing of these benefits.

The Provisional Measure also contains a chapter on enforcement. Infringement of the rules of the Provisional Measure will be sanctioned. Possible sanctions are specified and vary between the obligation to pay a fine and a jail sentence.

The Provisional Measure offered a solution to the conflict. However, a new dispute had started about the legal status of this instrument, as a Provisional Measure is not an official law in a formal sense.⁽⁵⁸⁾ Some scholars and politicians like Senator Silva argued that Provisional Measures are a violation of democratic rules, as Parliament had had no say in them. Furthermore, Senator Silva considered the rule to be unclear⁽⁵⁹⁾ and a legalization of biopiracy.⁽⁶⁰⁾ Moreover, other stakeholders also protested against the Provisional Measure, because purely scientific research is also subject to the approval procedure mentioned above.⁽⁶¹⁾

New negotiations between Bioamazonia and Novartis were started in order to comply with the demands from the stakeholders and the requirements of the Board and the Provisional Measure (at the time, number 2052). As a result, the original contract was changed. Novartis would invest an extra 2.5 million Swiss Francs in the project (6.5 million Swiss Francs instead of 4 million). Furthermore, as soon as an industrial application of Amazonian micro-organisms was identified, these micro-organisms should be deposited in a special Brazilian collection at the Novartis headquarters in Geneva. All those micro-organisms and compounds would remain the property of Bioamazonia.⁽⁶²⁾ These changes improved the position of both Bioamazonia and the State of Brazil. NGOs and the indigenous people were nevertheless suspicious, as the negotiations had been kept secret and this did not guarantee that all the criticisms mentioned before were met.⁽⁶³⁾

6. Reflection on the legal specification of the concept of equity in Brazil

In the philosophy of law, the concept of equity⁽⁶⁵⁾ is considered the practical application of the 'idea of justice'.⁽⁶⁶⁾ Equity, therefore, can be specified according to the retributive, distributive and procedural dimensions of justice. Reflecting on the Brazilian case, we can see a change in the interpretation and application of the concept of equity. At first, equity in a retributive sense - in short, retributive equity - was emphasized. This emphasis shifted towards equity in a more distributive and procedural sense.

Retributive equity deals with the interchange between parties. The essence of retributive equity is that there is some degree of reciprocity and balance in the obligations between two or more parties. The exchanged values must have equal weight. However, scholars differ as to what must be equal to satisfy this claim. In our opinion, the values exchanged by the initial contract did not have equal weight at all. Bioamazonia had actual obligations, while the obligations of Novartis were potential. Novartis had obligations only if a new product (drug) was discovered. Moreover, Novartis had obtained actual rights to control and transfer natural genetic resources. Bioamazonia, however, did not have any rights.

The benefit-sharing resulting from the initial contract also was unequal. Novartis would get far more than an equal share.⁽⁶⁷⁾ As the concept of retributive equity was not incorporated in the initial Bioamazonia-Novartis contract, it is not amazing that the State of Brazil decided to enact a Provisional Measure. This changed the situation as the State took the initiative to distribute benefits by setting certain minimum standards and by fixing a formal authorization procedure. This brought the concepts of distributive and procedural equity to the forefront.

Distributive equity implies that a state should take care that people are properly rewarded for their work (according to the value of their contribution to the social product⁽⁶⁸⁾ or in accordance with their efforts or with the costs they made for their work). The Brazilian Government applied distributive equity. In Article 9, para. 3 of the Provisional Measure, it is specified that indigenous and local communities that created, developed and conserved traditional knowledge associated with the genetic patrimony should receive the benefits arising directly or indirectly from the third-party economic exploration of 'associated traditional knowledge'.

