



João Barbosa Rodrigues: lore and practices

Barbosa Rodrigues in his cabinet: image, history, and science

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Abstract

Throughout the years there has been many works published about Barbosa Rodrigues' life and work, especially regarding his botanic and ethnographic research, his expedition to Amazonia, and his period as director of the Rio de Janeiro Botanical Garden. In these works, one photograph had a recurring appearance: Barbosa Rodrigues sitting in his cabinet. In this paper, we propose to analyse that photograph as a historical document to reflect on the different layers of symbolism it carries and on the public image of science and scientists in contemporary scientific culture. When considered as historical documents, one can glance at the intentions and designs behind photographs, which can reveal information about social and power relations, biographies, and in this case, the scientific work of a botanist in his cabinet.

Key words: Barbosa Rodrigues, cabinet, iconography, photograph, public image of science.

Resumo

Ao longo dos anos muitos trabalhos foram publicados sobre a vida e a obra de Barbosa Rodrigues, especialmente em relação a sua pesquisa botânica e etnográfica, sua expedição à Amazônia e seu período como diretor do Jardim Botânico do Rio de Janeiro. Nesses trabalhos, uma fotografia aparece recorrentemente: Barbosa Rodrigues sentado em seu gabinete. Neste artigo, propomos analisar essa fotografia como documento histórico para refletir sobre as diferentes camadas de simbolismo que possui e sobre a imagem pública da ciência e dos cientistas na cultura científica contemporânea. Quando consideradas como documentos históricos, é possível perceber as intenções e projetos por detrás das fotografias, que podem revelar informações sobre relações sociais e de poder, biografias e, neste caso, sobre o fazer científico de um botânico em seu gabinete de trabalho.

Palavras-chave: Barbosa Rodrigues, gabinete, iconografia, fotografia, imagem pública da ciência.

*Sitting on my desk in São Paulo,
at my house on Lopes Chaves Street.
Suddenly, I felt a chill inside.
I was trembling, very emotional
with the silly book looking at me.*

*Can't you see that I remembered that in the North, my
God!
very far from me
in the active darkness of the fallen night,
a thin pale man with hair falling down on his eyes,
after spending the day making a skin out of the day's
rubber,
has recently laid down and is asleep.*

That man is Brazilian like me.
Mario de Andrade
(Translated by the authors from the original
Portuguese poem.)

Introduction

João Barbosa Rodrigues (1842-1909) is probably one of the most well-known Brazilian scientists of the 19th century. His diverse interests, which ranged from botany to ethnography, his vast bibliography, and his long career, which included important hallmarks, such as being the director of the main botanic garden in Brazil, also make him one of the most studied scientists by historians. However, when we read the articles published about him, it is easy to see a pattern in which the most frequently used sources of information about his life and career are his published works, especially those in the areas of botany and ethnography.

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When we consider the iconography, it is possible to find articles about his botanical illustrations, but there still hasn't been an attempt to analyse images in which Barbosa Rodrigues is not the author, but the subject. One image is particularly interesting and has frequently been reproduced in articles, websites, and exhibits, always with the same title: "Barbosa Rodrigues sitting in his cabinet" (Fig. 1). This photograph was selected to illustrate the cover of a special volume of the *Revista Brasileira de História da Ciência* dedicated to the botanist and a large-scale version is currently reproduced on the walls of the herbarium at the Rio de Janeiro Botanical Garden Research Institute. There, the photograph pays homage to Barbosa Rodrigues, founder of the herbarium inaugurated in June 1890.

Despite being frequently replicated, there still hasn't been an attempt to analyse this image as a historical document, reflecting on the elements

present that make it a symbol of a material and visual culture of science. Firstly, though, we must point out that there is a long-standing tradition of using images in science, and images have taken multiple and complex roles in scientific communication. The development of what we call modern sciences, with the advancements promoted by the press, has made imagery and visuality increasingly important and we have seen a profusion of diagrams, drawings, engravings, etc., as observation takes a central role in the description of natural phenomena. Even with the innovation brought on by photography in the mid-19th century, scientists still argued about what would be the best way of translating natural phenomena into images (Daston & Galison 1992; Daston 2008), something which is today debated in relation to the processes of constructing digital images.

We could consider this photograph as a faithful portrait of the cabinet of the director of



Figure 1 – Barbosa Rodrigues sitting in his cabinet by Roberto Delforge, date unknown.

the Rio de Janeiro Botanical Garden. However, photographs can do more than capture a moment in time and analysing it as a historical document allows us to look beyond the elements represented in the scene and to see further than the instantaneous reality recorded on film. With this photograph in particular, we are shown a man of science caught in a moment of reflection inside the private space of his work cabinet. In this paper, instead of investigating written sources we propose to analyse that photograph, considering it as a historical document and reading it as such to find the different layers of symbolism that it carries.

Besides being used in the construction of scientific knowledge, we must also consider that paintings, engravings, and photographs – like the one we will analyse – which represent scientists and scientific objects, have frequently been used as a means of constructing a memory about science and a public image of science and scientists. As we will argue from the analysis of the photograph of Barbosa Rodrigues in his cabinet, these images contribute to the affirmation of scientific knowledge in society.

Inspired by Burke's (2001) considerations on how images can be considered historical documents and by Erwin Panofsky's (1955) concepts of iconography and iconology, we will attempt to analyse this image historically and critically, while looking for clues that can help us reflect about the public image of science and scientists in contemporary scientific culture and about the existence of a tradition in the representation of scientific cabinets.

