

The distinguished surgeon Francisco Antônio de Sampaio and the plants of “his country” (vila de Cachoeira, Brazil, late eighteenth century)

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Abstract

Francisco Antônio de Sampaio worked as a surgeon for over two decades in Cachoeira, in the captaincy of Bahia, Brazil. In this village, he produced writings on natural history, which he sent to the Lisbon Academy of Science, although he had no specific training in this area. This article analyzes his scientific output and healing practices, especially the uses and descriptions of local plants and his relationships with different agents, such as the “local commoners” and the naturalist and magistrate Joaquim de Amorim e Castro. His production of knowledge is interpreted here both from the perspective of the construction of scientific authority and through his interactions with local and metropolitan agents.

Keywords: history of medicine; circulation of knowledge; Portuguese and Brazilian Enlightenment; Francisco Antônio de Sampaio (c.1740-1800).



In recent decades, historians have turned increasing attention to interpreting the relationships between man and nature, problematizing and reframing the prevailing anthropocentric and providentialist views. In several fields of the history of science, environmental history, or history tout court, critiques of the ideology of progress have enabled this change of perspective, which interrogates the naturalization of the predatory action of the human species.

In a country like Brazil, with one of the greatest reserves of biodiversity in the world, it is essential to rethink our history in a way that takes account of the different layers of knowledge about plants produced collectively by different populations and cultures at different times. The natural world is being addressed from different perspectives in an attempt to interpret how knowledge is produced, what different social agents have been involved in scientific activities, the specificity of the work of men of science, and the circulation of people, animals, and plants, including at times when certain fields of science, like botany itself, were not clearly defined or institutionalized.¹

The fact that botany was first specialized and institutionalized in Europe does not mean that it was exclusively the outcome of European lived experiences. On the contrary, this type of knowledge presupposes global relations, and attempts to control, master, and understand different environments and flora. Furthermore, botany was only possible through the strained and selective processes by which local knowledge was assimilated (Raj, 2013; Schiebinger, 2017).

This article aims to interpret a case involving a Portuguese surgeon who lived, healed, wrote, and produced other scientific artifacts in Portuguese America in the final decades of the eighteenth century. The man in question is Francisco Antônio de Sampaio, who worked in the village of Cachoeira (captaincy of Bahia). Here we analyse Sampaio's production of knowledge about healing plants through different cultural and scientific practices, such as fieldwork and observation, contact with people, books and knowledge, and experience gained with patients. The main sources available are a volume on the natural history of plants and some letters exchanged between the surgeon and the Lisbon Academy of Science. To supplement these, we also draw on documents from the Overseas Council (Conselho Ultramarino) to better situate the interests of the crown and other agents who made use of "useful plants."

Based on our case study of Sampaio, we analyze the specific conditions in which science was produced in a colony, discussing how the readings, practices, and models of science and the associated circulation of knowledge and know-how among individuals as varied as unlicensed healers and agents of the crown with degrees from the University of Coimbra constituted a praxis particular to the local experience and materiality.

The analytical perspectives developed here therefore depart from the traditional diffusionist model, which conceives of science as the spread of practices originating in Europe outwards from the metropolitan centers. "Doing science" depends on knowledge, gestures, and language that are constantly tested, legitimized, and validated in a dynamic that involved the local and the global.

The eighteenth century was marked by an increase in knowledge about and mapping of the natural world and its potential, especially in colonial spaces. For the Portuguese-

Brazilian context, we have a vast literature on subjects such as the “philosophical voyages,” the organization of botanical gardens and cabinets, and the increasing circulation of books, memoirs, instructions, and other scientific texts, all for the production of knowledge of use to the Crown.²

Some of these men of science, many of whom were very close to Vandelli’s circle and graduated from the post-reform University of Coimbra (Calafate, 1994; Araújo, 2014; Fonseca, 2000, 2009), followed or returned to their homeland, Bahia, where they held posts in the royal administration as lawyers and magistrates. In these positions they undertook research, much of which would be published in the memoirs of the Lisbon Academy of Science. The collections they produced populated cabinets of curiosities and gardens in Portuguese America itself, as well as in the Kingdom and its colonies and in other European countries (Raminelli, 2008; Pereira, 2017; Pataca, 2006; Brigola, 2003).

