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'Annihilating Natural Productions': Nature's Economy, Colonial Crisis and the Origins of Brazilian Political Environmentalism (1786–1810)

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ABSTRACT

The article analyses the trajectory of a group of Brazilian intellectuals from 1786 to 1810, who inaugurated a systematic critique of the environmental damage caused by colonial economy in Brazil, especially forest destruction and soil erosion. These authors, schooled in the culture of the Enlightenment, adopted a theoretical framework centred on physiocratic economic doctrine and the 'nature's economy' encoded by Linnaeus. Their focus was political, anthropocentric, and pragmatic. They defended the natural milieu on the basis of its importance for the survival and progress of Brazilian society. Waste and destruction of natural resources were attributed to the rudimentary technologies and social practices inherited from the colonial system. They proposed an overall modernisation policy as the road to overcoming environmental degradation in the country

KEYWORDS

Brazil, Portugal, conservation history, political environmentalism, colonial crisis

I.

Of all the elements that God created for His glory, and for the use of man, certainly none is more worthy of contemplation than the Earth, the common Mother of all living creatures. She still gives us the same protection that she offered to those born in the beginning of the world. Not even the immense multitude of families who have

inhabited her, nor the terrible flood and shipwreck that it suffered with all its sinful children, nor the numerous and fearsome revolutions that so many times have almost thrown her off of her axis, nor the long succession of centuries that change and consume everything, were able to sterilise the fruitful germs of her fertility. She will always be, until the end of the world, as liberal and generous as she was in the beginning ... *despite the ungratefulness of men, who seem to work continuously to destroy and annihilate her natural productions, and to consume and weaken her primitive substance.*

José Gregório de Moraes Navarro (1799: 7)

The author of these words was a magistrate in the interior of Minas Gerais, in Brazil, at the end of the 18th century, when the region was experiencing the decline of a relatively short but historically remarkable cycle of extraction of gold and precious stones.¹ Little is known about this man, except that he studied Law at the Universidade de Coimbra, in Portugal, between 1778 and 1782 (Moraes, 1969: 257).² We also know that he served as a judge in Paracatu do Príncipe, deep in the western section of Minas Gerais, having been responsible for the official installation of that village, in 1798 (Barbosa, 1971: 340).

In 1799 Navarro published in Lisbon a small and fascinating volume entitled *Discurso sobre o Melhoramento da Economia Rústica no Brasil* [*Discourse on the Improvement of Brazil's Rustic Economy*].³ As far as we know, it was in this booklet that Navarro – after indulging in formalities common to the learned texts of the times, including a tribute to the Portuguese royal prince and an Arcadian poem in which he imagines a golden age when Aster could again return to the live on the Earth⁴ – for the first and only time formally presented his reflections about the contrast between the generosity of the earth and the ungratefulness of men, creatures who continuously strive to ‘destroy and annihilate her natural productions’. He did not remain at this generic level, though, as he also made important critical observations about the behaviour of Portuguese colonisers in Brazil. In Navarro’s words, they

successively founded large cities, remarkable villages and many other smaller places. But how are all these old population centres today? They resemble lifeless bodies. This is so because the neighbouring farmers, who supplied them with their basic goods, with their agriculture, *after reducing all trees to ashes, after depriving the land of its most vigorous substance*, left it covered with grasses and ferns ... and abandoned their houses, mills, workshops and corrals, establishing themselves in new plots. (Navarro, 1799: 11. The emphases in all the citations from Navarro are mine.)

Although he recorded the state of abandonment of many population centres and productive areas of the colony, as a consequence of destructive action affecting the natural environment, Navarro’s text stops short of stating that any and all attempts of human settlement were necessarily doomed. On the contrary,

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he foresees the possibility of lasting social progress, overcoming the destructive trend, if a beneficial and intelligent environmental behaviour is adopted:

Let us suppose now that, better advised, men have conserved the trees that bear fruit and are useful and that, *using each plot according to its natural characteristics, they have aided the fertility of the earth through means that experience and industry revealed to be the most convenient*. Would they not be much happier? Would the land not be as bountiful and beneficial to them as it was in the beginning to its first settlers? (Navarro, 1799: 9)

It is easy to see that Navarro's ideas, discussed further in this text, are quite unique, if we consider their time and place. Under the guise of a narrative typical of the style of the time – mixing biblical citations, elements of natural history and Graeco-Roman Arcadian references – what emerges from Navarro's text resembles a set of topics and perceptions usually associated only with the contemporary world. Navarro develops topics and perceptions familiar to the ecological debate of the last decades, which many consider to have emerged only after the great transformations – objective and subjective – caused by the planetary expansion of urban-industrial civilisation. Some aspects of Navarro's text seem to establish a startling connection between this 18th century magistrate from Minas Gerais and certain key questions of culture and politics at the close of the 20th century.

Navarro presents the earth, for example, as an availing and creative force, in a global and abstract sense. This is not the eulogy of the fertility of a specific place, something quite common in human cultures since antiquity, but the assertion of the permanent fecundity of the earth as a whole, the 'common Mother of all living creatures'. In Navarro's mind the planet acquires a sense of personality, a feminine gender and a will to survive that overcome all the many obstacles and difficulties posed since remote eras – such as Divine punishment (the deluge), the working of cosmic mechanics (the revolutions) or the exponential and potentially destructive growth of human presence.

When Navarro discusses the relationship between humanity and the earth, on the other hand, he sees that there is a potential ecological antagonism between them. What is most significant in this vision, as in the previous one, is its generic, abstract and continuous sense, going beyond local or specific contexts. The capacity of humans for environmental destruction does not stem from random or occasional actions, but translates a basic trend to consume the 'primitive substance' of the planet. It is true that Navarro argues, as we shall see, that this trend is stronger among young and immature cultures, having the potential to decrease through time by learning from its tragic consequences. In the case of colonial Brazil, a society that was living 'as if in its infancy' (Navarro, 1799: 8), devastation was growing and its results could already be felt in dramatic fashion. Several communities and productive activities were collapsing forever because of environmental degradation.⁵ The nature of this collapse, in Navarro's mind,

was not based on warfare among humans, nor on the exogenous irruption of some natural factor, but on the negative consequences of aggregate social action upon the natural environment. This natural environment starts to deny its 'vigorous substance' to mankind, which is thus deprived of its material base of existence. But the earth does not do so on its own, because it is by its own nature fertile and generous. It does so in response to human behaviour that 'consumes' and 'weakens' this substance. The earth is at once passive and active. Passive, because it takes human aggression silently. Active, because this silence is temporary, actually the incubation of revenge. The earth changes from beneficial to mean, from fecund humus to the proliferation of noxious weeds. Here we see an extremely modern theme – well expressed by Michel Serres (1991: 24) – of the passing 'from the war of all against all to the war of all against everything'. The issue of the opposition between humanity and the natural environment is no longer a moral one, a stark display of ungratefulness. It becomes an eminently political problem – a threat to the collective survival of the human community.

Despite composing a picture of environmental crisis and decay in 18th century Brazil, the author was not pessimistic about the future. Not only was it possible to learn to live harmoniously with the natural environment but – even more remarkable – it was possible to act in such a manner as to 'aid the fertility of the earth through means that experience and industry revealed as the most convenient'. For this it was imperative to reconcile economic action with environmental reality, seeking to learn the 'most adequate and natural [use] of each plot'. An actively malign stance had to be replaced by an actively benign one. In this manner it was possible to foresee the possibility of a beneficial and progressive renewal of Brazilian social life. More specifically, Navarro proposes three basic procedures: a) the introduction of the plough, to revive worn-out soils and to endow agriculture with a sense of permanence – as opposed to the nomadism of forest burning; b) the reform of industrial hearths, in order to reduce their consumption of firewood and increase the productivity of sugar-cane mills; and c) the conservation of forests, by means of reserves and incentives to plant trees (Navarro, 1799: 15-19).

The plough was a symbol of a rational and rooted mode of agriculture, free from the evils of forest burning and nomadism. Old plots, abandoned to noxious weeds after successive predatory efforts, could be reclaimed with the plough: 'if [the farmers] again return to their huts they will find many treasures hidden below the roots of grasses and ferns. Only the iron plough can find these treasures and choke those poisonous and useless roots that have sucked away all the substance of the land'. The introduction of the plough would revive 'a great portion of the lands lying around the large population centres, which have been resting indolent and abandoned'. It would thus be possible to reduce the high prices for food, which had increased immensely in the Minas Gerais of the late 18th century, and to acclimatise in Brazil trees and animals brought from Europe, especially sheep (Navarro, 1799: 14 and 18).

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The conservation of forests, another basic aspect of his proposal, depended first of all on the reform of industrial hearths used in sugar-cane processing. Their rudimentary technology caused excessive consumption of firewood. It would also be necessary to plant fast-growing trees and to use sugar-cane bagasse as fuel for the hearths. Farmers should be stimulated to plant fruit trees, palm trees and medicinal plants. Wood lots located near cities would be declared public trusts and exploited in a rational manner by municipal councils. Finally, the 'most serious concern' should be dedicated to the conservation of forests adjacent to the sea and to rivers, in order to 'provide the wood needed for ships and public uses'. These forests should be marked out and cared for as state patrimony (Navarro, 1799: 19).

