Revista da Faculdade de Direito da UERJ-RFD- Rio de Janeiro, v.1, n.23, 2013, **ISSN 22363475**

The genetic patrimony and biodiversity

Emphasis on international forms of protection against biopiracy

Renato Campos Andrade[1]

"Somos todos culpados de tudo e de todos perante todos, e eu mais do que os outros."
(DOSTOIEVSKI. *Os Irmãos Karamazov*)

ABSTRACT

This article aims to outline, through a bibliographical study supported by legal dispositions, the concepts of genetic heritage and biodiversity and the development of these institutes. Throughout the development of the text the emphasis will be on forms of international protection of both and some aspects of biopiracy will be analyzed.It is not intended to exhaust the topic, but only to help to place this issue in the legal-scientific discussion on the tension on sustainability.

KEY WORDS: Genetic Heritage. Biodiversity. Forms of protection. Biopiracy.

O patrimônio genético e a biodiversidade

Uma ênfase nas formas internacionais de proteção contra a biopirataria

RESUMO

O presente artigo visa alinhavar por meio de um estudo bibliográfico os conceitos de patrimônio genético e biodiversidade, com respaldo legislativo e da evolução dos institutos. No desenvolvimento do texto será dada ênfase nas formas internacionais de proteção de ambos e serão analisados aspectos referentes à biopirataria.Não se pretende esgotar o tema, apenas auxiliar a inserir este tema-problema na discussão jurídico-científica na tensão sobre sustentabilidade.

[1] Master Student of Environmental Law and Sustainability at Escola Superior Dom Helder Câmara. Contact: renato@guimaraesandrade.com.br. This article was translated by Isadora Falcão and autorized for publication by the author in 30/06/2013. Version in portuguese received in 17/10/2012, acepted in 27/11/2012.

PALAVRAS-CHAVE: Patrimônio Genético. Biodiversidade. Formas de proteção. Biopirataria

1. INTRODUCTION

First of all, it is important to enhance that we are living the so-called “second modernity”, referred to by other authors as reflexive modernity. That way, it is up to us making a conjunctural analysis o four times, making sure that we adopt the holistic, collective, global vision.

Ulrich Beck (1999) wrote about the “risk society” and discoursed about humanity’s new responsibilities before the recent conditions of technoscience, as well as its great destructive potential.

That is what makes a systematized and simultaneous global action mandatory, in order to avoid a gloomy, or even inexistent, future for humanity on Earth.

George Schaller, in a conference on biodiversity and ecosystems, back in 1977, affirmed: “We cannot bare another century like this one”.

Nicholas Gerogescu-Roegen, referred to as the father of bioeconomics, as well as a pessimist regarding the pace of human development nowadays, which, in his opinion, will finish by exhausting the exploitable natural resources and leaving our planet with the amebas, has made a remark, which, despite being catastrophic and a little exaggerated, should be taken seriously: “In a long term, economy will be necessarily absorbed by ecology” (GEROGESCU-ROEGEN *apud* VEIGA, 2005, p. 51).

This should mean that when there were few resources left, ecology would supervene upon the economy, for there would not be another tangible escape for human existence.

Putting aside the cataclisms, we shall not ignore the seriousness of our present predatory and developmental conjuncture.

On the 1972 UN Stockholm Conference, a trail-blazer document in the field of environmental protection, the roots of the present civilizatory situation were already visible, and

so was the concern about intergenerational rights, as it is stated on its Principle #2, the need for preservation of natural ecosystems on the benefit of present and future generations.

At the same time, it already assumed development as an inevitable and unstoppable reality, as stated on Principle #8, which states that economical and social development are essential in order to guarantee a pleasant life environment.

This brief introduction allows us to enhance the application of biodiversity and researches on genetic wealth, themes that will be better developed next.

On this essay, we will work on the concepts of genetic wealth and biodiversity, look for a connection between both, so then we can explore international measures fot protection and the piracy issue.

It is a piece of work based on investigative juridical research, including consultation of juridical works and legislation, through inductive method.

The employed model was Ulrich Beck's risk society, which, despite having been written in the 1980s, has the features of a recent work.

2. GENETIC HERITAGE

Genetic heritage consists on genetic information within bodies of a determined country, which can be studied with the scope of developing medicines or other improvements. They are part of the nation's heritage.

It has been argued whether it is a common heritage of mankind or just one of the nation to which the organism belongs. To Edson Ferreira de Carvalho:

> The juridical nature of the common heritage of mankind is similar to that one of the trust, whose main scope is the pacific usage, on order to thoughtfully protect, conserve and maintain the natural resources and pass them on to future generations. (CARVALHO, 2008, p.99)

Despite being the interest on preservation both a right and a duty of everyone, it is doubtless that the genetic heritage belongs exclusively to the country where it was found, which is expressly prescribed on the Convention on Biological (CDB).

