

SCIENCE AND POWER RELATIONS: CIRCULATION OF AGENTS AND NATURAL PHILOSOPHICAL KNOWLEDGE BETWEEN PORTUGAL AND BRAZIL IN THE 18TH CENTURY – THE CASE OF ANTÓNIO NUNES RIBEIRO SANCHES

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Resumo: No século XVIII, os estudos filosófico-naturais sobre as colônias foram orientados por um cunho mais academicista que, em alguns aspectos, transcendeu questões políticas, sociais e econômicas. Havia uma busca de complementaridade entre o Reino e a colônia, e nesse âmbito, as políticas do Estado foram postas em prática através de diversos processos de divulgação de instruções para a recolha de dados, formação de academias científicas, viagens filosóficas, e o envolvimento de diversos agentes com variadas atuações profissionais, tais como, militares, clérigos, médicos, cirurgiões e advogados. Estes indivíduos escreveram inúmeros textos sobre políticas de incentivo para que houvesse um maior conhecimento e domínio do território e as suas potencialidades naturais. Tais textos circulavam e fomentavam as políticas públicas, assim como, a própria construção de conhecimento. António Nunes Ribeiro Sanches, foi um dos agentes que participou deste processo. Muitos dos textos escritos por ele circularam através de sua extensa rede de contatos, e foram importantes para a formação e consolidação de diversas políticas públicas, principalmente a partir do Governo do Marquês de Pombal. Neste capítulo, pretendo expor algumas das ideias de Ribeiro Sanches sobre o reconhecimento dos recursos naturais brasileiros e sua exploração para o comércio e a medicina, em um manuscrito de 1763.

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Palavras-chave: António Nunes Ribeiro Sanches (1699-1783); natureza brasileira; século XVIII; filosofia natural; história da medicina.

Abstract: The 18th century natural-philosophical studies on the colonies were guided by a more academic stance that in some aspects transcended political, social and economic issues. Owing to the search for complementarity between the kingdom and the colony, State policies were translated into action in many ways: dissemination of instructions on data collection, set-up of scientific academies, philosophical travels, and the involvement of various agents from different work backgrounds, such as soldiers, clergymen, physicians, surgeons and lawyers. These individuals wrote many texts on policies geared to promote better knowledge and mastery of the territory, and its natural resources. These texts circulated and promoted public policies and the build-up of knowledge. The texts by António Nunes Ribeiro Sanches, one of the agents who took part in this process, circulated across his extensive network of contacts and were important to form and consolidate various public policies, especially during the government of the Marquis of Pombal. Our aim in this chapter is to disclose some of the ideas of Ribeiro Sanches contained in a 1763 manuscript on the Brazilian natural resources and their exploitation for commercial and medical purposes.

Keywords: António Nunes Ribeiro Sanches (1699-1783); Brazilian nature; 18th century; science; history of medicine.

INTRODUCTION

During the 18th century, the natural-philosophical studies on the New World conducted by the Europeans resulted in essays on a wide range of animal, plant species, minerals, native communities, climate, and geography. These studies are now important primary sources to those who dedicate themselves to studying the historical processes of how societies, politics and economy have been transformed, through theoretical and methodological perspectives of both colonial studies and the History of Sciences. These essays contributed to the building of knowledge about the natural environment in all its complexity, not only in the Old Continent but in the New World too. The systematic identification and cataloguing of fauna and flora done by agents in the 18th century produced material so that Natural Philosophy could develop extensively, while at the same time helped the mainlands strengthen their control over the colonies¹.

The 18th century was characterised by the increased interest of States in Nature and all matters related thereto, which helped the production and circulation of studies about the Natural World. This new interest in Nature, guided by the paradigms of the Enlightenment, enhanced by the wide circulation of texts and the creation of various dissemination institutions, such as science academies, botanical gardens, periodicals and private collections, also enabled the emergence of Natural History Offices.

¹ KANTOR, 2012: 239-250; DOMINGUES, 2001: 823-838; DOMINGUES, 2006: 150-174; PATACA, 2006; CARVALHO, 1987.

Funded by Science and Natural Philosophy patrons and sponsors, noblemen or the wealthy bourgeoisie, these institutions promoted the publication of books, memoirs and catalogues of plant and exotic animal collections. One of the most striking consequences of this tremendous interest in natural studies was the idea, often spurred on by national governments, that systematic research was needed in the still unknown areas of the world, in the established colonies and those still developing. Everything could be observable, experimented, catalogued, described, classified, and, finally, analysed as regards its uses, whether related to Science or Economy. This is what, to a large extent, boosted scientific production throughout the 18th century.

Various European nations financed natural-philosophical projects. Travels such as those of the English captain James Cook (1728-1779)², famous for exploring the Pacific Ocean, the Frenchman Louis Antoine de Boungaiville (1729-1811), the author of a treaty on navigation calculations who sailed around the world³, the Spanish Alejandro Malaspina (1754-1809) who travelled across America, Asia and Oceania⁴, or even the Philosophical Travels in Portuguese America idealised by the Italian naturalist Domenico Vandelli, carried out by Alexandre Rodrigues Ferreira (1756-1815)⁵, show that although nations like England, France, Spain and Portugal played different roles in the scientific domain called Enlightenment, they nonetheless recognised the need for studies on the Natural World and its resources.

As an intellectual movement, Enlightenment was far from being the privilege of one specific nation. It built up its own unique features in different parts of Europe, such as Germany, England, Italy, France and Spain, and spread practically to the whole of Western Europe and the Americas. A wealth of information resulting from the research and observation of nature and found in treaties, memories, botanical gardens and museums, driven by the principles of a new rationality disseminated by the achievements of the Illuminist thought flowed across Europe and its colonies⁶.

Far from being a homogeneous movement, the Enlightenment Age produced a great diversity of ideas and approaches to the most varied themes, and the core concepts formulated by the enlightened were applied differently in the different European and colonial territories. Partly because of this, the 18th century was marked by the broad dissemination of Natural Philosophy and of other fields of knowledge⁷. The circulation of ideas as a result of the abundant intellectual activity throughout the «Enlightenment Age» was done through published and printed books, rapid flow and far-reaching periodicals, and manuscripts⁸. We can, therefore, say that like in France and England, natural-philosophical studies in Portugal were also part of this process. The Portuguese men of letters also presented various avant-garde propositions, especially as regards Natural History⁹, their works showing

² FISHER & JOHNSTON, 1979.

³ DUNMORE, 2007.

⁴ PEDRO, 2010.

⁵ PATAKA, 2006.

⁶ FURTADO, 2012; CARVALHO, 1987.

⁷ HANKINS, 2002.

⁸ FURTADO, 2012.

⁹ CARVALHO, 1987; PATAKA, 2006.

the descriptions and classifications of nature in their colonies, for various purposes. Moreover, they also wrote critical studies and proposed ways for science in Portugal and in the Empire to become more and more prominent.

This becomes clear when we analyse, for example, the case of the so-called *estrangeirados* – the Portuguese elite who left the country to study or work abroad and search for new knowledge in universities scattered across Europe. In some cases, upon their return they were imbued with the Enlightenment reformist ideals for restructuring the bases of scientific thinking in all areas of knowledge. An essential part of the activity of these individuals was done by establishing extensive networks of communication¹⁰. The role of the so-called *estrangeirados* in the transformation of State policies on science and teaching in Portugal was quite relevant. Our analysis, however, has a penchant close to that of Júnia Ferreira Furtado¹¹, who has some reservations as to the leading role assigned almost exclusively to the said *estrangeirados*, as other individuals were also involved in these processes, many of whom from the many colonies. This is based on the understanding that if we look at the history of European intellectuals since the Middle Ages¹², studying in various leading universities in Europe was something that had always been done, representing mobility of men and ideas essential for fostering the production of knowledge, not only in Portugal but also across Europe.