The men of science and administrators of the Enlightenment worked in the captaincy of Bahia, with their collective gaze turned to the opportunities to be derived from timber, tobacco plantations, and copper mines, the acclimatization of species from the Orient, plants with healing properties, the local climate, and endemic diseases (Pereira, 2013, p.140 ff.; Pereira, 2017, p.678-680). Documents sent to the Overseas Council contain countless glimpses of this reality, bearing witness to the thriving production and circulation of knowledge by a very diverse set of agents who occupied different positions in the colonial setting. Their education and training were equally varied and ranged from exclusively local training to passages through European universities, which indicates that the acquisition and circulation of illustrated knowledge went far beyond the limits of the printed page (Furtado, 2012, p.70 ff.).

To give an example of this richly diverse reality, in 1786, Francisco Nunes da Costa, judge for the district of Ilhéus, sent a letter to the governor of Bahia, Rodrigo José de Menezes, reporting on a shipment of “bark of medicinal plants.” The cargo in question was one of the “American quinas” of particular interest to the Portuguese state (Walker, 2016, p.181). In addition, the content of the letter is quite revealing as it leaves clues about how the nature in Portugal’s American colony was approached, collected, and used through the action of these different colonial agents:

In a letter of December 14 last, Your Excellency did order me to help Father Marcellino Francisco de Mello, in the discovery and extraction of six arrobas of a bark, which he brought to the Court’s attention and which is called ‘white American quina,’ the aforementioned priest being its inventor; and Your Excellency did order me also to make this discovery and send what I may of it. Directly did I have Your Excellency’s letter delivered to the Priest, thereby gaining his assurance of the full and faithful execution of Your Excellency’s order, for which I offered my assistance, which he did not accept, for this extraction of similar bark being so easy and so widespread in this district, that the poorest of men may do it without expense or effort.

I hereby send Your Excellency 20 arrobas of the aforementioned bark, of which I should give Your Excellency, for the time being, the following list, until I may do so with another legitimate and specific description, which doth encompass the whole tree from which it was taken.

This bark or cork is generally known in this Captaincy of Ilhéus by the name of *Cavaco de Grem*, for it was the Indians of this Nation and vanquished or subjugated in the early years of this century, who made it known: they used it and recommended it as a infallible remedy for all manner of fevers, to fortify the stomach and for worms; they extended its use to all ailments and thence came its better known name of *pau para tudo* [wood for all] (Ofício..., 15 jan. 1786).³

Approximately seven months later, in a new initiative by the governor, who now sent a missive and letters to the minister Martinho de Mello e Castro, new shipments of “quinas” were sent from Bahia, this time two different species: “strong” quina (known in Brazil as *aratingui* or *cavaco d’anta*) and “brown” quina. When the quinas from Bahia reached the metropole, they were subjected to the “examination” of professors from São José Hospital. They then “rejected” the plants’ efficacy, issuing certificates that attested to their having been used on four patients without producing “any effect” and thus discrediting the quality of the product so strongly advocated by the magistrate of Ilhéus and Father Marcelino (Ofício..., 14 July 1790). However, their opinion was not shared by everybody. Testing part of the shipment of quina from Bahia, the magistrate from Aldeia Galega (possibly what is now Montijo, in the outskirts of Lisbon) distributed it among the surgeons and patients of his district and concluded that “many more people were given the said Quina, and were rid of the fevers that afflicted them.” This opinion was corroborated by Friar Agostinho de S. Antônio Ferreira, who cared for the ailing at the infirmaries of São Carlos and São João de Deus at the Royal Military Hospital of the Court, narrating the case of a soldier who had been “completely rid of these fevers” after being treated with the plant (Ofício..., 14 jul. 1790).

The person we will study here⁴ was involved in this collective endeavor to discover, classify, and use different species of plants from the captaincy of Bahia for the “useful” service of the king, whose multiple agents had different backgrounds and were employed in different branches of the state administration⁵ and the “republic of science” (Bret, 2008).

Francisco Antônio de Sampaio was born in Portugal in 1748 and arrived in Portuguese America as a child, settling, as already mentioned, in the village of Cachoeira, after brief stays in Espírito Santo and Rio de Janeiro. In Cachoeira, he practiced the healing arts for more than two decades, performing “experiments” involving plants and animals. He was certainly recognized as the local physician, as he was a member of the senate chamber and the Hospital of the Order of St. John of God (São João de Deus). Sampaio even said that he had a lifetime license to “cure of all medicine,” issued by the imperial physician-in-chief.⁶ Self-taught, he claimed that his “naturally curious nature” and his “natural inclination to study medicine, surgery, and pharmacy, making in them the progress that the country allows me, by means of continuous book learning ... I determined to write some words on the most notable productions in all three kingdoms.” This information appears in the letters he sent to the Lisbon Academy of Science. Altogether, there are four letters, between 1783 and 1793 (Cartas..., s.d., p.233, 282, 402, 463),⁷ which provide information on some key events concerning his professional work and his studies of the natural world from the region in which he lived.

