

Aniceto Rapozo's cabinet at the Lisbon Academy of Sciences

A window into Brazilian eighteenth-century timber resources

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From the end of the eighteenth until the beginning of the nineteenth century, wood samples were regularly sent to the Royal Army Arsenal in Lisbon for testing. The large number and variety of samples, as well as increasing interest on Brazil, explain why, in 1805, the Prince Regent of Portugal commissioned the preparation of four collections containing 1,213 timber specimens from Brazil and twelve from other origins. One of these collections, housed in a cabinet at the Lisbon Academy of Sciences, is now being studied in order to reveal its origins and to identify the wood samples. Botanical identifications will provide valuable information about the wood resources and the species used by furniture-makers in the late eighteenth and early nineteenth centuries.

A magnificent cabinet containing a collection of wood samples, mainly from Brazil, survives at the Lisbon Academy of Sciences, having been commissioned by the Prince Regent, later King João VI of Portugal (1767–1826) in the early years of the nineteenth century from José Aniceto Rapozo (1756–1824), the leading Portuguese cabinet-maker of his day.

The cabinet was noted by Étienne Geoffroy Saint-Hilaire (1772–1844) on 26 May 1808 at the former monastery of Our Lady of Jesus. Secularized in 1834, the monastery buildings were granted soon afterwards to the Lisbon Academy of Sciences by order of Queen Maria II, and the cabinet has remained there ever since. The date of Saint-Hilaire's visit was confirmed by one of the authors of the present paper by comparing religious events referred to in Saint-Hilaire's report with the year's liturgical calendar.¹ The discovery of the collection occurred during Saint-Hilaire's infamous mission to Portugal to 'requisition' natural history specimens from Portuguese collections, under cover of the invasion of Portugal by a French army led by General Jean-Andoche Junot (1771–1813). Saint-Hilaire subsequently referred to the cabinet in a report to his minister, which was filed soon after his return to France:² he left it undisturbed, he claimed, out of courtesy and in recognition of the polite reception he had received from the monks.

Geoffroy had set his sights on a cabinet at this monastery 'where, elegantly arranged, are samples of various Brazilian wood cabinetry showing their origin'. But since 'he could take all, he did not want to require anything', and the beautiful cabinet stayed with the monks of N. Senhora de Jesus.³

It is likely, however, that the real reason for his decision was the rather slight botanical significance of the collection, owing to the impossibility at that time of identifying the different wood species merely by reference to the information contained within the cabinet or recorded on the samples themselves. Indeed, the only data available were the common names attached to the samples and some broad provenance areas mentioned in Rapozo's catalogue. The lack of precise identifications forms one reason for the lack of interest in early wood collections. In the words of one author, 'Most older institutional wood collections or botanical institutes harbour noteworthy, ancient wood collections, but as far as I know their history is often poorly known or in danger of being forgotten.'⁴ The presence of the collection at the Academy of Sciences was referred to again in 1816,⁵ but since that time no further studies have been conducted and the cabinet has remained long forgotten.

In 2000, one of this paper's authors, having been appointed Director of the Academy's museum, looked for ways to increase knowledge of its patrimony. One such initiative, at the beginning of 2008, was to

endorse a study of the main wood collection – that contained in the cabinet. The information then available was minimal, although it was clear that the collection had been prepared around the turn of the nineteenth century; there were no hints as to the collection's provenance, other than those contained in the accompanying catalogue.

The present paper provides a historical context for the formation of the collection and investigates the reasons for the gathering of the many samples of which it is comprised. It also stresses the importance of the collection as a source of information on the wood resources available in the late eighteenth and early nineteenth centuries.

A brief historical context

The Age of Enlightenment in eighteenth-century Portugal was a period of growing interest in natural history. Among institutions involved with science and education, the creation in 1764 of the Royal Cabinet of Natural History and the Royal Botanical Garden at Ajuda is an event of special interest. Both institutions were designed to contribute to the education of the princes, the sons of Queen Maria I (1734–1816), but were also accessible to the general public. Furthermore, on 24 December 1779 the same Queen approved the creation of the Royal Lisbon Academy of Sciences. All of these institutions paid great attention to the collection of samples and the advancement of knowledge about natural resources from the Portuguese territories, both in Europe and overseas.

By the end of the eighteenth century, the Portuguese crown had launched a number of scientific expeditions ('philosophical journeys') to overseas territories with the purpose of gathering scientific knowledge concerning local natural resources and promoting economic growth. Expeditions continued to be mounted under two successive Secretaries of State (ministers) for the Marine and Overseas: Martinho de Mello e Castro (1716–95; minister from 1770 until his death) and Rodrigo de Sousa Coutinho, Count of Linhares (1745–1812; minister from 1795 to 1801). Both endorsed the scientific exploration of Brazil as an essential step towards ensuring better use of its natural resources. Among the main concerns, recognized since the sixteenth century, was the quantity and variety of high-quality woods that were intensively exploited and exported to Europe. The Atlantic

and Amazonian forests both offered naturalists an amazing world, a source of numerous new species and raw materials.