As said by Denis Borges Barbosa:

> After 1992, protecting the nation's interests became a priority when compared to local interests. In other words, in the Field of international Law, biological resources do not belong to this or that community, but to the main subjects of international Law, that is, the Nations. (BARBOSA, 2002, p.2)

Short after the 1992 Convention, an argument came up, about whether the effects should be declaratory or constitutive, *ex nunc* or *ex tunc*, that is, if the decision regarding the countries' exclusive ownership of their genetic heritage would be effective from 1992 or from the very beginning.

It was then stated that the convention's conclusion was only to reaffirm a preexistent situation, which meant that the countries have always been sovereigns regarding their genetic heritage.

Genetic heritage is mentioned in several dispositions o four Constitution, which has a clause that should be herein transcribed:

> Art. 225
> (...)
> II - preservar a diversidade e a integridade do patrimônio genético do País e fiscalizar as entidades dedicadas à pesquisa e manipulação de material genético; (...).

It is important to clarify the existence of an argument concerning the inadequacy of the term "genetic heritage", which is attached to the idea of an intergenerational legacy, as well as to the overcame concept of mankind heritage, according to which natural resources and their genetic heritage belong to all Nations.

In complete opposition, which actually gives rise to some reflection, we find Edson Ferreira de Carvalho (2008), who, in his piece "Meio Ambiente como Patrimônio da Humanidade" (environment as human heritage), affirms that the expression should keep being employed, since it would be the only effective way to preserve our most important biomes.

Regarding international dispositions, that is, the aforementioned 1992 Convention on Biological Diversity, the expression is no longer used, having been substituted by "genetic material", which means "any material of plant, animal, microbial or other origin containing functional unities of heredity".

It is important to say that such document was celebrated by several authors and properly remarked by professor Denis Borges Barbosa:

> The Convention on Biological Diversity brought a new concern to the juridical system, which is the one about preserving traditional knowledge under the concepto f intelectual heritage, as well as the intent of each Nation to control its own genetic heritage. (BARBOSA, 2002, p.2)

In order not to join the argument, which in no way is going to help us, we will, from now own, use only the most popular concept of "genetic heritage".

From 1995, that subject began to give rise, in Brazilian law, to some legal drafts, both federal and state ones, as, for instance, the draft 306, elaborated by Marina Silva.

Nevertheless, the first disposition to be published was the Temporary Measure nº 2.052, in 6.29.2000, which overlapped the whole discussion on the subject that was being held at the parliament, and disposed on the access to genetic heritage, its protection and the access to traditional knowledge linked to it, the sharing of profits and the access to technology and its exchange in order to conserve and employ such heritage.

However, that Temporary Measure went through several alterations until becoming what nowadays is the TM n. 2.186-16, published on 8.23.2001, made definitive by the Amendment n. 32/2001, which regulated the use of Temporary Measures and exempted from alterations the TMs published before the Amendment, until they are definitely analyzed by the Parliament.

The TM n. 2.186-16, from 23.08.2001 is, nowadays, the guideline on access to genetic heritage and the related traditional knowledge in our country, establishing in details the new conceptions about the subject:

> Information of genetic origin, held in samples of a whole or part of vegetal, fungic, microbial or animal species, in the form of molecules or substances derived from those beings' metabolism as well as from excerpts originated by those organisms, either dead or alive.

Such an initiative within our legal system is honorable, as enhanced by Paula Cerski Lavratti:

> In fact, the relevant aspect of that concept brought by the TM (that is a really interesting innovation), is the notion of "genetically originated information". In that sense, genetic heritage would not be limited by DNA and RNA, but also would include any material that contains such genetically originated information, such as biomolecules, for instance, which are common targets for bioprospection. (LAVRATTI, 2004, p.2)

On a definition that puts together the terms employed within the presente article, Édis Milaré affirms that "genetic heritage is the core of the whole biodiversity" (MILARÉ, 2011, p.722).

Therefore, having established the concept of genetic heritage, we can move on to our brief considerations on the subject of biodiversity.

3. BIODIVERSITY

Before exploring the concept of biodiversity, it is important to point out some data that reaffirm its importance.

According to the data released by the government, in conformity with the research provided by the National Evaluation of the Knowledge on Brazilian Biodiversity, just in the Amazon were identified 311 species of mammals, 1.300 species of birds, 600 species of reptiles, 250 species of amphibians, 2.100 species of fish, 8.000 species of invertebrate and about 20.000 species of plants.