The academy was not interested in publishing Sampaio’s scientific endeavors, and his manuscript was only printed some two hundred years after it was written (Sampaio, 1969;

originally written in 1782).⁸ In the letters sent to the Lisbon Academy of Science, he often asked for support for his activities, but official recognition as a corresponding member only came in 1798 (Conceição, 2016, p.171).

We agree with Schiebinger (2017, p.147) when she says that “not all knowledge, however, circulated” or, indeed, was effectively produced to circulate. Sampaio’s two-volume natural history treatise entitled *História dos reinos animal, vegetal e mineral do Brasil, pertencentes à medicina* (History of the animal, vegetable and mineral kingdoms of Brazil, belonging to medicine) seems to have been produced with the intention of publicize its contents. The handwriting and organization clearly indicate the goal of being read by men of science from the metropole and perhaps even being printed, so that he could gain a stronger foothold within the Portuguese and Brazilian “republic of science.” This desire to earn the recognition of men of science can be seen in the discursive strategies employed in the text and in his attempt to publicize his actions and experiences as a healer, manipulating and experimenting with the fauna and flora of “his country” (Kury, Nogueira, 2018).

Let us now turn to a discussion of what Sampaio had to offer the members of the Academy in terms of the use and knowledge of plants he accumulated over decades of observations, collections, readings, interpersonal contacts, and uses on the ailing bodies he treated.

Francisco Antônio de Sampaio and plants that heal

In the first volume of his *History*, Sampaio introduces us to 83 plants. The descriptions in the manuscript are supplemented by twenty watercolors and numerous figures per page. There are often separate drawings of details of the fruits, seeds, pods, and other parts deemed of importance, which are presented in such a way as to imitate the representations typical of the Linnean system. The specimens from the vegetable kingdom “belonging to medicine” are divided into 12 categories: “resolutives”, “detergents”, “thickeners” (for internal use), “astringents”, “purgatives and emetics,” “disobstructives,” “contravenoms and febreugas”, “diaphoretics”, “antivenereals”, “anticolics,” “antispasmodics,” and “cooling and tempering” (for external use). In each category, the plants were associated with specific therapeutic effects on diseased bodies, clearly showing the influence of Hippocratic and Galenic theories of humors.

One aspect that draws attention is that the plants described equally include ones that were in fact native to the Americas, such as *abutua* (*Chondrodendron platyphyllum*), achiote, cassava, cashew, and *tanherom* (probably *Alchornea triplinervia*), and plants that came from elsewhere, such as banana, malagueta pepper (which “grows in farms and gardens;” Sampaio, 1969, p.15), aloe, tamarind, and others (Martins et al., 2003). In general, the author shows no concern with giving the reader a clearer idea of where the plants in question come from. They appear generically as “plants of the country” (Cachoeira village). Sometimes, the place where they were collected is mentioned, along with indications of how common they were and how they fitted into the landscape: “growing in thickets;” “wild, uncultivated herb;” “produced in fields, and even by local people.” One likely explanation, which chimes with Gesteira and Kury’s view, is that some of these plants had been acclimatized for so

long and become part of these people's everyday lives that they were indeed held to be "of the country" (Gesteira, 2013, p.34-38; Kury, 2013).

Sampaio's book describes roots, branches, seeds, and fruit pulp in minute detail. He claims to have observed and tested their healing virtues by manipulating and applying them in different ways, both externally and internally. He also writes that he produced syrups, "pottages," tinctures, poultices, topical infusions, or sometimes applied the plants directly, especially the leaves – generally after being "bruised" or "dried and reduced to powder" – on sores, bruises, and other malaises. To give a sense of his literary style, we present below a section in which he describes the "uses and virtues" of *cuaté*, which he classifies as a fruit:

The flesh of this fruit is the only part that is of medicinal virtue; indeed it is a very good resolutive; I have preferred it to others of good repute, with great fortune, for which reason I can attest to its effect. Take one fruit when it is still green, cover it with embers, and hot ash until it is perfectly roasted; then remove the flesh, and with tolerable heat apply it to the tumor, removing the poultice whensoever it seems necessary (Sampaio, 1969, p.16).