Images as historical documents

"A picture is worth a thousand words" is a well-known adage used to convey the idea that a single image can hide many layers of meaning. In other words, images are polysemic (Penn 2002), especially because the different signs it contains appear to the observer at the same time, in contrast to the written text that only reveals its meaning as it is continuously read (Barthes 2006). As such, images can be interpreted and they have, historically, been created with the intention of being read, with paintings often having symbolical meanings attached to them (Manguel 2001). Despite all of this, historians have long refrained from the challenging task of deciphering the meaning behind images, preferring to work with written sources. The "pictorial turn", as William Mitchell (1995)

defines it, is still a recent phenomenon. According to Burke (2001): "Relatively few historians work in photographic archives, compared to the numbers who work in repositories of written and typewritten documents. Relatively few historical journals carry illustrations, and when they do, relatively few contributors take advantage of this opportunity. When they do use images, historians tend to treat them as mere illustrations, reproducing them in their books without comment. In cases in which the images are discussed in the text, this evidence is often used to illustrate conclusions that the author has already reached by other means, rather than to give new answers or to ask new questions." (Burke 2001: 10).

One reason that could explain why historians have preferred written documents is that images are "mute witnesses and it is difficult to translate their testimony into words" (Burke 2001: 14). Nevertheless, many historians have attempted it, and we should mention Aby Warburg (1866-1929), known for his studies on the Italian Renaissance and for his vast library where scholars such as Ernst Cassirer, Ernst Gombrich, Rudolf Wittkower, and many others tried translating images into words. Among those influenced by Warburg, Erwin Panofsky (1892-1968) stands out for his proposal of a methodology that included an iconographical description and an iconological interpretation. To understand the difference between them, Panofsky (1955) explains that:

As long as we limit ourselves to stating that Leonardo da Vinci's famous fresco shows a group of thirteen men around a dinner table, and that this group of men represents the Last Supper, we deal with the work of art as such, and we interpret its compositional and iconographical features as its own properties or qualifications. But when we try to understand it as a document of Leonardo's personality, or of the civilization of the Italian High Renaissance, or of a peculiar religious attitude, we deal with the work of art as a symptom of something else which expresses itself in a countless variety of other symptoms, and we interpret its compositional and iconographical features as more particularized evidence of this "something else." The discovery and interpretation of these "symbolical" values (which are often unknown to the artist himself and may even emphatically differ from what he consciously intended to express) is the object of what we may call "iconology" as opposed to "iconography." (Panofsky 1955: 31).

With iconology, Panofsky (1955) believes that analysing an image can go further than simply describing what is seen, as it opens windows to the understanding of the social, cultural, and historical context of a determined time. While iconography begins with a simple description of what is pictured in the image, recognising the forms, shapes, and lines as representations of objects and people, iconology moves on to the interpretation of what an image can tell us about the greater context it is inserted within. In this sense, Panofsky's method bears some relations with trends in the *Nouvelle Histoire*, which interprets culture as an amalgam of different symbolical forms, including images (Sousa 2005, 2009).

Furthermore, photographs can act like cross-roads between different temporalities, making us face the challenge of understanding them as a set of images dispersed in time and in space (Didi-Huberman 2012). As Manguel (2001) has stated, different stories find themselves intertwined when we read an image, including the author's and the reader's own personal biographies. Therefore, it is the researcher's task to establish connections not only through his experience and knowledge but also using his creative imagination, linking the photograph with other elements that allow it to be understood more broadly and not only as a portrait of something "real". That way, photographs can establish connections between different times and spaces. Here, we understand imagination as something that grants us the ability to create connections between the different elements present in the image we are observing and other images that are part of a society's shared imagery. In the case of Barbosa Rodrigues' photograph, it is possible to infer that there was a certain intention behind it, either conscious or unconscious, to register the scientist's cabinet and, in that way, that image dialogues with a tradition of imagery of scientific cabinets that goes back to the 16th century and that portray cabinets, libraries, laboratories, as well as the rooms used by scientists in their institutions and homes as spaces of isolated reflective work. There, scientists conduct their work before communicating their results to the public or their peers (Schaffer 1999).

So, while there are many more considerations about the methodological challenges of using images as historical documents, and many methodologies to choose from, in this paper we will take inspiration from Panofsky to divide our analysis into an

iconographical description and an iconological analysis. That way, we will first describe the elements we see and, later, we will interpret this photograph comparing it to a tradition of representing scientific cabinets and work as a moment of solitary reflection.

Iconographical description

When looking at the image our gaze is drawn to the right portion of the foreground where we observe a male figure, the only person represented in the scene. The man, who is photographed sitting on a richly carved wooden chair looks thoughtful. Leaning over an open book with his right hand over his forehead and eyes closed, his pose reminds us of the classic sculpture by Auguste Rodin (1840–1917), *The Thinker*. Like his bronze counterpart, his attitude is contemplative, and his expression demonstrates the effort of someone who is looking for answers that still elude him. The poor resolution of the 19th-century photograph does not allow us to identify the book he is reading, so we may never know what he was reflecting about at that precise moment.

We know, however, that the man is João Barbosa Rodrigues (1842–1909). His circular glasses, short, slightly greying hair, and characteristic, voluminous moustache combined with a Van Dyke-style goatee make his figure easily recognisable. Dressed in a dark suit, the formality of his figure contrasts with a detail that draws our attention: his left foot lays carelessly on what appears to be a large tortoise shell on the ground in front of him, an unusual footrest in a room where all visible furniture is made of wood (Fig. 2). Judging from its shape, it could be from one of the different species of tortoises known in Brazil as *jabutis*, which are members of the genus *Chelonoidis*.