Moreover, in Article 25 of the Provisional Measure the Government makes clear which benefits must be shared between the two parties (royalties, access to and transfer of technology, licences for products and process capacity building). The application of equitable benefit-sharing in concrete contracts is left to the contracting parties (generally speaking, a foreign company and Bioamazonia), but this sharing of benefits will be controlled by the Council mentioned before. The Council should authorize any research and bioprospection, whether commercial or not. Contracting parties should explain to the Council the way in which the sharing of benefits will be realized (Articles 9 and 10 of the Provisional Measure). This latter obligation solves another problem pointed out by the legal scholars and other members of the Brazilian society: the unjust enrichment of one of the parties involved in the contract. Closely related to equity, the idea of unjust

enrichment has to do with the fundamental legal principle that everybody gets a fair share. The contract failed to give a fair share to everyone whose rights were affected.⁽⁶⁹⁾

Procedural equity, the third dimension of equity, deals with the fairness of the procedure to be followed in decision-making.⁽⁷⁰⁾ The main point is that all those with rights and interests (stakeholders) should participate directly in the decision-making and should have the opportunity to voice their opinions.⁽⁷¹⁾ The Provisional Measure meets these requirements as it contains some clear provisions for the recognition and protection of the rights of the stakeholders involved. Those rights cannot be violated by the contracting parties (Articles 28 and 29 in relation with Article 8 of the Provisional Measure).

Today's situation in Brazil can be considered to be more balanced than before the existence of the Provisional Measure. In the Provisional Measure, retributive equity is still underlined as Article 24, para. 1 stipulates that '[b]enefits ... should be shared in a just and equitable manner between the contracting parties'. Additional provisions of the Provisional Measure specify the concepts of distributive and procedural equity. A fair sharing of benefits is guaranteed in this way. The shift in the specification of equity meets most of the legal criticisms mentioned above. The incorporation of the stakeholders, the qualification of the Council, the protection of the stakeholders' rights, especially the legal specification of benefits to be shared, and the obligation of equitableness in the process of benefit-sharing satisfy the criticisms on the lack of equitableness in the benefit-sharing. Various articles of the Provisional Measure also meet other criticisms not related to equitableness as such. The sovereignty rights of the Brazilian State are legally protected at the national level, as the Brazilian Council will take the final decisions. Abuse of power and the unlawful use of traditional knowledge were also minimized by the introduction of the Council.

7. Lessons learned from the Brazilian case

Obviously, the Convention on Biological Diversity has been a turning point in the debate on equitable benefit-sharing arising from the utilization of natural genetic resources. According to the Convention, benefits are to be shared in a fair and equitable way. However, the interpretation and application (legal implementation) of the Convention's rules have been transferred to the national level. Therefore, Article 15 of the Convention necessitates a further interpretation and application at the national level, the Provisional Measure being a first official attempt. The national debate in Brazil on benefit-sharing has made clear that the application of the rules from the Convention necessitates a more detailed explanation and clarification of the Convention's rule in the law. The Brazilian case shows that an equitable implementation structure can only be adequate if the public law component is well elaborated in clear provisions.

In the context of interpretation and legal implementation of the Convention two important lessons can be drawn from the Brazilian case. Firstly, a private law solution appeared to be unacceptable for the legal scholars and many other stakeholders so that it had to be changed to a primarily public law approach. Retributive equity does not emerge

automatically if contracting parties have equal power. Therefore, the concept of equity should be elaborated in a distributive and procedural sense under a public law approach.

Secondly, our paper shows that distributive and procedural equity require the incorporation of some basic elements in public law. The following public law elements from Brazil can be considered minimum requirements to be incorporated in other legal rules on this issue:

- the concept of genetic patrimony as a new legal category to be protected by public (constitutional) law;
- an overview of possible benefits from the utilization of natural resources that should be shared;
- a legally binding obligation to share the benefits in good faith between contracting parties;
- protection of weaker parties by a provision that exchanged values must have equal weight;
- not only the recognition of the general rights of indigenous people and local communities but also more specific provisions concerning property and associated traditional knowledge as well as recognition of the right to claim;
- provisions that make clear what institution has the authority to enter into contracts;
- the establishment of an independent institution that should check and approve contracts. This institution should make these contracts public, thus offering all stakeholders the possibility to exercise their rights. This institution may control and regulate the contracts on the topic.

