Petrifying the nation: paleontology collections in Brazil, 1836-1844

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Abstract

The formation and study of natural history and paleontology collections was part of the installation of political order under the Empire of Brazil, as well as the establishment of a scientific program. The symbiosis between science and the nation was actively promoted by Peter W. Lund, pioneer of paleontology studies in the country. The collections and writings produced by the naturalist lent support to the visualization of the past and the writing of history in Brazilian and European scientific and cultural institutions and museums. The disputes over the political order under the Regencies and the Majority were closely accompanied by the study and explanation of the forms of life and the planet found in the past.

Keywords: environmental history; Brazilian Empire; Peter Wilhelm Lund (1801-1880); museums; paleontology.

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The work of the naturalist Peter Wilhelm Lund (1801-1880), particularly in his paleontological investigations undertaken between 1836 and 1844, allows us to study the dual process of the musealization of nature and the propagation of a set of ideas concerning the nation during the period of the Empire of Brazil. Pursuing the metaphor of the petrification of the nation, we can discover some of the meanings involved in the visualization of the past in the paleontological studies and collections produced in the first half of the nineteenth century (Meneses, 2003).

During this same period, museums grew in importance and assumed particular characteristics (Guimarães, 2006, 2007). The visual was also used as a resource by other institutions. The Sociedade Auxiliadora da Indústria Nacional (Society for the Support of National Industry), for example, promoted debate on issues like agricultural production and the workforce not only through the publication of reports, journals, manuals and technical works, but also through exhibitions and public demonstrations of equipment, cultivation methods and processing technology with the aim of disseminating a "modernizing spirit in society" (Carone, 1978, p.18, 25). The historian Jules Michelet, for instance, made the 'resurrection' of the past a touchstone for his work (Barthes, 1991).

The examination of natural objects can help in comprehending the relations between the human being, society and nature. Beyond technology, commerce, hobbies and economic production, there is also a political and ideological vector involved in the ordering of these relations. Scientific procedures and explanations in the nineteenth century, especially in the first half, were dominated by the "naturalistic inclination" (Leinz, 1955, p.247). In this sense they contributed to reinforcing and disseminating "the ideology of the inevitability of scientific progress in the domain of the control of natural forces" (Gramsci, 1968, p.132).[1] Gilberto Freyre (2000) collected numerous examples of the new mysticism that emerged around technology and machinery in the first decades of national life under the Empire.

The paths and strategies pursued in the organization of the Brazilian State following its declaration of independence from Portugal in 1822 catalyzed the social endeavor to implant a 'scientific order' compatible with the creation of a tradition and identity for the nation – or more specifically, the society and economic groups that had led the introduction of the Empire of Brazil. The outlines of a new political order, including the revision of legal frameworks and institutional rules and practices, were crystallized in the movement known in historiography as the *Regresso* (Regression). Some of the actions and projects of the regressives – promoted as part of the political and administrative centralization embedded in the 1824 Constitution – included the interpretation of the Additional Act, reform of the Criminal Procedure Code, a reduction in the autonomy of the provinces, greater control of the Judiciary and the Legislature by the Executive, moderation of the power of the emperor, and army reform. The maintenance of slavery and the territorial unity of the Empire were paraded, even in the nineteenth century, as successful outcomes of this political action.

The recruitment of artists, scientists and intellectuals failed to conceal the more pragmatic aims, as indicated by the creation of the Society for the Support of National Industry in 1827, the Pedro II Imperial College in 1837, the Public Archive of the Empire and the

Brazilian Historical and Geographical Institute (IHGB) in 1838 (Carone, 1978; Guimarães, 1988). Parliament, the ministry, the courts, the State Council, the Imperial Court, the press, academies and faculties, the Armed Forces and the Church, among other imperial institutions, were heavily funded and filled with individuals with a variety of cultural profiles. Even the Emperor Pedro II tried to embody the symbiosis between science and nation.