The room seems to be Barbosa Rodrigues' cabinet in the Rio de Janeiro Botanical Garden, as implied by the title. This information appears repeatedly in the captions on articles that have previously published a copy of this image¹. We don't know if the title was given by the photographer or if

¹ Rocha, LM (2012) Delimitando as fronteiras: a musealização da botânica. *Revista Brasileira de História da Ciência* 5, supplement: 60-71. Available at <<https://www.researchgate.net/publication/336345917>>. Access on 22 January 2022; Marcolin, N (2013) A glória do botânico. Há 110 anos João Barbosa Rodrigues publicava livro clássico sobre palmeiras. *Revista Pesquisa FAPESP* 210. Available at <<https://revistapesquisa.fapesp.br/a-gloria-do-botanico/>>. Access on 22 January 2022; Andrade, RO (2016) Laboratório de um homem só. *Museu na Amazônia*, de 1883, impulsionou a carreira científica do botânico João Barbosa Rodrigues. *Revista Pesquisa FAPESP* 243. Available at <<https://revistapesquisa.fapesp.br/laboratorio-de-um-homem-so/>>. Access on 22 January 2022.



Figure 2 – With his foot on the tortoise shell, Barbosa Rodrigues reminds us of men's dominion over nature.

it was attributed later but it is, undoubtedly, highly descriptive of the scene and helps us understand it, while also reinforcing the idea that this is a private working space (Gaskell 2000). If so, we are looking at a record of one of the institution's most prestigious rooms with its principal administrator who is, perhaps, reflecting on the creation of the library, the planting of the arboretum, the reorganisation of the plant nurseries or the change in the course of the Rio dos Macacos, to name some of the milestones of Barbosa Rodrigues' management of the institution. Simultaneously, we can also suggest that he was possibly only posing for the photograph.

The original photograph is part of the collection of the Museu do Meio Ambiente of the Rio de Janeiro Botanical Garden Research Institute, which confirms the relationship between document and institution. Therefore, even though the photograph has not been dated, we can assume that it was probably taken between the years 1890 and 1909, when Barbosa Rodrigues acted as director. This date would set this image immediately after the Proclamation of the Republic, when important changes affected the entire public administration. For Barbosa Rodrigues personally, the appointment to the position of director of the botanical garden represents the culmination of a long personal trajectory and the consolidation of his scientific career.

In the tradition of the genre paintings popularised by 17th-century Dutch art, this photograph presents us with an apparently everyday

interior scene, albeit one filled with meanings and emblems (Gaskell 2000), in which we see Barbosa Rodrigues engaged with his work while surrounded by apparently disorganised objects as if in a cabinet of curiosities, spaces of scientific practice that tell us a lot about scientists' intent of observing and classifying the natural world. When looking at the image, we are led to believe that we have just entered his cabinet, surprising the botanist in a moment of reflection that allows us to curiously observe him in the middle of his work. However, although the photograph deceives us with the apparent spontaneity of the scene, we must keep in mind that photographs are often staged images. According to information available at the Rio de Janeiro Botanical Garden's database, if this is indeed a staged image the man responsible for capturing the staged scene was Roberto Delforge. Almost nothing is known about him, except for the fact that he worked as photographer, illustrator, and plant collector for the botanic garden in the first half of the 20th century and was, as such, someone immersed in scientific culture.

When analysing the scene, the space that constitutes the backdrop is just as important for the composition as the protagonist. In this photograph, we observe what is supposed to be the cabinet of the director of one of the largest scientific institutions in Brazil at that time. Furthermore, it is a botanist's cabinet, and we have captured him in the middle of his activities. On top of the table with the open book being consulted, we observe other books, papers, and an object that draws attention for its centrality on the tabletop: a microscope. Was Barbosa Rodrigues using the instrument during his study or was it symbolically placed there as a reminder that this is a space of science?

The choice of the microscope to be the scientific instrument that appears in the centre of the cabinet in the botanical garden is not accidental. The second half of the 19th century was a period of great changes in botany, with the decades between 1860 and 1900 being characterised by "a more thorough organisation of research" (Green 1909: 25) that included the incorporation of botany into the curricula of several European universities, greater profusion of laboratories, and the improvement of microscopic analyses. Instruments such as microscopes and microtomes were improved, new reagents were developed for microchemical examinations and advances were made in the field of phytotomy, a branch of botany dedicated to the study of plant anatomy.

However, it is our impression that this microscope could be misplaced, taken from the space where it would be actually used, away from the diligently prepared samples of the herbaria where the plants and seeds of the collections would be observed after being removed from their natural habitat, manipulated and preserved for study. As noted by Green (1909) that space, in the latter half of the 19th century, would be the laboratory. As such, we believe the microscope in the photograph could have been placed to symbolically reinforce the importance of observation and of scientists' attentive and learnt gaze in the process of constructing scientific knowledge. At the same time, it shows us that scientists need to be aided by optical instruments to see and interpret natural phenomena which are not easily apprehended by the human eye.

Although the photograph shows a botanist's office, few elements in the scene directly and specifically refer to studies in this area, except for the microscope and books that possibly contain botanical illustrations, such as the one Barbosa Rodrigues is looking at (Fig. 2). The organisation of the room, full of various peculiar objects scattered everywhere apparently in a disorderly fashion, leaving almost no empty spaces, reminds us of the organisation of cabinets of curiosities,



Figure 3 – In the cabinet, war-like weaponry shares the same wall as a painting of a female figure.

or *wunderkammer*, the predecessors of modern museums.

Among the cornucopia of objects, some items draw our attention, such as the large collection of blades and firearms suspended on the wall in the back (Fig. 3). Long shotguns, swords, sabres, and spears of different sizes and styles all appear symmetrically arranged as in a coat of arms. Although firearms and other weapons were used by naturalists in the field to kill and capture animals that would become part of Natural History collections, the arrangement that decorates the wall seems more like an assortment of wartime weaponry than a set of scientific equipment. Above the weapons, a painting depicts a figure in profile: a woman wearing a dress with a puff collar and lace sleeves, holding an open book in her hands. Who is the mysterious woman who adorns the wall of the director's cabinet? Could it have been Constança Eufrosina da Borba Paca (1844–1920), Barbosa Rodrigues' third wife?