Anticipating the discussion made in the next section, it is easy to notice the main theoretical matrix of such a project: the French physiocratic school of political economy, with its defence of agrarian production as the only true basis for social progress.⁶ It is significant that Navarro's economic program does not include mining, the major source of wealth in 18th century Minas Gerais. This was not accidental. Rural improvement was at the core of his Arcadian and physiocratic sensibility. Actually, he had no sympathy for the economy of mining. He criticises the men who 'started to destroy the land in order to retrieve from its bowels those treasures that were more agreeable to their ambition'. This behaviour had caused damage to city dwellers, who had to pay higher prices for subsistence goods (Navarro, 1799: 12). This was typical of the physiocratic critique of mining, branded as wavering, provisional, prone to disorganise price and monetary systems. Brazil's future, in Navarro's optimistic perspective, could do without this type of risk. The adoption of the above mentioned measures would be enough to turn Brazil into 'the richest and most fortunate [country] in the entire world', making it capable of 'harvesting, without difficulty, yellow wheat, sweet honey and aromatic balm' (Navarro, 1799: 19).

II.

Navarro's concepts were not brand new in the European and colonial contexts, but neither were they trivial. We are faced with a highly stimulating intellectual phenomenon when we consider that in 18th century Brazil someone was discussing ideas so germane to current ecological reflections – such as the image of the earth as an integrated and live reality, the global destructive impact of human action, the risk of social collapse on account of environmental degradation, and the need to promote a sustainable form of development. We can, surely, imagine Navarro as an isolated and individual phenomenon, a rare example of eco-visionary foresight blossoming in the remote backlands of Minas Gerais.

The truth, however, is very different. The documentary evidence to be shown demonstrates that he is not an isolated phenomenon, but part of a consistent

intellectual tradition of ‘political-environmentalism’⁷ in Brazil through the 18th and 19th centuries. This tradition has been ignored by international histories of ecological thought and, more surprisingly, by Brazil’s own cultural memory. We can realise how little we know about the origins of the ecological sensitivity of the modern world when we ponder the discovery of such an ancient lineage of Brazilian thinkers, stretching all the way back to the 18th century, concerned with the destruction of forests, the depletion of soils, climatic changes and other environmental damage. From 1786 until 1888, according to my researches, at least 38 Brazilian authors wrote regularly about these problems, always pointing to the socially negative consequences of the destruction of the natural environment (Pádua, 1997). The theoretical framework present in almost all these writers, including the ones discussed in the present article, deserves some initial comments. First of all, they adopted a strong political bias. The natural environment was defended not because of general ethical or aesthetic reasons, but because of its importance for nation-building, for the survival and growth of Brazilian society. Natural resources were the greatest tool for Brazil’s future development and should be treated carefully. To waste such a treasure would be a historical crime which should be combated by the public authorities. The main tone was always anthropocentric, scientificist and economically progressive. Destruction of nature was not understood as a ‘price of progress’ but as a ‘price of backwardness’. It was considered the legacy of centuries of colonial exploitation. The main panacea for achieving environmental sanity, in this sense, would be the coming of modern technologies and productive practices. In the particular case of Brazil, contrary to the views that try to link the origins of environmentalism with the Romantic culture, the natural environment was first defended, sometimes heroically, by pragmatic and utilitarian intellectuals.

In order to understand the cultural context from which this whole tradition emerged, including Navarro’s text, we need to reconstruct the historical lines which aided the genesis of a political discussion about the environmentally predatory nature of the Brazilian social establishment. Until the end of the 18th century, and during the entire colonial period, very few voices were raised in perception, far less in condemnation, of this fact. Since 1780, however, a theoretical movement in this direction began to take shape. It had a clearly defined epicentre: the Universidade de Coimbra after the occurrence of the curriculum reform of 1772, ordered by the progressive prime minister Marquis of Pombal. This reform pulled Portuguese academe away from traditional medieval scholastics and directed it to the new concepts of natural philosophy and political economy which were spreading in Europe. The Portuguese state itself promoted the introduction of this ‘Enlightened’ set of ideas in Portugal, more specifically a certain reading of such ideas. This was part of a semi-official project of cultural and economic modernisation. Despite its being launched during the long tenure of the Marquis of Pombal (1750–1777), I consider this

project 'semi-official' because it did not have the complete and permanent support of Portugal's ruling elite. Its trajectory was filled with turns, advances and retreats. The promoters of the reforms were always at odds with the representatives and the beneficiaries of traditionalist ideas and practices. The kings swayed in their support of the two groups, both of which were usually represented in cabinets. Several times a progressive minister was succeeded by a traditionalist one, and vice-versa. Rodrigo de Sousa Coutinho, paradigm of an enlightened and progressive minister – compared by Brazilian writer Hipólito José da Costa to 'a clock that is always ahead of time' – was succeeded as Minister of the Navy and of Ultramarine Possessions, a post he occupied between 1796 and 1801, by the Viscount of Anadia, whom the same Hipólito José da Costa considered to be 'a clock that is always late' (Cited by Maxwell, 1995 [1973]: 257).

This semi-official condition, together with the unstable basis of support, helped shape an enlightened culture that was flexible and politically moderate. 'Illumination' was interpreted more as a practical instrument of scientific progress and economic development than an utopia of revolutionary emancipation of the human race. In this context, the force of an Enlightenment committed to confrontation, radicalism and republicanism was quite limited. Even this prudent and instrumental version of the Enlightenment was harshly resisted in Portugal, as evidenced by the '*viradeira*', the conservative reaction that followed Pombal's fall from power.

At the close of the 18th century, however, a certain degree of development of natural sciences in Portugal was already irreversible – if nothing else, because of its important economic dimension. For example, in Brazil the production of precious metals, the main source of metropolitan income, was waning, and it was becoming clear that it would not recover if rudimentary methods continued to be employed. The study of geology and the development of new mining technologies became high priorities, as they brought the hope of finding new deposits and revitalising old mining sites. Brazilian agriculture also displayed a great potential for improvement, despite its low productivity. Revolutionary crises were destabilising old centres of colonial agricultural production, such as Haiti, and new opportunities were opening up in the international scene. Traditional Brazilian crops, such as cotton and sugar cane, were temporarily strengthened, despite their limited capacity for growth.

The best minds noticed that true progress in Brazilian agriculture required two movements which depended on scientific research. First, exogenous species had to be acclimatised in the colony. Incidentally, this was a central topic on the late 18th century economic agenda. Translocation of species from one region of the globe to another, with the support of botanical gardens to guarantee their survival, was in high order in colonialist countries such as France, England and the Netherlands. Portugal was clearly behind in this matter: only at the beginning

of the 19th century did it begin to create botanical gardens in Brazil⁸, while French Guyana, certainly not the most important French colony, had had a well developed botanical garden, called 'La Gabrielle', since the previous century.⁹

Second, better knowledge of Brazilian nature was urgently needed, in order to assess the economic usefulness of still unknown native species. The Portuguese empire was equally behind schedule in this matter. Ever since the 16th century systematic inventories of useful minerals, plants and animals of the entire world were being published in Europe, specially those found in the far eastern colonies. However, practically nothing was known about the very rich Brazilian territory, because the scattered and vague accounts of chroniclers were not an appropriate record. Brazil's colonial economy had been built, in reality, with little regard to local species. The option had been to use the territory – and the temporary fertility supplied by the burning of its enormous forest biomass – as a mere support for monocultures of exotic species brought in from the oriental tropics.¹⁰

At this historical juncture, however, Portuguese intellectuals and politicians started to perceive the need to promote the systematic study of Brazilian nature. This new mentality could be found in the Universidade de Coimbra and in the Academia Real das Ciências de Lisboa [Lisbon Royal Academy of Sciences], created in 1779, centres of knowledge that started to receive a growing number of youths from the Brazilian social elite. The great majority of these students – about 1,242 Brazilians attended the Universidade de Coimbra between 1772 and 1882 (Moraes, 1940) – did not become active intellectuals. But a minority of them formed the so-called Luso-Brazilian 'enlightened generation', the first group of Brazilian intellectuals trained in scientific knowledge and in the pragmatic and progressive spirit of European Enlightenment. (Dias, 1960; Maxwell, 1973).

From this small elite emerged the first intellectuals systematically concerned with environmental destruction in Brazil. The major mentor of this group was the Italian naturalist Domenico Vandelli (1735-1816), a friend and correspondent of Linnaeus, who was invited by the Portuguese government to participate in the reform of the Universidade de Coimbra. This invitation was not by chance, because Vandelli, being a member of the more moderate Italian Enlightenment, was used to the presence of Catholicism and aristocracies. Even so, given the prevalence of traditionalism in Portuguese culture, his intellectual impact was deeply invigorating. He became a scientific and cultural energiser, participating in the creation of the Jardim Botânico d' Ajuda [Ajuda Botanical Garden] and the Academy of Sciences (Munteal Filho, 1993). Furthermore, he became famous as the grand master of Portuguese naturalism, training an entire generation of researchers (including many Brazilian ones). Under his personal direction, several of these students combed the interior of Portugal and of its colonies, collecting specimens and doing scientific research.¹¹

Vandelli spread an intellectual synthesis that combined the physiocratic doctrine with the economy of nature. According to one author, he taught 'following the book of Buffon and the *Systema Naturae* of Linnaeus' (Ferreira, 1988: 27. Cited by Figueirôa, 1997: 45). The 'economy of nature', as systematised by Linnaeus is a basic part of the chain of scientific work that led, in the 19th century, to what came to be known as 'ecology' (Worster, 1994: chapter 2). It argued the existence of a system of interdependent balances between the several components of the natural world, in a manner that gave each component a function relevant to collective dynamics. This outlook was at the bottom of several critical analyses made in the 18th and 19th centuries of the impact of human action on the environment. It was in this cultural environment that the influential 'desiccation theory', for example, became widely known. It was developed by the cumulative efforts of naturalists such as Halles, Buffon and Duhamel du Monceau. It was the first modern scientific concept about climatic changes induced by humans, because it related the loss of vegetation to the reduction of humidity, of rainfall and of springs in certain territories (Grove, 1995: 164). The critique of deforestation, based on this thesis, gained a new conceptual and political status, because the climatic damages caused by deforestation could generate serious economic consequences.