The most remarkable expedition in Brazil was that led by Alexandre Rodrigues Ferreira (1756–1815) between 1783 and 1792, which resulted in a wealth of natural history specimens sent to the Royal Museum at Ajuda.⁶ However, these collections were never exhaustively studied; they also suffered depredations as a result of Saint-Hilaire's mission in 1808, and further losses resulting from a combination of poor conservation practices during the Napoleonic wars, inadequate resources, political instability and internal strife, including civil war. Recent papers emphasize the importance of this venture.⁷ Other expeditions include those to Cabo Verde, led by João da Sylva Feijoo (1760–1824) between 1783 and 1797; to Angola, led by Joaquim José da Silva (1755–?) between 1783 and 1808; and to Mozambique, led by Manuel Galvão da Silva (1750–?) between 1783 and 1793.⁸

Sousa Coutinho received strong support from Brazil's Viceroy, Luís de Vasconcellos e Souza (1742–1809; viceroy 1779–90). Souza requested that Fr José Mariano da Conceição Velloso (1742–1811) collect animal, plant, and mineral specimens in the state of Rio de Janeiro. Owing to the high costs of printing and engraving, his great work *Flora Fluminensis* remained unpublished until long after José Velloso's death.⁹ Vasconcellos e Souza's interest in natural history is also apparent from works that were dedicated to him,¹⁰ as well as by the recognition he received from Queen Maria I.¹¹

Awareness of Brazil's resources was not new in the eighteenth century. Gabriel Soares de Souza (1540–1592) had published as early as 1587 his pioneering work *Notícia do Brasil*, some chapters of which deal with various trees and their uses. Another early work of importance, providing proof of the value of the often unfairly forgotten Portuguese contribution, is that of Fr Cristóvão de Lisboa (?–1652).¹²

The richness of the Brazilian ecosystems also caught the attention of foreign naturalists: the Dutch physician and naturalist Willem Piso (1611–78) and the German astronomer Georg Markgraf (1610–43) together produced their *Historia Naturalis Brasiliae* (1648), which identifies plants both by scientific polynomial nomenclature and by native names. Other expeditions were undertaken by lesser known naturalists between the time of Vasconcellos e Souza and that of Piso and Markgraf.¹³

Economic considerations, especially those related to the naval and construction industries, also influenced Portuguese policies in overseas territories. Since the sixteenth century, Brazilian wood had already replaced home-grown resources (mainly pine and oak), owing to its diversity, abundance, and high quality.¹⁴ The variety and quality of Brazilian wood were also reported in other sources.

The selection of valuable wood species required observation of their use by native populations, in regard to their strength and durability, as well as testing programmes in such Portuguese institutions as the Royal Army Arsenal in Lisbon, which usually received material from local governmental authorities and from army personnel. The need for new wood resources was the reason why, in 1781, Martinho de Mello e Castro (Minister for the Marine and Overseas) informed the Governor of the District of Pernambuco that Julião Alves, carpenter at the Royal Army Arsenal, would travel to his district to evaluate the quality of Piquiá and Banamá woods.¹⁵ These woods were identified as suitable for the manufacture of barrels in experiments conducted at the Arsenal.

Other studies of Brazilian wood were carried out at the end of the eighteenth and beginning of the nineteenth century. Theodozio da Silva Reboxo reported on physical and mechanical tests (October 1779 to January 1780), comparing twenty-two Brazilian wood species with twelve from Goa, India.¹⁶ Similar experiments were developed after 1808 by Carlos Antonio Napión (1757–1814) at the Royal Army Arsenal in Rio de Janeiro, as well as by Carlos Valentim Julião (1740–1811) at the Lisbon Arsenal.¹⁷ Napión's experiments included tests on thirty-three wood samples of European and Brazilian species. In 1784, Vasconcellos e Souza (Viceroy of Brazil) sent numerous Brazilian wood specimens to the Lisbon Arsenal for evaluation of their properties and possible end-uses.¹⁸ Furthermore, Balthazar da Silva Lisboa (1761–1840) published a tract on Brazilian wood for carpentry and naval construction as a contribution to the rebuilding of the Brazilian navy under Emperor Pedro I (1798–1834).¹⁹ The same document refers to 309 wood samples identified by their common names; an annexe mentions forty-five timbers using polynomial nomenclature.

The English botanist John Miers (1789–1879), who visited Brazil from 1831 to 1838, was the owner of a private collection including seventy-five wood

samples that he himself collected while in Brazil.²⁰ Miers published a catalogue of Brazilian woods containing approximately 2,000 vernacular names, alphabetically arranged.²¹ This catalogue presents valuable information by providing botanical names (binomial nomenclature) and common names for some woods, as well as details of their origin and end-uses. One annexe to the catalogue presents a list of fifty-nine wood samples sent to France. Miers's catalogue demonstrates the great interest that Brazil's vast wood resources aroused in other European powers.

Miers's catalogue notwithstanding, Charles Holtzapffel's catalogue – prepared in 1852 and containing 165 vernacular names, some botanically identified by the British naturalist Dr John Forbes Royle (1799–1858) – is identified as one of the first catalogues of wood ever prepared. The importance of such catalogues is described thus: 'Judged by modern standards, the Descriptive Catalogue seems archaic and inaccurate, but at the time it was an important advance in the information available both to the timber trade and to furniture-makers.'²²

Apart from the scientific community, furniture-makers and civil and naval carpenters also showed a strong interest in available wood resources. Furniture-makers were increasingly interested in the large variety of textures and colours offered by new wood species of non-European origin.

On 19 February 1810 a Treaty of Commerce was signed between Britain and Portugal, as a result of the Royal Navy's assistance in the transfer of the Portuguese government to Rio de Janeiro in 1807. This treaty opened the ports of Brazil to British commerce, allowing the buying of timber and the building of warships. At the same time, a variety of Brazilian woods were tested at the British dockyards, with satisfactory results. Though the supply of Brazilian timber lasted until 1815 it never reached a significant level, for a variety of reasons.