Constança was Barbosa Rodrigues' "faithful companion" (Rodrigues 1903: 34) not just romantically, but also scientifically. Besides accompanying him during his expeditions, she helped with the collection of specimens and with the preparation of botanical illustrations (Rodrigues 2012). For her assistance, the botanist named a genre of orchids (*Constantia*) and a species of *Bactris* (*constanciae*) after her, claiming that the name was a reminder of Constança's courage, love for scientific discoveries, and heroism in the face of hardship (Rodrigues 1903). He even included her photograph in his *magnum opus* on palm trees, the *Sertum Palmarum Brasiliensium* (Fig. 4). So, if Barbosa Rodrigues was willing to publish a photograph of his wife in his most comprehensive work on Brazilian palm trees, it is not hard to imagine that he may have been tempted to hang her portrait on the walls of his cabinet. If so, the picture could be read as a symbolical representation of how women's scientific work often happened in the background, overshadowed by the work of men at that time.

Although this is the only painting in the room, we can see human figures in three medals on the far-left wall. Two of them appear to be cameos carved on porcelain or plaster-like material, with one representing the face of a woman and the other, the face of a man, both in profile. The third is a smaller metal medal, which hangs inside a wooden frame and has a male face in profile on its front side. A few photographs can also be seen, some hanging from simple unadorned frames and others frameless, wedged between the frames and

the walls. If we take a closer look, we can see that two of these photographs depict rows of men posing for the camera, a reminder of the mostly masculine presence in 19th century science (Fig. 5).

Aside from the decorative objects hanging from the walls, Barbosa Rodrigues' cabinet seems to be mostly filled with books. The large wooden shelf on the left appears completely packed with



Figure 4 – Constança's photograph in the *Sertum Palmarum Brasiliensium*.



Figure 5 – Photographs showing the prominence of male presence in 19th century scientific culture.

books of different sizes, some with white tags glued to their spines indicating that they have been catalogued and organised. Books are also found lined in the background and scattered in the foreground of the photograph, sitting on top of wooden stools as if they have been recently selected by the botanist to be consulted. On the bottom-left corner, a single book lies open on a wooden stool, making us wonder if it was handled by someone or if it was carefully staged to emphasise the idea that we are looking at a scientist in the middle of his work. Could these books (Fig. 6) be holding the exsiccates necessary for the botanist's work? Drying leaves, flowers, and seeds, pressing them onto sheets of paper, and organising them into books was a way of preserving, transporting, studying and comparing specimens.

The large number of books indicates the importance of reference works to 19th-century botanical studies. Annals, journals, and catalogues were fundamental in the process of learning about and comparing different species, therefore becoming essential to scientists in areas such as botany, zoology, palaeontology, and others. On the importance of museum catalogues to scientific work at that time, Lopes (2001) highlights that: "Catalogues are the most important objects created from collections since the 16th century. In the images and descriptions of catalogues, collections travelled through much wider territories than the narrow rooms of museums. In print, collections

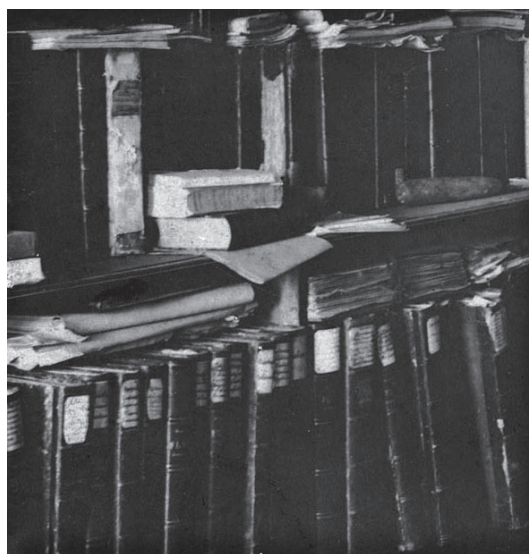


Figure 6 – Could the sheets visible on the bookshelf be a collection of exsiccates?

reached much larger audiences than those that visited museums, and expanded the possibilities of collecting, organising, and comparing.” (Lopes 2001: 60, translated by the authors).

According to Pinheiro (2009), there was an exponential growth in the publication of scientific books and journals in Europe and Brazil between 1800 and 1900. In the 19th century, just as today, publishing was a crucial step in having one’s work known in the scientific community. Therefore, scientists banded together in societies to share and discuss scientific matters, but also to organise the publication of journals which would later be translated into different languages helping with the internationalisation of scientific work. As Pinheiro (2009: 26) states: “with one thing everyone agreed, publishing was necessary”.

Barbosa Rodrigues was obviously aware of this necessity as he was a prolific writer himself, publishing many botanical and ethnographic works during his career. Moreover, publishing had been at the core of the dispute between him and Scottish naturalist James William Helenus Trail (1851-1919), a feud considered “a typical case of cultural imperialism” (Sá 1996: 6). Both botanists met in Brazilian Amazonia when Barbosa Rodrigues was at the service of the Brazilian Government and James Trail was working on behalf of the Amazon Steam Navigation Company and the Royal Botanic Gardens, Kew. After an initially friendly relationship in which both men named botanical species after each other as a way of honouring their friendship, Barbosa Rodrigues started to become suspicious of Trail’s growing interest in the palm trees he was studying. In the travel book written by James Trail’s companions Charles Brown and William Lidstone, they wrote the following: “Both the botanists were especially interested in the subject of palms, and more particularly in the discovery of new species. There was quite a scramble for the first and best specimens, and for the honour of preparing the first description. When one gentleman was fortunate enough, in the course of his rambles, to meet with an undoubtedly new variety, the other, who had been less lucky, would exhibit all the marks of extreme depression...” (Brown & Lidstone 1878: 238)

The scramble for specimens was quickly transformed into a race to publish. After returning to Rio de Janeiro, Barbosa Rodrigues hurried to publish descriptions of the new species he had collected. To further secure his authorship and to assure that his work would be internationally

known, he sent a copy of his *Enumeratio Palmarum Novarum* (1875) to the botanists at Kew who forwarded it to James Trail. The Scottish botanist received it with much surprise, immediately writing to Joseph Dalton Hooker (1817–1911), director of the gardens at Kew, to share his suspicion that the Brazilian had published to anticipate him. In response, he published two papers in the *Journal of Botany*, in 1876 and 1877 (Trail 1876, 1877).

