BIOPIRACY: FROM THE UNDERSTANDING OF ITS HARMFULNESS TO THE POSSIBLE FORMS OF ITS ANNIHILATION

Weverton Fernandes Bento Alves[1]

Abstract: The Brazilian State is formed by a vast territorial extension and has a huge biodiversity, and, therefore its natural resources are highly targeted worldwide. In this scenario, what is called "biopiracy" arises and puts Brazil at risk before the process of industrialization and the evergoing search for new technologies, especially those related to genetic and cultural heritage. At the same time, it is incumbent upon the Brazilian State to create mechanisms that inhibit this practice, so as to guarantee ecologic balance to present and future generations, both local and global.

Keywords: Biopiracy; Biodiversity; State intervention; Environment.

1 Introduction

Brazil is formed by a vast territorial extension with enormous biodiversity, and, for this reason, the eyes of the world turn towards the Country with significant intensity. These two characteristics combined – enormous biodiversity and vast territorial extension – end up, in a way, putting Brazil at risk from the industrialization process and the incessant search for new technologies, especially those related to genetic and cultural patrimony.

In this scenario, what is known as "Biopiracy" arises, which, in general terms, consists in the illegal exploitation or appropriation of natural resources and traditional knowledge of the communities of one country by the other, without proper authorization and conscience of the country that holds these resources, leading to their misappropriation.

The practice of biopiracy in Brazilian territory, despite being more visible in modern times, has been present since its colonization by the Portuguese. Therefore, the Brazilian State must create mechanisms that inhibit this practice, either through norms or prevention policies in general, thus ensuring ecological balance to current and future generations, both Brazilian and worldwide.

The Federal Constitution of 1988 ensures the right to an "environmentally balanced environment" in its article 225, as well as prescribes measures that must be taken by both the State and society for its maintenance and protection. In fact, the Brazilian State also has infra-constitutional rules that aim to maintain a balanced environment, among which Law 9,605 of 1998 and Law 13,131 of 2015, both with a very incisive regulatory character.

[1] Member of the State Commission of the OAB (Order of Attorneys of Brazil) JOVEM of the OAB / MG and Chairman of the Family Law Commission of the 82nd Subsection of the (wevertonfba@gmail.com).

In this perspective, this article reviews the legal doctrine and the Brazilian laws related to the subject, with the objective of demonstrating the consequences of biopiracy for the maintenance and realization of the right to the environment ecologically balanced and, similarly, for the homeland economy. Besides demonstrating possible solutions for the annihilation of biopiracy in Brazil. These are solutions that involve both the role of the State as regulator, inspector and promoter of the balance of the environment, and the role of the rest of the social body in protecting this environment.

2 From the Concept and the Historical Background of Biopiracy

The enormous Brazilian biodiversity, understood "[...] as the numerous structural and functional varieties of life forms at the genetic, population, species and ecosystem levels" (PANCHERI, 2013, p. 446), places the Country " [...] at the top of the ranking of megadiverse countries as a holder, along with Zambia, India, Costa Rica, Indonesia, Malaysia, Colombia, among others, of the majority of the genetic and natural resources on the planet" (LARANJEIRA et al., 2011, p. 155).

In addition, the Brazilian territory comprises an extension of three million and fifty-seven thousand square kilometers of tropical forests, including most of the Amazon Rainforest, the most extensive of them all. That's thirty percent of the world's tropical forests. In fact, protecting the biodiversity contained in such a territorial extension is laborious and sometimes requires more government attention (PANCHERI, 2013).

In this scenario, illegal practices totally detrimental to the Country's environment and economy are developed and there is, in fact, no control, nor a concrete coercibility that decreases such activities.

Consequently, it can be verified that it is not today that the use of the genetic resources and knowledge and associated traditional knowledge has been occurring inconsistently. The countries that have genetic resources, as well as the indigenous and local communities that maintain associated traditional knowledge, are not even consulted when using these resources by the exploiting countries, which achieve considerable economic gains to the detriment of the true owners of these resources, who do not receive any benefit.

This unjust appropriation, generally accentuated by the use of patents, which has occurred throughout Brazil's history, is called **biopiracy**, considered as "any unauthorized appropriation and use of biological material and / or associated traditional knowledge, for purposes of development and commercialization of products, and may or may not involve the obtaining of intellectual property rights" (PANCHERI, 2013, p. 444, emphasis added It is worth noting that the term biopiracy was coined in 1993 by the NGO RAFI (now ETC-Group) to make people aware of these practices (LARANJEIRA et al, 2011).