Given the nature of the text – a treatise on natural history – the healing plants from Cachoeira are described, classified, and presented according to their therapeutic qualities in the form of "simple" remedies. Very occasionally, Sampaio also associates their uses with other components, such as boiling leaves with "appropriate liquor" (albeit non-specific), as he did with *abutua* (Sampaio, 1969, p.17), or "*enhúdia*" of animals, giving preference "to the animals of this Brazil which are very penetrating" (p.14-15). In his daily medical practice, however, it is more than likely that the plants from Cachoeira, like those from other parts of the Portuguese empire, were combined, added to wine, *cachaça*, and animal, mineral, or even chemical components, which in Portuguese medicine had a significant impact thanks to the work of Dr. Curvo Semedo. This expedient appears in the healing arts of various surgeons acting in Portugal's American colony from whom there are extant medical materials, such as Gomes Ferreira (1735) and Antônio Mendes (1770). There are also some medical prescriptions attached to the estate of diseased persons (normally with a view to charging their successors), as we read in several studies (Furtado, 2005; Viotti, 2017; Quadros, 2019).⁹

Furthermore, unlike other medical genres, such as "observations," "memoirs," or "medical materials" (Costa, 2011, p.19-24), which provide detailed narratives of clinical cases and the course of ailments and their cures, Sampaio's plant and animal classification is virtually silent on how he took care of his patients, despite his apparently extensive work as a healer, given his involvement in so many spaces of healing. Throughout his text, he mentions healing only two patients: a man "over fifty years of age" who "recovered from a hernia, "thanks to genipap bark and its "adstringent" properties (which he does not address directly), and a "black girl," who did not recover from the bite of a jararaca snake. In this case, he was promptly called to help her, but in vain, since he "found her hand, which had been bitten, and the whole arm was putrid" (Sampaio, 1969, p.35, 61). Excepting these more specific accounts, there are also occasional mentions, as in his description of his

employment of the fig tree, which in his experience was the most “powerful disobstructive” agent of all the plants of this country, because with fortune have I healed many cachectic patients and even some with dropsy” (Sampaio, 1969, p.43).

It is therefore clear that in his “experiments” with local plants, Sampaio produced his own remedies – a prerogative of apothecaries in the medical hierarchy of the context under study – in addition to prescribing and administering “internal remedies,” which could only be performed by individuals with a university degree in medicine (as physicians). Such actions, which went beyond his duties as a licensed surgeon, explain the fines he received from the medical inspectors of the Protomedicato at a time of heightened surveillance both in the kingdom and in its colonies (Abreu, 2013). He addressed this issue in a letter he sent to Lisbon, in which he explained he had been fined “not only for making remedies, but also for using medicine to heal.” Despite his counter-arguments, the Protomedicato official was emphatic in setting the boundaries of the healing arts: “he replied that he knew of my great erudition, science, practice, and skill, but that they were of no service to me if I was not a trained physician” (Sampaio, 2008, p.14).

In addition to presenting the medical uses of plants from his country, Sampaio gave morphological descriptions of the plants that he reported on to the men of science from the metropole. Thus, he comments in his first letter to the Academy that if the presentation of his scientific endeavor went down well, he “would proceed... by the same method that I have adopted or as prescribed and determined by Your Excellency” (Sampaio, 2008, p.12). Although he did not explain it directly, his “method” involved making descriptions and morphological classifications of the plants from Cachoeira in a way that attempted to replicate the Linnaean model. To this end, in the details he provided, Sampaio counted anthers and pistils, described the shapes, colors, and sizes of flowers, leaves, branches, trunks, vines, pods, and seeds, and also claimed to make use of a microscope to lend his “observations” greater precision.¹⁰ The following excerpt shows how he described and classified *vassourinha* (*Baccharis dracunculifolia*), valuing its use in order to reinforce his credibility and distinguish himself from other observers: “This *vassourinha* is common near the villages and even along roadsides; it is much adorned with tiny leaves, and almost always with leaves that are ‘hard to see’ and very small seeds. Seen under a microscope, its flowers are found to be tetrapetalous and white to light red in hue. It is depicted in print 3, fig.3” (Sampaio, 1969, p.21; emphasis added).