Biodiversity in Brazil is estimated to represent about 20% of all planetary life. Besides, about 12% of the world's available hydrous resources are located in our country.

Noticed the magnitude of biodiversity, or biological diversity – a narrower, however equivalente, expression – we are left to conceptualize it.

According to the Convention on Biological Diversity:

> "Biological diversity" means the variability among living organisms from all sources including, inter alia, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species, between species and of ecosystems.

Through na easily understandable explanation, Celso Antonio Pacheco Fiorillo and Adriana Diaféria describe it as:

> (...) the diversity of life, both for the existence of our planet and to the survival of the human being, who, as the main target of such diversity, is, nowadays – and more than ever -, the great commissioner of its preservation, maintenance of life and the future of humanity. (FIORILLO; DIAFÉRIA, 2012, p.33)

This worry about biodiversity is unison among authors, as well as the general population, as accurately noted by Milaré, who emphasizes that the current distress "comes from the growing threat of extinction that haunts many species" (MILARÉ, 2011, p.696). The author highlights that no species are introduced or extinct without that fact causing a chain reaction.

This concept is undoubtedly related to the one mentioned at the introduction, where we talked about human accountability within reflexive modernity.

It is also important to notice the fundamental interdisciplinarity between law and biology, in order to better understand the subject, according to na article on genetic diversity, published by several authors, among them the biologist Fabrício R. Santos:

> We are getting to a point of fusion of the knowledge generated by the first naturalists, by 20th century researchers on biodiversity conservation, with the data obtained directly by hereditary information, which started being actually produced less than two decades ago, throughout molecular biology. (SANTOS *et al*, 2009, p.391)

Even if the explanation was brief, it is already clear how important and broad is the term biodiversity, and so its employment should be thoroughly studied and planned in order to preserve and protect that institute.

4. GENETIC HERITAGE AS A RELEVANT FEATURE OF BIODIVERSITY

Since the 1972 Stockholm Convention, the concern about future genarations has been stated throughout careful planning for the usage of natural resources, literally expressed by principle 2:

> The natural resources of the earth, including the air, water, land, flora and fauna and especially representative samples of natural ecosystems, must be safeguarded for the benefit of present and future generations through careful planning or management, as appropriate.

On the same document, through its principle 8, we can notice the inexorable need for economic development in order to improve humanity's quality of life:

> Principle 8
>
> Economic and social development is essential for ensuring a favorable living and working environment for man and for creating conditions on earth that are necessary for the improvement of the quality of life.

However, in order to use genetic heritage contained in biodiversity, it is necessary to establish rules and parameters to regulate the nations' internal and external actions

In Brazil, such measures were thoroughly regarded only after a contract filled with potestative clauses, between the Brazilian Association for the Sustainable Use of Amazon Biodiversity – Bioamazônia – and the Novartis company, with the scope of collecting and identifying bacteria and fungi, producing extracts and proceeding to analysis aiming to identify substances that raised pharmaceutical interest in Amazon, a deal which brought no advantages to the country, whether it was by technology transference or by any other way of distributing the profits. Only after all that went on, an argument on the aforementioned concepts was actually developed.

Such contract has been rescinded by the Supreme Court, which generated a great impulse towards the evolution of the debate on the subject, as well as on the national legislation itself, culminating on the publishing of the Temporary Measure n. 2.186-16, n. 8.23.2001.

Let us also highlight that the popular initiative, as well as the one from the press, were indispensable, since when those groups got to know about the contract, made some pressure towards its termination. It is summed up by the adage "*to know in order to preserve*", contained on the 1948 Universal Declaration of Human Rights:

> 1. Everyone has the right freely to participate in the cultural life of the community, to enjoy the arts and to share in scientific advancement and its benefits.

The principles of participation and information – effectively considered, and not as mere instruments endowed with fake legitimacy – are fundamental for the development of a legitimate society which is able to preserve and take care of the environment in all its aspects (artificial, natural, cultural and work matters).

Yet again we turn to the CBD, which accurately provided:

> Article 10
>
> Each Contracting Party shall, as far as possible and as appropriate:
> (a) Integrate consideration of the conservation and sustainable use of biological resources into national decision-making;
> (b) Adopt measures relating to the use of biological resources to avoid or minimize adverse impacts on biological diversity;
> (c) Protect and encourage customary use of biological resources in accordance with traditional cultural practices that are compatible with conservation or sustainable use requirements;
> (d) Support local populations to develop and implement remedial action in degraded areas where biological diversity has been reduced; and
> (e) Encourage cooperation between its governmental authorities and its private sector in developing methods for sustainable use of biological resources.