In this sense, the Portuguese intellectuals who travelled to other countries and who had an active part in the public teaching and science policies need not be classified differently, as if they were part of a unique circle specific to Portugal. Nonetheless, we also feel it would not be appropriate to abandon the term *estrangeirado* and replace it with *emboabas ilustrados* [learned foreigners], as Furtado suggested in *Oráculos da Geografia Iluminista*¹³. The risk here is that we would fall into the same error we wished to avoid, as we would wrongly call a relatively heterogeneous group of individuals by a name that, albeit more comprehensive, may still leave out other agents. This is why we have chosen not to use any specific terminology when referring to such individuals.

Against this backdrop, some figures deserve recognition, for instance, the Count of Ericeira, Luís António Verney (1713-1792), and Martinho de Albuquerque, who, during their travels in Europe, came forward with some innovative suggestions for reforming education and science in Portugal. Another example was António Nunes Ribeiro Sanches (1699-1782), who left the country to study in Spain and Holland and, although he never came back, played a relevant role in the more advanced discussions about the teaching of Medicine and Botany in the Portuguese universities. Based on the Enlightenment ideas, these and other men wished to help Portugal recover from what they believed was an intellectual delay compared to other countries¹⁴.

The Portuguese State was quite committed to reforming the theoretical-methodological basis of teaching at the University of Coimbra. Although reforms began throughout the 18th century, they

¹⁰ CARNEIRO *et al.*, 2000: 591-619.

¹¹ FURTADO, 2012.

¹² GRANT, 2002.

¹³ FURTADO, 2012.

¹⁴ BOXER, 2011; DISNEY, 2011.

increased in depth and speed from the second half of the century. To encourage a further approximation to the pedagogical structures in Europe and to how they were organised in the rest of Europe, Natural Sciences gradually gained more ground, especially with the work of Domingos Vandelli and his team, in both Portugal and the colonies. Besides being concerned with the recognition of the natural environment of Portugal within Europe, the research conducted in the colonies driven by the organised search for and exploration of resources promoted Portugal as a member of a network that contributed to the studies of Natural History¹⁵ in a global context. To some degree, the lack of knowledge about Portugal's production activity may be the reason why the country was considered to be sitting on the sidelines in a transforming context of knowledge and in the implementation of the Enlightenment principles.

In short, despite the peculiarities regarding the problems and troubles experienced by Sciences in Portugal, amidst reforms, persecutions, political upheavals and distrust on the part of the main supporters of the *Ancien Regime*, the natural-philosophical production in that period was remarkable¹⁶. This works must be analysed as the essential basis for understanding any transformation processes of scientific knowledge in Portugal and in the colonies.

Against this complex background, a concerted effort mainly under the auspices of the State took place throughout the 18th century to promote the renewal of basic knowledge in both the kingdom and in the colonies. The period from 1750 on in Portugal, which Charles Boxer termed «Pombaline Dictatorship»¹⁷, was extremely important for the country and its colonies. In our opinion, this period brought about some of the key policies on the implementation and reform of the educational and political bases of the kingdom, directly related to the Royal Court's interest in learning about the economic resources of its colonies. A considerable part of this effort was steered to the production of maps, to increasing the knowledge of the territory in order to strengthen the Portuguese ambitions in America, in terms of both strategy and diplomacy, in particular in relation to the territorial disputes with Spain¹⁸.

Another aspect that caught the attention of several historians that have addressed the extent of the impact of the Enlightenment ideas in Portugal was the reform of university education and the State incentives given to sciences. Sebastião José de Carvalho e Melo (1699-1782), the Marquis of Pombal, directed part of his policies to the reform of Portuguese universities, especially its most important – and only one from 1759 on –, the University of Coimbra. Reforms in Coimbra began in 1772 with the hiring of qualified staff and changes in the curricula of various courses.

Much of the reform process also involved removing those at the helm of the university as a direct consequence of the broader process of expelling the Jesuits from the Portuguese territory. The University of Coimbra, steered by the brothers of the Society of Jesus, traditionally offered only courses in Medicine, Laws and Theology¹⁹. Changing the running of the institution by completely excluding the Jesuits furthered the direct subordination of the university to State interests, which in

¹⁵ PATACA, 2006.

¹⁶ DOMINGUES, 2001: 823-838; DOMINGUES, 2006: 150-174.

¹⁷ BOXER, 2011.

¹⁸ KANTOR, 2012; DISNEY, 2011.

¹⁹ KANTOR, 2012; DISNEY, 2011.

the second half of the 18th century were opened, albeit selectively, to the various ideas circulating across Europe driven by the Enlightenment thinking²⁰. The thrust of the reform was followed by the restructure of the organisation and education. A clear example of this was the faculties of Philosophy, Mathematics, and Medicine, which now offered subjects as diverse as Natural History, Physics, Chemistry, Geometry, and even the start of a Botanical garden, whilst at the same time it focused more and more on the training of naturalists²¹.

Under the reforms of the university, Pombal kept contact with some of the ideas shared by Portuguese and foreign intellectuals all over Europe, such as António Nunes Ribeiro Sanches, Luís António Verney, José Monteiro da Rocha and Domingos Vandelli, even if he did not adopt them entirely²². In this sense, by championing the university reform process the Royal Court actively participated in the cultural and scientific renewal, with the help of funding and incentives for travels and expeditions, which resulted in attempts to reformulate and take stock of the knowledge there was of the Natural World in Portugal and in the colonies. In connection thereof, we note the travels promoted by the Portuguese Court, in particular from the reign of King D. José I (1750-1777) and Queen D. Maria I (1777-1816) onwards, known as «Philosophical Travels»²³ which, as we hope to demonstrate further ahead in this study, were a considerable part of the efforts made to produce knowledge about the Natural World in the Portuguese possessions.

The policies for encouraging philosophical investigations advanced and heightened in the aftermath of Pombal's ministry, during the reign of Queen D. Maria I. Greater projects were dedicated to the organisation of philosophical expeditions funded by the Court and coordinated by the University of Coimbra and Vandelli and his team²⁴. The involvement of various sectors of society was encouraged, by coordinating the work of mathematicians, astronomers, physicians, surgeons, clergymen, Royal Court officials, engineering and naturalists, some even from other parts of Europe. This group of people also included some that had no specific academic training in these fields of knowledge, but who somehow learned of the instructions to gather information about the natural environment formulated by the reformed University, and later by the Lisbon Academy of Sciences²⁵.

Based on the relevance given by the various historians we have mentioned before to all these issues, we realise that the recognition of the general aspects of the transformation processes that aimed for the reorganisation of the exploration means and the survey of the colonial territories are the ideal starting point to the objectives of this thesis. This is the background against which the various information collection works must be analysed, which aimed at various purposes related with a myriad of issues, in particular of an economic and political nature²⁶. From the 1760s on, and even more so during the reign of Queen D. Maria I, it was clear that the works were without any doubt influ-

²⁰ PATAÇA, 2006; BRIGOLA, 2003; DOMINGUES, 2001: 823-838; DOMINGUES, 2006: 150-174.

²¹ PATAÇA, 2006; BRIGOLA, 2003; DOMINGUES, 2001: 823-838; DOMINGUES, 2006: 150-174.

²² PATAÇA, 2006.

²³ PATAÇA, 2006; BRIGOLA, 2003; DOMINGUES, 2001: 823-838; DOMINGUES, 2006: 150-174; KURY, 2015: 243-277.