During that period, however, the number and variety of new wood species available on the market delighted British cabinet-makers. In a letter addressed to the engineer and manufacturer James Watt (1769–1848), the furniture-maker George Bullock (1777–1818) expressed his satisfaction with Brazilian woods, but also his disappointment with the lack of information to accompany them:

Let me know if the thick pieces of any of the woods I have sent you will answer your purpose. I have increased my

collection since I sent yours off, and hardly a ship arrives from the Brazils that does not bring some fresh specimen of wood. I hope I shall have it in my power to make something interesting in this collection . . . do you know any work that can assist me in finding the proper names of these woods, the character of the tree &c. &c. I have desired the Captain to bring me over a bough of each of the trees, and a piece of the Bark and if they have seed or fruit this also . . . if you can enlighten me on the subject a little I shall feel myself much obliged to you and in return will promise to supply you with such specimens as I collect.²³

Brazilian wood collections at the end of the eighteenth century

Wood collections, or xylaria (from the Greek ξύλον, or *xylon*, wood, and *-arius*, plural *-aria*, a Latin suffix signifying collective possession, repository, etc.), were first employed to display timbers useful for civil, naval, and other purposes. The collection under study is believed to have been created for exactly these purposes. The cross-referencing of wood samples with specimens included in a certified herbarium was not a common practice before the end of the nineteenth century, although it has now become an essential principle when defining a wood collection as a true xylarium.

The practice of relating the anatomical structure of wood samples to different genera began only with the first studies of structural arrangement and cell features, mostly of the stem and branches. Wood anatomy was first established and regularized around the middle of the nineteenth century. The first contributions were made by Auguste Mathieu (1814–90) and Hermann Nordlinger (1818–97). The latter is the author of a series of books (1852–88) describing 1,100 wood cross-sections of species from around the world, under their scientific, binomial nomenclature.²⁴

The wood collection of the Lisbon Academy of Sciences and that belonging to Carlos Julião pre-date three other early wood collections,²⁵ namely: a collection of Japanese woods (forty-five samples) prepared around 1830; a collection of European woods (158 samples) dating from 1809; and another collection of Japanese woods (177 samples) dating from 1878. On the evidence of the most recent version of the *Index Xylariorum*,²⁶ seven wood collections were created before 1950. Among these, the Kew Economic Botany Collection founded in 1847 holds the wood collection gathered between 1790 and 1810 by George Loddiges

(1786–1846), a British nurseryman. His collection contains 415 wood samples from different origins, including Brazil and Portugal.

In Brazil, one of the first institutional wood collections was created at the Rio de Janeiro Botanical Garden. It was formed at the end of the nineteenth century by Barbosa Rodrigues (1842–1909), the Garden's director between 1890 and 1909, as part of the reorganization of the Botanical Garden under Brazilian Republic Decree 518 of 23 July 1890.²⁷ According to the decree, all timbers and plant products were to be represented by samples. The same collection included samples donated by Emperor Pedro II (1825–91), along with others from Barbosa Rodrigues.

The extensive wood collection owned by Carlos Julião was referred to by Carlos António Napion.²⁸ Julião was an Italian citizen who travelled through India, China, and Brazil as a member of the Portuguese army. While preparing a collection of Brazilian wood samples, António José da França e Horta (governor of São Paulo, 1802–11) used the Julião collection as a reference.²⁹

The acknowledged significance of Julião's collection explains why França e Horta informed the Secretary of State for Overseas Territories and Marine, João Rodrigues de Sá e Mello Meneses e Souto Maior (1755–1809), that he had sent wood samples from the São Paulo District for Julião's collection.³⁰ This collection provided sufficient background to the catalogue published by Julião on different wood types, their provenance, and end-uses.³¹ Unfortunately, scientific identification had not been carried out in preparing most of the publications referred to above, so that only the common names were used.

The use (and misuse) of common names limits knowledge of the wood species referred to in these publications and hence also awareness of available wood resources at that time. Such misuse had already been recognized at the beginning of the nineteenth century:

No lesser obstacle is the ambiguity which existed in Brazil regarding the nomenclature of different woods. Frequently there is no agreement about the name or the wood species to which that name corresponds; this is magnified by conflicting designations used in Europe.³²

For tropical wood the misuse of common names occurred because early naturalists tended to base their identifications on the names provided by the native

population; due to the lack of competence in native languages, this led to frequent misunderstandings.

It therefore can be seen that 'Caa-guaçu-iba' (Markgraf, 97) could not be a common name but instead refers to any type of large-leaved tree; also 'Abaremotemo' (Piso), is a contraction of 'Abá-eymatembium', which translated is tree or stem without food, and this could only mean that the Acacia (*Pithecolobium*) was not a plant that produced edible fruits as, for example, the Ingá. It may be for that reason, therefore, that the same common names were given by these two travellers to different plants. From indolence, the natives suggest the first name they remember off the top of their heads, just to get rid of them.³³

The Brazilian historian Francisco Adolfo de Varnhagen (1816–78) used the Neves e Mello catalogue, which is a copy of the original by Aniceto Rapozo, to correct a common name that had been included in *Noticias do Brasil*, a sixteenth-century manuscript by Gabriel Soares de Sousa. This correction relates to the common name 'copinha', a fruit tree from the Bahia District:

It should be the copiuba that provides wood as mentioned in the catalogue of woods from Brazil and other conquests made by the learned Professor of Coimbra [University], Doctor Antonio José das Neves e Mello. In his catalogue it is written copihuba.³⁴

The Academy's wood collection

The double-doored cabinet containing the wood samples (Fig. 1) encloses thirty-five drawers. The overall dimensions of the cabinet are: maximum height, 708 mm; maximum width, 594 mm; maximum length, 501 mm; (internal) door width, 285 mm. The drawers have nearly identical dimensions, as measured in drawer number x: maximum length, 427 mm; maximum width, 534 mm; depth, 17 mm. The exterior and interior aspects of the cabinet exhibit simple flush, straight surfaces.