It was precisely from all these theoretical frameworks that Vandelli started to criticise explicitly and recurrently the environmental destruction underway in the Portuguese world. Examining the situation of Portuguese wood-lots in his *Memória sobre a Agricultura de Portugal e de suas Conquistas* [*Memorial about the Agriculture of Portugal and its Conquered Lands*], published in 1789, he states that 'rarely are they planted and the older ones lack adequate care for their conservation and growth' (Vandelli, 1990 [1789a]: 128).¹² The loss of floral cover on hilly terrain, on the other hand, made them 'ever more sterile' on account of erosion. Deforestation thwarted their being 'supported in several planes in order to avoid the waters from rolling down with much speed', with the result that the waters 'not only take with them salts and oils, but precisely the most fertile land' (Vandelli, 1990 [1789a]: 129). This critique becomes much more severe, however, when Vandelli starts to reflect about environmental damage in Brazil, because the colonisation of the land was combining two negative and apparently opposite elements: under-settlement and over-exploitation. Vandelli's progressive stance in economic matters made him disgusted with the fact that 'the immense country of Brazil [was] almost deserted of people and uncultivated' (Vandelli, 1990 [1789c]: 144).¹³ He was even more disgusted because, even with such slight occupation, the environmental integrity of the territory was continuously being destroyed:

agriculture is expanding along the borders of rivers in the interior of the country, but it does so in a manner that in the future will reveal itself harmful. It consists in burning ancient forests whose wood, because of the ease of transportation by means of the

river themselves, would be very useful for naval construction, or for extracting dyes, or for cabinet making. Once these forests are burned, they are cultivated for two or three years, while the fertility produced by the ashes lasts, until the diminished fertility makes them abandon the plots in order to burn new sections of forests. Thus they continue destroying the forests along the rivers (Vandelli, 1990 [1789a]: 131).

In a different text, also published in 1789, entitled *Memória sobre Algumas Produções Naturais das Conquistas* [*Memorial about Some Natural Productions from the Conquered Lands*], Vandelli criticises this manner of deforestation from another standpoint. It is not only an agronomically incorrect method but also a process that destroys still unknown components of tropical flora, aborting the possibilities of their future use through the application of scientific research:

Among the plants from conquered lands, there are many unknown to botanists, basically very useful trees, or trees useful for building ships, houses and useful objects, or for extracting dyes. However, they will become rare and their transportation will become difficult in Brazil. This is explained by the habit introduced of burning large plots of forests on the borders of the rivers for the cultivation most of the corn or cassava, extinguishing the fertility of these plots in a few years and requiring new burns, leaving behind land that was earlier cultivated. Thus are destroyed immense trees that are useful and can be easily transported (Vandelli, 1990 [1789b]: 147).

Notice that Vandelli's perspective does not contain any kind of nature cult or romantic overflow in the face of its manifestations. The destruction of the natural environment is criticised for utilitarian and political reasons, based on a clearly pragmatic and anthropocentric perspective. Slash-and-burn agriculture is bad because it is unsustainable, because it does not preserve the fertility of the soil, because in the future it will reveal itself to be damaging. The extinction of arboreal species is undesirable because it is bad for industry – ship-building, etc. The important thing here was the correct construction of an economy and a society, neither of which could be built upon such a precarious and devastated basis.

Such precariousness, on the other hand, was present not only in environmental practices, but also in social structures. Vandelli initiates a lineage of criticism of slavery as the basis of Brazilian colonial economy, although in an implicit and cautious tone. When he comments upon Brazilian agriculture, for example, he notes that 'all agricultural tasks are performed by Black slaves, and no White will condescend to being a farmer – the major reason why agriculture in Brazil will never grow very much' (Vandelli, 1990 [1789a]: 131).

In another text, when he suggests an effort to 'pacify and civilise the Indians and make them used to agriculture', he explains this policy by the need to make Brazilian economy 'less dependent on so many Blacks, who in time will become so expensive that it will be hardly worth transporting them to Brazil' (Vandelli,

1990 [1789c]: 145). All these topics would later be taken up by several of his Brazilian students, initiating an intellectual tradition that tried to associate environmental criticism with socio-economic criticism in the Brazilian colonial context.

It is important to note that Vandelli was never in Brazil, and that his remarks were derived from information received through his correspondents. His concerns were therefore built upon his close association with a group of his Brazilian students. This mechanism was reinforced when each of his students returned to Brazil, having first-hand contact with the destruction in progress. This was the context in which the first treatises on political environmentalism were written in Brazil.

It is significant that these writers were not concentrated in one area of Brazil, but were spread over many regions. This helped increase the richness and diversity of their observations. The major names of this initial period were Manuel Arruda da Câmara (1752-1811), in Pernambuco; Baltasar da Silva Lisboa (1761-1840) and Manuel Ferreira da Câmara Bittencourt e Sá (1762-1835), in Bahia; José Gregório de Moraes Navarro (?) and José Vieira Couto (1752-1827), in Minas Gerais; Antônio Rodrigues Veloso de Oliveira (1750-1824), in Maranhão and later in São Paulo; João Severiano Maciel da Costa (1769-1833), in Rio de Janeiro. José Bonifácio de Andrada e Silva (1763-1838), certainly the most important member of the group, distinguishes himself from the others because of his late return to Brazil. While they returned from their European studies before the end of the 18th century, or right at the beginning of the 19th century, Bonifácio stayed in Europe and involved himself in several academic and administrative tasks. After his return to Brazil, in 1819, Bonifácio eventually became Minister of the Kingdom and Foreign Affairs and the head of the cabinet that led the country to political emancipation in September of 1822. In this position he made a systematic effort to pull together a project of reform and development for Brazil, and conservation of natural resources was one of its major components (for a deeper analysis of Bonifácio's ideas and political work, and his close connections with the intellectual group discussed in this article, see Pádua, 1987 and Pádua, 1999).

Going back to the environmental discussions in Portugal, however, it is important to notice that concern over the destruction of natural resources was not limited to academic circles. It spilled over into the concerns of political leaders. In this matter, as in others, Rodrigo de Sousa Coutinho was a key actor. Coutinho envisaged a federalisation of the Portuguese empire, with Brazil as the seat of the crown, and this increased his concern with the fate of Portugal's largest colony.¹⁴ Its potential should be carefully studied by the natural sciences, both by *in situ* expeditions and by the remittance of Brazilian specimens to Portugal, for adequate examination. Its agriculture should be stimulated by means of the diversification of cultures, the acclimatisation of exotic plants, technological development and the instruction of farmers.¹⁵ Mining should be revitalised by the

introduction of improved techniques and geological knowledge.¹⁶ Finally, it was necessary to form an intellectual and administrative elite, born in Brazil, capable of directing the country's progress, without losing its fidelity to the Portuguese sovereign.¹⁷ Coutinho was personally involved in the recruiting of a select set of young Brazilians. He became their mentor, supported their studies, heard their counsel and opinions, and handed them scientific and political tasks. Many of the authors who founded Brazilian political environmentalism shared this double condition: disciples of Vandelli and *protégés* of Sousa Coutinho.

In line with this idea of preparing Brazil to become the future seat of the empire, it was necessary to leave behind the brutal and coarse exploration of resources practised since the early days of the colony. Coutinho's understanding of this is clear in the letter of instructions that he sent to Manoel Ferreira da Câmara Bittencourt e Sá, in 1800, when he went to Bahia to tend matters pertaining to his family's business. Sá, about whom we shall say more later on, was one of Coutinho's favourite *protégés*. He had joined Bonifácio in a long program of geological studies in several European nations, starting in 1790. In 1800 he was appointed to be the General officer for Mines and Diamonds in Minas Gerais and Serro do Frio, the first Brazilian to occupy the position.

In the above mentioned letter, written before Sá's appointment, he was given a set of tasks very illustrative of the cultural environment under discussion. Among other things, he should stimulate prospecting in search of new mines; work along with the local botanical garden in the acclimatisation of the Pará breadfruit in Bahia; and encourage, by means of the introduction of new technologies, the cultivation of peppers, cinnamon, hemp, cassava and sugar. A specially relevant task, in face of the subject of this article, was to confront forest destruction:

His Royal Majesty also orders you, despite your personal interest as a land owner, to examine the plans and proposals established for the conservation of wood lots and forests of Cairu, and to observe if the owners really have the right to practice such large clear-cutting and terrible burns ... About such clearcuts and burns, in the benefit of the cultivation of cassava, His Royal Majesty orders you to alert land owners and make them see the great advantages that they would enjoy by substituting so absurd a method for the better system of a regular culture, such as the ones in the Antilles, from which abundant productions of cassava are obtained.