²⁴ BRIGOLA, 2003.

²⁵ BRIGOLA, 2003.

²⁶ DOMINGUES, 2001: 823-838; PATAÇA, 2006.

enced by the specific knowledge that emerged from the Enlightenment intellectual enthusiasm. Even if the initial aim was simply to survey the resources of the territory, we can nevertheless note that the observation of the Natural World in Brazil and the cataloguing, description and classification works were influenced by the enlightened thought that then permeated the intellectual realms in both Europe and in the colonies²⁷.

The 18th century was clearly a period of effervescence in the various fields of knowledge. The circulation of knowledge often involved the exchange of information through the networks of contacts created between philosophers from various areas of knowledge²⁸ and scattered throughout the whole Empire. The social and economic transformations that occurred in Europe at the same time as the scientific revolution promoted the emergence of a market for knowledge and brought a new momentum to the knowledge production process²⁹. Many works that later became beacons of the construction of scientific thinking during this period focused on the understanding of the political, social and cultural aspects of Enlightenment, from the time it took to mature, during the Early Modern Age, to its consolidation as a set of ideas and practices corresponding to the various spheres of human action³⁰.

KNOWLEDGE IS POWER: THE CASE OF RIBEIRO SANCHES

It is a well-established fact that a significant number of agents works and scientific knowledge circulated across the Portuguese Empire throughout the 18th century. However, we need to understand how all these elements, together, were able to circulate and promote the complex production of natural-philosophical knowledge about the colonies, something quite beyond the studies carried out under the Philosophical Travels organised by Vandelli. Another issue in connection with knowledge production in the 18th century is the question of how Science produced in the Portuguese Empire is situated within the European contexts, regarded as models of the development of scientific thinking throughout the Enlightenment Age.

Based on the analysis of the diversified circulation of people and ideas, we note that the natural-philosophical studies carried out on Brazil, especially in the second half of the 18th century, have some peculiarities and consist of a complex network of producers and works, where applying a unique knowledge production model is unsuitable.

Having the circulation of knowledge and of individuals as the starting point, and assuming, as Francis Bacon said, that «knowledge is power» and that it is a means to overpower nature³¹, and knowing that power games influenced the production of knowledge we can look into some case studies that reveal the types of works and agents during that period. To do so, we need to see how the discussions on

²⁷ PRESTES, 2000; DOMINGUES, 2001: 823-838; PATAÇA & PINHEIRO, 2005; KURY, 2015; KURY, 2008.

²⁸ DARNTON, 1979.

²⁹ DARNTON, 1979.

³⁰ DUPRÉ, 2004.

³¹ BACON, 1992.

the policies for the promotion and implementation of new science development models in Portugal and in its Empire permeated the ideals of intellectuals, and how their ideas circulated and were validated.

Since the early 18th century, during the reign of King D. João V, the number of agents, books, ideas and correspondence in circulation in both Portugal and in northern European countries or colonies increased³². The Portuguese Empire was connected by sea routes³³ used for trading purposes and for circulating texts, whether letters, official documents, cash from trade, sermons or scientific texts.

In the first half of the 18th century, much of the scientific thinking circulated through the exchange of correspondence between diplomats, Royal Court officials and intellectuals³⁴. These letters addressed several topics and, through them, scientific knowledge circulated and was validated. This situation did not change as we move on to the second half of the 18th century; quite the contrary, it increased. The number of written works from mid-century on political, economic and scientific issues in connection with the search for the natural resources of the colonies, especially Brazil, is unquestionably greater. The interest of the Portuguese State in expanding its knowledge about the colonies increased due to political, economic and academic reasons. This interest resulted in a significant increase in the number of agents, in the colonies or other territories, who sought to write specifically about the geography, the native populations, or to the natural environment of the colonies and suggest the mechanisms they believed should be used by the Royal Court to enhance knowledge and the use of natural resources for commerce and science. Many of such agents in or outside the colonies addressed this topic and produced a large number of documents in connection thereto, most of which are hand-written and can be analysed with the purpose of understanding the processes of learning about and using these natural resources.

This greater movement of intellectuals during the reign of King D. João V in turn spurred the rejuvenation of the Portuguese intellectual class, thus forming a republic of Letters. Some changes begun in this process, allowing for a greater intellectual openness, either with the circulation of individuals, books, ideas, and correspondence, or with the creation of spaces dedicated to scientific production, such as the Royal Academy of Portuguese History³⁵. Júnia Ferreira Furtado discussed this process extensively based on the work, writings and diplomatic career of D. Luís da Cunha (1662-1749). A man of letters and trusted by the King, he overcame the boundaries of his diplomatic careers by playing a key role in the circulation of knowledge between Portugal and Northern Europe countries. One of his main duties was to select and purchase the latest books published and to send them to Portugal so that they could be added to the royal library. Some of those books were actually included in the black list of books prohibited by the Inquisition³⁶.

This is one of the many examples of Portuguese intellectuals that, in the first half of the 18th century, left the kingdom to travel across Europe. We could list many more agents who took the «grand

³² FURTADO, 2012.

³³ ALENCASTRO, 2010: 115-144.

³⁴ FURTADO, 2012.

³⁵ FURTADO, 2012.

³⁶ FURTADO, 2012.

tour» across the main education institutions in Europe and picked up the most modern scientific thoughts on the Portuguese political and scientific situation. In fact, the circulation of agents across scientific institutions had been taking place since the Middle Ages³⁷ and intensified as the natural course of science education and production in Europe. Another emblematic example of such Portuguese agents taking the «grand tour» was António Nunes Ribeiro Sanches (1699-1783).

Ribeiro Sanches was born in 1699 in Penamacor, a town in central Portugal. As he was a new-Christian, he left the country at a young age and never returned. He first enrolled at the University of Coimbra in the early 18th century and then transferred to the University of Salamanca in Spain, where he received his Doctorate in Medicine in 1724. His life and work were studied extensively by the renowned Portuguese historian Maximiano Lemos³⁸ and is still studied today due to the impact that his thoughts and works had on some of the main reforms implemented in education and health, especially from the second half of the 18th century. His travels to the major intellectual centres of Europe and the influences he took in from those centres are clearly visible in his works and influenced the scientific and educational policies in Portugal. While in Europe, the Portuguese physician travelled to Genoa, Montpellier, Bordeaux and London, where he came into contact with local intellectuals, learned about new scientific trends, and practiced Medicine. He then left for Holland where he mingled and studied with the famous physician Hermann Boerhaave. Later, in 1731, Boerhaave himself advised Ribeiro Sanches to travel to Russia as an army physician, earning him fame and reputation and leading him to be appointed as the personal physician of the tsarina Ana Ivanovna. In 1739 he was appointed member of the St Petersburg Academy of Sciences and in the same year he was appointed member of the Paris Academy of Sciences³⁹. His name figures in the membership roll of the Lisbon Academy of Sciences as of 22-05-1780.

As he was involved in State conspiracies, Ribeiro Sanches left St Petersburg for Paris (where he lived until he died in 1783). Here, he established significant relations with the French intellectuals, absorbing the Enlightenment thoughts and actively participating in shaping a new scientific environment in Portugal. Ribeiro Sanches wrote an enormous amount of texts in this period and his intellectual fame became even more prominent. His main works deal with topics connected with Medicine, Education and Natural History⁴⁰.