Provisions containing these principles should of course be clearly specified, flexible and transparent. These principles might in the future be summarized in guidelines or even in a protocol on benefit-sharing as part of the Convention on Biological Diversity.⁽⁷²⁾

Notes

1. This article was presented by S. Peña-Neira at the 6th Conference of the Parties of the Convention on Biological Diversity held in The Hague, the Netherlands, on 19 April 2002. It is one of the chapters of S. Peña-Neira's PhD thesis, a comparative study of the application and interpretation of the rule on equitably sharing benefits arising from the commercial utilization of natural genetic resources. The authors want to thank Professor P. Glasbergen, Head of the Copernicus Institute, University of Utrecht, the Netherlands, for his comments and criticisms.

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4. Associate Professor, Institute of Constitutional and Administrative Law, Faculty of Law, Utrecht University, the Netherlands. E-mail address: G.Addink@law.uu.nl.
5. The term 'natural genetic resources' is used as it concerns genes originating in nature, not in human beings.
6. F. McConnell, *The Biodiversity Convention: A Negotiation History*, Kluwer International, 1996.
7. The interpretation of a legal rule is an activity developed by anyone involved (or not) in the field of law. It has to do with the fulfilment of an obligation established in the Convention, the so-called 'legal implementation'. Several rules and documents consider application and legal implementation to be synonymous. We will follow this interpretation. Cf. Decision II/11, 2nd Meeting of the Conference of the Parties of the Convention on Biological Diversity, Jakarta, Indonesia, 6-17 November 1985, and the 'Report of the Open-Ended Intersessional Meeting of the Strategic Plan, National Reports and Implementation of the Convention on Biological Diversity', UNEP/CBD/COP/6/5, 27 November 2001, p. 14.
8. The consequences are different too: in private law everything is possible if it is not expressly prohibited and in public law everything is possible if it is expressly permitted.
9. Convention on Biological Diversity (Secretariat), <<http://www.biodiv.org>> (12.02.02).
10. B.S. Kurlovich, *The significance of Vavilof's scientific expeditions and ideas for development and use of legume genetic resources*, Plant Genetic Resources Newsletter, No. 124, December 2000, p. 23.
11. The Convention on Biological Diversity received the status of national Brazilian law through Decree 2519 of 16 March 1998. The Brazilian Senate, however, had ratified the Convention already in 1994.
12. Última Arca de Noé, <<http://www.ultimaarcadenoe.com/natureza%20ingles.htm>> (04.02.2002).
13. Constitution of Brazil, <http://www.uni-wuerzburg.de/law/br00000_.html> (04.02.2002).
14. Ibid.
15. The amendment to the Constitution can be found in Article 60.

16. For example, Articles 20, 21, 22, 23, 24, 26, 84, 170, 173, 175 and 216. Article 225 states that the government has to ' . . . preserve the variety and integrity of Brazil's genetic wealth and supervise entities engaged in research and handling of genetic material'.

17. All these obligations were a result of the legal developments in the United Nations and the Economic Commission for Latin America and the Caribbean (ECLAC) in the 1950s and 1960s as well as the opinions of Latin American legal scholars. The aim of all the obligations was the recognition of fairness in international law relations. See, for example, A. Alvarez, *Dissenting Opinion on the International Statute of South-West Africa (1949-1950)*, Advisory Opinion of July 1950; ECLAC, *Transformación Productiva y Equidad*, Santiago de Chile, 1991, and ECLAC, *Transformación Productiva, Equidad y Medio Ambiente*, Santiago de Chile, 1992. In the case of the sovereignty rights over genetic resources, the origin of the concept can be found in the General Assembly Declaration on Permanent Sovereignty over Natural Resources (GA Res. 1803 (XVII), 14 December 1962). Later, Principle 21 of the Declaration of the Conference on the Human Environment in Stockholm in 1972, Principle 2 of the Rio Declaration on Environment and Development and Article 15 of the Convention on Biological Diversity were the norms that followed the UNGA Declaration of 1962. The different elements in the article seem to be under the influence of the Merck-INbio contract, although there is no research to be found on this conclusion in scientific publications.