The work and experience of Peter Wilhelm Lund (1801-1880), a Danish naturalist, who settled and died in Minas Gerais, the pioneer of Brazilian paleontology, provides an insight into the relations between science and nature in the structuring of a national Brazilian identity, in the midst of the political project of the Regression. This was a centralizing project that in the decades from the 1830s to the 1860s, between to:"the end of the Regency and the liberal renaissance of the 1860s set the tone and defined the content of the imperial State," combining social order and the diffusion of the ideal of civilization in what Ilmar Rohloff de Mattos (2009, p.32; 1987) called "the Saquarema period."[2]

A reading of Lund's *Memórias científicas* (Scientific memoirs), letters and biography (1935, 1950) allows us to study the role performed by natural objects in a broader political process spreading out through time and space. They provide us with a series of insights into how the past is visualized and history written in museums, insofar as the ideological function contained in the celebration and musealization of natural history tells us about values, positions and social conceptions of the world (Vasconcellos, 2007, p.18).

The location of the Portuguese court in Rio de Janeiro from 1808 made Brazil increasingly visible to other western societies. Between the second half of the eighteenth century and the mid nineteenth, the observation and collection of objects, data, samples and information launched innumerable scientists on journeys across the different continents, expanding knowledge and stimulating the emergence and organization of institutions, publications, exhibitions and national and international communities of different kinds, animated by the spirit of discovery and classification of the global explorers (Fernández-Armesto, 2009, p.357-430; Raminelli, 2008). According to Eric J. Hobsbawm (1982, p.23), during this period the world was still known only in pieces, even for someone experienced like the naturalist Alexander von Humboldt.

Europe experienced a similar movement of discovery within the continent itself as people explored areas until then considered hostile, wild and dangerous, enshrouded in mystery, like the highest mountains. The European urban world was unaware of them until the eighteenth century and, at the start of the nineteenth, the mountainous areas were still largely unknown. It was only in 1787 that an expedition climbed Mont Blanc, located in the border region between France and Italy. Humboldt embarked on what was a remarkable exploit for the time, climbing Mount Chimborazo in the Andes (Pratt, 1999, p.222). In the 1830s, according to Angyone Costa (2006, p.266), there reigned "a vivid scientific curiosity stimulating young scientists to observe and study the caves of Europe, especially those of France." These investigative excursions would result in discoveries, such as the 'Neanderthal man,' in modern day Germany in 1856, clearing the way for questioning and contesting that the Old World was inhabited in the past by a historically and physically homogenous population. Large animals and other peoples were found to have occupied

European spaces before them. It was the revelation of a new world that seemed to emerge from the heart of the old continent.

Lund and the Empire of Brazil

The presence of naturalists from the north of Europe in Brazil started to expand after 1810 with the arrival of Eschwege and Varnhagen in the service of the Portuguese Crown, responding to the promises of reform and a revival of mineral exploration in the country. In 1841, Peter Claussen, a Dane, accompanied Joseph Libon, a Belgian naturalist, on his first voyage to Brazil (Stols, 2006, p.77). Claussen had become the owner of a farm in Curvelo, Minas Gerais, and presented the region to his compatriot, Peter W. Lund.

Lund, who had previously studied medicine, became a dedicated naturalist. In 1825 he travelled to Brazil hoping to improve his health and conducted botanical and zoological studies. He returned to Europe and met with Humboldt and Cuvier. In Rio de Janeiro, in 1833, he disembarked with the intention of travelling to the provinces and ended up settling in Lagoa Santa, Minas Gerais. He became an honorary member of the IHGB in its early years and maintained correspondence with the institution, exchanging publications, drawings and material collected in his research. Lund had no access to paleontological collections and, as the main recourse for analyzing the objects that he found – which allowed him to study the local fauna in detail, both extinct and living – he turned to the works on comparative anatomy written by other naturalists. The "Scientific memoirs" testify to his continual reworking of the interpretations, the incorporation of new findings, studies, pieces, journeys, comparisons, readings and observations, in an incessant search for knowledge.[3] Through correspondence he kept up-to-date with institutions, authors and researchers, accompanying the debate on theories, findings, recent news, opinions and information (Lund, 1842, 1844, 1893). According to Marchesotti (2005), in this way he secured a presence in the scientific and intellectual field of his time. Pedro Ernesto Luna Filho (2007, p.26) identifies six mentions by Charles Darwin of the works of his Danish colleague. Lund found himself physically "isolated, but within the scientific community of his time" (Santos, 1923; Marchesotti, 2005, p.131, 134, 138). This meant that when he interrupted his research in the caves of Minas Gerais, he did not completely abandon his scientific activities, which also included his contributions as a speleologist, geologist and botanist. He also worked there in collaboration with the naturalist Eugen Warming, who undertook research in Lagoa Santa between 1863 and 1886 (Klein, 2002).