Ribeiro Sanches had an influential network of contacts and used it to express his thoughts and works. According to Júnia Ferreira Furtado, this network included D. Luís da Cunha (1662-1749), Denis Diderot (1713-1784), Buffon (1707-1788), Leonhard Paul Euler (1707-1783), Herman Boerhaave (1668-1738), D'Alembert (1717-1783), Sebastião José de Carvalho e Melo (1699-1782), Joseph-Nicolas

³⁷ GRANT, 2002.

³⁸ LEMOS, 1911.

³⁹ FURTADO, 2012; LEMOS, 1911.

⁴⁰ While in Portugal, Ribeiro Sanches wrote, in 1726, the *Discurso Sobre as Águas de Penha Garcia*. At the invitation of Diderot, he wrote the entry on venereal diseases for *Encyclopedie*. In the following years, the Portuguese doctor published his main works on the Portuguese political and scientific environment: *Tratado da Conservação da Saúde dos Povos*, 1756; *Cartas sobre a Educação da Mocidade* (Being one of the most important and influential for the period), 1760; *Método para Aprender e Estudar a Medicina*, 1763. And finally, in 1779, he wrote *Mémoire sur les Bains de Vapeur en Russie* (FURTADO, 2012; LEMOS, 1911; BOTO, 1998).

Delisle (1688-1768), Étienne-Maurice Falconet (1716-1791), *inter alia*, such as his nephew, physician José Henriques Ferreira.

As soon as he arrived in Paris, Ribeiro Sanches established an important contact with D. Luís da Cunha. Both the diplomat and the physician agreed on several ideas and thus a partnership was formed. The text written in 1730 by D. Luís da Cunha in collaboration with Ribeiro de Sanches, entitled *Método com que se deve estudar e ensinar a filosofia e medicina moderna* (On how to study and teach philosophy and modern medicine) shows precisely how their ideas converged. According to Júnia Ferreira Furtado, this text by D. Luís da Cunha shows some of the measures that were later implemented by the Marquis of Pombal in his reform works (1750-1777)⁴¹.

Even though he never returned to Portugal, Ribeiro Sanches was a prominent figure in the establishment of many scientific and educational policies implemented in Portugal throughout the 18th century. Due to his connections with central figures of the Portuguese State, such as D. Luís da Cunha and the Marquis of Pombal, his ideas (even if not in their entirety) were incorporated in the Pombaline reforms. Ribeiro Sanches participated actively in the construction of the political and scientific bases for the reorganisation reform of the University of Coimbra, in particular in the development and reform of medical and educational thinking⁴². He strongly defended that the Portuguese Royal Court should increase the incentives so that the intellectuals could travel across Europe⁴³. His ideas, works and critique were plentiful and circulated across and outside the Empire. His vast and varied works have for long been studied and analysed by historiography and includes studies, texts and letters⁴⁴ exchanged between his fellow workers and individuals connected to the State. Whether Ribeiro Sanches's ideas put into writing were published or not, or read or not, the fact is that he discussed many aspects of scientific knowledge production in his time and his works circulated among his extensive network of contacts. Therefore, we do know that the Portuguese physician wrote some pages, at different moments in time, about the colonies and their natural resources, and the use thereof by the Royal Court. This is where our interest comes into play.

The texts known to have addressed this topic are: *Discurso sobre as Colónias, sobre a América portuguesa e sobre a Agricultura*, of 1763; *Considerações sobre o governo do Brasil desde o seu estabelecimento até o presente tempo*, of 1777; *Sobre as lavouras e fábricas de tabaco do Brasil*, of 1778; and *Dos efeitos do descobrimento da América e conquistas, e se as colónias devem ser regidas pelas mesmas leis que o centro do Reino de que dependem*⁴⁵, the date of which is unknown⁴⁶. In addition to these specific texts, Ribeiro Sanches also mentioned the situation of the colonies and their organised exploitation so that the natural

⁴¹ FURTADO, 2012: 142.

⁴² FURTADO, 2012; LEMOS, 1911; BOTO, 1998.

⁴³ FURTADO, 2012.

⁴⁴ The contents of his letters varied greatly. However, as part of the reform policies implemented by the Marquis of Pombal concerned the colonies and natural-philosophical studies in the colonies, some of these letters should have also dealt with this subject. After all, throughout that period the intellectuals, whether in Portugal or overseas, were concerned with the situation in the colonies and with the recognition of the countries' resources and, of course, also concerned with the recognition and establishment of borders (FURTADO, 2012; PATACA, 2006; BRIGOLA, 2003).

⁴⁵ While most of these texts have been microfilmed and are available for consultation at the National Library of Portugal, others are already published, and a large majority were listed and analysed by Maximiano Lemos.

⁴⁶ LEMOS, 1911.

resources could be properly used for Medicine and commerce, as we can see in the work *Cartas sobre a Educação da Mocidade*, of 1760, and in *Método para Aprender e Estudar a Medicina*, of 1763.

From among all these works written by Ribeiro Sanches, some of which focus on the colonies, their nature, natural resources useful for commerce, Medicine and Natural History, we find a unique manuscript on Brazil dating back to 1763: *Apontamentos para descobrir na America portuguesa aquellas produções naturaes que podem enriquecer a Medicina e o Comercio. Paris 2 de Outubro de 1763*⁴⁷.

ON THE POLICIES TO ENCOURAGE THE STUDY OF NATURAL RESOURCES IN THE COLONIES

The political-scientific scenario in Portugal in that period was totally directed to the construction of bases that could organise Science in the country according to the Enlightenment thought. The literate class criticised the Royal Court and suggested solutions for the country's intellectual enrichment. The manuscript by Ribeiro Sanches, divided into four parts, contains this vision: *Introdução; Alguns meios para descobrir as produções do Brazil e para virem no conhecimento dos Medicos e dos Mercadores Portuguezes; Instruções e qualidades dos que havião de indagar as produções das terras de Ultramar; and Obrigação destes Botanicos na indagação da História Natural das Conquistas e Colonias Portuguezas.*

The text sets out a few aspects adopted by the Marquis of Pombal in his reforms, not only of the university, but also of the State policies, for example, the fostering of research and introduction of crops, and the study of the colony's native plants that could be used in Medicine.

As he states in his introduction:

*If the basis of Portuguese America had been rooted in universal agriculture and commerce, today we would have plenty of information about its crops that we totally ignore. It seems that this has not been looked into other than for overpowering the masses and removing the gold from its mines, overlooking the fact that agriculture also brings plenty of wealth*⁴⁸.

In this context, and according to Ermelinda Pataca⁴⁹, one of the instructions given by Vandelli as the coordinator of the Philosophical Travels at the post-reform University of Coimbra was that the naturalists should study the chemical composition of soils suitable for plant cultivation. This was a clearly to encourage agriculture in the colonies. The author also cited Ribeiro Sanches and showed the physician's concern in relation to this in his 1763 work, *Método para Aprender e Estudar a Medicina*. Pataca emphasised the criticism made by Ribeiro Sanches regarding the policies on the encouragement of closer relations between the mainland and its overseas colonies. Ribeiro Sanches had already suggested in *Método para Aprender e Estudar a Medicina* that the Royal Court should direct energies to

⁴⁷ BNP – Secção dos Reservados, COD. 6941//4. *Apontamentos Para Descobrir na America Portuguesa Aquellas Produções Naturaes Que Podem Enriquecer a Medecina, e o Commercio* [Manuscrito]. Paris: [s.n.], 1763. Disponível em <<http://purl.pt/27752>>. [Consulta realizada em 04/2016]; CONCEIÇÃO, 2017a.

⁴⁸ BNP – Secção dos Reservados, COD. 6941//4... p. 4.