When he received a copy of the papers in 1878, Barbosa Rodrigues was not only shocked but also offended. He noticed James Trail had ignored some of his work and had redescribed some species he had already described. The absence of reference to his *Enumeratio Palmarum Novarum*, which he knew James Trail had read, was taken as an insult. This led him to publish a protest entitled “Protesto-Appendice” (Rodrigues 1879), attempting to set the record straight on who had the right of authorship over the description of the palm trees they both had encountered in Amazonia. After analysing the dispute, Sá (1996) argues that: “Regarding Barbosa Rodrigues, it is clear that he felt his “natural” domains invaded and, even worse, his scientific interests gradually appropriated by one whom he saw as an opportunist. Not surprisingly, he eagerly tried to protect his interests assuming a posture justified by a presumed right of precedence. Since B. Rodrigues had first obtained, and drawn the specimens, he took for granted that such initial steps would alone guarantee him the authorship of his new species. Trail, on his turn, had no idea his actions could be taken for unethical, since he hid no information from B. Rodrigues, having even given him handwritten descriptions and samples of his own specimens. For Trail, the fact that he had been the first to collect complete specimens of the new species (*i.e.* with leaves, flower and fruit), gave him the notion that he had assured for himself the right of describing them.” (Sá 1996: 164).

The quarrel between Barbosa Rodrigues and James Trail illustrates how publishing (and publishing first) was crucial to advancing one’s scientific career. In many ways, that remains true today and being the first to publish a new discovery or a new scientific idea can be determining in consolidating a career in the sciences. A published description of a new species, for instance, not only secured a botanist’s name in the history of science but also guaranteed the internationalisation of his name. According to Lopes (2000), most 19th-century museums published their own journals and exchanging publications with other museums was a

way of promoting scientific cooperation. As such, publishing was a way of integrating and expanding the exchange between the international scientific community, as it promoted a way for knowledge to circulate.

During his time as director of the Rio de Janeiro Botanical Garden, Barbosa Rodrigues began the publication of the Contributions du Jardin Botanique de Rio de Janeiro. The journal, which was published in French between 1901 and 1909, informed readers of the research that was carried at the institution. In the National Exhibit of 1908, when the botanic garden was celebrating its 100th anniversary, a collection of the editions was chosen as one of the objects that would represent the institution (Heizer 2007). Given this context, it is not surprising to see that the director's cabinet in the botanic garden is swarming with books on every shelf, table, and stool, almost as if it were a library room.

Sharing a modicum of space on the larger shelf with such an impressive collection of books are a few items worth looking at more attentively (Fig. 7). Among the objects we can identify is a small round urn, possibly an animal skull, two round shaped rock-like objects resembling pestles, an unidentified item safely kept inside a glass case, and a small bust of a woman who could be the Greek goddess Athena judging from the helmet she wears. Some items, however, stand



Figure 7 – Assortment of items that share space with the books on the bookshelf.

out more than the others on the left portion of the photograph. Two of them seem like they might be of indigenous origin: a bag decorated with a multi-coloured geometric pattern and fringes, and a hand-painted calabash with a flat bottom. Could these have been acquired by Barbosa Rodrigues during his time in Amazonia?

In the same way as many other 19th-century traveller-naturalists, Barbosa Rodrigues learnt from the indigenous populations of Brazil. He observed and recorded how the natives named, organised, and used botanical specimens, and was one of the first to find evidence that the indigenous populations of the Amazon used a taxonomic system of their own to classify botanical species (Peixoto *et al.* 2012). He was also one of the main scientists in Brazil to study the toxicity of the poison *curare* used by indigenous groups in the Amazon (Sá 2012).

During his career, Barbosa Rodrigues conducted research in the fields of anthropology, ethnology, ethnobotany, and ethnolinguistic, publishing on the languages, cultures, and origins of different native groups in Brazil. He also collected indigenous artefacts, being partly responsible for the collection which was once preserved at the Botanic Museum of Amazonas where he was director between 1883 and 1890 (Rodrigues 2012). So, could these apparently indigenous objects be part of that collection, retrieved by Barbosa Rodrigues after the museum was closed and taken with him to his new cabinet in Rio de Janeiro? Furthermore, the presence of these artefacts reminds us of the poem by Mario de Andrade in the epigraph: despite being alone and isolated in his cabinet, scientists are connected to the outside world by the memories and the objects which play an essential part in the lonesome and introspective task of contemplation.

Three other items stand out on the bookshelf: circular-shaped, pocket-size instruments, which hang on the left side. They resemble pocket watches or compasses, but after consulting with Marília Andrade², the museum specialist at Museu do Meio Ambiente in the Instituto de Pesquisas Jardim Botânico do Rio de Janeiro, we believe they might be pocket aneroid barometers, which can still be found in the collection. Developed by the French physicist Lucien Vidie (1805–

² We would like to thank Marília Andrade for her assistance during our research, as we constantly relied on her for information about the museum collections at the Instituto de Pesquisas Jardim Botânico do Rio de Janeiro.