Such a conclusion is reaffirmed by the researcher Luis Antonio de Oliveira who discoursed at the Parliament Inquiry Comission on Biopiracy (2006): “Sharing the knowledge allows society to know what is the estimated value of biodiversity and what are the adequate means to conserve it and sustainably use it”.

Therefore, according to a text from the National Environmental Department, the Convention on Biodiversity bonds the concepts pointed out at the prior items, by saying that:

> (...) proposes rules that assure the conservation of biodiversity, its sustainable usage and the fair sharing of the profits generated by the economic use of genetic resources, respected each nation’s sovereignty upon the heritage located in its territory.

One possible conclusion is the one that genetic heritage would be biodiversity’s potential (that is, possibly economic), surely not limited to biodiversity *in natura*, but reaching also the

traditional knowledge of communities not embraced by development, such as indian tribes that are part of biodiversity and own a significant genetic potential.

Before this brief explanation, comes clear the need to regulate biodiversity and genetic heritage, making sure that international regulations should be examined in other to pursue the aforementioned holistic solution.

5. INTERNATIONAL MEASURES OF PROTECTION

Recapping what has been said, the Convention on Biological Diversity (CBD) was a goal on the protection and regulation of genetic heritage and biodiversity, as well as traditional knowledge.

Before this treaty, there were some sparse norms regarding international measures of protection, locally adopted, in particular the 1970 UNESCO Convention and the UN Food and Agriculture Organization (FAO) resolution 5/89. The latter unveiled a dispute, even if disproportional, between agriculturists and biotechnology companies, which can be regarded to as a primal step to the CBD. Such subjects are accurately explored by Marcelo Dias Varella (2004) through his brilliant essay *Tipologia de Normas sobre Controle do Acesso aos Recursos Genéticos (Typology of the norms controlling the access to Genetic Resources).*

Through its publication, the CBD stated the sustainable usage of components of biological diversity, through an accurate analysis of the conservation and sustainable usage of biological resources within the nation's decision-making process, and provided in its Article 10 that the Nations shall:

> Protect and encourage customary use of biological resources in accordance with traditional cultural practices that are compatible with conservation or sustainable use requirements

Proceeding to a comparative analysis of national strategies towards protection and usage of biodiversity in several countries, in 1999, the National Department for Environment, leaded by Ibsen de Gusmão Câmara, reached the following conclusions:

- The *status* of biodiversity changes according to the country, and it is mostly affected at developed ones ore those with a longer history of human occupation, especially in Europe.
- It is noticeable the bigger effort developed countries, even those where biodiversity has been drastically reduced, make to protect what was left.
- Another aspect to be highlighted is that, even with a long history of human occupation, some developed countries maintain a comparatively high level of biodiversity.
- Their main problems towards conservation tend to be quite similar: human demografic pressure, distruction and fragmentation of habitats, unmeasured hunting, lack of means to enforce the rules, land administration conflicts, popular indifference regarding biodiversity, unmeasured exploitation of forests, fire, lack of coordination between governmental bodies, invasion or lack of control in protection areas, lack of information, by the population and the government, about the concept of biodiversity and its importance.

Through the conclusion of that study, we can see that it is possible to preserve and use biodiversity in a sustainable way, taking by example countries that have degraded great part of their biological diversity, but that nowadays have actual worries about preserving what was left.

According to the Environment Department, in a comparative analysis:

> Biodiversity conditions in Germany are largely distinguished from those at developing countries and particularly from those owning a megabiodiversity; it is a rich nation, with an area only 40% bigger than the state of São Paulo, densely populated for millennia, but with ancient practice of sustainable usage of resources; we can use as an example the fact that German forest have been exploited for the last 150 years, but in a controlled way. Its biological diversity, strongly altered by ancient human occupation, is comparatively well known.

We cannot forget that the protection of traditional knowledge cannot dissociate its basilar elements, which, according to Iacomini, are “culture, territory and biodiversity”. That is, we must think about ways of interaction with local communities in order to understand their culture,

interaction with the site where they live and also their interaction with biodiversity (IACOMINI, 2007, p.17).

We can also infer that, without an active presence of the government, that should work efficiently, demographic lack of control and law disobey have been destructing biodiversity in a catastrophic way.