Attention is paid to the formation of the word biopiracy, it is inferred that the term "bio" means life and "piracy" theft, so one can conclude its meaning as the activity of merchandising products of nature to other countries without the proper authorization , in a manner inconsistent with state standards and principles of global cooperation and respect, in particular, with the guidelines of the Convention on Biological Diversity (CDB).

In this same line, Juliana Ferraz de Rocha Santilli (2002, p. 50) points out that States should follow the provisions contained in the CBD "on their genetic resources and the need for prior informed consent of countries of origin of genetic resources for access activities, as well as the fair and equitable sharing of the benefits derived from their use", so that these activities occur without prejudice to the countries that own those resources and to the environment.

Continuing the rationale about biopiracy, Diniz (2008, p. 688 considers it as the "use of the genetic heritage of a country by multinational companies to serve industrial purposes, improperly and clandestinely exploiting its fauna and flora, without making any payment for this raw material."

Still in this conjecture, in the current scenario, biopiracy corresponds to the

> [...] use of intellectual property on Biosociodiversity in disobedience to the requirements prescribed by the Convention on Biological Diversity, namely, preservation of Biodiversity, respect for the Sovereignty of the country over its natural resources, implementation of access legislation of the country of origin, including prior and informed consent, protection of the rights of local communities, sharing of benefits, including transfer of technology. (PANCHERI, 2013, p. 457).

In view of the above, it is concluded that biopiracy is the illegal exploitation of fauna and flora resources and knowledge of traditional communities, nationally or internationally. Both Brazilians and foreigners can figure as active agents in this activity.

Although the discussion about the practice of biopiracy in Brazil is recent, history shows us that such activity is secular. This is because, when analyzing its genesis in the national territory, it is verified that since the colonization by Portugal biopiracy was already exerted by the exploration of Brazilwood (*Caesalpinia echinata*). It is enough to see that the Portuguese appropriated this raw material in an absolute way, leaving only a large environmental degradation for what is now understood as Brazilian territory (MENCONI; ROCHA, 2013).

Similarly, it is important to mention the episode occurred during the sixteenth century: the sending of rubber tree seedlings to Asia without any formality and respect for the environment, culminating in the economic ruin of the North of Brazil (MENCONI; ROCHA, 2003). However, in a later episode in the 1970s, *Bothrops jararaca* venom had its active ingredient isolated, serving as the basis to produce captopril, one of the most widely traded in the world drugs against hypertension. This drug obtains annual revenues of millions of dollars on a genetic heritage that, theoretically, is ours, of the Brazilian people, demonstrating the notoriety of the national prejudice

(MIRANDA, 2005).

Similarly, more recently, in January 2003, the non-governmental organization Amazonlink discovered the registration of *cupuaçu* by the Japanese, reaching a marked media coverage and becoming one of the most popular cases in Brazil (MELLO, 2003). In 2004, Amazonlink, along with its partners in the venture, was able to cancel the application for registration of the trademark and the way of extracting the oil from the fruit in Japan, arguing that the Tupi origin name was commonly used to refer to fruit. Thus, because of the name of the product, the word "cupuaçu", name of a tropical rainforest tree related to cacao, could not be considered and registered as a trademark (PANCHERI, 2013).

There is also a case of the year 2003, where *açaí* (name of a palm tree cultivated for its fruit) was patented in Japan as the property of K.K. Eyela Corporation. However, fortunately, in this case, the Brazilian government was also able to cancel the registration of the brand in 2007 (BRAÚNA et al. 2016). Other examples of biopiracy registered in Brazil are:

> [...] *Castanha-do-pará* (Brazil nut), the Andiroba (widely used in the cosmetic and pharmaceutical industries), the Ayahuasca (the main plant used in Santo Daime rituals), the *Copaíba* (from which *Copaíba* oil is extracted), the Jaborandi (a plant that produces pilocarpine, used to combat glaucoma), the *Curare*, the *Espinheira-Santa* (from which the oil is extracted), the *Unha-de-gato*, the *Vacina do Sapo*, among many others. (PANCHERI, 2012, p. 452).

In this sequence, one cannot fail to elucidate what biopiracy of culture is or, as treated in this work, the appropriation of associated traditional knowledge. Thus, culture means any physical and immaterial practice of a society, both tangible and intangible, consubstantiating itself in everything that is generated by humanity. In fact, it is all the set of knowledge and skills developed and built socially by man.

Consequently, the biopiracy of culture is understood as a way of subtracting the knowledge and customs produced by traditional communities, such as *quilombolas* (residents of *quilombos*, hinterland settlements founded by people of Afro-Brazilian origin), natives and other forest peoples, about plants or animals, transforming them into commodities of immense value (BULZICO, 2009).