18. Brazilian State, Social Organizations Act, Act No. 9, 637, May 15, 1998. Brazilian Law Journal, <http://www.planalto.gov.br/ccivil_03/Leis/L9637.htm> (04.02.2002).

19. The legitimization of the private law way chosen is based on the ideological background of the neo-liberal school of economics (Friedman and Becker). According to this school, private management has more to offer to society, as it is perceived to be more effective, since it yields better results on investment. As a result, the sharing of benefits would be determined by the market forces and market power of contracting parties. It was in line with the neo-liberal ideology with its focus on 'marketization' of natural resources that Bioamazonia was interested in an agreement with a foreign company. Bioamazonia needed an agreement that would be a model for future contracts with international companies interested in the genetic riches of Amazonia. The results, however, were far from successful; cf. J.E. Lane, *Public Sector Reform: Rationale, Trends and Problems*, Germany Sage 1996, p. 1, R. French-Davis, *Economic Reforms in Chile: From Dictatorship to Democracy* (Development and Inequality in the Market Economy), University of Michigan Press, 2002 and R. Penha-Cysne, *Aspectos macro e microeconomicos das reformas brasileiras*, No. 63, Serie Reformas Económicas, ECLAC, May 2000, p.1.

20. Bioamazonia web page, <<http://www.bioamazonia.org.br>> (04.02.2002).

21. Ibid.

22. Ibid.

23. Ibid.

24. M.I. Barreto, *Las organizaciones sociales en la reforma del estado brasileño*, pp. 10, 11, <<http://unpan1.un.org/intradoc/groups/public/documents/clad/unpan000167.pdf>> (24.10.02).

25. Novartis is based in Basle, Switzerland. The company is the result of the 1996 merger of two Swiss pharmaceutical companies, Sandoz and Merck.

26. J. Chataway, *Novartis: New agribusiness strategy*, <<http://www.agbioforum.org/v4n1/v4n1a03-chataway.htm>>.

27. The contract was sent by Professor Marilia Coutinho, University of São Paulo. E-mail 27 July 2000.

28. According to clause 5a of the contract, conflicts should be solved through negotiation and arbitration, which is very common in these kinds of contract.

29. Brazilian State, op. cit., p. 13.

30. I. Raw, *Bioamazonia, Novartis e o Brasil*, <<http://www.sbjq.org.br/publicacoes/beletronico/bienio2/boletim177.htm#4>> (04.02.2002).

31. R. Arnt, *Tesouro verde*, Environment, Justice and Finance, Revista Exame, São Paulo, 2 de maio de 2001.

32. L. Glowka, *Towards a Certification System for Bioprospecting Activities*, State Secretariat for Economic Affairs, Bern 2001, p. 1.

33. Warwick Kerr, *Indios também são cientistas*, <<http://www.amazonpress.com.br/entrevista/dedoc/entr03052001.htm>> (30-10-02), I. Raw, op. cit., and M. Coutinho, op. cit. If we compare the Bioamazonia-Novartis contract with the contract between Novartis and the University of California at Berkeley, we can easily get the impression that the deal should be qualified as biofraud. According to its contract with the University of California, Novartis was to pay 25 million dollars without having any rights to the information on the resources. G. Rausser, *Public/private alliances*, AgBioForum, 2(1), pp. 5-10 15April 1999, <<http://www.agbioforum.missouri.edu>> (04.02.2002) and J.H. Vogel, *El cartel de la Biodiversidad*, <<http://www.biodiversidadla.org/noticias2/noticias316.htm>> (04.02.2002).

34. E.O. Wilson, *The Diversity of Life*, WW Norton and Company (re-issued edition), 1999, pp. 319-322, 337-339 and 343. Cf. Andrew P. Dobson, <<http://www.princeton.edu/~dobber/>> (09.06.2002), Professor J. Ekpere, University of Ibadan, Nigeria, <<http://www.nature.com/wcs/b21.html>> and <<http://www.netlink.de/gen/Zeitung/2001/010207d.html>> (25.06.02).