Foreign naturalists seldom published scientific works in Brazil. The collections that they formed and the texts that they wrote were aimed at European cultural and scientific circles (Marchesotti, 2005, p.148). Lund sent his collections to Denmark. This fact can be understood as a gesture of retribution for the support and financing he had received from the Danish Crown. It is also makes sense in terms of the need to organize, preserve and make available the collections for study, which at that time was not achievable in Brazil. Here it is worth recalling Lund's fear concerning the destination of the collections in a context of political instability like the 1830s and 1840s. Revolts and uprisings exploded in various provinces, including Minas Gerais in 1842, creating a cartography of rebellions

and placing in doubt the continuity of the territorial unity of the Empire of Brazil. There was, however, a cultural limit given the absence of institutions and naturalists, and a social limit, the tensions and conflicts surrounding the future of Brazilian monarchy. This is what Lund seems to suggest in a letter sent to the king of Denmark at the beginning of 1845:

> it is not suitable to conserve my collection here any longer, in part because one cannot rely on the little security that is available in these regions, but mainly due to the impossibility of being able to organize these objects properly. ... since it is most convenient that this collection, given its importance, value and scientific interest, should arrive as quickly and completely as possible to be used by science, I beg to be allowed to deliver the collection at Your Majesty's disposition and to determine what I judge to be the most suitable course of action to achieve this *desideratum* (Lund, 1845, cited in Santos, 1923, p.54).

Paleontology studies would flourish in Brazil in the second half of the nineteenth century. In 1855 Frederico Burlamaqui published a monograph on Pleistocene mammals and in 1863 the first fossils were found in the Amazonian basin, in the Tapajós valley. Paleontological research intensified over a short period with the activities of the Geological Commission of the Empire of Brazil between April 1875 and December 1877 under the direction of Charles Frederick Hartt, and its collection was transferred to the National Museum (Mendes, 1981, p.48-51; Freitas, 2002). Paleontology also appeared in the three sections of the National Museum – zoology, botany and general – when it was reorganized in 1876 (Schwarcz, 1989, p.31).

Lund was probably attracted by the possibilities for scientific research existing in Brazil (Costa, 2006, p.265-266). Young, a naturalist beginning his scientific career with some experience as a traveler and collector in fieldwork, he followed Humboldt's advice concerning the need for direct contact with the regions and the nature being studied (Marchesotti, 2005, p.38, 85). In 1798 Napoleon's journey to Egypt promoted a re-encounter of Europeans with history, with the past and a great vanished civilization. A voyage to Brazil could promote the encounter of European history and civilization with nature. There is a recurrent trace, the idea of fertilization, renewal and a new beginning focused on the future resulting from these distant voyages. In Humboldt's ideal of scientific research, the voyages would provide two substantial contributions: the collection of new information and the possibilities of studying this information comparatively in the light of the knowledge existing at the time, thereby expanding the dominion of the sciences (Romariz, 1996, p.4). Lund would become a pioneer in the study of caves and fossils in Brazil, particularly on the Pleistocene mastofauna of Minas Gerais (Mendes, 1981, p.46).

Comprehending the work of Peter W. Lund involves recognizing the symbolic power of natural objects as carriers of meanings capable of "evoking and remaking lost epochs" (Santos, 2006, p.112). This means studying the work and activities of Lund amid a "process of producing representations, actions and objects" (Arantes, 1984, p.164). The starting point here are the questions that can open the way to exploring these aspects. What language is used to make the invisible visible? How to enable the emergence and visualization of the extinct, the past, the buried, the residual, the distinct, the fossilized, the different – in sum, the specificity of Brazil's natural past? The answer was an ordering and classificatory

language, the one used by the nineteenth century sciences. Technical terminology rather than the imagination or literature, painting, the traveler's account and the free description. An "attitude of cold scientific and photographic impassiveness," expressed in collections, texts, letters and scientific drawings (Gramsci, 1968, p.98).

Paleontology and politics

Lund made direct observations, excavations, collections and research in caverns, wrote essays with classifications and descriptions, as well as prints of all the material, supported by the comparison of vestiges and studies of geology and zoology, precisely at a moment when the scientific mentality in general and the natural sciences in particular were asserting themselves. The naturalist made exhaustive use of observations, approximations, analogies and comparisons, and successfully associated the visible and the invisible. How then did he display his collections? What representation and what social identity are legitimated by his investigative process? The aim here is to try to move beyond the more usual approach in which Lund's experience is reduced to just a chapter in the history of the sciences in Brazil.