In addition to the various negative aspects for the environment, especially for flora and fauna, biopiracy generates for Brazil "a daily loss of US $ 16 million" (MENCONI; ROCHA, 2003, p. 1). This is due to the fragile surveillance, accompanied by the lack of mechanisms capable of annihilating this conduct, as well as the scarcity of investments in prevention (PANCHERI, 2012).

In this sense, differentiating between biopiracy and trafficking is very relevant, because, due to their similarities, these two practices are distinct. Trafficking consists of collecting, seizing or conducting biological material from the universe, be it from plants, fungi, animals or micro-

organisms. While biopiracy profits on the genetic apparatus of the living being, trafficking confiscates the living being itself.

Having said that and using the relationship made by Ivanira Pacheri (2013, p. 454 between the activity of biopiracy and trafficking, it is observed that

> [...] the trafficking of fauna that, in addition to being pernicious in itself, makes it possible, of course, to harm the environment as a whole, but is still linked to Biopiracy, from the moment when the animals are abroad, being created and reproduced with happy result, and the industry has access to a new experimental model or an original source of active principles.

Once this distinction has been made, it is considered that, unlike biopiracy, which is not characterized as a crime, since the Genetic Patrimony Access Law only provides for administrative sanctions, trafficking in animals is criminalized under the Environmental Crimes Law (BRASIL, 1998).

It closes this discussion, in homage to everything that was exposed, outlining that one cannot forget the danger named by biopiracy. For, knowing all the damages resulting from this practice for the Brazilian nation in all its aspects, inhibitory and preventive mechanisms must be faithfully enforced, to guarantee, in addition to a favorable economy, a nature that is consistent with human dignity.

3 Right to the Ecologically Balanced Environment

In modern Democratic States, fundamental rights lay the foundation of the constitutional order. "This is the main protection of the citizen, in its individual or collective dimension, vis-a-vis the State (vertical legal effectiveness), and nowadays also in the face of economic power (horizontal legal effectiveness)." (BULZICO, 2009, p. 288).

From this point of view, the right to an ecologically balanced environment is constitutional and, necessarily, a fundamental right of the Brazilian citizen. This environmental protection in the Brazilian legal system is recommended in Article 225 of Chapter VI, Title VIII of the Constitution of the Federative Republic of Brazil of 1988 (BRASIL, 1988 Thus, the constitutional order considered the environment as a common good of the people, so that there is no acquired right over it and it is not allowed to be appropriated - and essential for the quality of life of the social body.

In this way, the Federal Constitution grants to the collectivity and the Public Power the duty to defend and preserve it, as it is inferred by the *caput* of its article 225 - "[...] everyone has the right to the ecologically balanced environment, good of common use of the people and essential to the healthy quality of life, imposing on the Public Power and the collective the duty to defend and preserve it for present and future generations" (BRASIL, 1988) –, and requires, therefore, that the Public Power take action and act actively to ensure that this right is guaranteed.

It is noted in the constitutional fragment above, the emphasis on the reciprocal responsibility between society and the State in safeguarding the environment, as a means and end to sustain the equity of the environment for present and future generations. Thus, in an enlightening line, Bettina Augusta Amorim Bulzico, in her master's dissertation, explains:

> It is observed **the emphasis given to environmental preservation as the main form of action**, both by society and the State in its social and productive relations, which can be understood as synonymous with prohibition of degradation, as well as imposition of recovering the degraded environment. Its aim is to establish protection in the present so that future generations can also enjoy these legal assets in a perspective of social and state responsibility resulting from a solidarity between generations. Besides this prediction, the article reports a series of values that make of the environment a legal good of diffuse nature, of common use of all, conceived in its totality of collective patrimony. (BULZICO, 2009, p. 214, emphasis added).

That said, it is evident the intention of the constituent to assure the right to the balanced environment, imposing, for that, duties to the citizens and delegating to the State functions of maintenance and of effective guarantee to the environmental health in general. As a result, it should use its vertical position when compared to private ones, to optimize - while maintaining the social-environmental order - and discourage biopiracy - as a positive regulator -, fulfilling its role as the primary guardian of this Law (BUZICO, 2009).

In view of the above, Karel Vasak has developed a theory in which he frames Human Rights in generations. According to the generational classification, fundamental rights are divided into three generations of Human Rights, based on the development, conquest and recognition of these rights (BULZICO, 2009).

According to the theory of Karel Vasak, quoted by Bettina Augusta Amorim Bulzico,

> [...] civil and political rights, based on freedom, should belong to the first generation of Human Rights; economic, social and cultural rights, based on the notion of equality, should belong to the second generation; while the right to development, peace and a healthy environment, originating from the idea of solidarity, should belong to the third generation. (VASAK apud BULZICO, 2009, p. 107-108).