His description of the antbush (*fedegoso*) is typical of his attempt to imitate the style of botanic descriptions of his day. As well as covering the flower’s reproductive organs, he shows the stages of development of the plant:

The pod shown in letter (a) is already large, but is not yet mature, the others (b) are in a more tender state, and more so the one that emerges from the center of the flower. Fig. 6 shows two flowers on a single stem: they are pentepetalous and are endowed with four small anthers and two large ones which accompany the only *gina* (c) and exude a foul odor (Sampaio, 1969, p.13).

In the second volume of his *History*, which focuses on animals, written after Sampaio had received some encouragement and guidance from members of the Academy, the

references to Linnaeus become explicit. In his last extant letters, Sampaio reports that he followed a “diverse method” which he believed to be “more perspicuous, perceptible and worthy.” Later, he mentions this method directly: “everything [the description of the animals] according to the order and terms of Linnaeus” (Sampaio, 2008, p.14, 16).¹¹ As we know, during the Portuguese-Brazilian Enlightenment, the preference for the Linnaean classification system as a standard for the production and validation of scientific knowledge was largely due to the influence of the Italian naturalist Domenico Vandelli, since the Swede’s taxonomy was by no means a consensus across all the scientific centers of Europe (Kury, 2008, p.73-74).¹² Furthermore, adopting the Linnaean method made it easier for Portugal to circulate scientific texts beyond its borders.

Despite his attempts to make morphological descriptions of the fruiting elements, Sampaio’s work contains many passages that depart from this type of methodology and present observations based on his direct and repeated contact with the plants and animals he studied and experimented with. The direct observation of phenomena and first-person accounts by educated persons were also appreciated in the scientific context of the day. Indeed, it was not so much his adoption of a Linnaean-inspired style, for which he was unqualified, as his knowledge of the “uses and virtues” of the local plants and animals, based on his experience in and around Cachoeira, that made his writings so dense (Kury, Nogueira, 2018; Nogueira, 2019). This kind of descriptive strategy can be observed, for example, in the characterization of the pigeon bean (*anduzeiro*), in which he emphasizes that its pod has seeds similar to lentils and that “when stewed [they] are more flavorful than beans, whereof comes their name” (Sampaio, 1969, p.28).

When referring to the hog plum tree (*cajazeira*), he also showed how its utility – “which is one of the largest grown in Brazil” – went beyond the astringent properties of its leaves, unripe fruit, and bark: “Its trunk is very thick, covered with cork. ... This cork is always very cracked; it is very dense, which is why many artisans craft out of it very delicate works such as images of saints, frames for golden objects, and other such dainty things, but what it has of ease of work it matches in brittleness” (Sampaio, 1969, p.33).

Observations and descriptions associated with “common uses” and the “customs of the people” were present in other texts that aimed to classify animals and plants. They were given a special systematization in the context of the Enlightenment, during which time a large number of instructions and other “instrumental” texts were produced to orient the gaze of those who classified and collected specimens of plants and animals to scrutinize nature. Many of these texts focused on the economic utility and different potential uses of natural products, in addition to the recording and collection of artifacts of their own making and all manner of “curiosities” from the peoples and spaces that were part of the empire (Pereira, Cruz, 2012, p.116).

Observations of this nature involved the consumption or use of various plants that we would currently see only as seasonings to add flavor and substance to the remedies and which had numerous other properties, being significantly referred to at the time as “bodily fertilizers” (Carneiro, 2002). Such was the case of pepper, ginger, sugar, and other ingredients, which frequently appeared in different genres of medical texts – especially medical materials –, added to remedies for reasons that went far beyond their strict use as

food, as they were associated with a series of bodily functions, such as recuperating energy, controlling the “passions of the soul,” exercise in general (sexual activity included); that is, combined with other variables, they made up the complex and enduring Hippocratic conception of diet (Cairus, 2005, p.93 ff.).

In short, when Sampaio discussed the “plants of his country,” in line with the metropole’s interest in identifying the exploitable potential of nature in the colonies, he sought to produce first-hand knowledge that could only be acquired by those who had direct relationship with their object over years of observation and practice. At certain moments in his treatise, this aim prompted Sampaio to offer “warnings,” in which he refuted and corrected information from widely circulating medical texts, such as the *Farmacopeia tubalense* (1735) and *Âncora medicinal* (1720; Sampaio cites its second printing). These references also demonstrate his familiarity with the scholarly world by corroborating the “continuous book learning” that he made a point of mentioning in a letter as part of his training.