The link between paleontology and politics was achieved through the attention given by both to the ruptures and continuities found in history and nature. The distinct geological eras that had been home to humans and animals, similar to their contemporaries, allowed a channel of communication to be established between past and future. Like Herder (1995) in the eighteenth century, Lund arrived at humans through his interest in nature. Society and nature would walk hand-in-hand, bound together in the same process of development, that of a world in constant mutation (Rossi, 1992, p.105, 149).

The mutable conditions of living beings and the physical world were made evident by science in the nineteenth century. The novelties, new scales and expansion in achievements made through the knowledge of astral bodies, the Earth, living beings, the human mind, cornerstones to industrial growth, also propelled the expansion of education, culture and scientific institutions, including journals, books, museums, academies, universities, libraries, planetariums, botanical gardens, the formation of collections and systemic data records. Different scholars from distinct areas of knowledge contributed to the change in the ways of seeing nature and converted its study into a prestigious and popular science (Huxley, 2007, p.212, 217). The coining and dissemination of the term 'scientist' at the start of the 1840s is an indicator of the preeminence and distinction that achieved by the men dedicated to the sciences and their role in the life of nations (Trabulse, 2006, p.11). The activity of the naturalists also strongly encouraged individualism, since it combined the scientific spirit, personal freedom and financial autonomy. In the nineteenth century the sciences founded a narrative of progress driven by the ceaseless empirical discoveries and theoretical speculations. The linear conception of time is at the root of this narrative, conferring unity and direction to human destinies (Gould, 1991, p.17, 23).

The potential of nature as a passport to mercantile prosperity, civilization and the future seemed to be confirmed day after day by the technical innovations that dynamized productivity in agriculture, industry, communications and the processing of tropical

products. The prospects of controlling and projecting the destinies of peoples meant that the nineteenth century lived through innumerable large political disputes and social conflicts, which themselves prompted a prolific output of ideas expressed in imaginative works on human relations, society, the economy and the State (Wilson, 1986, p.22).

In Brazil the journal *Nitheroy*, launched in 1836, promulgated this utilitarian conception of culture, the arts and the sciences in the name of progress and the country's rupture with the colonial past. France offered the main intellectual reference points in relation to social life – via the Historical Institute of Paris, created in 1834 – in ways that so vexed Father Lopes Gama in the pages of his *O carapuceiro* (1996), and in the natural sciences with the studies of Georges Cuvier (Faria, 1970, p.212, 217).

The abdication of Emperor Pedro I in April 1831 kindled the prospects for a new era. The Additional Act, issued in 1834, was an expression of this moment that opened up for national history, introducing greater administrative and financial autonomy for the provinces, exposing to the government authorities the regional mosaic and social diversity found in the different parts constituting the Empire of Brazil. Gradually the need became evident to merge the management of the territories with the construction of nationality. The affirmation of the nation State and monarchical power would resort to the construction of a historical memory and a national identity capable of assuring the legitimacy of the dynasty, along with social cohesion and loyalty to the instituted order (Basile, 2009). In 1835 two great currents of political opinion were constituted, that of the Regression and that of Progress, both highly active in the General Assembly of the Empire during the 1834-1837 legislature and forming the embryos of the Liberal and Conservative parties which dominated parliamentary life in the nineteenth century.

Peter W. Lund's research conferred Brazil its own unique place in the history of the planet, contributing to a kind of biological and geological independence, the natural autonomy of the new Empire on the American continent. This Brazilian presence in the world legitimated the desire and search to occupy a position among the civilized nations through the convergence between science and the nation, and no longer between the colonies and the inhospitable regions of the planet – a list of spaces that had been excluded in a recent past (Ricupero, 2004; Gramsci, 1968). Civilization was expressed precisely in the practices and scientific activities that ordered the natural world and placed Brazil among those nations now guided by the hands of science (Heynemann, 1995). The work, composition of collections and settling of Lund in Brazil perpetuated the tie with Europe, showing the reasonable adaptation of the European to the tropics.