As can be seen, the ecologically balanced environment is part of the third generation of Human Rights, which are also known as rights of community vocation or collective ownership. It is enough to see that it is a diffuse and supra-individual right, and its greatest value is the humanism of law, in which global harmony among all living beings must prosper, giving ownership to humanity, as a whole, both of present and future generations (BULZICO, 2009).

In this sense, in the international agenda, to institute mechanisms to protect the environment, there have been conferences that have led to the formulation of international norms, aimed at ensuring the protection of the environment by the States, asserting the importance of

maintaining the environment as a fundamental guarantee for man (BARBOSA, 2008).

Regarding the result of these conventions, not forgetting the importance of all the conferences and instruments related to the topic, some of the most relevant to this work stand out, namely: United Nations Charter, 1945; Universal Declaration of Human Rights, 1948; Human Rights Covenants of 1966; Declaration on the Right to Development, 1993; United Nations Conference on the Human Environment, 1972; World Commission on Environment and Development, 1985; Conference of Rio – ECO 92 and Agenda 21 (BARBOSA, 2008).

Without underlining the specificity and relevance of each international instrument mentioned above, it is emphasized that the right to a healthy environment was incorporated into the internal ordering of several countries as a fundamental right after the *United Nations Conference on the Human Environment* held in Sweden in 1972, which resulted in the *Stockholm Declaration on the Human Environment*. This paper offers an attractive tool in the search for the construction of ecologically, socially and economically sustainable human communities, emphasizing the importance of state action for the effectiveness of environmental preservation and using 26 principles for objectifying this ideal (BARBOSA, 2009).

In view of the aspects addressed, it is clear and indisputable the understanding of the right to the ecologically balanced environment, in accordance with the Brazilian constitutional order and with international treaties, as a fundamental right of the Brazilian citizen with the scope of unavailable right. Consequently, maintaining the environmental balance is a guarantee of the man who must be protected, above all, by the State. So, the different economic branches must respect and have policies to minimize or extinguish the damages caused to nature in general, thus guaranteeing dignity of life for present and future generations.

4 Synthesis of the Normative History Concerning Access to Genetic Heritage and Associated Traditional Knowledge

In the international context, there are several state agreements dealing with intellectual property, such as TRIPS (Agreement on Trade-Related Aspects of Intellectual Property Rights), an international treaty that concluded the Uruguay Round of Multilateral Trade Negotiations of the General Agreement on Tariffs and Trade (GATT) in 1994 and created the World Trade Organization (WTO) (MARTINS, 2009).

The mentioned treaty, ratified by Brazil through Decree No. 1,355 of December 30, 1994, in general, allows researchers to patent discoveries made through research in other countries if they have a share in the profits obtained from the discoveries (MARTINS, 2009). However, even in the face of a treaty which states cooperation and mutual respect among States, there are several events in which the patent is made, and the country of origin has no share in profits. Sometimes the country does not even know about the appropriation of its natural resources.

The Brazilian State is one of those countries which, in addition to failing to earn significant profits that would have a significant impact on the national economy, suffer from the environmental degradation resulting from this practice, which may either disrupt the balance of the national biome or extinguish native species and placing traditional knowledge at the discretion of large foreign firms (VARELLA, 2004).

This fact shows that the regulation of the practice of biopiracy in the national territory is incipient, leaving much to be desired about the intervention, and about the repression of this practice that is harmful to the environment and, above all, to the economy.

The first measure taken in relation to the inhibition of this practice occurred atypical, through Provisional Measure (PM) nº 2.186-16, edited by the president at the time, Fernando Henrique Cardoso, on the 23rd of August of 2001 (VARELLA, 2004). This PM disciplined access to genetic heritage, protection and access to associated traditional knowledge, sharing of benefits and access to technology and technology transfer between the holding countries and the countries exploiting these resources (BRASIL, 2001a).

The rule in question, because it was published before Constitutional Amendment No. 32, dated September 11, 2001, remained in force until the promulgation of Law 13,123 / 2015 - which will be explored below -, because, according to Article 2 of the said amendment, " the provisional measures issued prior to the date of publication of this amendment remain in force until a later provisional measure repeals them explicitly or until final decision of the National Congress" (BRASIL, 2001b).

In view of this, it is noted that the mentioned normative text has long been constituted as the legal framework that governed the access and remittance to other countries of components of national genetic heritage, associated traditional knowledge and fair and equitable sharing benefits arising from the commercial use of genetic resources (BRASIL, 2001a).

Although PM has been a great advance in legal terms, the condition of "bio-pirates" did not have a significant change in respect for Brazilian biodiversity and state sovereignty, since the norm only established that access to any genetic resource would depend on the authorization of the Union, without punishing the practitioners of biopiracy, and still hindering the access of Brazilian researchers to genetic resources (BRASIL, 2014).