1866), aneroid barometers were considered less accurate than mercury barometers. Because of this, scientists such as Henrique Morize (1860-1930), the astronomer who directed the National Observatory between 1908 and 1929, recommended that aneroid barometers should only be used in case the mercury ones weren't available (Tibúrcio 2013). Nevertheless, pocket barometers were some of the most widely available scientific instruments that traveller-naturalists carried and used in the field. With them, they took measurements of atmospheric pressure and altitude that aided in geographical and climatological studies. Interestingly, much like the microscope in the middle of the room, these barometers seem to have been retired from use, as they hang on a corner as reminders of the scientific practice made popular in the 17th century of translating natural phenomena into numbers by using precision instruments such as thermometers and barometers. Data collected by travellers with the aid of instruments were recorded daily in notebooks and diaries (Bourguet 2017; Gesteira 2017).

Completing the scene, one item of furniture appears almost hidden at the back of the room: a wooden display case with double windowed doors (Fig. 8). Through the glass, we see objects that appear to be a variety of rocks or maybe even archaeological remains, varying in shape and size. The photograph alone does not allow us to identify what these objects may have been and there seems to be no record of what was stored inside the display case, which is still part of the collection at the botanic garden. Since these are inside Barbosa Rodrigues' cabinet, could they be related to one of his archaeological studies?

In the 19th century, there was a growing interest among the international scientific community over the study of shell mounds or *sambaquis*. Once believed to have been remains of living beings carried by the Deluge, these were then considered evidence of the actions of pre-historic men and, as such, important in the study of the origins of humankind. This matter was a subject of heated debates at the time, especially between evolutionists and their adversaries, and between monogenists and polygenists. After the publication of *On the Origin of Species* (1859) by Charles Darwin (1809–1882), these debates were intensified. In Brazil, this matter also took on a nationalist aspect, as determining the origin of South American natives was considered an

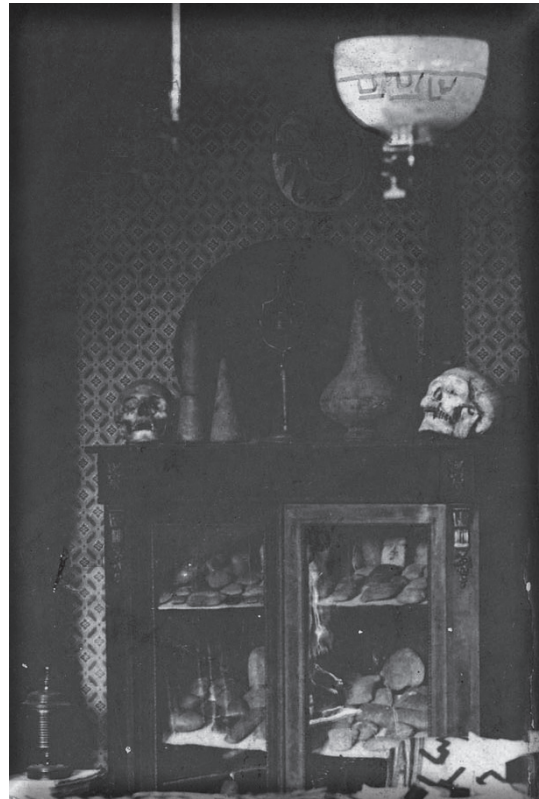


Figure 8 – Could these have been objects used by Barbosa Rodrigues in his archaeological research?

important step in writing the national history of Brazil. Analysing Barbosa Rodrigues' works on the *sambaquis*, Domingues (2012) argues that: "Actually, with these works Barbosa Rodrigues engaged himself and took a stand on the debate on the origins of the American man, which was then object of scientific and political discussion since it defined the genesis of nationality through history. The matter of writing the History of Brazil that mobilised everyone included the origin of man in the country." (Domingues 2012: 46, translated by the authors).

Despite being generally more common near seashores, Barbosa Rodrigues found mounds near the banks of Amazonian rivers and deeper into the interior. He proceeded to study them, comparing his observations with those of European scientists who had found similar formations in Europe and North America. He also recorded what the indigenous populations in the area knew about these *sernambis*, as the natives called them. Barbosa Rodrigues was thorough in his studies as he identified different shells, estimated the

age of these formations, took measures, collected samples, considered whether they could confirm the hypothesis of the European origin of native Americans, realised that these mounds were kitchen remains of past civilisations, published his findings in the journal *Revista Ensaios de Ciência* (1876) and in the compilation *Antiguidades do Amazonas* (1879), and argued against the destruction of the *sambaquis* for extracting lime (Domingues 2012).

Since these mounds were composed not only of shells, but also of petrified fishes, pieces of pottery, and even human remains, could these differently shaped rocks and human skulls have been collected by Barbosa Rodrigues from a mound he encountered in Amazonia? It is impossible to know for sure, but it wouldn't be surprising given that Barbosa Rodrigues was a prolific collector and owned a vast personal collection of Natural History objects. Moreover, could these mounds also be the origin of the two human skulls placed symmetrically on top of the same wooden cabinet? Separated by a couple of conical-shaped objects in the middle, one of them resembling a jug, the skulls are placed facing opposite directions. While one of them looks straight at the bookshelf on the left, the other turns its grim gaze at the centre of the room, almost as if the skull is aimed directly at us, watching those who observe the photograph with its lifeless eyes.