The discovery, organization and shipment of fossil collections to the Danish museums highlighted the peculiarities of the Brazilian nation prior to the era of specializations in the natural sciences. The crisis of a science with aspirations to universality reached a watershed with the publication of *The origin of species* by Charles Darwin and the death of Alexander von Humboldt, both in 1859, marking the transition between two moments in the trajectory of the natural sciences in the nineteenth century (Romariz, 1996, p.25).

Brazil's singularity, its political autonomy, was also corroborated by its natural history, precisely at the moment when Brazil jointed the world market governed by free trade, emphasizing not the exotic but the routine description involved in the work of the

meticulous scientist, regularity and order, characteristics of the bourgeois world. The fossils collected by Peter W. Lund were converted into symbols in the construction of the desired national unity of Brazilians as a community (Ricupero, 2004, p.164-165). Paleontology with its relics of the past provided elements of identity and ancestrality for the nation that was being reorganized and hierarchized through a process of painstaking scientific classification. The Empire of Brazil could once again present itself to the world as a civilization with natural origins in America and cultural origins in Europe, in an open American appropriation of European symbols whose clearest inspiration was the monarchical regime (Ricupero, 2004, p.261).

Geological studies flourished and became professionalized in the first decades of the nineteenth century with the emphasis given to field data obtained from stratigraphic empirical research. In the eighteenth century research and analysis of the sedimentation and stratigraphy of these same sediments had been developed in search of a chronology for the presence of different vestiges – fossils – in these strata, revealing the "irreducibly historical character of geological phenomena" (Gould, 1991, p.156; Rossi, 1992, p.23).

This minute and systematic examination gave rise to a science of fossils, paleontology, based on the desire to collect 'petrifications' in all their variety (Gould, 1991, p.73, 79; Barrau, 1984, p.89). The collected material provoked an inquiry into the relation between living beings and, through them, the opposition between history and nature lost its meaning. Nature was revealed to have its own history with its organization through time able to be glimpsed in fossils (Rossi, 1992, p.23; Gould, 1991, p.156). Over the course of the nineteenth century, these natural objects would become highly sought and valued in the European museological market, composing a huge empirical database for the expanding knowledge of comparative anatomy and for biological theories (Marchesotti, 2005, p.10; Trabulse, 2006, p.45).

Paleontology was a new discipline and had been born "as a science" along with its sibling geology in the first half of the nineteenth century (Mendes, 1981, p.45; Gorceix, 1950). The study of fossils imposed the need to interrogate the history of the planet, the emergence and destiny of life, the transformations of nature and the universe, and the origin of human beings themselves. Natural history, by contemplating this study through classification and morphological nomenclature based on Linnaeus, cleared the way for the comparison between the forms of living and dead organisms (Foucault, 2007). Georges Cuvier (1769-1832), a prominent figure in nineteenth century studies of biology, became a key reference in this line of investigations and studies. For paleontology, comparative anatomy was one of the main tools in the study of fossils, functioning as a biology of the past. Examining animal morphology enables structures to be studied in living, preserved and fossilized organisms. Associating the end of the geological eras and the continuity of life, extinct creations and living creatures, Cuvier was the "first to reconstruct the fauna of a lost world" through comparative anatomy and the paleontology of vertebrates (Taquet. 2007. p.202). Ever since then the material existing in museums has been used to describe and study species. Over the twentieth century, the research activities in zoological studies placed increasing value on the fieldwork of the naturalists, including figures like Humboldt, Charles Lyell, Lund himself and Charles Darwin, back in the first half of the nineteenth century.

In his "Scientific memoirs", Lund noted that through the examination of the material he had collected, the s:"last extinct animal creation of the new world represents the true prototype of the present creation." The observation established a bridge between past and present, despite the separation and difference between them: "there also exists a notable similarity since more than half of the genera are common to both sets of fauna [fossilized and the living]" (Lund, 1935, p.73, 85). A mediated, relative rupture that excluded neither extinction nor continuity in Brazil's natural history.