This PM was revoked only on May 20, 2015, with the enactment of Law 13,123. This, in turn, was the first act of the Legislative Branch that referred to the practice of biopiracy, regarding access to genetic heritage, about the protection and access to associated traditional knowledge and the sharing of benefits for the conservation and sustainable use of biodiversity (BRASIL, 2015).

Thus, the neglect of the Brazilian government in the face of a problem of an economic and, especially, environmental order has been demonstrated. As the PM that preceded the mentioned legislation did not have a coercive injunction regarding the practice of biopiracy, and

by the time it took the Legislature Branch to edit that norm – about fourteen years – many took advantage of that loophole to engage in this activity without fear of punishment.

As for Law 13,123 / 2015, even though it was created with the main objective of "facilitating research, leveraging technological innovation in the productive sector and generating benefits for the whole of society" (BRASIL, 2014, p. 24), it has not made great advances concerning the inhibition of the practice of biopiracy. The legal text sought to institute mechanisms with the purpose of providing the national economic development. Thus, it maintained the Council for the Genetic Heritage Management (CGEN), which was set up in April 2002, and now incorporates it into Article 6, Chapter II of the Law, with the following prerogatives:

> Art. 6 The Council for the Genetic Heritage Management – CGEN, a collegiate body of deliberative, normative, advisory and appellative character, is created within the ambit of the Ministry of the Environment, responsible for coordinating the elaboration and implementation of policies for the management of access to the genetic heritage and associated traditional knowledge and sharing of benefit, formed by representation of organs and entities of the federal public administration that have jurisdiction over the various actions referred to in this Law with a maximum participation of 60% (sixty percent) and representation of civil society in at least 40% (forty per cent) of the members [...]. (BRASIL, 2015).

Nevertheless, despite the intention of the infra-constitutional legislator to promote the economy, trying to facilitate the exchange of the activities of researchers, manufacturers, the State, indigenous peoples and traditional communities, promoting bioprospecting[2], provided that the CGEN must organize the entire structure of genetic heritage, associated traditional knowledge and the sharing of its benefits, as occurred since 2002, Law 13,123 of 2015 proves to be ineffective and does not prevent other countries from misappropriating Brazilian natural resources.

Because of this criticism, it is inferred that mere regulation is not, in itself, capable of stabilizing the environment and guaranteeing real economic growth in Brazil, and it is also necessary to institute and consolidate governmental policies to achieve adequate protection genetic resources and associated traditional knowledge.

5 Socio-environmental State of Law: a two-way street for a possible solution

The state came from the granting of individual powers of man to a central order, through a pact or social contract, with the purpose of guaranteeing order and social security. That is, primitive men, in a state of nature, were exclusive owners of themselves and their powers, but, for the maintenance of life in society, they recognized an authority to discipline and coordinate the coexistence between them.

[2] Research and exploration of the biodiversity of a region, its genetic and biochemical resources of commercial value.

Despite the great relevance of an in-depth study of both the origin and the development of the modern State, we shall briefly discuss here the classic models of State for the understanding of the Socio-Environmental State of Law.

In this scenario, from the outset, we have the so-called Absolutist State, originating from the alliance between king and bourgeoisie. In this state model, power was concentrated exclusively in the hands of the king, who, in turn, was a strong intervener in social life. He received funding from the bourgeoisie and was thus obliged to create an environment conducive to business of the bourgeois class, such as the opening of roads, the creation of a single currency, the unification of weights and measures (MORAES, 2008, emphasis added).

However, the delegation of power to the monarch became an obstacle when business increased, since its high intervention in social life and excessive spending on the social apparatus hindered economic development. Thus, the idea of a minimal and liberal state, which did not interfere with the economy and let the market regulate itself, became widespread to ensure that the full freedom of production and circulation of goods ensured the progress of companies and nations, appearing the Liberal State (MORAES, 2008, emphasis added).

In the twentieth century, exhausted by the very social and economic conditions that gave rise to it, the Liberal State could no longer account for the reality and interests of the bourgeoisie. Then, after the Second World War, the capitalist countries attempted to rebuild the economy on other bases. The form of state organization called the State of Social Welfare (MORAES, 2008, emphasis added) was disseminated.

The Welfare State had as its purpose and basic characteristic the state intervention in economic activities, regulating them to execute large investments and works and to redistribute income, always aiming, at least theoretically, for the welfare of most of the population. The idea was to break with the centenary principle of liberalism, which rejected any interventionist function of the State (MORAES, 2008).