35. Making a simple comparison, the NGO Conservation International arrived at the conclusion that Brazil could be the Saudi Arabia of a 'biological' OPEC. Cf. R. Arnt, op. cit., p. 43. The same opinion can be found in A. Kolk, *Forests in International Environmental Politics* (International Organizations, NGOs and the Brazilian Amazon), International Books, 1996, p. 136.
36. H. Svarstad, *National Sovereignty and Genetic Resources*, in V. Sanchez and C. Juma (eds.), *Biodiplomacy*, ACT Press, 1994, p. 52.
37. MST, Campanha por un Brasil Livre de Transgenicos, *Brasil: Movimentos sociais e a Embrapa*, in Biodiversidad en latinoamerica, ultimas noticias, at <<http://www.biodiversidadla.org/noticias2/noticias352.htm>> (25.01.02).
38. J.C. Centeno, Brazilian shamans and biopiracy, 25 November 2001, 21:27 UTC <<http://csf.colorado.edu/forums/elan/2001/msg00620.html>> (30.10.02) and MST, ibid.
39. J.C. Centeno, ibid.
40. D. Nogueira, op. cit.
41. E. Galeano, *The Open Veins of Latin America: Five Centuries of Pillage of a Continent*, Monthly Review Press, 1998, p. 25.
42. S. Camargo Vieira, *The sustainable use of Brazilian biodiversity*, Development Issues, Vol. 2, Number 3, December 2000, p. 7, and F. Xaver Perrez, *Co-Operative Sovereignty*, Kluwer Law International, 2000, p. 73. This concept is in Article 15 of the Convention on Biological Diversity and represents one of the principles of international law applicable to cases concerning natural resources. It is the inherent and overriding right of a state to control the exploitation and use of its natural resources. Every time anyone violates the permanent sovereignty over natural resources, this violation is extended to the sovereignty itself.
43. S. Camargo Vieiria, op. cit., p. 7, and A. Kolk, op. cit., p. 77.
44. N. Schrijver, *Sovereignty over Natural Resources: Balancing Rights and Duties in an Interdependent World* (doct. diss.), n.p., 1995, p. 165 and p. 169.
45. Annex 2, clauses 3.2 and 3.3.
46. Biodiversidad: Oportunidad y dilema, <<http://www.nodo50.org/enciclopediaespejos/enciclopedia/BIODIVERSIDAD.htm>> (24.10.2002).
47. I. Raw, op. cit.
48. J.C. Centeno, op. cit.

49. C.M. do Amaral Azevedo and E. de Andrade Azevedo, *A trajetória inacabada de uma regulamentação (Biodiversidade -Valor econômico e valor social)*, <<http://www.comciencia.br/reportagens/biodiversidade/bio11.htm>> (24.10.02).

50. Sociedade Brasileira de Química, boletim eletrônico <<http://www.sbq.org.br/publicacoes/beletronico/bienio2/boletim178.htm>> (24.10.02).

51. M.H. Allegretti, *O polêmico acordo entre BioAmazônia e a Novartis*, <<http://www.amazonpress.com.br/opiniao/dedoc/opi25082000.htm>> (24.10.02), D. Cevallos, *Abortan convenios de bioprospección*, <<http://www.tierramerica.org/2000/1015/articulo.html>> (24.10.2002) and S. Camargo Vieira, op. cit., p. 7.

52. S. Camargo Vieira, op. cit., p. 7.

53. The current discussion about the topic of natural genetic resources is related to intellectual property rights. The discussion deals with the question of ownership of the intellectual property rights derived from the development of products that have natural genetic resources as a base. The legal protection extended by the intellectual property laws should be for the provider of the genetic resource or the company that develops the product.