CBD acknowledges the Nations' sovereignty on the usage of natural resources and traditional knowledge of local communities and indigenous people, whilst protecting the rights of those communities to take part on the process and the profits generated throughout it, according to the following excerpts of the treaty:

> Acknowledging the strict and ancient dependence to biological resources from many local and indigenous communities with traditional lifestyles, and that is it desirable to equally share the benefits deriving from the utilization of traditional knowledge, of innovations and practices that contribute to the conservation of biological diversity and to the sustainable usage of its components. (...)
>
> (j) Subject to its national legislation, respect, preserve and maintain knowledge, innovations and practices of indigenous and local communities embodying traditional lifestyles relevant for the conservation and sustainable use of biological diversity and promote their wider application with the approval and involvement of the holders of such knowledge, innovations and practices and encourage the equitable sharing of the benefits arising from the utilization of such knowledge, innovations and practices; (...)

After the CBD, it was adopted the Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization on the tenth reunion of the Conference of the Parties in October, 29, 2010, in Nagoya, Japan.

Brazil signed the document in February, 2011.

The Nagoya Protocol to the Convention on Biological Diversity is an agreement that aims to complement the Convention and structure, legally and clearly, the effective setting of the fair and equitable sharing of benefits arising from the utilization of genetic resources in order to compel the parts to follow what has been agreed within the document. Such objective is expressed in its Article 1:

> The objective of this Protocol is the fair and equitable sharing of the benefits arising from the utilization of genetic resources, including by appropriate access to genetic resources and by appropriate transfer of relevant technologies, taking into account all rights over those resources and to technologies, and by appropriate funding, thereby

> contributing to the conservation of biological diversity and the sustainable use of its components.

And yet again on Article 5:

> Art. 5 In accordance with Article 15, paragraphs 3 and 7 of the Convention, benefits arising from the utilization of genetic resources as well as subsequent applications and commercialization shall be shared in a fair and equitable way with the Party providing such resources that is the country of origin of such resources or a Party that has acquired the genetic resources in accordance with the Convention. Such sharing shall be upon mutually agreed terms.

We can also see, within the document, a concern about protecting less developed countries and stimulating technology transfer, as stated in its article 23:

> Article 23. Technology Transfer, Collaboration and Cooperation
>
> In accordance with Articles 15, 16, 18 and 19 of the Convention, the Parties shall collaborate and cooperate in technical and scientific research and development programmes, including biotechnological research activities, as a means to achieve the objective of this Protocol. The Parties undertake to promote and encourage access to technology by, and transfer of technology to, developing country Parties, in particular the least developed countries and small island developing States among them, and Parties with economies in transition, in order to enable the development and strengthening of a sound and viable technological and scientific base for the attainment of the objectives of the Convention and this Protocol. Where possible and appropriate such collaborative activities shall take place in and with a Party or the Parties providing genetic resources that is the country or are the countries of origin of such resources or a Party or Parties that have acquired the genetic resources in accordance with the Convention.

We can point out some mandatory duties that are emphasized on the protocol, which recommends to the signatary countries to:

- Take measures in order to allow biological resources within their jurisdiction to be accessed with previous authorization and in order to establish mutually agreed terms, as demanded by the other Contracting Party;
- cooperate in cases of alleged violations of the other Contracting Party's demands;
- stimulate contractual dispositions on the resolutions of controversies on mutually agreed terms;

- ensure the opportunity to seek judicial aid under their legal systems when the controversy regards mutually agreed terms;
- adopt measures regarding access to justice;
- adopt measures with the scope of monitoring the utilization of genetic resources after they leaving a country, including by requirement of effective control spots in any stage of the value chain: research, development, innovation, pre-commercialization or commercialization.

It is interesting to notice that an article has been included with the scope of make everyone aware of the importance of the treaty for the document, that is, article 21. That provision points out, among other things, that the contracting parties shall spread the Protocol, set up meetings with local communities and all those interested in bringing those communities into the implementation of those measures.

Let us also say that the fair and equitable sharing of benefits may involve direct monetary payment, technology transfer, infrastructure construction, scientific training support, etc.

The definition for equitable sharing is subjective and tends not to be egalitarian, since the desires and economic power of the biotechnology-owning companies often overlap local communities, protection bodies and even governmental regulation.

It is also important to highlight the shock between local communities and the government, since, even if the first own traditional knowledge, they are part of a Nation and therefore must subject to its hierarchy. Again, international community acknowledges only the Nations' rights, and not the communities'.

Still, several countries allow those communities not only to take part on the whole process, but also to have the power of vetoing the projects.

The aforementioned Nagoya Protocol states that the access to traditional knowledge of indigenous and local communities "when associated to genetic resources will improve such communities' ability to be benefited from the use of their knowledge, innovations and practices", which enhances the importance of the communities taking part on the process and directly benefiting from it.