Since the 1970s, this state organization has experienced crises and needed reorganization. As market and economic conditions became unbalanced, due to the State spending on social policies. As a result, the well-being of society would be under the responsibility of the citizens, in the face of the argument that health care and public education were spent heavily on welfare and support for the unemployed, that is, public services should be privatized and paid for by those who used them, and the model called the Neoliberal State (MORAES, 2008, emphasis added).

This state model rehabilitated and sustained values such as free market and free initiative. It also radiated the separation between economy and politics, with the State intervening less and less in the economy, assuming a regulatory role (MORAES, 2008).

After brief considerations on the main state models, giving rise to the idea of discussing a new paradigm of state ideal that meets the economic development with balance and maintenance of the environment for present and future generations. For, nowadays, the idea remains that the

environment can be maintained in a balanced, independent and autonomous way. It is enough to see the natural interdependence of global biodiversity, which goes beyond ponds and geographical boundaries. In this way, it is asserted, in this respect, the importance of increasing the responsibility and the duties of the State to relate to society, foreign states, non-governmental organizations and others, in a perspective of solidarity and collaboration (LEITE, 2007).

In support of this premise, the United Nations (UN), in its Preamble to the Declaration on the Right to Development (Resolution No. 41/128 of 04.12.1986), argues that the development

> [...] is a global, economic, social, cultural and political process aimed at continuously improving the well-being of the whole population and all individuals, based on their active, free and significant participation in the development and equitable sharing of the benefits arising therefrom. (ONU, 1986).

For this reason, Brazil, in the exercise of its sovereignty and in its role of promoting environmental equity, respecting, in particular, international treaties on the environment, of which it is a signatory, must articulate with the other nations an ideal of State that allows the effective economic development with reduction of present and future damages to nature and, consecutively, to humans (FENSTERSEIFER, 2008).

In this context, the model called the Socio-Environmental State of Law, with the recommendation of the attribution of ecological duties to the State, supported by an interpretation that sensitizes it to promote, together with society, the effective maintenance of the environment in a balanced way (BORTOLINI, 2014).

This model is characterized as a mechanism in which citizens and the State unite to achieve the realization of the common good of the ecologically balanced environment, without dissonances between private or public relations, integrating "legal, social and political elements in the search for an environmental situation favorable to the full satisfaction of human dignity and harmony of ecosystems" (LEITE, 2007, p. 275).

Rafaela Emília Bortolini (2014, p. 9) establishes five fundamental functions on the model of Socio-Environmental State of Law, explained below:

> (i) to adjust forms that are more appropriate for the management of new risks and avoiding organized irresponsibility; (ii) to legalize contemporary instruments that are preventive and precautionary, abandoning the idea that Law should only concern itself with obvious damages, and then incorporate special attention to abstract, potential and cumulative damages and risks; (iii) to approximate the notion of integrated law, since the effectiveness of the environmental defense depends on multi-thematic considerations; (iv) to seek the construction of an environmental conscience; (v) to foster a better understanding of the object studied, providing an understanding of the ecological position of the human being and the implications that result from the integrative vision of the environment.

It should be noted that this is not a beginning of a state model, but a new State ideal, which fully aims at establishing a right with equivalence between the economic order and the social good of the individual. In this sense, it should be noted that "a State regulating economic activity, capable of directing and adjusting it to constitutional values and principles, aiming at human and social development in an environmentally sustainable way" (FENTERSEIFER apud BARTOLINI, 2014, p. 9).

According to José Rubens Morato Leite (2007, p. 299 in practice, the verification of the Socio-Environmental State, as a solution for minimizing biodiversity degradation, "will only be possible from a global awareness of the environmental crisis, in view of the requirements, under penalty of irreversible exhaustion of environmental resources, of a modern, informed and proactive citizenship",

For this reason, to achieve this ideal, states must, in a joint effort, foster the importance of establishing standards and guidelines for the maintenance of a healthy environment, making use, above all, of international directives such as International Environmental Law (BULZICO, 2009).

In this regard Bulzico (2009, p. 43 establishes the relevance of this branch of Law, stating that:

> International Environmental Law is of great use to the entire international community, since the way it is applied reflects consubstantially in the quality of life, in health, in the physical, mental and psychic well-being of the human being. From the point of view of the sovereign State, this branch influences the public policies, culture and economy of each country, and is influenced by it.

In this same line of understanding,

> [...] under the prism of the effective guarantee of the environment against economic development, marked by scientific and technological advances, the institution of the Socio-Environmental State of Law is surrounded by vast challenges in the current social body. This is because the intervention of man in nature in his economic activity puts it at risk while being used in such a way that it is considered ‘as a simple object devoid of any intrinsic value’. (PETTERLE; CADEMARTORI, 2016, p. 280).