Fossils illustrate a discourse on human and social development, and their singularity affords comparison with distinct realities and with universes different from our own (Santos, 2006, p.110). Fossils lit both the flame of reason and awoke the imagination and fantasy. In the nineteenth century they enabled Brazil to be identified with the world, including Europe, and to be distinguished as an Empire within America as a whole. In France during the same period the analogies between zoology and societies nourished the literary creativity of Balzac in his writing of *La Comédie humaine* (Taquet, 2007, p.206). In Brazil, Monteiro Lobato (1964) in a tale that he wrote in 1906 and lent its name to his book – *Cidades mortas* – makes an analogy between the 'dead cities' of the title and skeletons of vanished fauna, observing "mansions that recall the bones of giant sloths from which the flesh, blood and life had fled forever" (p.3). Vitality and huge size are associated with the past of the now vanished cities of the Paraíba valley in São Paulo. The paradox between rupture and continuity in social life reappears in the image of the distant and extinct past as something that belongs to us and yet is dead: "There where everything was remains nothing" (p.4).

Edmund Wilson (1986, p.49) observed that the nineteenth century was more excited by science than politics. A time open to the future, the Saquarema period, which even so did not dispense with creating a tradition that met the wishes of a particular social group and translated the identity of the nation as a whole. Much the opposite: it called for the petrification of nationality and the Empire, just as fossils solidified the life of the past in substantial and robust form. This would eternalize Brazilian society as a semiophore, a symbolic representation, imbued with socially attributed meanings that would acquire form, strength and perpetuity over time, just like fossils, and that would attract the attention and interest of Europe. It is symptomatic, for example, that the judicial vocabulary and thought of the time established the expression *cláusulas pétreas*, literally 'stone clauses,' in reference to the constitutional text. The new political order ran parallel to the new ways of studying and explaining the past of life and the planet.

The fossils collected and studied by Lund were bones mineralized by the action of time and sedimentation inside the caves and caverns where they were found. They differed, therefore, from those amalgamated in rock and encountered by George Gardner in Ceará. The latter naturalist travelled through Brazil between 1836 and 1841, the same period during which Lund collected his material and wrote some of his Memoirs. Gardner wrote:

> Understanding that a very large deposit of fossil fishes existed at a place called Novo Mundo, about three leagues to the west of Barra do Jardim, I determined on making an excursion there prior to my departure. ... here also, as in other places, almost every stone contains the remains of a fish in a more or less perfect condition; most of the smaller ones,

> that were only four or five inches long, were perfectly entire, but the larger ones, some of which measured fully six feet, were always in fragments (Gardner, 1849, p.164-165).

The scientific practices in the musealization of nature provided testimony to a vanished world. The consolidation of the nation, a living collective, petrified in the course of the years and the accumulation of sediments that gave it solidity, pointed to a society that had extinguished its colonial condition, the Portuguese past and the political subordination to the foreigner (Barrau, 1984, p.94). The vastness of the Empire, its institutions and natural productions, also surfaced in bones and skeletons of extinct animals such as reptiles, armadillos, sloths and rodents, alongside the exuberance of the forests, the length of the rivers, the size of the lands and the seacoast, and the diversity of living fauna and flora. The argumentative unity between the logic of the text and its illustrations is indissociable. According to Stephen Jay Gould (1987, p.18), in a "world of observation, pictorial summary assumes an especially vital role."

By associating the Brazilian territory with the planet as a biophysical whole, the historical rift between the nations was healed. These nations could now be placed on equal and united terms within the history of the world and humanity. Here fossils seem to contain a curative virtue in terms of social and political aspects, and not just medicinal as occurred in China (Barrau, 1984, p.92). By integrating the diversity of forms of life and the history of the world, the legitimacy of what was peculiar to the various terrestrial environments, such as the enslavement of Africans, could appear as simply a distinctive local feature that did not undermine the general sense of a universal history to which the Empire of Brazil claimed to belong at the start of the nineteenth century.

The occurrence of fossils in Brazilian soils indicated not only the transition from one condition to another, but underlined the naturalness of this transmutation, combining perpetuation and extinction in a harmonious form. And this was precisely the challenge facing the builders of the Empire from 1835 under the political mindset dominating the Regression. The disappearance of one world, indigenous and Portuguese, and the crystallization of another, new-born, but equally dependent on an essential aspect of the old regime. Paleontology could be used to imply the naturalness of the makeup of Brazilian society and its social hierarchies and indeed the political moment made it essential to consolidate the feature definitive of Brazilte:'s singularity among the nations: slavery (Mattos, 2009, p.38).