⁴⁹ PATACA, 2006: 30-32.

the survey of natural resources in the colony that could be used not only in agriculture and commerce, but also in Medicine⁵⁰, an argument he reinforced in the 1763 manuscript.

This criticism towards the Royal Court made by agents such as Ribeiro Sanches and by others known as the *estrangeirados* was essential to a significant part of recent historiography that studied this topic, giving rise to the idea that Portugal lagged behind in terms of intellectual knowledge. Now, this criticism needs to be filtered as these agents were in a specific context and used their texts to call the attention to their work and ideas, in an attempt to validate the knowledge they were producing. As we will see in the following chapters, the number of works and the quality of scientific production in the second half of the 18th century are no proof of the intellectual delay, or even of the studies on the natural resources of the colony. It may even be true that natural resources in the colonies were not properly used, but this does not confirm the idea that society was lagging behind in terms of science either in the mainland or in the colony.

We know that other letters besides this manuscript were exchanged between Ribeiro Sanches and Sebastião José de Carvalho e Melo. In Júnia Ferreira Furtado's opinion, the contents of these letters are somewhat unknown⁵¹. Yet, it is quite noteworthy that although the Marquis of Pombal contacted Ribeiro Sanches during his Pombaline reforms, he did not adopt all the suggestions made by the physician. The manuscript by Ribeiro Sanches dated 1763 reveals many of the ideas adopted by the Portuguese Royal Court in connection with teaching and research on the natural resources of the colonies, disclosing also some bits and pieces of information that may have been exchanged in other letters between these two men.

In this regard, Ribeiro Sanches not only presented what he believed should be the right approach of the Royal Court to the colonies, but also categorically criticised the University of Coimbra and the teaching of Medicine:

*The money spent by the University of Coimbra on thirty Medicine students each one 40 years of age could be better spent by the State on the education of the students that I propose, rather than on those physicians whom the Royal service does not need today*⁵².

Elsewhere in the same letter, Ribeiro Sanches spoke of the benefits of knowing the land, the possible crops that it could produce and stated that the King alone could not be able to research, know and work on this issue; he would need a group of professionals with specific expertise to do the job:

Even though a King may be driven by a creative spirit, always imitating the Omnibenevolence of God Almighty who created Man in his image, he will not be able to see everything, examine everything, and order everything all by himself. The King needs geographers, land measurers, men knowledgeable in Natural History, in Chemistry, in Metalworks so that they may give their findings to the Archives of the State Economic Court, and decide on their final destination. If such a Court were to exist in the Kingdom, if the income it

⁵⁰ BNP – *Secção dos Reservados*, COD. 6941//4...; PATACA, 2006.

⁵¹ FURTADO, 2012.

⁵² BNP – *Secção dos Reservados*, COD. 6941//4... p. 6 – verso.

*had or could have come solely from the work and industry, then the studies of the King's very extensive possessions overseas would only skim the surface*⁵³.

In Ribeiro Sanches's opinion, studies should be conducted on the natural environment the colonies in order to find out what could be extracted and cultivated. Besides being a question of strategy, territorial delimitation, commerce and control, knowing more about the natural environment of Brazil would be a way of obtaining the largest amount possible of knowledge, in particular on Natural Philosophy and Medicine.

As a whole, Sanches's text talks about the benefits of Natural History knowledge for the economy, agriculture and science. So, based on the analysis of other countries like England, Holland and Spain, he gave examples of how these countries increased their trade and science through the natural-philosophical studies about their colonies:

*I realise I lack the strength, expertise and news about that continent to achieve everything I have thought about on this topic. These difficulties have made me write separate treatises on everything I have about America. To try my strength, in this first treaty I wanted to learn how we should search for medicines, spices and other products to increase the mechanical arts, which are already known to the Castilians, English, and Dutch, in their possessions in America and in East India, and in Africa. And also how we could discover other products hitherto unknown in Medicine and in Commerce*⁵⁴.

This same argument was also used by Domingos Vandelli in a letter sent to the Marquis of Angeja⁵⁵ a few years later, in 1777, where he applauded the success of the philosophical expeditions carried out by other countries, and how they valued the natural-philosophical studies of their overseas possessions:

*Other nations have acknowledged this usefulness by sending, on these and other occasions, mathematicians and intelligent naturalists. This is what the tsarina of Moscow, the French, the English and the Danes have done. They know how to take full advantage of what natural sciences are able to produce*⁵⁶.

This concern in comparing what other European countries were achieving permeated much of the discussions and philosophical thinking in the Portuguese political and scientific society throughout the 18th century. This concerning grew, especially in the second half of the century, when initiatives to implement a methodical research of the natural resources in the colonies intensified, on the basis of the idea of an organised exploitation of these resources, based on philosophical studies. From a methodological viewpoint, Ribeiro Sanches, and other agents such as Vandelli, used this argument in their discourses.

⁵³ BNP – *Secção dos Reservados*, COD. 6941//4...

⁵⁴ BNP – *Secção dos Reservados*, COD. 6941//4... p. 1.

⁵⁵ VANDELLI, Domenico – *Carta de Vandelli ao marquês de Angeja*. In CAMARGO-MORO, Fernanda de; KURY, Lorelai – *O Gabinete de Curiosidade de Domenico Vandelli*. Rio de Janeiro: Editora Dantes, 2008.

⁵⁶ VANDELLI, Domenico – *Carta de Vandelli ao marquês de Angeja*...

In the sub-chapters of Ribeiro Sanches's manuscript – *Alguns meios para descobrir as produções do Brasil e para virem no conhecimento dos Médicos e dos Mercadores Portugueses*⁵⁷ and *Obrigações destes Botânicos na indagação da História Natural das Conquistas e colônias Portuguesas*⁵⁸, the author continues to criticise the Portuguese State regarding the knowledge of Natural History in the colonies and then use of these resources for Medicine and commerce. For him, natural sciences and the teaching and practice of Medicine should converge, adding that Botany was necessary to understand the natural resources of the colonies, and that physicians would be instructed on the uses and applications of plants and minerals in Medicine.

Following his arguments so that the Portuguese State could have a better economic and scientific use of its colonies, especially Brazil, Sanches spoke about the importance of university education and the reform he had proposed for the University of Coimbra. As to achieve so, he highlighted that the Portuguese intellectuals should have the opportunity of visiting the north of Europe, and showing that the circulation of agents was of the utmost importance for knowledge building:

*While it is clear that the State needs to know about the products of its possessions and to make the best use thereof, no-one will doubt that learned men are required for this, and that this is necessary for the State's economy. The State should find these learned men and hire them to conduct the research we propose herein. It should send five or six students of Medicine between the ages of eighteen and twenty, talented and resourceful, healthy and strong, capable of body work (the work of a pharmacist and naturalist, or as we say, herb collector, means walking across mountains and hills and being exposed to the elements and many dangers) and willing to learn Botany and Natural History, first and foremost, and, secondly, practical Astronomy needed for drawing geographical maps, taking note of heights, marking longitudes, all of which is required in the exercise of Natural History in the unknown, or at least little known, climates and lands*⁵⁹.

As this text was written in 1763, at a time when the State policies marked by the ideals of the Marquis of Pombal were being implemented, mainly those on educational reforms, we realise that Ribeiro Sanches's discussions, critique and notes on the possible measures that should be taken with a view to increasing the knowledge of the Natural World of Brazil fit perfectly well into the context of the period, and were in line with the ideas of other intellectuals, such as Luís António Verney (1713-1792), João Jacinto de Magalhães (1722-1790), Teodoro de Almeida (1722-1804), Manuel do Cenáculo (1724-1814) and José Monteiro da Rocha (1734-1819)⁶⁰.