Still following this reasoning, on the risks of the environment as a function of human exploitation, it is pointed out that “[...] for tens of thousands of years, men survived without anything resembling our science. After about four centuries [...] the science is presenting serious threats to our survival” (LEITE, 2007, p. 21).

Also, in this perspective, despite environmental risks, Petterle and Cademartori (2016, p. 281-282, emphasis added), when interpreting the vision of Ulrich Beck (2010), proposed in his work " Risk Society: Towards a New Modernity", demonstrate that

> [...] in a **society of risk, scientific and technological knowledge,** whose purposes should be the development, social welfare, quality of life and dignity of the human person, due to its inconsequential instrumentation, with all its power of creation and destruction, **becomes the main threat to the maintenance and survival of the human species itself**, taking with it the whole ecosystem as well.

These authors conclude, in relation to the conception of Ulrich Beck, that:

> The author understands that there is a need, for a future scenario, of a process of reindustrialization and technological democratization, taking into consideration the environmental protection. For him, this is an *ecological option of Welfare State*, in which there would be the creation of authorities, equipped with powers and attributions, to effectively combat the industrial booty of nature. (PETTERLE; CADEMARTORI, 2016, p. 282).

Therefore, considering the state of environmental risk by the industrial economic movement in general, having in turn a new paradigm of social order, the Socio-Environmental State of Law can be understood as a model in which the exploitation of natural resources occurs equitably with its balance. For this reason, the State must intervene in the economic field to realize this perspective (PETTERLE; CADEMARTORI, 2016).

For this purpose, "a new conception of development and State based on technological and scientific advance" is proposed (PETTERLE; CADEMARTORI, 2016, p. 282), so that sustainability is understood as the essential basis for progress, implying reciprocal implications for the State and for society regarding environmental protection.

Considering what has been observed, it is necessary to idealize a new north of state control, so that "[...] the solidarity with respect to the duties in the maintenance of the ecological balance assumes a legal-constitutional dimension" (PETTERLE; CADEMARTORI, 2016, p. 282). Therefore, it is essential for the social and environmental good, especially for the discouragement of the practice of biopiracy, an entrepreneurial action on the part of society, to value its natural wealth, and on the part of State, intervening in internal and external policies that endorse the right to the ecologically balanced environment as reality and its duty.

6 The Bill No. 6794 and the Criminalization of Biopiracy

Criminal Law, because it has a sanctioning nature, is one of the most effective means of social coercion. Such discipline, with its penalties and safety measures, induces behaviors and gives applicability to its legal devices. Inclusively, several authors affirm that life in society is only viable due to the Criminal Law and its convincing methods of coercion.

Precisely from this point of view, Muñoz Conde

> [...] believes that without the penalty it would not be possible to coexist in the current society. Coinciding with Gimbernat Ordeig, he understands that penalty constitutes an elementary resource which the State relies on, and which it uses, when necessary, to make possible the coexistence between men. (BITENCOURT, 2012, p. 273).

Now, in view of the coercive nature of criminal methods, nothing more coherent than biopiracy would also receive protection from this branch of Law. In the current context of environmental imbalance, it is fundamental that legal assets as important as the fauna and flora are protected by the Criminal Law. The environment is a collective good and belongs to the whole society and it is certain that only with its conservation will we preserve the existence of the human species itself.

From this perspective, Álvaro Sánchez Bravo affirms that

> [...] the appeal to the Criminal Law for the protection of the environment supposes to consider it as one of these values and interests, as a reality, without which it is not understood the society, nor the States, nor the human being itself. If Criminal Law should appeal in defense of the environment, it is because it is so important, so essential, that an attack against it will crack the cements of our own existence (BRAVO apud FERNANDO; DANTAS; MINAHIM, 2008, p. 1441).

However, despite all the above, biopiracy does not have an express and restrictive criminal type that criminalizes it. However, acts of biopiracy may end up coinciding with some of the behaviors described in Law No. 9,605 of 1998 (Environmental Crimes Law). As an example, consider the content of article 29 of this Law, transcribed below:

> Art. 29. To kill, persecute, hunt, catch, **use wild fauna specimens, natives or on a migratory route, without the proper permission, license or authorization of the competent authority, or in disagreement with that obtained**:
> Penalty - detention of six months to one year, and fine (BRASIL, 1998, emphasis added).

The preposition above can be confirmed by the Criminal Appeal judgment 200951018102993 by the 2nd Panel of the Federal Regional Court of the 2nd Region, in which the conduct characterizing the practice of biopiracy was considered as corresponding to the international trafficking of animals, whose authors were condemned exactly under the terms of the provisions of Article 29 above (BRASIL, 2012).