The cabinet-maker signed his work in accordance with the Portuguese rule which followed that established in Paris (1743–89), stating that cabinet-makers should stamp their products.³⁵ The identification mark 'IAR', carved into the cabinet's base (Fig. 2), are the initials of Iosephus Aniceto Rapozo.

The wood collection under consideration consists of 1,225 samples. Twelve are from Angola, Cabo Verde, India, Madeira, and São Tomé, and all others are from Brazil. Average dimensions are 100 mm long, 56 mm wide and 5 mm thick. A label is glued to each sample, giving its common name.

Aniceto Rapozo's catalogue can be found in the last drawer. It presents a list of woods, giving common names, end-uses, and districts of provenance: Rio de Janeiro, Bahia, Pará, and Pernambuco. The last page of the catalogue explains why twelve species from outside Brazil were included in the collection: from India, the collection contains the five most admirable woods; only one species from the Cabo Verde Islands was considered since the other twenty-two could also be found in Brazil; from Madeira only three of twenty-four species were considered. No data are given concerning the criteria for the choice of wood species from Angola and São Tomé but, as for the other overseas territories, the most valuable woods had probably been considered.

The collection is thus essentially composed of Brazilian wood species. The cabinet-maker underscores this by numbering only the Brazilian samples and by marking the top rails of the trays with a yellow wooden inlay indicating the number of the wood species. Non-Brazilian samples are mentioned in an annexe to the catalogue.

A further hypothesis may be considered, namely that the inventory could have been prepared by Professor António José das Neves Mello (1770–1835) of Coimbra University, who published a catalogue of 1,225 wood samples – exactly the number of samples in Aniceto Rapozo's cabinet at the Lisbon Academy of Sciences.³⁶ Another document reveals, however, that Mello's catalogue is merely an improved version of that prepared by Aniceto Rapozo:

This catalogue contains 1,225 wood samples organized in alphabetical order, with a description of their uses and provenance. It is in agreement with the wood sample collection kept at the Physics Cabinet of Coimbra University, the gift of Francisco de Lemos, Bishop, Count and reformer of this institution. It is not an original work by Doctor Mello but instead a faithful copy of the original catalogue of the cabinet, which had been made by José Aniceto Rapozo.³⁷

Furthermore, the correspondence of the title of the catalogue of the collection surviving in the cabinet at Lisbon with that of Mello supports the conclusion that the former is the original version by Aniceto Rapozo.

Rapozo was appointed cabinet-maker to the royal court owing to the high quality of his work, evident in the skills involved in preparing the wood samples of the Academy's collection. The quality of the work can be appreciated by the accuracy of the samples' dimensions,

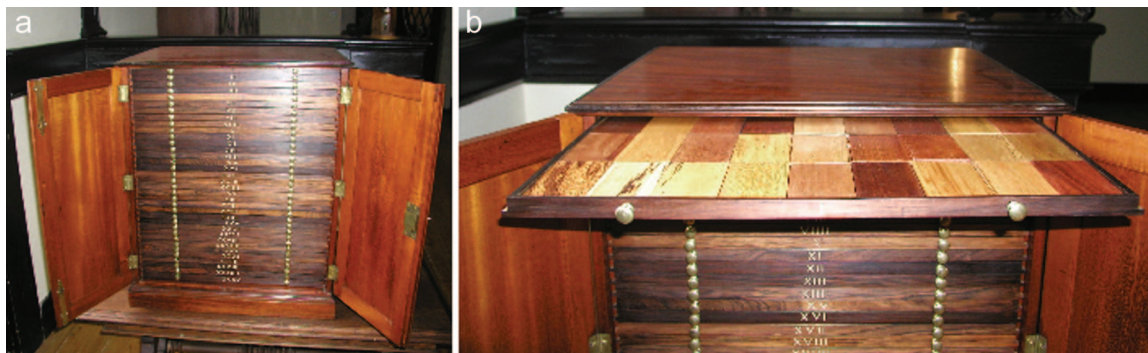


Fig. 1 a-b. Front views of the wood cabinet.



Fig. 2. The cabinet-maker's identification mark.

whose coefficients of variation are 0.69% for the width, 3.44% for the thickness, and 0.47% for the length, as well as by the precision, thoughtfulness and quality of the gluing process in cases where the sample is constituted by two pieces glued together (Fig. 3).

Origin of the collection

A note in a newspaper published in May 1812 records that in 1805 the Prince Regent, later King João VI, sent 1,095 pieces of wood from Pernambuco, Maranhão, Pará, and Bahia to the University of Coimbra.³⁸ The Prince Regent is also said to have requested that Aniceto Rapozo prepare four collections from this wood material, one of which was to be placed in the Regent's room, clearly emphasizing his close interest in it. This is also obvious in the destiny of two of the remaining collections, one of which was sent to the Ajuda cabinet while the other was intended to be given as a gift. The fourth collection was sent to the University of Coimbra, along with the remaining wood material for physical and mechanical tests:

In 1805, HRH the Prince Regent ordered that a Brazilian collection of 1,095 wood parallelepipeds, very well polished

and showing their beautiful natural colours, be sent to Coimbra University. These wood samples do not cover all of Brazil but only the captaincies of Pernambuco, Maranhão, Pará, and Bahia. José Aniceto Rapozo, from the city of Lisbon, was asked to prepare four collections, one to be given by HRH as a gift, another for Coimbra, another to the Ajuda cabinet, and still another to be placed in HRH's room. HRH also ordered that any offcuts be sent to Dr Constantino Botelho de Lacerda Lobo, Professor of Experimental Physics at Coimbra University, in order for him to determine their strength, specific gravity, and other properties.³⁹

The collection in Aniceto Rapozo's cabinet is, therefore, one of the four prepared by this famous cabinet-maker, although three discrepancies should be noted. The first relates to the number of wood specimens: 1,095 according to the note quoted above, whereas the Academy's cabinet contains 1,225 samples. The second point of disagreement concerns the origin of the samples in the respective collections, since the latter contains samples from Rio de Janeiro but not from Maranhão (contrary to the note above). Thirdly, wood species from regions other than Brazil are included. All these discrepancies are discussed below, taking into consideration the information available on other consignments of wood samples sent from Brazil to Portugal at the end of the eighteenth century, as well as the contents of private cabinets then existing in Lisbon.