The letter closes with an observation that sums up Coutinho's general political understanding of the environmental issue:

Bear always in mind that principle of eternal truth: Mines and Forests must be regulated by scientific principles, in which their general utility is computed, and not abandoned to the interests of private owners who, in these cases, and in them only, can act against public utility, in a remarkable exception to the principles of political economy. (Coutinho, 1800)

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There are several interesting elements in this letter. Cassava farmers from the region of Cairu, near Ilhéus, in Bahia, were ravaging the Atlantic Forest. It was necessary to find fair criteria to evaluate their rights in face of the rights of the state. Aside from establishing these criteria, the matter could be solved by educating the farmers, who were probably ignorant of the existence of more modern and less destructive techniques (the reference to the Antilles shows that Coutinho was aware of environmental conservation practices in other tropical regions, and hoped for their application in Brazil). The most significant aspect from the theoretical point of view, however, was the discussion about the limits of the market economy. Coutinho admits that, according to the 'principles of political economy', private interests in general do not conflict with the public interest. There is, however, a 'remarkable exception', related precisely to the environmental issue. In this matter the potential for conflict between private action and 'public utility' is strong. It is therefore necessary that public authority should regulate access to natural resources according to 'scientific principles' that take into account their collective utility, instead of 'abandoning' them to private interests. Indeed, this was one of the central veins of the nascent Brazilian political-environmental critique.

III.

Since 1786, in the context of the intellectual and political environment discussed above, several intellectuals born in Brazil started to produce texts about the same environmental topics focused on by Vandelli and Coutinho, but presenting their own interpretations. In order to understand the common position of this group and to avoid mistaken interpretations, some general comments are required. First of all, we must understand their basic position about the 'Brazilian question'. In the transition between the 18th and the 19th centuries Brazil was experiencing a 'colonial crisis'. The impossibility of keeping the social and political stability of such a big country through the old methods of colonial domination was becoming clearer all the time. Furthermore, the rudimentary technologies and social practices established by the old colonial economy were unable to promote economic growth and to organise a proper use of the vast natural resources of the Brazilian territory.

In face of this reality a strong political debate began. The alternatives discussed covered a spectrum that went from the conservative permanence of pure colonialism (based on metropolitan monopoly) to a position in favour of a universal Luso-federalism, in which each territory would be considered a 'province of the monarchy', to use Sousa Coutinho's expression (cited by Mendonça, 1958: 277). The concept of the political independence of Brazil was almost absent from this debate (at least in an explicit manner). A local attempt at political emancipation in Minas Gerais, in 1786, was firmly suppressed. The

dominant project among the Brazilian intellectual and political elite at that moment, including the authors discussed in this article, was to stress the urgent need to break away from the old colonial pattern and promote the endogenous progress of Brazilian society and economy without severing ties with the Portuguese state. This project was partially achieved in 1815, when Brazil ceased to be a colony and received the status of a 'united kingdom' linked to Portugal. In 1822, however, when it became clear that the new Constitutional Assembly in Portugal was planning to reduce the autonomy attained by Brazil – and even downgrade it again to the status of colony – the country's ruling elite adopted the proposal of a complete breakaway and independence from Portugal. The authors analysed in this article, however, were living in a political environment prior to this turning point. It was a moment of historical transition – with all the usual associated ambiguities – in which a certain Brazilian identity was starting to take intellectual shape. Place of birth was not an irrelevant matter in this complex interplay of identities. These authors many times identified themselves as Brazilians, despite their training and public activities in the Portuguese *polis*. It is significant that when breaking away from Portugal became imminent, in the early 1820s, all survivors of the group participated in the movement that led to the construction of an independent state.

But the peculiar identity of the writers mentioned above was not in their position about Brazilian independence. Their main particularity was emphasising the environmental aspects of Brazilian colonial condition and its prospects for autonomous development. The majority of intellectuals identified with the Luso-Brazilian enlightenment did not have a concern – or did not express such a concern – about environmental destruction. It was perfectly possible to incorporate parts of the enlightenment ideal, for example economic progressivism and scientific-technological efficacy, disconnected from any concern with environmental destruction. Attention to the environment was clearly a minority affair, despite the fact that those who did pay attention to it were far from occupying marginal political positions, specially José Bonifácio. At that moment there was not any definite *corpus* of environmental critique, but only a few theoretical sources – such as physiocracy and nature's economy – that, if properly combined, could aid reflection about the environment as a political problem. There was also a highly challenging objective context, because predatory and short-sighted routines prevailed in Brazil. Such a context was not, however, a sufficient condition for the emergence of an environmental critique, and accordingly such an outlook did not grow in the majority of the authors who observed it. To understand the emergence of this critique it is necessary to look closely at the specific profile of a group of intellectuals who for cultural and sociological reasons that need to be better investigated in the future, developed a special sensitivity regarding the topic of environmental destruction, opening a tradition that managed to persist in Brazil during the 19th century.

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A crucial text for the establishment of this tradition was the *Discurso histórico, político e econômico dos progressos e estado atual da filosofia natural portuguesa, acompanhado de algumas reflexões sobre o estado do Brasil* [*Historical, political and economic discourse about the progress and current state of Portuguese natural philosophy, together with some reflections about the state of Brazil*], published in 1786 by Baltasar da Silva Lisboa. This text can be taken as a first synthesis, or a first programmatic manifesto of what I am calling the Brazilian environmental-political tradition. The approach, the topics and the proposals presented by him were recurrently recovered by many later writers. Lisboa, a doctor in Law graduated from Coimbra, was born in Bahia.¹⁸ He played to perfection the role that Sousa Coutinho had envisioned for the new Brazilian elite. He was openly loyal to the Portuguese state, considering himself, as a Brazilian, a legitimate heir of its political and cultural heritage. However, it was not difficult to notice, specially in the second part of his text, his special interest in the Brazilian question, and his search for a path which would lead to the development of Brazil. This was the type of patriotism that Coutinho considered acceptable, and even necessary, to the political project of the Portuguese empire.

Lisboa, as was typical of his intellectual group, had an almost messianic confidence in the transforming power of scientific rationality and natural philosophy. Accordingly, he begins with a critical analysis of the highs and lows of natural philosophy in Portuguese history, since Roman times until the reform of the Coimbra University and the creation of the Academy of Sciences.¹⁹ The renovation under way was considered highly benign, mainly in political terms. Natural philosophy is 'the science that contributes the most to the common good' and its development has immediate social effects, causing 'agriculture to be more florescent, the arts to be more polished and perfect, the population to grow, the factories to be more stable'. The Portuguese nation, with its economy in decay, could 'invert its bad image among peoples', once it adopted 'natural history as the moral and the politics of all its districts, cities and villages' (Lisboa, 1786: 30-36).

The second part of the book is much more concrete and full of proposals, discussing the manner by which the progress of natural philosophy could help the 'vast continent of America discovered three centuries ago'. Brazil indeed needed urgent change. Agriculture was practised in the country 'in the most despicable manner that one can imagine'. It ignored the use of the plough. Work was still performed by 'the poor slaves who, badly instructed, naked, tyrannised, many times starved to death – how should they be concerned with the fortune of their owners?' (Lisboa, 1786: 39 and 48). In the production of sugar, productivity was meagre and hearths were poorly built. All this led to a great waste of resources:

The immense quantity of wood wastefully employed in the manufacturing of sugar is impossible to understand. The problem is in the construction of the hearths, which

demand one load of wood for each load of sugar-cane. The adequate construction of reverberatory hearths would solve this problem, which causes great losses to farmers and masters of mills, because those who do not possess large forests do not manufacture sugar and those who do have such forests in the future will let their mills go idle on account of lack of firewood, because this is confirmed by experience. (Lisboa, 1786: 47-50)

The solution to this state of affairs required a general policy of reform. Some reforms would have a wide social impact, as in the case of the incorporation of Africans and Indians into the productive process in a rational manner. The author is in this respect essentially pragmatic and displays no sentimentalism nor cultural respect for these social groups (except for a certain admiration for the Indians' practical wisdom about tropical nature). Lisboa speaks from a cultural position assumed to be superior – Western rationalism. He had no doubt about who was civilised and who needed to be civilised. The key word in his model was incorporate into civilisation, as far as possible, those who were excluded (such as Africans, Indians and the ignorant land owners and free farmers).

This point deserves to be stressed, because it appears again and again in the other authors. Not even his strictly humanitarian suggestions display any cultural relativism or unselfish ethic. The reduction of violence against Africans and Indians was a political and economic necessity. Africans, for example, should be treated with moderation – without 'the criminal abuses exceedingly employed' by the majority of slave owners – receiving instruction about religion and marriage (so that they 'would not continue with crimes and excesses of sensual passions'). They should also be allowed one day per week to work for their own subsistence (instead of spending Sundays 'drunken and indulging in the vices typical of their natural weakness'). This policy of 'good morals and provident economy' would make the slaves 'more loyal to and more friendly with their masters' (Lisboa, 1786: 53-55).

As to the Indians, it was necessary 'to civilise them and save their souls'. The best way to do this was the North American manner: 'multiply their needs ever more, so that they will be forced to associate with more industrious neighbours'. Their incorporation in economic production was a vested interest of the state, who should not allow them to live 'in large villages filled with a clergy who are indifferent to these issues'. The cultivation of cochineal, for example, could be entrusted to the Indians 'in exchange of liquor and several trinkets that they like so much'. However, their highest importance would be as a source of knowledge about Brazilian nature. Lisboa knew that European knowledge was limited, because 'we ignore completely many other [plants], but we are aware that the Indians know many that can be used as antidotes to many diseases'. Scientific expeditions should, therefore, seek knowledge from Indians 'pacified with kindness and goods'. This task could not be postponed any longer, because the key to the country's progress was information about its natural productions. It was urgent to 'disclose all the bounteousness that nature chose to hide in those

paradises, in which it seems that she decided to show all her power, as she did in no other place in the world' (Lisboa, 1786: 67-68).