Indeed, throughout the entire second half of the 18th century the various documents written by a large number of agents contain criticisms very similar to those of Ribeiro Sanches (1763). For example, years later, Manoel Joaquim de Souza Ferraz⁶¹ wrote a book on Botany in 1792, in which he outlined

⁵⁷ BNP – *Secção dos Reservados*, COD. 6941//4... p. 4 – verso.

⁵⁸ BNP – *Secção dos Reservados*, COD. 6941//4... p. 7 – verso.

⁵⁹ BNP – *Secção dos Reservados*, COD. 6941//4... p. 6 – verso.

⁶⁰ CARNEIRO *et al.*, 2000: 591-619.

⁶¹ Correspondent member of the Lisbon Royal Academy of Science, he practiced Medicine in Porto for four years before returning to Brazil in 1795. He worked in Minas Gerais during the vice-royalty of the Count of Resende, and later went to Rio de Janeiro. He was a Brazilian trained in Medicine in Montpellier, and correspondent of the Lisbon Academy of Sciences.

his criticism and spoke about the need of the Portuguese State to know more about its natural resources in Brazil.

According to Ferraz:

if the many strengths match my ardent desire that the love of this science inspires and propagates among the Portuguese youth, that is, the first to facilitate its path and the means of instruction; it is, however, a mammoth task and can only be done by a powerful force like the State; only the State can encourage progress in Botany, rewarding those who put their minds to it and excel: by giving them the necessary means for them to travel and make discoveries that will be useful for the whole society [...] Everything there is unknown and glory belongs to Portugal for finding it; so when will the country engage in this important operation, on which all the learned men of Europe are impatiently waiting for? Can you imagine how natural history and medicine would benefit from this?⁶²

It is clear that even with a 20-year difference between the texts by Ribeiro Sanches and Ferraz, the concerns in the ideals of Portuguese intellectual remained practically the same. The political-scientific situation of Portugal and its colonies and the changes begun in 1750 and ended with the policies implemented by Queen D. Maria I drove the Portuguese intellectuals into writing on topics related with science and the recognition of the natural resources of its colonies. This situation lasted until the early 19th century. The policies to encourage the production of knowledge and the criticism made by the Portuguese intellectuals, at home or abroad, must be used as a guideline to understand the concerns and urgent needs, the latter in connection with science, but not as a bulwark to define the degree of quality of science in those times.

In addition to all these aspects relating to the discourse of Ribeiro Sanches on the need to implement sharper policies on the natural-philosophical studies in Brazil, we can suggest other avenues of analysis not only of the manuscript itself, but of a complex circulation network of agents and knowledge that embodied the writings and ideas of Ribeiro Sanches about Brazil and its natural resources. All these may serve as an example to contextualise that period, which, in our opinion, was marked by the intense circulation of knowledge, to a great extent based on the relation between science and power.

CIRCULATION OF KNOWLEDGE IN ANTÓNIO NUNES RIBEIRO SANCHES'S MANUSCRIPT

To understand the knowledge circulation processes through Ribeiro Sanches's 1763 manuscript, we need to contextualise the document. To that end, we will base our reasoning on some Portuguese intellectuals from the early and late 20th century who studied the life and work of Ribeiro Sanches. First, we note that the Ribeiro Sanches exchanged many letters with other interlocutors. We also realise that the hierarchical relations underlying the circulation of knowledge were based on connections between science and power.

⁶² ACL – *Série Azul de Manuscritos*, COD 375. FERRAZ, Manoel Joaquim de Souza – *Memoria sobre a Botanica, e as vantagens, que della rezultão para a praxe Medica, apresentada á Academia real das sciencias de Lisboa*. Lisboa: [s.n.], 1792.

Maximiano Lemos (1860-1923)⁶³, for example, stated that Ribeiro Sanches had written and sent to D. Vicente de Sousa Coutinho (1726-1792)⁶⁴ in 1763, 25 handwritten pages on the colonies⁶⁵. Another individual who also wrote about Ribeiro Sanches was Victor de Sá (1921-2004)⁶⁶, stating that there was a text dating back to 1763 entitled *Discursos sobre as colônias, sobre a América portuguesa e sobre a agricultura*⁶⁷. We can also add to this list Innocêncio Francisco da Silva (1810-1876)⁶⁸, who also referred to a manuscript on Brazil dating back to 1763 written by Ribeiro Sanches and addressed to the Marquis of Pombal. In view of this, we can say that Ribeiro Sanches wrote not one but at least two texts on the same topic and sent to different agents in different territories, both of which held trustworthy positions in the Portuguese State. The contents of the manuscripts make the objective of Ribeiro Sanches quite clear: being a political-scientific document, he intended to discuss the State policies on the recognition and exploitation of natural resources in the colonies⁶⁹.

In his works prior to this 1763 manuscript, the Portuguese physician discussed the issue of Natural History for the Portuguese kingdom, and the importance of teaching Botany in medical schools. His texts already showed his criticism and suggestions in this relation, but they did not directly concern the Brazilian territory⁷⁰.

Throughout the 18th century, knowledge production agents disseminated their ideas and exchanged letters among a large number of individuals that formed a complex network of contacts⁷¹. This phenomenon, which basically involved handwritten documents, took place across the Portuguese Empire. Ribeiro Sanches, who was an active agent, wrote much and had an extensive network of contacts. We can say that, for him, it was clear that if he were to write to D. Vicente de Sousa Coutinho and the Marquis of Pombal, his ideas would be more easily accepted and adopted by the scientific community, thus validating his work. This is a stage on which power games were part of the royal court society, in which the social and hierarchical standing of whoever wished to expose their ideas, or the interpersonal and political relations were essential if their work were to be accepted, recognised and validated⁷².

Ribeiro Sanches's network of contacts reached beyond the borders of France and Portugal and reached Brazil, through another letter he authored and sent to his nephew who lived in Brazil –

⁶³ Doctor and teacher of History of Medicine at the University of Porto.

⁶⁴ D. Vicente de Sousa Coutinho was an influential Portuguese ambassador in Paris.

⁶⁵ LEMOS, 1911.

⁶⁶ History teacher at the University of Porto.

⁶⁷ SÁ, 1980: 146.

⁶⁸ Important bibliographer, member of the Lisbon Academy of Sciences, and author of the *Diccionario Bibliographico Portuguez* – a seminal work sometimes referred to as *Dicionário de Inocência*, it consists of 23 volumes. The purpose of the *Diccionario* was to continue the *Bibliotheca Lusitana* (written by Diogo Barbosa Machado and published between 1741 and 1758). The idea was to catalogue and systematise the works, texts, and letters written by Portuguese authors (SILVA, 1867).

⁶⁹ CONCEIÇÃO, 2017a.

⁷⁰ CARVALHO, 1987: 30-35.

⁷¹ FURTADO, 2012.

⁷² BIAGIOLI, 2003.

doctor José Henriques Ferreira⁷³. This letter written in 1788 contains arguments similar to those found in the 1763 manuscript.

This letter was transcribed and disclosed to the public by José Henriques Ferreira himself in his work on Cochineal in 1788. He stated that:

he also wrote some chapters of a letter written from Paris by Doctor Antonio Ribeiro Sanches to me, in reply to another letter in which I informed him of the 8th year of the Academy; that he had sought to determine some matters and products of this country⁷⁴.

In this work, besides discussing specific issues on the cultivation, use and trade of Cochineal, the nephew of Ribeiro Sanches criticised the situation of the research on the natural resources of Brazil, the transposition and planting of species that could be useful for agriculture, and transcribed a long excerpt of the letter sent by his uncle, where Ribeiro Sanches once again criticised and gave his ideas so that the Royal Court could recognise and use the natural resources of its colony⁷⁵.