As previously stated, Saint-Hilaire had seen the cabinet when he visited the monastery of Our Lady of Jesus in May 1808. It appears to have been placed there as the gift of the Prince Regent, having been offered to the Aula Maynense, where a course in natural history had been created in 1792 by Fr José Mayne (1723–92), one of the monastery's superiors. The Academy took responsibility for the administration of the course.

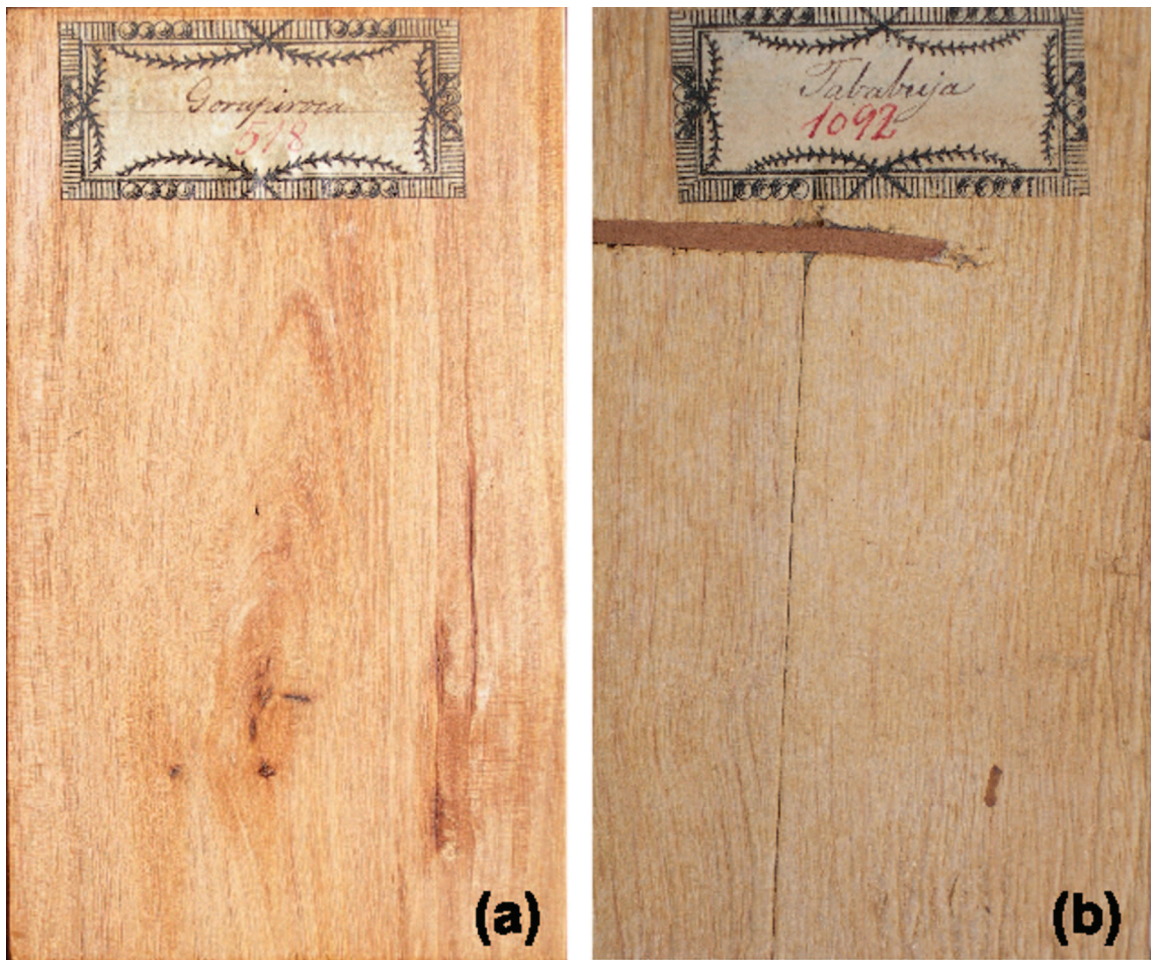


Fig. 3. Examples of considerable craftsmanship in the preparation of wood samples. Samples (a) and (b) were made by gluing smaller pieces together. More than two centuries later, the samples show no signs of delamination. Sample (b) shows a small reinforcement of test pieces using concepts now in vogue in structural engineering using timber (glued-in rods).

Little information survives on the whereabouts of the remaining three collections. There is a reference to one collection of 1,225 wood samples at the Botanical Museum of the Faculty of Philosophy of the University of Coimbra in 1872.⁴⁰ The existence of two collections (that presently at the Academy of Sciences and the one reported at Coimbra University in 1872) with the same number of specimens – and both of them made by Aniceto Rapozo – reveals that the designated number of wood samples evidently changed to 1,225, compared to the Prince Regent's initial order of only 1,095. Although no explanation can be given for this change, the correspondences confirm that the wood collection studied was indeed

one of the four ordered by the Prince Regent from Aniceto Rapozo.

Another question relates to the source of the material needed to make the four collections plus that required for tests at the University of Coimbra. We are strongly of the opinion that the source would have been the large number of samples sent at the end of the eighteenth century for testing at the Royal Army Arsenal in Lisbon, a suggestion based on the fact that no private collectors had means sufficient to provide the quantity and variety of material required for such enterprise.