However, such legal predictions are not effective in combating the practice of biopiracy. This is because

> [...] according to current regulations, when caught in this type of irregular action, the foreigner simply pays a fine – generally, derisory, in relation to the possible profit to be obtained with the patenting resulting from the research on the active principles contained in substances or parts of specimens of native flora and fauna – and he/she is released, returning later to the Country for new bio-pirate attacks, certain of its impunity. (ARAÚJO, 2006, p. 2).

In view of this situation, the Bill No. 6794 of 2006, authored by Deputy João Campos de Araújo (2006, p. 1), intends to insert article 61-A in the Environmental Crimes Law to punish the practice of biopiracy more severely, with the following wording:

> Art. 61-A. To collect, transport, store, deliver, obtain, sell or donate a specimen of native flora or fauna, part or product of it or its substance derived as an active principle, for commercial or scientific purposes, without the authorization of the competent body or in disagreement with that obtained.
> Penalty – imprisonment, from two (2) to five (5) years, and fine.
> Paragraph1st If the conduct provided for in the caput aims to send abroad the specimen, part or product of it or its substance derived as an active principle, without the authorization of the competent body or in disagreement with that obtained, the penalty is increased from half to double.
> Paragraph 2nd If the conduct provided for in the caput aims to send abroad the specimen, part or product of it or its substance derived as an active principle, for the development of scientific research abroad or the registration of a patent, without the authorization of the competent body or in disagreement with that obtained, the penalty is increased from one and a half times to triple.
> Paragraph 3rd In cases where the conduct provided for in the caput and in its paragraphs is carried out by a foreigner, the competent authority shall be responsible for the referral of the case-file to the Ministry of Justice for the purpose of its expulsion, without prejudice to the application of other applicable sanctions. (BRASIL, 2006).

Well, from the reading of the mentioned mechanism, it is noted that the Art. 61-A starts innovating from its penalty. It happens that most of the conduct provided for in the Environmental Crime Law is punished with the penalty of detention, which hinders compliance with the penalty in an initially closed regime. However, contrary to the general system of the Law, Article 61-A provides for imprisonment and authorizes the commencement of the sentence under a more burdensome regime (ARAÚJO, 2006).

Subsequently, it is observed that the minimum and maximum sentences are also higher when compared with the other penalties provided for in the Law under analysis. Most of the typified conducts are punished with months, whereas Article 61-A provides for a penalty of two (2) to five (5) years (ARAÚJO, 2006).

In addition, the referred legal, proposes two cases of increase of the penalty, which influence in the third phase of the dosimetry of the sentence. Thus, if the agent practices the conduct described in the caput with the intention of sending the shipment abroad, the penalty can be increased from half to double. In this continuity, if the shipment abroad intends the development of research or the registration of patents, the penalty can be increased from one and a half to three times (ARAÚJO, 2006).

Finally, if a biopiracy is practiced by foreigners, paragraph 3 provides for a referral of the case to the Ministry of Justice to promote the expulsion process (ARAÚJO, 2006).

Then, in the face of all that has been exposed, it is noted that the proposals of the Deputy João Campos will probably protect Brazilian fauna and flora, as well as contribute to the fight against biopiracy. However, it is noted that the Bill inserting Article 61-A in the Environmental Crimes Law was proposed in March 2006 and has not been very successful in the course of these almost 13 (thirteen) years. Thus, the matter must be treated more seriously by Congressmen to be able to process faster, with the urgency that the subject demands.

7 Conclusion

Given all that has been exposed in the course of this article, one can conclude that Brazil has always been marked by large explorations of its genetic heritage and that, unquestionably, the practice of biopiracy in the national territory, besides causing enormous economic damage, it ends by extirpating from the individual his/her constitutional right to have the environment balanced for present and future generations.

Likewise, as was inferred in this analysis, the existing rules must be complied with more imperatively and, in the same sense, it is necessary to create cogent norms that give the activity of bio-pirates more severe sanctions for the purpose of safeguarding not only for the Brazilians, but for the world population, a duly equitable environment.

In addition, individuals must become more and more aware of their fundamental role in this end, and therefore, through the creation of educational public policies, the State must propagate this idea. That is because, the original constituent granted the State the duty to promote and maintain the balance of the environment, and, likewise, conferred upon it the duty of guaranteeing education to citizens.

After all, annihilating the practice of biopiracy does not mean, in an increasingly technological world, to curb the economic development of Brazil or the States in general. However, it is argued that such development and consequent technologies beneficial to life should take place in a sustainable manner, to guarantee an effective growth of the economy, based on the individual's inalienable right to have the environment preserved world-wide.

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