Please note that this governmental prerogative of controlling the access to its biodiversity and traditional knowledge so it can possibly generate an exploration of genetic heritage must be performed in a clear, bureaucracy-free and properly supervised way, which is not what has been happening in Brazil, according to a testimony extracted from an article of the Brazilian Society for Scientific Progress (2010):

> "Rules have to be clear so that agents who intend to study national biodiversity can fulfill the demands", says Divina Aparecida Leonel Lunas Lima, professor at Goiás State University (UEG) and Ph.D. student of economic development at the environmental field at Campinas State University (Unicamp). As na example, Divina points out the regulation regarding the access to traditional knowledge. "Traditional knowledge makes things a lot easier, for populations already know the function of a particular plant, which saves years of research", affirms. (BRAZILIAN SOCIETY FOR SCIENTIFIC PROGRESS)

The excess of bureaucracy and lack of legal regulation, or even deference to law are equally pernicious.

International legal regulations have common features and must, above all, look up to the commandments of the Convention on Biological Diversity. However, through all that has been said, we can see the amateurism that hovers the subject and the difficulties in conciliating governmental interests and the communities' ones.

It does not mean that such an argument is an excuse, but the excess of bureaucracy and different legal regulations certainly works at least as a contribution to our next subject, Biopiracy.

6. BIOPIRACY IN BRAZIL

Over the past years, thanks to the development of biotechnology and to the readiness on international trademarking the possibilities for such exploration have multiplied.

The word Biopiracy came up in 1993, by the NGO RAFI (Rural Advancement Foundation International, nowadays known as ETC-Group), which aimed to bring to light the fact that transnational companies and scientific institutions were subtracting and trademarking biological resources and indigenous knowledge without governmental permission.

From that moment on, the term biopirates started being used to designate those who, sometimes with government endorsement, take from other countries, usually developing ones, which have a fragile and inefficient legislation, with poor or no inspection, genetic resources with economic potential.

According to Juliana Santilli, biopiracy can be defined as:

> (...) the activity regarding the access to genetic resources in a particular country or to traditional knowledge attached to such resources (or to both) in discordance with the principles established on the Convention on Biological Diversity. (SANTILLI, 2004, p.246)

The Brazilian Institute of International Trade Law, Information Technology and Development– CIITED – offers the following definition:

> Biopiracy consists in the act of accessing or transferring genetic resources (animal or vegetal) and/or traditional knowledge attached to biodiversity without express governmental permission from the Nation where the resources were taken from or the traditional community that developed and maintained a particular knowledge throughout time (a practice that defies the binding dispositions of the UN Convention on Biological Diversity). Biopiracy regards, also, the non-fair and equitable sharing – among Nations, corporations and traditional communities – of the resources generated from the exploration, commercial or not, of the transferred resources and knowledge.

On that subject, Brazilian Environment Department has expressed the following:

> Historically, the use of genetic resources and knowledge and of the traditional knowledge attached to them, has occurred in an unfair way. The countries of origin of the genetic resources and the local and indigenous communities, that own traditional knowledge, have not even been consulted by those who use such resources in order to obtain economic profit with commercial products. That unfair appropriation, often aggravated by trademarking, is what we call biopiracy e has occurred throughout the whole history of Brazil.

A classic example is the one of the açaí, that raised the interest of foreign companies, which trademarked names as “Açaí” and “Açaí Power” in order to ensure the exclusive use of the word. Brazilian government filed several suits in order to stop such an outrage. Our country’s legislation provides on the legal way to access our genetic heritage:

> Art. 16. O acesso a componente do patrimônio genético existente em condições in situ no território nacional, na plataforma continental e na zona econômica exclusiva, e ao conhecimento tradicional associado far-se-á mediante a coleta de amostra e de informação, respectivamente, e somente será autorizado a instituição nacional, pública ou privada, que exerça atividades de pesquisa e desenvolvimento nas áreas biológicas e afins, mediante prévia autorização, na forma desta Medida Provisória, desenvolvimento tecnológico ou bioprospecção, visando a sua aplicação industrial ou de outra natureza; (...).

When it comes to smuggling wild animals, we had the Parliamentary Investigation Comission on Biopiracy, in order to raise irregularities, and which final report, disclosed in February 2003, proved the wrongfulness of such a trade that raises about US$ 10 bi a year in the whole world, from which US$ 500 mi regard the market of hypertension medicines, whose active comes from the poison of Brazilian snakes like the Jararaca (one gram of its poison is worth US$ 433,70).

Estimates by IBAMA point out that Brazil has a daily loss of about US$ 16 mi (more than US$ 5,7 bi a year) thanks to international biopiracy, which takes Brazilian raw material and products out of the country and trademarks them in their countries of origin, stopping Brazilian companies to sell them everywhere else and even making them have to pay royalties when importing them as finished products.