When we are reminded that this is the cabinet of a botanist, the presence of two human skulls stands out as something peculiar and quite curious. Historically, the inclusion of skulls in the visual arts has had the objective of reminding observers of the Latin maxim *memento mori*, that is, "remember that you die". The Grim Reaper, skulls, skeletons, and even hourglasses, have been used symbolically to represent the transience of life and the inevitability of death. This was such a popular motif since the 16th century that it became a genre in its own, known as *vanitas*. Could the photographer, either purposefully inspired by this artistic tradition or subconsciously imbued with this knowledge that Gombrich (1984) called *schemata*, have placed the skulls as a playful pun on the immortality that photographs gift to those in front of the lenses?

However, a more pragmatic approach to the reason behind the existence of two skulls in Barbosa Rodrigues' cabinet takes us back to a time before the specialisation of the natural sciences into different disciplines. More than a botanist,

Barbosa Rodrigues can be considered a naturalist, and in true 19th century fashion his interests spanned over the many fields encompassed by Natural History. Analysing how Natural History was taught in Brazilian schools, Barboza & Meloni (2018) found records of the curriculum of Colégio Pedro II from 1926 indicating that up to early 20th century Natural History classes included lessons in zoology, botany, geology, and mineralogy. It was precisely at this school that Barbosa Rodrigues studied when he moved from Minas Gerais to Rio de Janeiro in 1853. Despite later specialising in botany and, in particular, palm trees and orchids, he made contributions to the fields of geography, ethnobotany, ethnography, philology, zoology, palaeontology, archaeology, anthropology, pharmacology, as well as to the knowledge of indigenous languages and cultures (Rodrigues 2012). Therefore, because of Barbosa Rodrigues' polymathic nature, it is also possible that the skulls were subjects in one of his many studies.

Iconology and the representation of scientific cabinets

The iconographical description of the photograph has revealed many elements that could be further analysed. It is interesting to notice how much a keen observation and a meticulous description can uncover from an apparently simple record of a man sitting in his cabinet. However, as we have seen, this man is a scientist and that makes this photograph heir to a long tradition of portraying men of science inside their work cabinets. Next, we will compare Barbosa Rodrigues' photograph with four other examples to explore what these images can tell us about how and where scientists work, reflecting about a long-standing tradition of representing scientific cabinets.

The cabinet where the photograph was taken alludes to a space where scientific knowledge of the natural world was produced since the early modern period: the cabinet of curiosities. Commonly found in universities but also inside the residences of scholars, nobles, and other members of the elites, these were private and restricted places where collections of natural (*naturalia*) and artificial (*artificialia*) objects from all over the world were brought together in an apparently disorderly manner. However, this supposed disorder actually reflects our own lack of understanding of the intentions behind the organisation of these cabinets (Hooper-Greenhill

1992). According to Lara Filho (2006): “When looking at an image of a cabinet our tendency is to see an accumulation of objects placed beside each other and grouped without any kind of organisation or criterion. What would be the possible connection between a landscape painting, an embalmed fish, and an oil lamp? However, cabinets had very coherent ways of being organised, even if we have difficulty understanding them.” (Lara Filho 2006: 8, translated by the authors).

So, while we may not realise what is the connection between a tortoise shell, indigenous artefacts, scientific instruments, a collection of swords, and a couple of human skulls, that does not mean that there wasn't one. Cabinets were as different as the people who organised them, and their organisations also changed according to the reigning paradigms of the time. While some cabinets were put together in a demonstration of a person's wealth, others were organised as spaces for scientific study.

Collecting and cataloguing objects was an increasingly important task since European travellers began assembling objects from various parts of the world to enlarge the collections of scholars and other powerful men. Zoological and botanical specimens from the Americas and indigenous artefacts were transformed in luxury goods, circulating in different spaces, as in Johan Maurits van Nassau-Siegen's menagerie in the Dutch Recife where species from various places were put together and served as specimens for study. Many objects collected by him were later distributed to cabinets of curiosities in Europe and are now part of museum collections and learning institutions (Françoso 2014; Gesteira 2020).

If we compare the photograph of Barbosa Rodrigues with other images showing scientific cabinets, we can find similarities that allow us to reflect on how scientific work was portrayed according to a particular visual culture of science. On the painting by German artist Eduard Hildebrandt (1818–1868) we see an elderly Alexander von Humboldt (1769–1859) sitting in his personal library with an open book in his hands as if he was engaged in reading it (Fig. 9). We are reminded of Barbosa Rodrigues and the open books in his own cabinet in the photograph that makes us believe that the scientist had been surprised during his studies. In both cabinets, books are the most abundant objects, symbols of knowledge and erudition, but also of the importance of references and comparison for

scientific work. In Humboldt's room, as in Barbosa Rodrigues', some apparently unrelated sculptures, paintings, scientific instruments, and preserved animals complete the scene, an array of the different objects that were part of Natural History collections.

According to the artist responsible for the painting, Humboldt's was a library room, a type of cabinet that also played a role in the construction of scientific knowledge. It is not by chance, then, that it shares many similarities with Barbosa Rodrigues' cabinet. According to Latour (1996), libraries were spaces where nature was transformed into information, just like cabinets of curiosities and laboratories. In this sense, these spaces were part of the process of transforming nature into science, a process that also included expeditions and working in the field to collect specimens (Kury 2001). But while the field was the space for collecting, rooms such as cabinets, laboratories, and libraries were where scientists attempted to understand the natural order of the world by systematizing and arranging the collections they received. Scientific cabinets were, therefore, spaces for cataloguing, comparing, describing and arranging specimens, being one of several spaces considered fundamental to the advancement of scientific knowledge. According to Lara Filho (2006): “The cabinet's purpose is to instruct and, therefore, it must display in an organised fashion that which nature shows us grouped together disorderly. It is necessary, nevertheless, that this organisation serves the demands of the scientific world without deviating too much from nature itself.” (Lara Filho 2006: 46, translated by the authors).



Figure 9 – Alexander von Humboldt's library by Eduard Hildebrandt (1856).