In the best style of the times, Lisboa classified the potential utility of nature according to its three kingdoms. First of all, it was necessary to increase productive knowledge about native plant species, also acclimatising other useful species brought in from other parts of the world. Established cultures should be consolidated by means of more intelligent and rational methods. Cotton, in particular, was a 'new and powerful branch of industry and commerce', because England was establishing 'thousands of factories, modelled on those of Asia' and 'Europe as a whole has approved the use of such manufactured products'. The plough, pulled by cattle or horses, would be well suited to Brazilian *massapê* soils, increasing productivity. New cultures, such as rice, indigo, coffee and grapes, should be enthusiastically stimulated.

In the animal kingdom, a more productive animal husbandry industry was needed, yielding also butter and cheese. Lisboa complains about the predatory treatment of domesticated animals, such as 'the habit of killing bulls, cows and calves indiscriminately, only to fulfil a certain number of hides, resulting in reduction of the herd and in bad quality of the hides'. He was also concerned with the treatment of wild animals. Deer were abundant in the hinterlands, but 'as they are killed indiscriminately at all times, their numbers will dwindle in the future'. The great potential of fisheries was frustrated by rudimentary practices in the conservation and preparation of the catch. In consonance with his physiocratic background, Lisboa examines very briefly the mineral kingdom, mentioning only that mines should be run by 'philosopher magistrates' and that there was an important potential to be explored in the Serra dos Órgãos (Lisboa, 1786: 55-66).

By comparing Lisboa and Navarro, we can see that a well-defined project for Brazil was emerging. Some proposals appear in both authors, such as conserving wood, reforming hearths and introducing the plough. This last point will be present in the debate all the way up to the end of the 19th century, the plough having become a symbol of a rational and non-predatory agriculture, a counter-example to the hegemony of the slash-and-burn practices.²⁰ The two authors differ, however, when Lisboa expresses social concerns that Navarro avoided (except in passing). In this respect, future texts followed more the lines of Lisboa. The issues of incorporating the Indians and of the better treatment of Africans, for example, were reworked by several authors, gaining their most elaborate treatment in the works of José Bonifácio written after 1819, when environmental criticism took an explicitly anti-slavery attitude and established a causal connection between slave work and the destruction of nature (Pádua, 1999).

Lisboa's book should therefore not be considered a summary of the original tradition of Brazilian political environmentalism, because many new ideas and proposals were later added – Lisboa himself making some of the new contributions. The book should be taken as a first large step in this line of thought, that only now is starting to be historiographically reconstituted.

IV.

There is no space for a detailed discussion of the other texts. I will mention only a few illustrations of their literary and theoretical richness. First of all, it is important to notice that they become more and more radical. No longer produced in Portugal – as were Vandelli's treatises and Lisboa's first text – where impressions of Brazilian environmental problems could somewhat fade, the new texts were written in the field, so to say, in direct contact with exploitative practices found in several regions of Brazil.

This point gains a specially interesting analytical dimension if examined in the light of Richard Grove's findings (Grove, 1990; 1995) that establish a strong link between the colonial condition and the origins of environmentalism. Grove argues, based on a wealth of primary documents, that the most intense and comprehensive perceptions of environmental degradation, specially since the 18th century, occurred in the European colonies located in the tropics. He demonstrated that in certain regions, such as Mauritius, the Caribbean, India and South Africa – he did not study Latin America – ecological perceptions became important to administrators and naturalists of the 18th and 19th centuries, prompting the emergence of public policies aimed at neutralising environmental problems. The theoretical sources that informed such policies were similar to those of the Luso-Brazilian authors: for example, physiocracy, the economy of nature and the desiccation theory.

The large scale of the productive systems established in tropical regions translated into swift and deep demographic, biological and geological upheaval.²¹ The intensity of this process generated critical environmental degradation, in which the contrast between destructive dynamics and the natural environment of the tropics – fragile, complex and unfamiliar to European eyes – was starkly clear. The first political analyses about the unsustainability of colonial productive systems appeared in the context of this collision between certain emerging elements of European culture and colonial realities.

The Brazilian case presents an interesting aspect to be considered within such a comparative framework. Contrary to the cases studied by Grove, in which environmental issues were considered and confronted by scientists and administrators born in the European colonialist countries, generally employed by colonial companies and governments, in Brazil this reflection was developed by locally born intellectuals, members of the local elite who later participated actively in Brazil's political independence. Political motivations were diverse, despite similar theoretical influences.

The Brazilian writers, when returning from their sojourn in Europe, felt deeply moved and challenged when they rediscovered the rustic reality of their country of origin. For example, the physician and botanist Manoel Arruda da Câmara, writing from Pernambuco in 1797, explained to minister Sousa Coutinho the reasons that were delaying the dispatch of scientific information that he had

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asked for: 'there is the vastness of the backlands which I must cross, and the deserted places and absence of a mail service, and the strong rains and swollen rivers that I will have to overcome with all my strength'. (Câmara, 1982 [1797]: 239). There was in these words a sense of sacrifice and mission.

The landscape of the rediscovered country almost induced gloom. The same Câmara, in his *Memória sobre a Cultura dos Algodoeiros* [*Memorial about the Cultivation of Cotton Trees*], published in 1799, was shocked by the fact that the cultivation of sugar-cane, which required 'the deepest knowledge of physics and chemistry', was left to 'inept and stupid men in whose hands the landowner trusts his fortune'. Firewood was cut and taken as if to a 'place of sacrifice'. Every time the author had the 'unhappy experience of being present at such a catastrophe', he felt as if he 'was witnessing a dissipate and prodigal son consuming in a few hours the abundance that a laborious father had taken from the earth with the strength of his arm' (Câmara, 1982 [1799]: 113).

Câmara's reaction, typical of his intellectual group, was to develop studies and experiments seeking more efficiency in the production of sugar and cotton. He also tried to discover native plants that could open up new perspectives for agriculture and the economy in general. One of these plants was the '*almécega*', which he found in the Pernambuco backlands. Its pitch had several useful applications. The scientific validity of this discovery was not enough, however, to guarantee its economic use. His text *Ofício sobre a Almécega e a Carnaúba* [*Letter about Almécega and Carnaúba*], published in 1809, shows that the author, also in those backlands, had to deal with what he called, in general terms, 'ignorance', something that discouraged him deeply. Despite the fact that the wood of the *almécega* was not very useful, the species was threatened by 'the ignorance of the people' who 'relentlessly cut it down in the many agricultural plots opened in the native forests'. The tree was threatened also by the fires that "bums" and ill-famed hunters set to the woods, with the aim of thinning out the brush so that they can ride their horses without difficulty'. This problem could only be solved by the 'forbidding such destruction of virgin forests, in which *almécegas* are abundant, and also by forbidding the setting of such fires, something that can only be accomplished if some legal punishment is given to violators' (Câmara, 1982 [1809]: 230).²²

Writing from Ilhéus, in Bahia, in 1789, the already mentioned Manoel Ferreira da Câmara Bittencourt e Sá, spoke of a country 'covered mostly by thick forests that its inhabitants were daily striving to destroy, in exchange for the short utility of one to four crops ... and without using their precious woods for construction, dyes and craftwork' (Sá, 1990 [1789]: 3). Farmers were satisfied with the 'mediocre contentment' of producing cassava and rice for the market of Salvador, Bahia's capital, instead of profiting from the introduction of new cultures such as sugar-cane, cacao and the liqueurs of tropical fruits. Or, maybe, more fisheries, specially whales and turtles, or even the wood industry. The author was well conscious of the environmental risks of these improvements. In

the case of whaling, for example, Sá criticises the mistakes of the whalers, specially the ‘ignorant belief that without the killing of the young whales the mothers cannot be caught’. He also notes that the scarcity of whales in other areas was causing English and North American boats to hunt in Brazilian waters. The problem could only be solved by adopting whaling methods that did not kill the younger whales (Sá, 1990 [1789]: 42).