Further information seems to confirm this hypothesis. Aniceto Rapozo's catalogue indicates access to a

large variety of wood samples from different districts in Brazil. The catalogue states that there were other districts which could provide various wood species, but that these were not included in the collection since the relevant species were already represented by samples from the other districts referred to above. At that time only the Arsenal received large consignments of wood samples from a variety of Brazilian captaincies, a fact that explains the second discrepancy between the Prince Regent's order and the origins of the samples mentioned in Rapozo's catalogue.

At the Royal Army Arsenal a few names are worthy of mention. The first is that of General Bartholomeu da Costa (1730–1801), appointed Inspector of Workshops. In 1789, he was preparing a monograph on the strength of a large variety of woods from Brazilian and other Portuguese overseas territories.⁴¹ Costa's successor was Carlos Napion, who had taken charge of the workshops by 1802; Napion became a member of the Royal Academy of Sciences of Lisbon.

When Napion accompanied the royal family to Brazil in 1807, Carlos Julião replaced him as Inspector of Workshops. In 1801, Julião published a dictionary of trees and shrubs which gave their common names, uses, and provenance.⁴² In an annex, he mentions the arrival at the Arsenal of a large shipment of Brazilian wood:

Wood collection from Rio de Janeiro sent by D. Luiz de Vasconcellos e Souza, Governor of that district in the year 1784, which contains 5,008 samples from the various districts of that capital sent in 122 boxes.⁴³

The shipment was made at the request by Vasconcellos e Souza to the captains of different districts, who had been asked to send samples of the available wood resources. The order also required that samples should give their common names, quantity, the greatest length and width of the boards, and their end-uses.⁴⁴ These orders were fulfilled; records survive of the gathering of the wood samples at the Trem Real in Rio de Janeiro and shipment to the Arsenal in Lisbon.⁴⁵ This collection also included wood samples collected by private landowners.

Julião's manuscript states that, after removing duplicates and specimens for which the common names were not indicated, 681 specimens remained. Comparing their common names with those in the Academy's wood collection, it is apparent that all are

mentioned in the latter, adding support to the authors' suggestion that the core of the collection consists of samples shipped to the Arsenal by Vasconcellos e Souza in 1784. The same samples also seem to form the basis of the monograph that was under preparation by Bartholomeu da Costa in 1789, just five to six years after the arrival of Vasconcellos e Souza's samples. The presence of wood samples from other Portuguese overseas territories also supports the view that identifies the origin of the wooden material as the Royal Army Arsenal (the third discrepancy as noted before).

Testing of the Brazilian wood was undertaken as part of the quest for alternative wood sources caused by shortfalls in European forest production capacity. New wood samples were always tested and evaluated, and comparisons were made with wood species whose value had already been established.

One particular wood sample in the collection, no. 13 named 'Alaranjado', reinforces the hypothesis of a relationship with the Arsenal. Although several Portuguese papers since the seventeenth century have been consulted, this common name has been found only in Carlos Julião's dictionary, in which he describes its provenance (district of Rio Branco) as well as its end-uses. The description by Julião and the fact that this common name was not recorded amongst the samples sent by Vasconcellos e Souza or in any other papers, supports the view that the samples received in Vasconcellos e Souza's consignment were complemented by others already at the Arsenal.

Importance of the collection

The wood collection at the Lisbon Academy of Sciences presents an opportunity for establishing the Brazilian wood resources available to the Portuguese authorities at the end of the eighteenth century, but in order to achieve this aim a scientific study is necessary in order to identify botanically the different wood samples. Without such a study, the usefulness of the catalogue is limited by the extreme confusion surrounding common names as outlined above.

Despite information contained in manuscripts and other documents from the sixteenth century onwards, several types of wood are mentioned only by common names which were applied indiscriminately to several wood species. In the case of Brazilian woods, the same common name may be used to designate over twenty species. The use of common names prevents a full understanding of the exact type of wood

historically used by cabinet-makers and carpenters in Portugal and elsewhere, allowing only the most probable associations to be suggested.⁴⁶

An example of the importance of the identification process can be demonstrated by considering the above-mentioned sample with the common name of 'Alaranjado', not mentioned in any of the numerous Portuguese documents consulted so far. A species designated as orange wood (on account of its colour) was used in English furniture at the beginning of the eighteenth century:⁴⁷ no information concerning the species

to which that wood belongs is available, but clearly it did not belong to the species *Citrus* spp., usually associated with this common name at that time.⁴⁸ Orange wood was used in a sofa table dating from 1809 and on a workbox of 1808, and is considered as 'almost certainly' belonging to a variety of *Caesalpinia*.⁴⁹

The botanical identification carried out on the sample designated 'Alaranjado' (translated as 'Orange') in the Academy of Sciences collection assigned it to *Centrolobium* cf. *paraense* Tul, a species now classified as endangered (Fig. 4). The visual characteristics