Henriques Ferreira transcribed part of the letter he received from his uncle, who complained about the lack of druggists and the need for natural products relevant to Medicine to be better organised. He said that:

There is no Royal druggist in Lisbon as I proposed, with a hired assistant to look for these natural products, and to send them with their description and what they are used for and how the natives use them: the correspondent is ordered to question the natives about the medicines they use to heal their complaints, fissures, fractures, syphilis, cancers. Without these advancements and expenses there will never be science, or arts, or commerce, or civil State⁷⁶.

Note the transfer of discourse and the circulation of knowledge between Sanches and his nephew, further enhancing the idea that the knowledge produced, whether in Europe or in the colonies, was not limited to a few agents. The arguments presented by Ribeiro Sanches were disseminated to at least three different people – D. Vicente de Sousa Coutinho, the Marquis of Pombal, and José Henriques Ferreira. Moreover, perhaps D. Luís da Cunha also had access to the writings of Ribeiro Sanches on the natural resources of Brazil. After all, both the physician and the ambassador were close and kept an active relationship.

In this period, the complex networks of contacts and exchange of correspondence and works between agents gave rise to an extensive amount of scientific and critical texts about the Natural His-

⁷³ José Henriques Ferreira was a prominent intellectual in Brazil. He was the doctor of the Viceroy, the Marquis of Lavradio. He was also a doctor at the Royal Hospital and actively participated in the foundation of the Scientific Academy or the Academy of Medicine and Natural History of Rio de Janeiro in 1772 (MARQUES, 2005).

⁷⁴ ACL – *Série Azul de Manuscritos*, COD 375 (30). FERREIRA, José Henriques – *Historia do Descobrimento da Coxonilha no Brazil da sua natureza geração, criação, colheita, e utilidades*. Publicado no «Patriota», vol. III, p. 3-13, conforme indicado por Innocência (Tomo IV, p. 367).

⁷⁵ ACL – *Série Azul de Manuscritos*, COD 375 (30)...

⁷⁶ ACL – *Série Azul de Manuscritos*, COD 375 (30)... p. 342.

tory of Brazil, which circulated beyond the borders between the mainland and the colony. For example, Ribeiro Sanches, who had never returned to Portugal and had never been to Brazil, mentioned in his 1763 text, repeating it in the letter sent to his nephew, a few natural products, their properties and means of production, such as *Quina*, *Ipecacuanha* and *óleo de Copaíba*⁷⁷. He learned of this from other works written by other agents, which shows that knowledge of the natural environment of Brazil was broadly transmitted during the 18th century, especially in the second half of the century.

The figure below shows, through the analysis of the connections between Ribeiro Sanches and the agents involved in the exchange of correspondence on the natural resources of Brazil, how knowledge circulated based on their network of contacts.

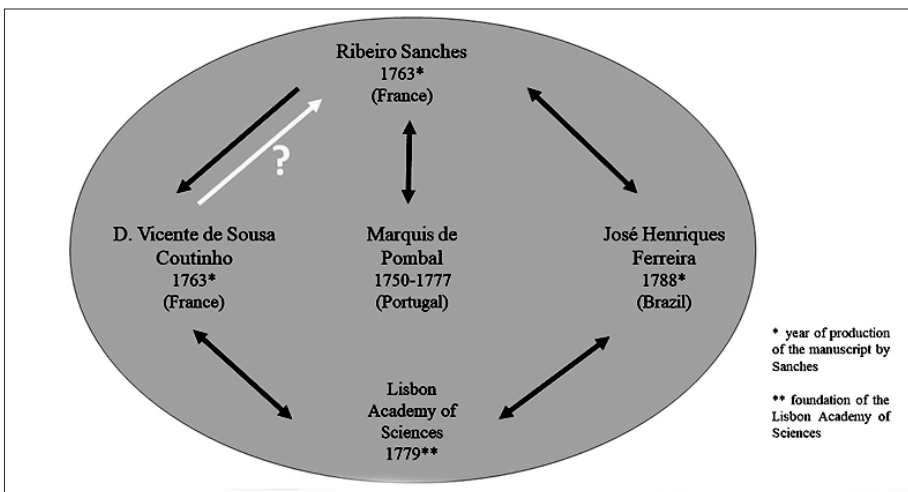


Fig.1. Connections and circulation of knowledge involving Ribeiro Sanches and his work

The circulation of knowledge was essential to the development of Science, so that it could be recorded in order to form its own bases in each scientific community⁷⁸. But for that to happen, the political issues had to be overcome and power relations between agents had to be established. The simple production of knowledge was not enough for it to be validated. This knowledge had to be accepted and, therefore, political barriers had to be overcome. The knowledge circulation process in the Portuguese Empire, involving power games, was not inferior to that in other places. What we do find is that it has specific differences. For example, the lack of printed books in itself did not mean less works or the isolation, or a smaller degree of scientific development, but it does speak volumes about the policies on production and dissemination of knowledge in that period.

⁷⁷ BNP – *Secção dos Reservados*, COD. 6941//4...; ACL – *Série Azul de Manuscritos*, COD 375 (30)...

⁷⁸ RAJ, 2013: 337-347.

CONCLUSION

In the 18th century, the smaller number of printed works in circulation compared to the amount of manuscripts does not mean that ideas were locked in confined spaces, or just within the Portuguese empire. Scientific knowledge on various subjects did circulate and was validated through the exchange of correspondence in the colony, in Portugal, or in other places outside the empire. We believe this to be quite clear when we analyse the work of Ribeiro Sanches. Since there were quite a few agents, diplomats, physicians, and intellectuals in the colonies and in the centres of northern Europe, knowledge circulated and was disseminated through this complex network that involved many territories and a wide range of agents⁷⁹.

The circulation of these individuals in the scientific space of Europe and of the colony, the circulation of their ideas and texts provides us with an avenue of analysis to understand how scientific knowledge was produced, embodied and reshaped according to the peculiarities of each place⁸⁰, yet without turning it into a regional perspective, rather to let go of the idea that scientific knowledge construction only took place in the large centres. If we lock the topic of discussion to the European context or the colonial context, we are excluding some possibilities of analysis and leaving out some of the peculiar characteristics of the scientific knowledge construction process. This is quite clear in the case of Portugal and Brazil, because knowledge circulated not only between the kingdom and the colony, but rather in a broader realm involving many agents and territories. If we think of the process as a circle and not a two-way exchange, an outward and an inward movement, we realise that the dissemination of knowledge was much more complex, and that its transformation and reconfiguration processes occurred at different times, in various territories, and by the various producer agents. This circulation and reconfiguration of ideas is visible in the analysis of the text by Ribeiro Sanches (1763) and his interlocutors.

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SOURCES

- ACL – *Série Azul de Manuscritos*, COD 375. FERRAZ, Manoel Joaquim de Souza – *Memoria sobre a Botanica, e as vantagens, que della rezultão para a praxe Medica, apresentada á Academia real das sciencias de Lisboa*. Lisboa: [s.n.], 1792.
- ACL – *Série Azul de Manuscritos*, COD 375 (30). FERREIRA, José Henriques – *Historia do Descobrimto da Coxonilha no Brazil da sua natureza geração, criação, colheita, e utilidades*. Publicado no «Patriota», vol. III, p. 3-13, conforme indicado por Innocêncio (Tomo IV, p. 367).

⁷⁹ FURTADO, 2012.

⁸⁰ RAJ, 2013: 337-347; LIVINGSTONE, 2013.