A similar alert was given about the wood industry. The author condemns the daily waste of valuable wood burned in needless fires. Such wood should be used in a rational manner, conserving forests and replanting trees. Precisely the opposite was happening in the region, in which ‘there is no record of the planting of a single tree used daily in construction or as fuel’ (Sá, 1990 [1789]: 45). The matter was political enough, and even had an international dimension, for a serious intervention by the state, so that the industry could proceed in an adequate manner:

Therefore, I believe that it will be in the interest of the state not only to publish mere orders, because some have already been published, although with little effect, but to also appoint officers to take care of and regulate the indiscriminate cutting of woods, forcing owners of seaboard properties to conserve those woods fit for construction, given that they occupy such small sections of their holdings and will not bring losses to their plantations. He also must force the owners to plant and reproduce these trees, so that each one has a certain number of the mentioned species. If these measures had been taken earlier ... we would not be forced to beg and buy for steep prices the oaks of Pennsylvania, for the construction of our military vessels’ (Sá, 1990 [1789]: 45).²³

A few years later, this advice by Sá, particularly in reference to vessels of war, was partially taken by the Portuguese government. In March, 1797, under Sousa Coutinho’s authority, the crown sent royal decrees to the governors of some of Brazil’s provinces, dealing with the issue of the conservation of forests and of hardwoods. The decrees were sent at least to the provinces of Paraíba, Rio Grande de São Pedro and Bahia, this last one being the most detailed and complete.²⁴ The content of these documents is about the same. They all open with the same rationale, that ‘the woods and the trees for construction are of the highest interest to the royal navy’, and can also be a good source of revenue to the royal treasury in case the navy organised ‘regular cuts of those woods for the purpose of commerce with foreign nations’. Thus, it was necessary to ‘take all precautions for the conservation of the forests of the state of Brazil, and avoid their ruin and destruction’. The decrees determined that all forests and wood lots along the seaboard and navigable rivers that ran into the sea were owned exclusively by the crown. These areas could not be given away as grants and the ones that had been granted should be taken back by the crown, compensating owners with new grants of land in the interior. The decrees also made owners responsible for the conservation of the royal trees, and ordered that ‘those who

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set fires and destroy the woods' should suffer severe punishments (Sousa, 1934: 20-24).

There is not enough space to discuss the dynamics and eventual results of this essay in environmental policy in colonial Brazil.²⁵ There is a consensus that it failed in its basic goals. Nonetheless, it is probable that it helped to reduce, for some time, the rate and the scale of devastation, at least in some regions. One aspect deserves attention here. The policies adopted by Sousa Coutinho, in 1797, were strongly influenced by the network of Brazilians with whom he was in touch. These decrees were, to be true, a specific and narrow response, if compared to the broader discussion under way. What was being debated was nothing less than the need for a general reform in the predatory nature of the Brazilian economy, while these decrees dealt only with the supply of wood to royal shipyards. Nonetheless, this was not a minor matter, as Europe was going through deep turbulence generated by great military conflicts. Other countries were doing the same, seeking to guarantee supplies for their vessels of war (Albion, 1926). But Sousa Coutinho clearly acted because he became convinced that forest practices in the colony were not sustainable and because he feared the extinction of Brazil's forests. His decision was therefore shaped by the intellectual debate under examination.

A key character in this entire episode was, once again, Baltasar da Silva Lisboa, who then lived in Portugal, after spending a few years in Brazil. He combined a solid training as law scholar with good knowledge of forest botany, and was trusted by Coutinho. In May of 1797 he was appointed to the post of auditor of the jurisdiction of Ilhéus and magistrate in charge of forest conservation – a sort of high-ranking forest ranger. While in this position, which he occupied until 1818, he made detailed studies in mapping and compiled a flora inventory of the local Atlantic Forest, besides adopting procedures for its conservation and rational use. He had many conflicts with the local elite, especially loggers and cassava farmers. His policies suffered several changes throughout the period and generated much controversy, specially regarding the right of the state to preserve forests located on private holdings.

This conflict between state and private interests gave a special theoretical dimension to the debate between Lisboa and the intellectual spokesman for forest owners in Cairu, José de Sá Bittencourt e Aciolli. This character was a brother of Manoel Ferreira da Câmara Bittencourt e Sá and a member of Brazil's enlightened generation. After being jailed for his involvement in the 1789 anti-Portuguese conspiracy in Minas Gerais, he was released and eventually established himself as a logger and farmer in the region of Ilhéus. Despite his political past, he managed to establish direct connections with Sousa Coutinho, who appointed him to be the inspector of the saltpetre mines of Monte Alto and ordered him to build a road connecting the Bahian coast to that section of the hinterland. Aciolli was, therefore, an intellectually and politically influential adversary for Lisboa.

In June of 1799, Aciolli published an anonymous document entitled *Observações sobre o Plano Feito para a Conservação das Matas da Capitania da Bahia* [*Observations about the Plan Written for the Conservation of Forests of the Province of Bahia*], containing many criticisms of Lisboa's policies.²⁶ The author defended the interests of the landowners with eclectic arguments. He pulls together liberal principles and a list of concrete threats that curiously resemble those voiced today whenever the state tries to regulate deforestation activities in Amazonia. The important point is that Aciolli at no point denies the validity of the conservation of forests, demonstrating that this concept had already reached a degree of consensus among the contenders. His argument is the defence of the property rights of 'those people who live there'. Besides, he maintains that these landowners could do a better job than the state in terms of conserving forests. According to this view, farmers and loggers had a rational interest in preserving the resources located on their properties, as long as they had the guarantee of retaining the land and the liberty to manage their business.²⁷

The text later contradicts this argument, because it contends that without deforestation it would be impossible to develop conventional economic production of the region. This prepares the context for the threats. Restricting the destruction of forests would cause wood to become scarce because loggers would be ruined, and cassava flour to become expensive, as farmers would also be ruined. The restrictions would bring other evils, such as unemployment and the reduction of royal revenues. Aciolli recognises that cassava production requires the use of dense forests, and not second-growth plots, in order that soils could be fertilised and ants be excluded (he was pinpointing the type of forests that needed to be burned). The permanence of this production system was a considerable political issue, because cassava was the basic staple of the local population. According to Aciolli, it was therefore necessary to 'strike a balance' between intended conservation and the forest destruction required for economic progress. The elimination of forests would not be, he argued, entirely negative because they could aid in the improvement of the region's 'very rainy climate' which had caused 'many difficulties to the first settlers'. This was a curious inversion of the desiccation theory (Aciolli, 1799).

To avoid the economic collapse of Ilhéus, without putting in risk the supply of wood to the shipyards, Aciolli suggests that the state set up forest preserves further South in the province, in the region of Porto Seguro, in lands that were almost void of population. In short, the state preserves would be beneficial, but only if they were located far away from the forests that Aciolli and his friends were using. Doctrinal coherence was not the strong point of the text. What is historically significant is its having been, in the words of Morton, 'one of the first occasions in which Brazilian elites used the classic doctrines of economic liberalism to defend their interests' (Morton, 1978: 56).

Lisboa, ironically brother of the Viscount of Cairu, the father of Brazilian liberalism, followed a completely different theoretical direction in his response. He eloquently defended the precedence of the public interest over private ones.

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His enlightened politics were closer to the tradition of the authoritarian modernisation of the Marquis of Pombal than to any 18th century school of liberalism. Although he does not use the term, Lisboa bases his argument on the concept of *raison d'Etat*. The supply of wood to royal shipyards is within the scope of elementary concerns such as the security and the survival of the political community. War vessels 'sustain the independence and the power of the throne'. All sectors of society depend on these two traits, including the land owners who complained about conservation measures. Without these war vessels, the 'many private parties' would not be able to 'trade the outputs of their industry in the metropolis', neither to 'acquire through their agricultural output the goods that they are capable of buying'. The monarchy, in the name of the general good, had the right to 'create an impenetrable barrier to the defective ambition of the colonists, who did not wish to cultivate without destruction and who ... destroyed such important lands with iron and fire'. To make this right even more legitimate, the conservation magistrate cited old laws from the times of Portuguese absolutism, such as the so-called 'Regimento do Monteiro-Mor', dated from 1605. It established the control of the crown over forests in order to preserve game, and it could be extended by inference to the preservation of trees.²⁸ Lisboa also resorts to the experience of other European nations, where 'the most intelligent men and the most illuminated governments' were decreeing the conservation of forests as a guarantee for their navies (Lisboa, no date, 12-13).

Lisboa sees the state as the grand agent of public rationality. He thus criticises the minority of land owners who always profited from 'the wood they took from private forests and those owned by the Indians' and who did not wish to be deprived of 'the advantages that their ambition and interests promise'. This group desired that 'Your Highness does not own any forests in the vicinity of the cities, that Your vessels of war depend on the whim and the ambition of middlemen, who will become the controllers of the public power of the monarchy' (Lisboa, no date, 14). Lisboa argued that the monarchy represented an autonomous and superior entity that could never be controlled by private interests. The monarchy should also have a privileged role in the occupation of geographic space so as to exercise its beneficial control over society as a whole. Based on this logic, Lisboa expresses irony about Aciolli's proposal of preserving forests in the South of the province, far away from urban centres:

They wish that the Royal Navy have access only to the forests located in the remote parts of the coast, inhabited by savage Indians and by escaped slaves. Even then this property would not be safe because these inhabitants ... might well claim their rights over them and request compensation for the losses suffered in their agriculture. As in this century of so many novelties there have been publicists and doctors who wrote expressly about the rights of animals, who knows if they would not also recognise the legitimate rights of the orangutans, tigers and *surucucus*²⁹ of the dense jungles to complain about violence and request compensation for their losses in these remote lands in which they were living? (Lisboa, no date, 15).

This quotation is important to understand the intellectual tradition under examination. Lisboa's immediate arguments refer to the pretence that there could be private interests more important than those of public authority. If farmers refused to accept this authority, why would other sectors not behave in the same manner (including Indians and escaped slaves)? Moreover, if this possibility exists, why not extend it to animals? This last ironical punch reveals the anthropocentric character of Brazil's original political environmentalism. Lisboa scorns the debates about the rights of animals, which some philosophers were starting to engage in. For him the natural environment does not have any intrinsic value, but only a grand instrumental value. Its conservation is essential for the satisfaction of social needs. This is the motive of Lisboa's fight against the destruction of the forests. For him, forests are a political object, a resource required for the expression of a political project. The debate centred, therefore, not on the ethical opposition of the rights of humans *versus* the rights of non-humans, but on the political opposition of an instrumental, predatory and short-sighted view of nature and an equally instrumental, but prudent and sustainable, view of nature.