The reach of paleontological collections as vectors for connecting and overcoming inequalities was also evident in the charity work practiced by Lund over his years living in Lagoa Santa. Completing the work routine begun with the paleontological research, he practiced as a medic, taught music and drawing, instructed local people to read and write, welcomed scientists and the curious, and strove to instill education, charity and religion in the population, the virtues heralded by nineteenth century liberalism (Wilson, 1986, p.34).

The growth of the coffee economy placed Brazil in the world market, which included the nations considered emblematic of civilization, and those nations and regions where slavery was still practiced, like the island of Cuba and the southern US. Paleontology, more than just a scientific actuality, also responded to one of the Empire of Brazil's needs. The young science assured international legitimacy by inverting the contrast between nature and civilization, dissolved by the subjugation of the former by the latter. It also

assured social legitimacy by converting slavery into a type of 'social fossil,' an inheritance and presence of the past, condemned to inescapable extinction over the course of time. Apparent ambiguities made readily comprehensible by the words of the Danish naturalist, written on April 7th 1839: "Thus the known facts do not exclude the possibility of the current fauna being entirely independent of the old fauna, the two only sharing in common the correspondence of their basic forms" (Lund, 1935, p.186).

This attention to the present had a political foundation that singularized the IHGB and the Danish Royal Society of Northern Antiquaries, institutions to which Lund was affiliated and which he strove to connect. Both sought to enhance the "past of their nations through the search for ennobling pasts" (Marchesotti, 2005, p.138). History could openly legitimize public opinions (Guimarães, 1988, p.16; 2001).

The collections and studies sent by Lund to the museums, journals and scientists of Europe contributed to Brazil's role in the development of science and the venerated civilization of the nineteenth century. The symbolic incorporation of the past, of nature and of native populations by converting them into museum pieces not only meant immobilizing them, it also meant the start of a new and different era which opened up in the second quarter of the century. The Empire of Brazil announced a new pattern of conduct and social behavior, integrated by the market, by science and by the monarchy. Natural history showed that there was no incompatibility or incoherence between the elimination of the Portuguese past and the claim of its inheritance (Mattos, 2005). Hence the value attributed to the history of men, life and the Earth by the constructors, individuals and institutions of the imperial order.

The presence of Minas Gerais in national life after the 1842 uprising was also a factor in the search to dampen down rivalries between the imperial government and the liberals who had appropriated the impetus of the rebellion. The Lagoa Santa skull, offered to the IHGB, enabled the social and natural world to be ordered, hierarchized and subordinated – the dead man outside of history – and the elements constituting these worlds to be highlighted, providing the foundations for the exercise of power.[4] Minas Gerais was united with Rio de Janeiro after the defeat of the liberal revolt in Santa Luzia, in the area surrounding Lagoa Santa. It collaborated with the dissolution of regionalisms, bringing together the Empire's provinces around a strong centralized Executive. Lund dealt with elements that contributed to an intellectual operation capable of naturalizing Brazil's political reality in the regency period.

Final considerations

Lund's paleontological collections contained the symbolism needed for a "nexus of spontaneous nationality" among these provinces after 1842. They did so not by defining the particularities of Lagoa Santa or the Minas Gerais province, but by expanding the scope and meaning of the fabricating an image of national identity and even the place of the Empire of Brazil in the international context. A widespread demand at the time, which can be encountered in the pages of the journal *Minerva Brasiliense*, for example, published in Rio de Janeiro in November 1843: "Foreign to one other, our provinces lack

the strength of the moral bond, the 'nexus of spontaneous nationality,' that could closely bind the inhabitants of this immense tract of land which nature covered with the two largest rivers of the universe" (Minerva Brasiliense, cited in Guimarães, 1988, p.14).

Lund set off a game of mirrors in which the province of Minas Gerais was reflected in Brazil. The latter in turn was reflected at another scale in Europe. In 1847 the IHGB created its Commission of Ethnology and Indigenous Archaeology, which sponsored the pragmatic thesis of tracing the specificity and identity of the Brazilian nation proposed by Martius and published in 1844 by the Institute's journal. The welcome Lund received in the IHGB also makes evident the decision of the Empire's managers to use the symbolic to construct and propagate national identity and values, rather than use public education as a means to integrate the country's diffuse regional and cultural diversities. The limited scope of citizenship had no need for public education and, instead, the images perpetuated education's role in distinguishing social conditions and privileges. According to Arno Wehling, the symbolic construction of the nation State and Brazil as a specific identity required the idea of a new beginning and the reordering of the past. Demands stamped in the award given to Martius's thesis "How one should write the history of Brazil", in 1843, and in the prevalent depiction of the indigenous groups inhabiting the Empire's territories. The native South Americans were conceived as the last link in a civilizing process that had exhausted itself and fallen into decline. The 'historical sedimentation' (Wehling 1999, p.38) existing in other countries was absent in the Empire. Its textual narrative would be elaborated only in the work of Varnhagem (p.112).