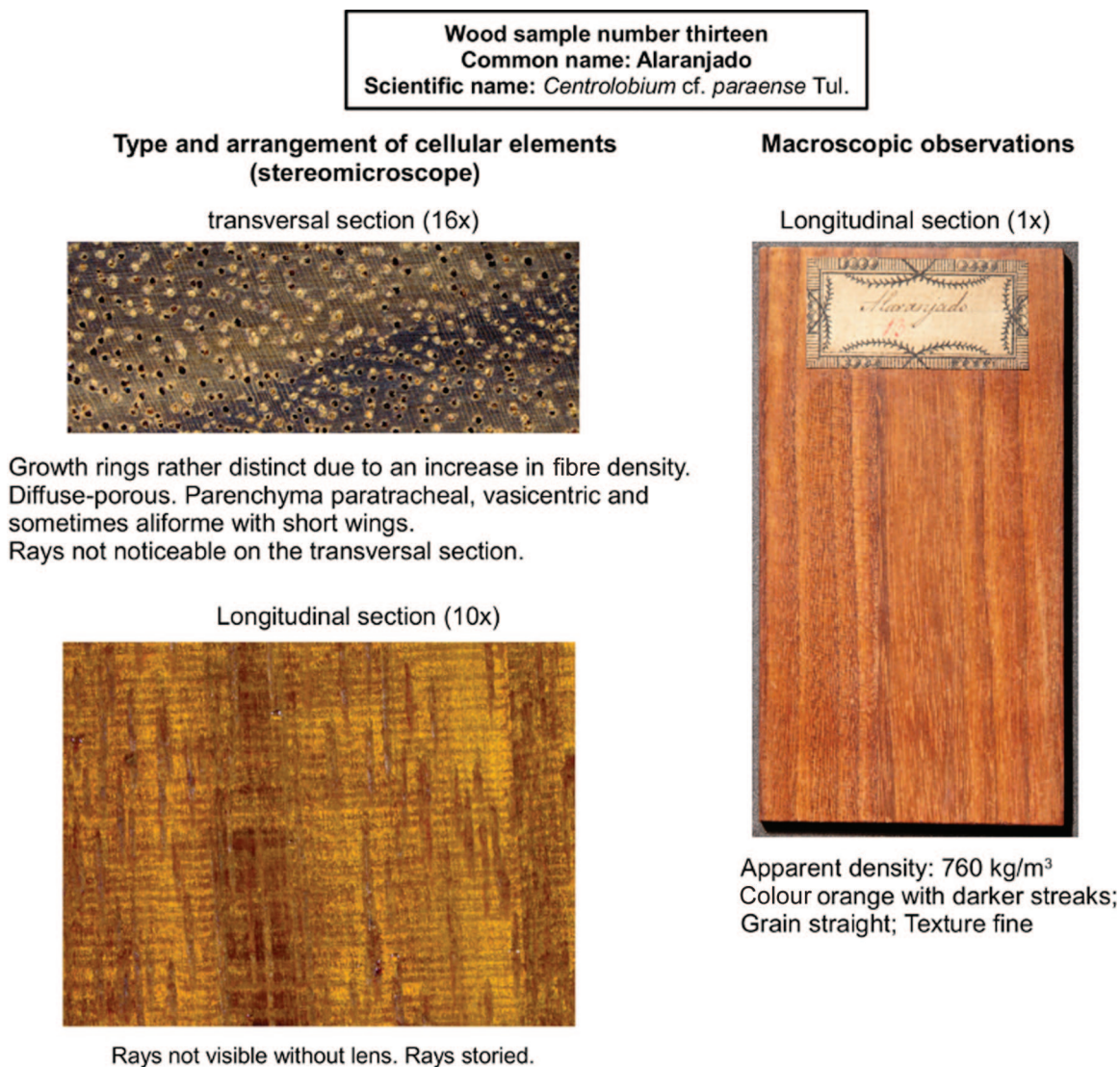


Fig. 4. Wood identification information used to identify wood sample no. 13.