Alarming data disclose that 80% of the animals die before they are able to get to the “final consumer”; 95% of Brazilian wild animal trading is é illegal and the profit arising from international smuggling of wild animals is only lower than that obtained through drugs and guns.

Our national legislation is strict, stipulating fees up to 5 million of reais, according to article 17 of the Decree 5.459, from June 7 2005, but the ugly truth is stamped on the data collected about those infractions according to the following study, taken from the Biopiracy CPI:

Ano	Qtd. autos de infração	Valor autos de infração (R$)	Valor pago (R$)
2001	11.320	31.080.771,14	5.610.899,74
2002	17.606	54.388.286,68	9.845.171,88
2003	5.935	23.308.793,67	4.354.415,60
2004	4.999	12.254.752,71	3.724.771,16

The disparity between legal provision and reality is so large that the investigation document reports a case in which the original fee was of R$ 400.000,00 and finished in mere R$ 400,00.

Mild criminal punishing is another stimulus for that phenomenon. Act n. 9.605 from 1998, which provides on criminal and administrative punishments generated by conducts and activities that damage the environment establishes, in its article 29, penalties no longer than one year of detention:

> Article 29. Kill, pursue, hunt, catch, using specimens of wild animals, native or migratory route, without permission, license or authorization from the competent authority, or at odds with the one obtained:
> Sentence - imprisonment from six months to one year and a fine. § 1 The same penalties:
>
> I - who prevents the breeding of wildlife without a permit, authorization or in disagreement with that obtained;
> II - who alters, damages or destroys nests, shelters or natural.

Some of the issues unveiled by the Comission were: inefficiency of IBAMA's surveillance system; insufficient human resources e material from government entities; employees lack of training; the large extension of our frontiers, which, on the majority of the cases is located inside closed and hard to access forests, which stops the bodies of proceeding to effective surveillance.

Putting the aforementioned items together, we can see clearly how important it is to protect and regulate genetic heritage and biodiversity through international legislation that is at least similar in order not to allow any doubts or stimulate that biotechnology "cancer", the biopiracy.

At the same time, it is necessary that legal regulations, specially the Brazilian one, establish exemplar punishments in order to discourage biopirates and actually charge the payment of the established fees, preferably directing the collected amount to the empowerment and equipment of environmental police.

7. FINAL CONSIDERATIONS

This brief essay aims to highlight the importance of the reflection and opinion-making towards biodiversity and genetic heritage. It is mandatory that humanity lowers its discourse and, above all, get to know the hues of each concept in order to decide till which point we should explore our biodiversity on the pursuit of economic and "developmental" results generated by genetic heritage.

Biopiracy came up through biotechnology's technoscience, for what the argument should have been developed since the beggining of the second modernity.

There are no doubts regarding the "pace" of humanity and that the motor of evolution and development cannot, nowadays, be braken, as provided by the Convention on Biological Diversity:

> principle 4
> To achieve sustainable development, environmental protection shall constitute an integral part of the development process and can not be considered in isolation from it.

The inevitable conclusion, however, is that we shall think over the means to be amployed in order to reach particular goals.

According to Flávia Piovesan, in her preface to Vanessa Iacomini's work "Biodireito e o Combate à Biopirataria": "There must be a balance between scientific progress and ethical demands" (*in* IACOMINI, 2009, preface).

Citing professor José Eli da Veiga: "Science experts are undoubtedly capable of establishing what should be done in order to avoid an irreversible crisis, but the issue of this balance's establishment is not scientific or technologic, but rather political and social" (VEIGA, 2005, p.207).

Society nowadays requires an alteration of conception and concepts, while the preexistent dialogue between Law and Ethics must be repeated and enlarged in the fields of Biorights and Bioethics.

Our ancient convictions are no longer sufficient to solve such modern problems, for what is only left for us is to turn back to the *zetein* in order to build a new dogmatic path. Recapture

and study the *chôra*[2] highlighted by Afrânio Nardy (2003), in order to catch a glimpse of the real geographicity and discuss its future.

REFERENCES

ANUÁRIO MATA ATLÂNTICA. *Protocolo de Nagoya*. Available at: <http://www.rbma.org.br/anuariomataatlantica/protocolo_nagoya.php>. Accessed on: 30 maio 2012.

BARBOSA, Denis Borges. *Biodiversidade, Patrimônio Genético e Propriedade Intelectual*. Rio de Janeiro 2002.

BECK, Ulrich. *La sociedad del riesgo global*. Madrid: Siglo Veintuno de España Editores, 2002.