It should be noted that the collections that Lund arduously assembled with the paleontological materials collected in the Lagoa Santa region indicated the intersection of three themes that appear in 73% of the publications in the IHGB's journal: indigenous peoples, regional history, and scientific voyages and explorations (Guimarães, 1988, p.20). The research on the continent's native fauna and inhabitants, the practice of a recently formed science, paleontology, and the presence of Minas Gerais in national life defined a place for the indigenous populations and for the Empire of Brazil, incorporating them in the process of civilizing the tropics, casting the former into the past and projecting the fate of the latter in the present. Here we should note that the eastern part of the province, the Doce and Mucuri river valleys, were the setting of disputes over land, occupied by indigenous groups referred to as Botocudos (Espindola, 2005; Otoni, 2002).

Lagoa Santa was converted into a confluence of the natural and civil worlds. Nature and history flowed into the site. It was described as a meeting point of scientists, and to a large extent it really was. The paleontological reality smoothed over the theories of catastrophe, deluges and the extinction of the species and testified to the coexistence of fauna and human society, past and present, an allegory of Europe and the New World. We should also recall that, previously, the American continent had already been central in the radical shift effected by the scientific interpretation of nature, distanced from Biblical orthodoxy (Rossi, 1992, p.53).

This explication of the meaning of Lund's paleontological collections in Brazil is also supported by the recent considerations of the researcher Átila Augusto Stock da Rosa (2006, p.27). Although long, the citation provides us with a useful insight:

> It suffices to recall that the developed countries were all located in the northern part of the planet, to imagine the significance of large predators in the north to be the result of the evolution of the runt-like predators in the south. The inversion of the facts with the discovery of large dinosaurs in Argentina and Africa, for example, has helped modify the self-esteem of their populations, showing that fossils have a major educational and reality-transforming potential. Consequently, more than just a commercial value, a fossil has a unique psychological value, the sense of belonging to a place or community. This is the principal significance of what became conventionally to call a Paleontological Heritage.

In the nineteenth century objects still carried a sense of authenticity of the past that impregnated the historical culture of intellectual procedures characteristic of antiquarians (Poulot, 2001; Guimarães, 2007). This same authenticity, on one hand, would steadily give way to the discourse on history, part of the growing interest in the analyses of historical knowledge and, on the other, would end up restricting the space and explanatory power of the material testimonies of the past, given the social, economic, ethnic, national and ideological ties and values that preserved them and that could become emblematic (Santos, 2006, p.63, 78). The value attributed to Lund's work during the development of paleontology at the end of the nineteenth century reinforced the belief in the political astuteness of the project of the Empire builders, the Saquarema period and the Regression in promoting the pragmatic incorporation of the natural sciences into Brazil's national life, entrusting them with a place in the construction of the nation State and in writing the history of Brazil.

In the 1920s history clearly began to rival nature, coveting and soon enjoying an exclusive space in the new museological institutions, such as the National Historical Museum, created in 1922, or those already in existence, like the Paulista Museum (Santos 2006; Brefe, 2005). Nature, however, would continue to nourish the discourses on the identity of the Brazilian nation, now found in its open fields, parks, landscapes and natural monuments (Franco, Drummond, 2009; Drummond, 1997).

NOTES

[1] On Brazil, see Figueirôa, 1997. In this and other citations of texts from non-English languages, a free translation has been provided.

[2] The Conservative party leadership at this time in the mid nineteenth century were known as the *saquaremas*, named after their political base in the coastal town of Saquarema, near to Rio de Janeiro.

[3] The intellectual conditions in which Lund conducted his scientific work in Lagoa Santa are corroborated by the Danish naturalist Herluf Winge (1857-1923). See Couto, 1950, p.25.

[4] Lund announced the dispatch of the skull in 1844. On April the 16th 1846, the IHGB's first secretary confirmed receipt of the same.

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