- BNP – *Secção dos Reservados*, COD. 6941//4. *Apontamentos Para Descobrir na America Portuguesa Aquellas Produções Naturaes Que Podem Enriquecer a Medecina, e o Commercio* [Manuscrito]. Paris: [s.n.], 1763. Disponível em <<http://purl.pt/27752>>. [Consulta realizada em 04/2016].
- SÁ, Victor de (1980) – *Ribeiro Sanches: Dificuldades que tem um reino velho para emendar-se e outros textos*. 2.ª ed. Lisboa: Livros Horizonte.
- SILVA, Innocência Francisco da (1867) – *Diccionario Bibliographico Portuguez: Estudos de Innocencio Francisco da Silva Applicaveis a Portugal e ao Brasil*. Lisboa: Imprensa Nacional. Tomo VIII (1.º suplemento).
- VANDELLI, Domenico – *Carta de Vandelli ao marquês de Angeja*. In CAMARGO-MORO, Fernanda de; KURY, Lorelai – *O Gabinete de Curiosidade de Domenico Vandelli*. Rio de Janeiro: Editora Dantes, 2008.

REFERENCES

- ALENCASTRO, Luiz Felipe de (2010) – *A rede económica do Mundo Atlântico português*. In BETHENCOURT, Francisco; CURTO, Diogo Ramada – *A expansão marítima portuguesa, 1400-1800*. Lisboa: Edições 70, p. 115-144.
- BACON, Francis (1992) – *Novum organum*. Porto: Rés-Editora, Lda.
- BIAGIOLI, Mario (2003) – *Galileu, cortesão: A prática da Ciência na Cultura do Absolutismo*. Porto: Porto Editora.
- BOTO, Carlota (1998) – *Enciclopedismo de Ribeiro Sanches: Pedagogia e Medicina na Confeção do Estado*. «História da Educação», vol. 2, n.º 4. Pelotas: ASPHE/FAE/UFPEL, p. 117.
- BOXER, Charles R. (2011) – *O Império Marítimo Português 1415-1825*. Lisboa: Edições 70.
- BRIGOLA, João Carlos (2003) – *Coleções, Gabinetes e Museus em Portugal no Século XVIII*. Lisboa: Fundação Calouste Gulbenkian.
- CARNEIRO, Ana; SIMÕES, Ana; DIOGO, Maria Paula (2000) – *Enlightenment Science in Portugal: The Estrangeirados and their Communication Networks*. «Social Studies of Science», vol. 30, n.º 4. Thousand Oaks, CA: SAGE Journals, p. 591-619.
- CARVALHO, Rómulo de (1987) – *A História Natural em Portugal no século XVIII*. Lisboa: Instituto de Cultura e Língua Portuguesa.
- CONCEIÇÃO, Gisele C. (2017a) – *Evidences of the circulation of natural philosophical knowledge about Brazil in a 1763 manuscript by António Nunes Ribeiro Sanches*. «História, Ciências, Saúde-Manguinhos», vol. 24, n.º 2. Rio de Janeiro: Fiocruz.
- ____ (2017b) – *Natureza Ilustrada. Processos de construção de conhecimento filosófico-natural sobre o Brasil na segunda metade do século XVIII*. Porto: Faculdade de Letras da Universidade do Porto. Tese de doutoramento.
- DARNTON, Robert (1979) – *The Business of Enlightenment: A publishing History of the Encyclopédie, 1775-1800*. Cambridge, Massachusetts, London: The Belknap of Harvard University Press.
- DISNEY, A. R. (2011) – *História de Portugal e do Império Português*. Lisboa: Editora Guerra & Paz, vol. II.
- DOMINGUES, Ângela (2001) – *Para um melhor conhecimento dos domínios coloniais: a constituição de redes de informação no Império português em finais do Setecentos*. «História, Ciências, Saúde – Manguinhos», vol. VIII (suplemento). Rio de Janeiro: Fiocruz, p. 823-838.
- ____ (2006) – *Notícias do Brasil Colonial: A Imprensa Científica e Política ao Serviço das Elites (Portugal, Brasil, Inglaterra)*. «Varia História», vol. 22, n.º 35. Belo Horizonte: FCH, UFMG, p. 150-174.
- DUNMORE, John (2007) – *Storms and Dreams: The Life of Louis de Bougainville*. Chicago: The University of Chicago Press.
- DUPRÉ, Louis (2004) – *The Enlightenment and the Intellectual Foundations of Modern Culture*. New Haven: Yale University Press.
- FISHER, Robin; JOHNSTON, Hugh (1979) – *Captain James Cook and His Times*. Londres: Croom Helm, Ltd.
- FURTADO, Júnia Ferreira (2012) – *Oráculos da Geografia Iluminista: Dom Luís da Cunha e Jean-Baptiste Bourguignon D'Anville na construção da cartografia do Brasil*. Belo Horizonte: UFMG.
- GRANT, Edward (2002) – *Os Fundamentos da Ciência Moderna na Idade Média*. Porto: Porto Editora.
- HANKINS, Thomas L. (2002) – *Ciência e Iluminismo*. Porto: Porto Editora.

- KANTOR, Iris (2012) – *Cultura cartográfica e gestão territorial na época da instalação da corte portuguesa*. In KURY, Lorelai; GESTEIRA, Heloisa, org. – *Ensaio de história das ciências no Brasil: das Luzes à nação Independente*. Rio de Janeiro: EdUERJ, p. 239-250.
- KURY, Lorelai (2008) – *A Filosofia das Viagens*. In CAMARGO-MORO, Fernanda de; KURY, Lorelai – *O Gabinete de Curiosidades de Domenico Vandelli*. Rio de Janeiro: Editora Dantes, p. 73-84.
- ____ (2015) – *O Naturalista Veloso*. «Revista História», n.º 172. São Paulo: USP, p. 243-277.
- LEMOS, Maximiano (1911) – *Ribeiro Sanches: a sua vida e a sua obra*. Porto: Eduardo Tavares Martins.
- LIVINGSTONE, David N. (2013) – *Putting Science in Its Place: Geographies of Scientific Knowledge*. Chicago: The University of Chicago Press.
- MARQUES, Vera Regina Beltrão (2005) – *Escola de homens de ciências: a Academia Científica do Rio de Janeiro, 1772-1779*. «Educar», n.º 25. Curitiba: Ed. UFPR, p. 39-57.
- MAYR, E. (1998) – *O desenvolvimento do pensamento biológico: diversidade, evolução e herança*. Brasília: Universidade de Brasília.
- PATACA, Ermelinda Moutinho (2006) – *Terra, água e ar nas viagens científicas portuguesas (1755-1808)*. Campinas – SP: Universidade Estadual de Campinas, Instituto de Geociências. Tese de doutoramento.
- PATACA, Ermelinda Moutinho; PINHEIRO, Rachel (2005) – *Instruções de viagem para a investigação científica do território brasileiro*. «Revista Brasileira de História da Ciência», vol. 3, n.º 1. Rio de Janeiro: [s.n.], p. 58-79.
- PEDRO, Abraham San (2010) – *Expedición Malaspina. Um viaje científico-político alrededor del mundo, 1789-1794*. Madrid: Ministerio de Defensa de España/TURNER.
- PRESTES, Maria Elice Brzezinski (2000) – *A investigação da natureza no Brasil-Colônia*. São Paulo: Annablume/FAPESP.
- RAJ, Kapil (2013) – *Beyond Postcolonialism... and Postpositivism: Circulation and the Global History of Science*. «Isis», vol. 104, n.º 2. Chicago: The University of Chicago Press, p. 337-347.