BRASIL. *Biodiversidade no Brasil*. Available at: <http://www.brasil.gov.br/cop10/panorama/brasil-e-a-biodiversidade/biodiversidade-no-brasil>. Accessed on: 28 maio 2012.

BRASIL. *Constituição da República Federativa do Brasil de 1988*. Available at: <http://www.planalto.gov.br/ccivil_03/constituicao/constituicao.htm>. Accessed on: 27 maio 2012.

BRASIL. *Medida Provisória nº 2.186-16, de 23 de agosto de 2001*. Available at: <http://www.planalto.gov.br/ccivil_03/mpv/2186-16.htm>. Accessed on: 27 maio 2012.

CÂMARA DOS DEPUTADOS. *Comissão Parlamentar de Inquérito Destinada a Investigar o Tráfico de Animais e Plantas Silvestres Brasileiros, a Exploração e Comércio Ilegal de Madeira e a Biopirataria no País* – CPIBIOPI. Available at: <http://www.camara.gov.br/internet/comissao/index/cpi/Rel_Fin_CPI_Biopirataria.pdf>. Accessed on: 28 maio 2012.

CARVALHO, Edson Ferreira de. *Meio Ambiente como Patrimônio da Humanidade*. Curitiba: Juruá, 2008.

[2] To Afrânio Nardy, there must be a combination between Law and Geography in order to study the *chôra*, that would mean the study of the geographical area, but including all the interactions between its live inhabitants, including men, and not the study of space only as *Topos*, which is purely locational analysis.

DECLARAÇÃO DE ESTOCOLMO SOBRE O MEIO AMBIENTE HUMANO. Available at: <http://www.dhnet.org.br/direitos/sip/onu/doc/estoc72.htm>. Accessed on: 11 maio 2012.

FIORILLO, Celso Antônio Pacheco; DIAFÉRIA, Adriana. *Biodiversidade e Patrimônio Genético e biotecnologia no Direito Ambiental*. São Paulo: Saraiva, 2012.

IACOMINI, Vanessa (coord.). *Propriedade Intelectual e biotecnologia*. Curitiba: Juruá, 2009.

LAVRATTI, Paula Cerski. *Acesso ao Patrimônio Genético e aos Conhecimentos Tradicionais Associados*. Available at: <http://www.museu-goeldi.br/institucional/artigo%20goeldi%20paula%20lavratti.pdf>. Accessed on: 03 maio 2012.

MILARÉ, Edis. *Direito do Ambiente*. São Paulo: RT, 2011.

MINISTÉRIO DO MEIO AMBIENTE. *Análise comparativa*. Available at: <http://www.ibcperu.org/doc/isis/mas/8745.pdf>. Accessed on: 03 maio 2012.

NARDY, Afrânio. Geograficidade, Heurística dos riscos socioambientais e afirmação do princípio da precaução no procedimento de estudo de impacto ambiental. In SAMPAIO, José Adércio Leite; WOLD, Chris; NARDY, Afrânio. *Princípios de Direito Ambiental*. Belo Horizonte: Del Rey, 2003.

PIOVESAN, Flávia. Prefácio. In IACOMINI, Vanessa. *Biodireito e o Combate à biopirataria*. Curitiba: Juruá, 2009.

PLATIAU, Ana Flávia Barros; VARELLA, Marcelo Dias. *Diversidade Biológica e Conhecimentos Tradicionais*. Belo Horizonte: Del Rey, 2004.

SÁ, Maria de Fátima Freire de; TORQUATO, Bruno. *Manual de Biodireito*. Belo Horizonte: Del Rey, 2011.

SANTILLI, Juliana. *Conhecimentos Tradicionais Associados à Biodiversidade: Elementos para a construção de um regime Jurídico Sui Generis de Proteção*. Available at: <http://www.anppas.org.br/encontro_anual/encontro2/GT/GT08/juliana_santilli.pdf>. Accessed on: 11 maio 2012.

SANTOS, Fabrício R. *et al*. *Diversidade Genética***.** Available at: <http://www.icb.ufmg.br/lbem/pdf/santos09biotaminas-divgen.pdf>. Accessed on: 02 mai. 2012.

SOCIEDADE BRASILEIRA PARA O PROGRESSO DA CIÊNCIA. *Burocracia ainda emperra acesso ao patrimônio genético nacional*. Convenção de Biodiversidade. Available at: <http://cienciaecultura.bvs.br/scielo.php?pid=S0009-67252010000300004&script=sci_arttext>. Accessed on: 28 maio 2012.

VEIGA, José Eli. *Desenvolvimento sustentável*: o desafio do século XXI. Rio de Janeiro: Garamond, 2005.