54. MST, op. cit.

55. A. Pollack, *Biological products raise genetic ownership issues*, New York Times, November 26, 1999.

56. In Brazil, the protection of those resources has been a political issue for a long time. Some defenders of those resources, e.g. Mr Chico Mendes in Acre, the region of Senator Silva, were even killed as a consequence of their initiatives to defend the idea of a more sustainable exploitation of Amazonia. Andrew C. Revkin, *Burning Season: The Murder of Chico Mendes and the Fight for the Amazon Rain Forest*, Dutton/Plume, 1994, and the web page on Mr Chico Mendes, <<http://www.senado.gov.br/web/senador/marinasi/marinasi.htm>> (04.03. 02). For the fights of the rubber-tappers, cf. A. Kolk, op. cit., p. 108.

57. E.M. Gavetti, *Limitação ao uso de medidas provisórias*, 191, Jurisprudencia Brasileira, civil e comercio, Brasília, 2001, pp. 19-31.

58. P.L. Saraiva, *Medida provisória: Pressupostos de admissibilidade*, <<http://geocities.yahoo.com.br/ditaduracivil/mpsaraiva.html>> and L.C.

Portinho, Subject: [IBAP] medidas provisórias, Date: Thu, 11 Feb 1999, <<http://www.mail-archive.com/ibap@pegasus.com.br/msg00150.html>> (24.10.02).

59. M. Silva, <<http://www.dataterra.org.br/Boletins/aspta65.htm>> (04.02.2002).

60. R. Arnt, op. cit.
61. Ibid.
62. Revista Novartis, <<http://www.novartis.com.br/revista/>> (05.01.02).
63. The Forest Alliance of British Columbia, *Bioamazonia keeping quiet about contract alterations*, <<http://forests.org/archive/brazil/biokeepq.htm>> (24.10.2002).
64. We draw special attention to the book by J. Finnis, *Natural Law and Natural Rights*, Oxford University Press, 1980, especially chapter 7 on 'Justice' and pp. 184-193. We will change, however, for a more general concept expressed in the word 'retributive' and not continue using the word 'commutative'.
65. Equity is defined as 'the quality of being fair and impartial' and the idea of justice is related with being morally right and fair; *Collins Cobuild English Language Dictionary*, Harpers Collins Manufacturing, Glasgow, 1992, pp. 475 and 789. Several philosophers of law pointed out the existence of 'mysteries' in the relation between law, equity and justice. R.A. Newman, *Introduction*, in R.A. Newman (ed.), *Equity in the World's Legal Systems*, Etablissements Emile Bruylant, Bruxelles, 1973, pp. 15-17. These ideas are often misinterpreted as synonyms of equality. Nevertheless, in order to make our ideas accessible to everyone, we will use the word 'equity' instead of the word 'justice'. Moreover, Article 15, para. 7 of the Convention refers to the word 'equity'.
66. H. Hart, *A Concept of Law*, 2nd edn., Oxford University Press, 1994, p. 152, and R. Dworkin, *Is Law a System of Rules?*, in R. Dworkin, *The Philosophy of Law*, Oxford University Press, 1979, p. 17.
67. These arguments are in line with the opinions of P.S. Atiyah, *Essays on Contract*, Oxford University Press, 1988, esp. p. 350.
68. Stanford Encyclopedia of Philosophy, <<http://plato.stanford.edu/entries/justice-distributive/>> (04.02.2002).
69. E.J. Schrage, *Unjust enrichment: A historical and comparative overview*, in E.J. Schrage (ed.), *Unjust Enrichment and the Law of Contract*, Kluwer Law International, Dordrecht, 2001, p. 5.
70. P.D. Smith and M.H. McDonough, *Beyond public participation: Fairness in natural resource decision-making*, 14: Society and Natural Resources, 2001, pp. 239-249 and H. Svarstad, *Biodiversity Prospecting: Biopiracy or Equitable Sharing of Benefits?* Centre for Development and the Environment (SUM), University of Oslo, 1995, p. 3.
71. Ibid.

72. After the presentation of this paper at the 6th Conference of the Parties of the Convention on Biological Diversity, The Hague, Netherlands, 7-19 April 2002, the International Symposium on Medicinal and Aromatic Medicinal Plants held in Rabat, Morocco, 2-4 May 2002, agreed with some of our recommendations expressed during the presentation at the Conference of the Parties; see <<http://www.conserveafrica.org>> (28.05.02).