In the context of European colonial exploration, these cabinets also took on a symbolical role. They received large numbers of products arriving from colonial spaces and those specimens which were considered exotic often stood out in these collections. Moreover, when exhibited in a cabinet specimens were symbols of European sovereignty over colonial areas in the Americas, Africa, and Asia (Domingues 2019). They were able to convey two very powerful symbolical messages at the same time: our collective capacity of domesticating nature, as when Barbosa Rodrigues subdues the tortoise shell with his foot, and European dominion over colonial space (Pataca 2011).

On the next example, we see a young Carl Linnaeus (1707–1778) resting in his cabinet after a botanising excursion (Fig. 10). Exhausted from working in the field, the naturalist seems to have dropped his cane, hat, and specimens on the floor without much care, sitting on the chair to fall asleep. His only companions are a dog, also asleep beside him after probably accompanying him in the field, and a bird in the background. As in the other images we have seen before, only man and nature share the private space of the cabinet as science is portrayed as a solitary practice and cabinets as private spaces of knowledge production. Interestingly, the belief that scientists are lonely and introspective geniuses who work individually and isolated is still popular in our culture today (Gil-Pérez *et al.* 2001), showing how this particular aspect of the visual culture of science still resonates contemporarily.

Notwithstanding this popular belief, the idea scientific work being solitary and lonesome couldn't be further from the truth and many studies

have already shown that even travelling naturalists relied on extensive networks of collaborators while working in the field (Antunes *et al.* 2019). Linnaeus himself considered that scientific work was a combination of tasks performed by essentially two kinds of naturalists: those who collected specimens and those who dedicated themselves to comparing, systematizing, and naming those specimens. In other words, some naturalists worked in the field while others worked in cabinets (Abdalla 2017). Furthermore, these images lead us to believe that working in the field was tiresome to the body, as shown by the fatigued Linnaeus fallen onto his chair, while cabinet work was intellectual and taxing to the mind.

On the final image we have selected, we can see into the director's cabinet (1881–1908) in the National Observatory in Rio de Janeiro, an institution that collaborated extensively with the Jardim Botânico (Fig. 11). Once again, we see that the most numerous objects in the room are books, which fill several bookshelves from top to bottom all around the cabinet. Even some of the working desks are swarming with books on their tabletops, with the notable exception of the desk on the right corner, which has three rectangular boxes possibly used to store scientific instruments. As with the other cabinets, some scientific instruments scattered around remind us that this is a space for science. Notably, we see what is possibly a chronometer on a desk and a large globe occupying a central position in the room, much like Barbosa Rodrigues' microscope. These items can be found today as part of the museum collections at the Museu de Astronomia e Ciências Afins.



Figure 10 – A young Linnaeus resting in his cabinet by an artist unknown.



Figure 11 – The director's cabinet in the National Observatory in Rio de Janeiro.

Conclusion

When producing an image, regardless of it being a painting or a photograph, authors imprint their past experiences, their memories, and signs that belong to a shared culture, combining them with the intention to produce a particular meaning. An image is, therefore, always the product of conscious decisions and unconscious meanings, of intentionality and subjectivity, and as such, can be interpreted in various ways. When analysing an image historically, we must see further than what is pictured in the forms, lines, and colours to find clues that allow us to reach the author's social, cultural, and historical background. By doing so, we can realise that the similarities found in the images we have analysed are not a product of chance, but a consequence of the way science, scientists, and scientific work has been represented throughout the centuries.

As we have seen, the images selected have many similarities, as they share some of the same symbols frequently present in this tradition of representing scientific cabinets. In every scene, we have seen private spaces leading us into thinking that science is not practised publicly but in the interior of scientific cabinets. In the instances we have seen the scientists who occupy those spaces, they are always men, and they are always alone, making us believe that science is a solitary practise. Other elements in the images tell us that science is an intellectual practise that requires many books and, naturally, many hours dedicated to reading them. But even though books are the most prominent objects in every scene, scientific work also relied on instruments that allowed these men to make observations and quantify natural phenomena. But, perhaps most importantly, science needed collections and we see specimens of all orders scattered around those cabinets: exsiccates, shells, skulls, indigenous artefacts, possible archaeological remains. All of this was the domain of what was then known as Natural History, a way of studying nature that was deeply rooted in the comparison and categorisation of specimens. Simultaneously, it was a way of studying nature that divided scientific work in two basic categories: fieldwork, where specimens were collected, and cabinet work, where they were analysed, described, and organised. In these cabinets scientists ordered the natural world, something that might seem contradictory in these apparently unordered spaces. By ordering nature,

scientists showed their dominion over it, and we have seen this symbolically represented by Barbosa Rodrigues' foot on the tortoise shell.

Finally, these images are not only part of a tradition of representing scientific cabinets, but they are also part of a culture of how science was presented visually. These images of science and scientists were part of larger processes in the affirmation of science's role in society as a specialised and useful knowledge, and of scientists' role as part of a cultural elite capable of demystifying the secrets of nature. These common objectives also allows us to understand the similarities between the selected images, as Barbosa Rodrigues' photograph sitting in his cabinet is but one piece of a larger puzzle, allowing us to make the connections that reveal a shared vocabulary in the visual representation of science.

Iconography

- Barbosa Rodrigues em seu gabinete. Museu do Meio Ambiente. Instituto de Pesquisas Jardim Botânico do Rio de Janeiro, Brazil.
- Fra Linné's ungd. Artist unknown. The Royal Danish Library, Denmark.
- Humboldt in his library by Eduard Hildebrandt. 1856. Museen zu Berlin, Germany.
- Sala do diretor no Observatório Nacional. Memória fotográfica em placas de vidro. Observatório Nacional, Brazil.

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