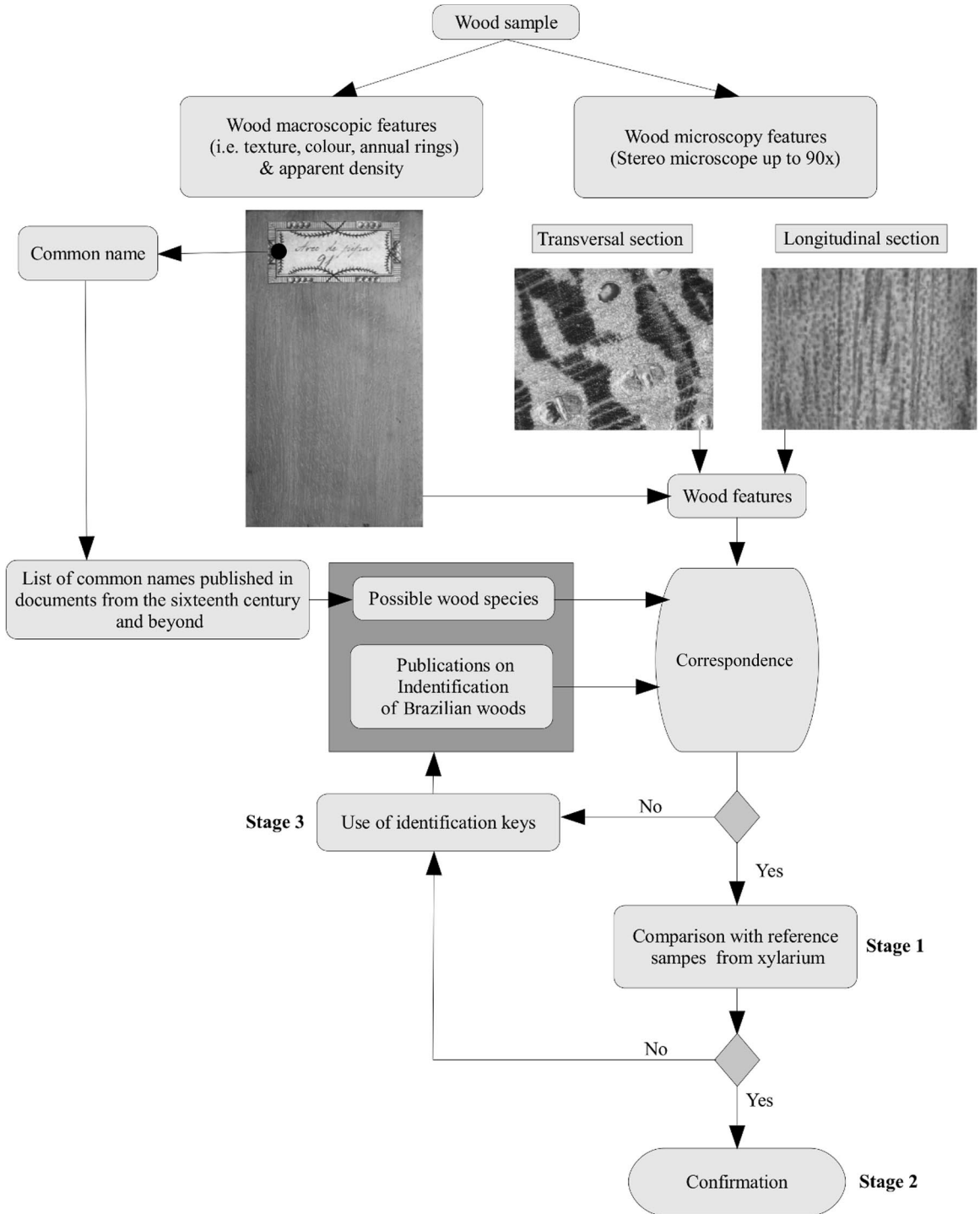


Fig. 5. Wood identification flowchart.

illustrated by Bowett permit the proposition that the wood claimed as belonging to a species from the genus *Caesalpinia* in fact belongs to the genus *Centrolobium*. This example shows at once the importance of wood identification as a provider of new insights into the types of wood used in antique furniture and stresses the importance of botanical identification as a means of adding scientific value to the collection in addition to its clear historical value.

However, the botanical identification of woods is not a simple task since wood is a conservative tissue which is less liable to change than other parts of the plant in the course of evolution. Therefore species of the same genus or between genera do not necessarily correspond to significant differences in the wood's internal structures, so that limits are posed to the process of wood identification.⁵⁰

The techniques usually applied are also unsuitable or of limited use for historical wooden artefacts.⁵¹ As a result a specific identification procedure was developed for the scientific identification of the wood samples from the Lisbon Academy of Sciences (Fig. 5). Further details of this procedure will be given in a future publication.

At this time, only c. 14 per cent of the wood samples have been identified within an acceptable margin of error (stage 2, Fig. 5) and 27 per cent of the samples are considered as pre-identified (stage 1, Fig. 5). The difficulties involved in the identification process are also related to the fact that 27 per cent of the names mentioned in the catalogue made by Aniceto Rapozo are unknown and of these only 14 per cent are referred to by their common name in the manuscript associated with Carlos Julião.

Finally, the inclusion in the collection of the most important, high-quality wood resources from Portuguese overseas territories other than Brazil allows the continuing identification process to improve our knowledge of the corresponding wood species, which frequently have been identified by their common names but seldom with scientific nomenclature.

Conclusions

Apart from the contributions related to the Portuguese scientific missions, economic considerations – especially the need for wood in carpentry and the naval industry – led both local and royal

authorities to support the study of the remarkable wood resources of Brazil. Accordingly, at the end of the eighteenth century and the beginning of the nineteenth, a large number of wood specimens were sent to the Royal Army Arsenal in Lisbon to be tested. Their great variety, as well as an increasing interest in Brazil's natural resources, were probably the reasons why in 1805 the Prince Regent ordered four Brazilian wood collections to be prepared, one of these being kept at the Lisbon Academy of Sciences.

This collection provides remarkable evidence of the Portuguese authorities' interest in the display and study of Brazil's wood resources as then known. Another point to be emphasized is the excellence of the craftsmanship demonstrated by Aniceto Rapozo, cabinet-maker to the royal court, especially considering that the four collections required the preparation of 4,900 wood samples. The importance of this collection extends beyond the cabinet itself. Indeed, the collection considered here provides a remarkable opportunity to obtain a closer correlation between Brazilian wood species and their scientific names, and thus a better knowledge of the wood resources available in Brazil in the late eighteenth and early nineteenth centuries.

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31. See Julião, op. cit. (note 18), pp. 1–159.
32. ‘Mais un obstacle qui n’est peut-être pas moindre, c’est l’ambiguïté qui règne, au Brésil même, dans la nomenclature de ses différens bois; on n’y est souvent d’accord, ni sur le mot, ni sur l’objet auquel on l’applique; et des dénominations parfois tout opposées en Europe, viennent encore accroître la confusion.’ L. Freycinet, *Voyage autour du monde entrepris par ordre du Roi. Exécuté sur les corvettes de S.M. l’Oraïne et la Physicienne, pendant les années 1817, 1818, 1819 et 1820*, vol. 1 (Paris, 1827), p. 121.
33. ‘Assim, vê-se, “Caa-guaçú-iba” (Markgraf, 97), não podia ser nome proprio, mas antes um qualquer typo de arvore de folhas grandes: e “Abaremotemo” (Piso), como contracção de “Abã-eyma-tembiu” igual que: arvore ou tronco sem alimento, também só quis significar que a Acacia (aliás Pithecolobium) não era planta productora de fructas comestíveis, como o é, por exemplo o Ingá. Por isso, talvez, foram por estes dois viajantes, registrados os mesmos nomes para plantas diferentes.

- Por indolência, os índios, para se verem livres delles, lhes davam qualquer nome que lhes chegava á memoria.' F. C. Hoehne, 'Botânica e agricultura no Brasil no século XVI: Pesquisas e contribuições', *Brasiliana* 71 (1937), p. 49.
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