Critiques about the inconsequential actions of private interests were made at the same time by authors living in Minas Gerais, another fundamental section of the Brazilian colonial economy. In the year 1799, when Navarro published his *Discourse*, José Vieira Couto wrote his *Memória sobre a Capitania de Minas Gerais* [*Memorial about the Province of Minas Gerais*], in which he presented a deeply critical analysis of the regional situation, underlined by environmental concerns. The main objective of the text was to discuss the decline of mining and ways to reinvigorate it. The author thought that the decline was due above all to technical incompetence. The development of a 'national metallurgical craft', with modern machinery and technology, could revive mining, because enough ore remained to be exploited. Diversification of production was the key to the matter, with more attention to the exploration of iron ores.

Improvement of the transportation system was another important aspect, and this could be achieved by using the natural trails of the rivers and by constructing channels between them and the coast. New roads should be opened to substitute current ones, which were in very bad shape. Besides, new means of transportation should be adopted, with the introduction of new animals capable of hauling cargoes, like the camel and the buffalo.³⁰ A native solution could be the tapir, which could be domesticated and trained to haul cargoes. These measures should be complemented by a general economic development programme, stimulated by the state on the basis of tax breaks that would later be compensated by the increase in revenues caused by improved collective welfare (Couto, 1848 [1799]: 320-325).

Another aspect of this reform program should be taken into account: the treatment of the natural environment. Couto did not point out the environmental problems created by mining, or perhaps he deliberately decided to avoid the

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issue.³¹ In reference to agriculture and forests, though, his evaluation was probably the most eloquent among contemporary texts:

It seems that it is time to pay attention to these precious forests, these amenable woods that the Brazilian farmer is threatening with total burning and destruction, with an axe in one hand and a firebrand in the other. A barbarian agriculture, that is also much more expensive, has been the cause of this general conflagration. The farmer gazes around and sees two or more leagues of forests, as if he were looking at nothing, and even before he finishes reducing them to ashes he is again gazing far away to take destruction elsewhere. He has no affection nor love for the land that he cultivates, because he knows well that it will not last long enough for his children. The land, on its side, does not smile at him, nor offers him the gracious sight of waving yellow ears to soothe his eyes. A harsh field, covered with stumps and thorns, is what remain in his property' (Couto, 1848 [1799]: 319).

Despite the Arcadian and poetic tone of this striking excerpt, as we follow Vieira Couto's reasoning we see that his environmental concern was much more political than aesthetic. The problems caused by deforestation and farmers' rootlessness affected the future of the province. Firewood and lumber were already scarce and this scarcity could nullify the growth potential of mining. Metallurgical industries required much wood for construction and fuel, besides charcoal, and would not be feasible if forest reserves were located too far away. The author himself had inspected 'layers of excellent iron ore' that 'will never be useful to anybody because the woods are so far away' (Couto, 1848 [1799]: 319).

The solution, according to Couto, was a total ban on the deforestation of wood lots around villages and the conservation of at least half of the wood lots on more remote properties. This policy would bring obvious benefits to agriculture and society. Farmers 'would be forced to plough and to apply manure to the land', abandoning slash-and-burn practices. In this manner, their 'remaining wood lots would be conserved for their own utility and for the utility of their sons and the state'. This forest conservation policy could furthermore lead to an authentic transformation of social dynamics, because 'properties would then become much more permanent, the population would settle down and stop wandering, agriculture would improve and we would see that this scarcity of firewood and lumber would not be so deadly to the future construction of our foundries' (Couto, 1848 [1799]: 320).

Couto's text becomes even more interesting from the point of view of the *ethos* of modern ecological thinking. Immediately after his strong protest against predatory agriculture and forest destruction, the author discloses his utopia for the future of the region:

I think I can already see a new horizon, a new sky: Thousands of hearths cover the plains and release thick billows of smoke to the clouds. The hills are being mined and

their rich entrails are vomited through their small mouths. The cacophony of a thousand machines strike my ears, a laborious, content and joyful people walks the surface of the earth in large groups (Couto, 1848 [1799]: 320).

There is reason for surprise at this excerpt. What seems to be the nightmare of today's environmentalist – 'thick billows of smoke' and the 'cacophony of a thousand machines' – seems to be the dream of this old writer from Minas Gerais, the same man who was able to write the strong protest against deforestation quoted above. Few passages reveal so clearly that, for the intellectual tradition under examination, environmental destruction was not seen as the price of progress, but as the price of backwardness. Economic progress was not seen as a threat to the natural environment. What really degraded and destroyed the land were archaic and ignorant practices, inherited from colonial times, and they could be corrected only by modern technologies and projects. It is true that such projects are rarely so explicitly industrial as in this particular text; following the physiocratic ideal, they usually seek a modern agricultural society.

Besides, one can argue that the environmental innocence of Vieira Couto's industrialism is not an evaluation, nor the result of an actual experience. It is a fictional and vague picture of the industrial world that actually existed. His view would probably have changed if he had had the opportunity – as others did – to observe directly the impacts of the industrial city on the natural environment (Clayre, 1977). Even if we accept this counterfactual point, the text remains significant, if for nothing else because it is informed by a perception of the existence of the new social landscape produced by the Industrial Revolution. More than a defence of an industrial landscape, what the text reveals is a strong desire for progress, a devotion to modernity.

The same confidence in progress appears, in a much more ambiguous form, in the writings of Moraes Navarro. We saw that this writer from Minas Gerais was, at the time, the most keen Brazilian observer of the universal dimension of environmental problems. The problem of an essential contradiction between humanity and the planet, with the possibility of collapse of those societies that destroyed their own material conditions of existence, contrasted with the optimistic and progressive philosophy of history typical of the Enlightenment, including its Luso-Brazilian version. This contradiction was a basic dilemma in Navarro's writings. He affirmed, for example, a strong faith in the regenerative powers of the earth. Despite cumulative bad management throughout history, especially Brazilian colonial history, the fertility of the earth would always be able to renew itself when human beings started to treat it properly. On the other side, human societies went through similar phases of historical evolution. In relation to Portugal, Brazil was in its infancy. The Portuguese, after having damaged the fertility of their land over a long historical span, had learned new ways, becoming better cultivators of their plots and carefully conserving 'the remains of those wood lots that they had unthinkingly destroyed' (Navarro, 1799: 8–10).³² Brazilians would tend to do the same when they matured.

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The basic ambiguity of this line of thought is in the premise, essentially metaphysical, that 'the land, despite its antiquity, never loses its vitality'. The fact is that several passages seem to contradict this possibility. If colonists insisted in their predatory ways, for example, the future of the country would be dreadful, because it 'would lose its natural resources, or see them decrease sharply, and the men would finally be forced to cultivate the land that they so mistakenly abandoned and to conserve the remaining trees, but they would not have even the seed of many of them'. Actually, this was the reality in some parts of the colony: 'look around the edges of the larger cities in the province of Minas Gerais and try to find in any of them some of those precious trees that in earlier times were the most beautiful ornament, and you will not find even signs of their ancient existence' (Navarro, 1799: 10-13). Actually, the author is saying that destruction can be irreversible, because many components of the Brazilian flora were being extinguished forever. Therefore, the ability of the earth to bounce back was not so complete. In an important part of the text, Navarro tries to confront this ambiguity, but does not solve it. In a comment about the actions of colonisers, he states that

Some will say that this behaviour of the men in Brazil is very useful and profitable because without it no advantage could be derived from those immense forests, the secret home of animals and plants; the great variety of trees and herbs would not be known, neither would their utility and virtues; the rich treasures hidden in the earth would not be discovered; barbarian peoples would not be civilised; the inner and outer commerce of those vast domains would not have increased. In the end, they will say, according to our own principle, that as the land is always capable of the same production, it does not matter that men sterilise it for some time. Because when they no longer have new plots that voluntarily surrender their natural productions, after settling all the land, after extinguishing the race of wild animals and poisonous beasts, after civilising the peoples raised among feral creatures, they will then employ those methods that necessity and industry define as the most convenient to bring back to life the ancient fertility in the earth. But we answer that, following a middle ground, they could not attain all these advantages without being deprived of others that by their own fault they go on losing, and that their descendants will not be able to repair, even if they desire to do so? (Navarro, 1799: 13)

This line of thought is conceptually confused, as one can easily see. Navarro opens a distinct possibility of following a path by which the benefits of progress could be attained without extinguishing the possibility that future generations will have a healthy environment and repair the evils of environmental degradation, if they so wish. As he is not ready to formulate a theory of the irreversibility of environmental damage, however, he is unable to produce a decisive argument in favour of changing from a predatory pattern of development to a sustainable one. The logic of this necessity would have to be based on the impossibility of the first pattern to survive for long periods, on its ability to cancel, after a certain

degree of destruction, any possibility of building a sustainable alternative. This point does not become evident. It is merely indicated in the text under the guise of lost advantages that the 'descendants will not be able to repair'.

In the end, we do not learn what would be really lost if men postponed indefinitely changing the pattern of development (trusting the eternal generosity of the earth). This contradiction between enlightened optimism and the potential pessimism of Navarro's environmental criticism weakens the conceptual validity of his argument. On the other hand, however, it reveals the richness of the theoretical tradition that this article has tried to summarise. Some of its dilemmas, as we have just seen, remain as highly controversial topics in the political and philosophical agenda of the contemporary world.

NOTES

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¹ For a summary of the environmental consequences of this mining cycle, see Dean, 1995: Chapter 5.

² The *Dicionário Bibliográfico Brasileiro [Brazilian Bibliographic Dictionary]*, by Augusto Sacramento Blake, published in 1898, the major source of information about Brazilian writers of the past, does not even mention Navarro's dates of birth or death.

³ The booklet was published in Portugal by the Brazilian botanist friar José Mariano da Conceição Velloso, as part of a series about agriculture, aimed at land owners in Brazil. See note 15 about the nature of this editorial venture.

⁴ Aster, the Greek goddess who departed from the earth in protest against human wickedness, was recurrently used as an image in post-Renaissance European thought, sometimes with political purposes. Yates (1975) presented an important study on this subject.

⁵ This fact has not been totally ignored by Brazilian historiography, but in general it has been underestimated. Some authors looked into the topics of 'dead cities' and nomadic agriculture that abandoned destroyed soils in search of new forest to be burned. For a synthesis, see Pádua, 1997: chapter 2. Current research in environmental history will bring new light to these issues.

⁶ For a good analysis of the physiocratic ideas see Grandamy, 1973.

⁷ I am aware of the possible anachronism implied in the use of this expression. Anyway, I take it to identify an analysis of the relationship between society and the natural environment that gives a special concern to its importance for the construction, survival and fate of a political community.

⁸ See Segawa, 1996 about the first botanical gardens in Brazil. Rio de Janeiro's fashionable 'Passeio Público' was built between 1779 and 1783, but its functions were more urbanistic than botanical. Royal decrees, signed by the minister Sousa Coutinho, determining the creation of true botanical gardens were sent to Belém in 1796, and to Olinda, Salvador, Vila Rica e São Paulo, two years later. None of them were actually

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established, though. Rio de Janeiro's important botanical garden was created only in 1808.

⁹ Dean, 1995: 126. This garden was later put under Portuguese control, between 1809 and 1817, when Cayenne was occupied, in reprisal to the invasion of Portugal by Napoleonic troops. A considerable quantity of botanical materials were transferred from this facility to Brazil, including a variety of sugar-cane that became known as 'caiana' (from Cayenne).

¹⁰ The exploitation of brazil-wood, in the first decades of colonisation, was an exception to this rule, despite its quite limited economic impact.

¹¹ The best known of these expeditions, at least in the Brazilian case, was directed by a student of Vandelli, Alexandre Rodrigues Ferreira, who explored Amazonia between 1783 and 1791. It should be noted, however, that this quest for new knowledge about the natural world was relatively timid in Portugal, if compared to the efforts of other colonialist countries of the time. Suffice it to recall that Ferreira's expedition went through countless difficulties in terms of operational and political support. On this subject, see Moreira Neto, 1983.

¹² In a significant footnote, Vandelli states that 'it would be necessary to apply to this kingdom the laws that France enforces in relation to its wood lots'. This example reveals the impact of the forest ordinances edited by Colbert in 1669, on the formation of 18th century political environmentalism. About this matter, see Glacken, 1967: 491. It is interesting to record, however, that a great amount of forest destruction occurred in France after the 1789 revolution, which came to be cited as a counter-example. About this point see Corvol, 1989 and Grove, 1995: 259.

¹³ Vandelli manifested a typical physiocratic dislike of mining, declaring that mines 'should not be the major concern and occupation in Brazil' and that 'the greater part of the richness to be gained from colonial conquests should come from other natural productions originated by agriculture or other things as offered by nature'. This did not preclude the compromising suggestion about the need to create a 'wise regulation' for mining activities or even the employment of machines to drain mined perimeters. Vandelli 1990 [1789c]: 154.

¹⁴ Coutinho forwarded his proposal to make Brazil the seat of the crown in 1803 (Maxwell, 1995 [1973]: 257).

¹⁵ The task of publishing books useful to Brazil's agrarian development was given to the naturalist and friar José Mariano da Conceição Velloso, who published several booklets, including Navarro's 'Discurso'. Velloso also published a type of practical encyclopedia entitled *O Fazendeiro do Brasil [The Farmer of Brazil]*. Coutinho sent several lots of these agronomic books to the governors of Brazil's provinces, so that they could be sold to farmers. It seems that the experience was not successful. A correspondence signed in 1800 by the governor of São Paulo, Antônio Mello Castro e Mendonça, informed the minister that 'nobody is willing to buy a single book, so that many of the books that have circulated were donated by me.'... Cited by Lyra, 1994: 88.

¹⁶ Coutinho's 'Discurso sobre a Verdadeira Influência das Minas dos Metais Preciosos na Industria das Nações' ['Discourse about the True Influence of Precious Metals Mines in the Industry of Nations'] is commonly cited. He states that mining should not be neglected, going against the physiocratic position that it caused the ruin of the national economy. See Coutinho, 1990 [1789].

¹⁷ Maxwell (1995 [1973]: 254) argues that such an effort to co-opt the young learned men also had in mind to avoid them becoming involved in anti-Portuguese rebellions.

¹⁸ A relevant piece of information is that Baltasar was the younger brother of José da Silva Lisboa, the Viscount of Cairu, famous introducer of liberal economic doctrines in 19th century Brazil.

¹⁹ In this respect, Lisboa renders a special tribute to Vandelli. See Lisboa, 1786: 16.

²⁰ For a historical discussion about the introduction of the plough in Brazilian agriculture, see Holanda, 1994 [1956]: ch. II-5. For an analysis of the continuing debate about the topic of the plough in the second half of the 19th century, see Pádua, 1998. It is curious that the potential environmental damage caused by the plough, as noticed in other countries, was not perceived by the Brazilian authors, even because it was not a concrete reality in that country. It remained a kind of distant technological utopia.

²¹ The case of Latin America is treated in Tudela, 1990 and Castro, 1994.

²² The author also defended the prohibition of cutting *carnaúba* trees, commonly used in the construction of corrals and fences. He argued that the use of the tree's wax would be much more beneficial to the economy (Câmara, 1982 [1809]: 231).

²³ In 1807, almost 20 years after the publication of this text, a group of farmers wrote letters to the Senate of Bahia in answer to queries it had posed about the major problems affecting the agriculture of that area. Sá's letter revealed his continuing concern with forests. Most of the letter had a liberal perspective, but Sá mentions the conservation of forests as a just and necessary exception to 'the right of each to behave as he will'. He defends the need of a strong conservationist legislation, although he states his scepticism about its results. See Sá 1821[1807]: 96-97.

²⁴ The three decrees are reproduced in the historical collection of forest legislation compiled by Souza, 1934. Apparently, other governors received similar decrees. The governor of São Paulo, Antônio de Mello Castro e Mendonça, certainly received a similar document at that time. It was based on this document that he wrote the 'Providências Interinas para a Conservação das Matas e Paus Reais da Costa desta Capitania' ['Provision Measures for the Conservation of the Forests and Royal Trees of this Province']. See Mendonça, 1915 [1799].

²⁵ An informative synthesis, centred on the case of Bahia, is given by Morton, 1978.

²⁶ The section of the letter of Sousa Coutinho to Manoel Ferreira da Câmara Bittencourt e Sá, cited on section II, above, refers precisely to this conflictive situation. The minister asked Sá to make a fair evaluation of the problem, despite knowing that his brother was a participant in the conflict. He requests also that Sá convince landowners of the benefits related to the voluntary adoption of conservation practices. See Coutinho, 1800.

²⁷ This argument has been universally contradicted by historical evidence in forested areas subject to the conditions of open frontier.

²⁸ The character of the 'Monteiro Mor' comes from the medieval origins of the Portuguese state. He was the man responsible for the general welfare of the forests (still today called 'montes' in the Iberian Peninsula). Royal decrees defining the tasks and rights of the Monteiro Mor had been published since the mid-15th century, but only in 1605 did the post gain an official regulation.

²⁹ Also known as surucutinga (*Lachesis muta*), the surucucu is the largest of the poisonous snakes native to Brazil. It is curious that a man with deep knowledge of the Atlantic Forest, such as Baltasar, would mention animals that did not exist in Brazil, such as tigers and orangutans. It seems to me to be a question of terminology. By tiger he probably means the jaguar (this use was recorded in the interior of Brazil by Von Ihering, 1968: 692). His orangutan were probably the large guariba or bugio monkeys. The author was still using

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European zoological classifications, a proof of how little was known about the specific biodiversity of Brazilian forests.

³⁰ The proposal to introduce camels in Brazil, specially in the semi-arid regions of the Northeast, was renewed throughout the 19th century. A concrete attempt was made in 1859, at the province of Ceará, without success (Braga, 1962: 54).

³¹ These effects were mentioned by several authors, even by some who were less sensitive to environmental matter. The Bishop Azeredo Coutinho, in his *Discurso sobre o Estado Atual das Minas do Brasil* [*Discourse about the Present State of Mines in Brazil*], written in 1804, states that 'the gold mines operated with water ... sterilise the lands that incidentally would be very useful to agriculture; it is therefore necessary to turn them over and make very deep furrows'. Azeredo Coutinho, 1966 [1804]: 202.

³² In this respect, Navarro disagrees with other observers, such as Vandelli, who criticised the environmental conditions of Portuguese agriculture in the 18th century.

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