Another example of his attempts to legitimize his knowledge and practices and his desire to commune with the world of books can be found in the description he makes of the medicinal “uses and virtues” of *abutua*, which by then was well known and widespread in the Old World as a drug. Once again, Sampaio was keen to affirm the therapeutic experience accumulated for decades in “his country,” refuting the distant knowledge of “writers”: “If all the medicinal virtues writers attribute to the *abutua* were true, it would surely be of estimable merit; but experience of its oftentimes repeated use has taught me the contrary of what they assure in some ailments” (Sampaio, 1969, p.57).

In certain passages of his treatise on natural history, this tone of originality and “first-hand” knowledge appears even more strongly. It can be seen in the description of the leaf (or herb) of fire (*erva-de-fogo*), which, with his trained eye, Sampaio was able to identify in the “meadows” and “thickets” in the area where he worked as a healer and which he knew so well. By so doing, he sets his knowledge and healing practices apart from those of other men of science and healing agents, and perhaps thereby earning appreciation and notice by the men of science from the metropole: “This plant is little known by common folk and even by medical professionals, but I can attest by my experience of using it that not only is it an excellent detergent of any kind of sore but that never have I seen in any dispensary a remedy of such effective and fortunate[*sic*] virtue” (Sampaio, 1969, p.22-23).

Elsewhere, when discussing the resolutive properties of *jarrinha* (*Aristolochia*), he once again lauds the medicinal properties of the local plant, describing it as one of the “most bountiful resolutive of the vegetable kingdom,” concluding that he was not referring only to the resolutive “of this Brazil,” but “even more with preference to those which are brought here from foreign lands” (Sampaio, 1969, p.11).

In our search for other clues as to the likely influences from learned sources to support the natural history produced by the surgeon Sampaio, we found indications that he may have had direct access to some of the instruction manuals designed to standardize and train the observations and practices of those involved in observing and collecting in the natural world, produced by men of science or in the name of their institutions in the metropole; perhaps even the *Breves instruções* (*Brief instructions*) published by the ACL itself in 1781.¹³ The fact is that about a year after leaving the press, the governor of Bahia informed he

Minister Martinho de Mello e Castro of the receipt of copies of *Brief instructions* and, obeying the orders sent with the work, shared them “with the people that seemed to me of greatest wit, so that they may use them” (Ofício..., 11 maio 1782). Despite not giving more precise information about who these people “of greatest wit” were, this document proves that these instructions were circulating in the captaincy of Bahia at the same time that Sampaio was studying natural history.

Although Sampaio did not make any explicit mention of this type of publication in his scientific texts or letters, evidence of his likely familiarity with the Instructions can be seen in the way he emphasizes the fact that “his painter”¹⁴ had reproduced animals and plants,¹⁵ many of them in their “figures, and colors, and many in their patterned grandeur” (Sampaio, 2008, p.16), which reproduces language that repeatedly appeared in the *Brief instructions* and in other travel instructions produced in the second half of the eighteenth century (Pereira, Cruz, 2012, p.115-133; Pataca, 2006; Abdalla, 2012). For example, in the *Brief instructions* we can find the following observation about the information that should accompany the collection and shipment of samples of quadrupeds: “and when this [preparing the animal for shipment] cannot be done with due perfection, at least send your drawing with the right colors, or an exact list that best compensates its absence” (Breves instruções..., 1781, p.10).

In another passage of the instrumental and normative text produced by the Lisbon Academy of Science, remittances of “some works crafted by the natives of the country, such as their attirement, weapons, instruments etc.,” informing about “the most remarkable and curious things of the land, in which said products are to be found, and the customs of the peoples who inhabit it” (Breves instruções..., 1781, p.37-38). We do not know for sure whether the shipments Sampaio sent to Lisbon contained this type of artifact. On the other hand, as noted, supplementing his accounts and descriptions of plants of use to medicine with information on their nutritional properties or craftwork did not fall outside the scope of what was of interest to the men of science from the metropole. This is yet another indication that Sampaio was in fact familiar with some of these “instructions.”

At the same time that Sampaio was producing his manuscripts and prints of the local flora and fauna, he sought entry to the circuit of remittances of other scientific artifacts to the Kingdom, destined for botanical gardens and cabinets in Portugal and across Europe. To this end, he wrote asking for confirmation of the receipt of a nailed case which read on the “lid in large letters: for the Invictus Academy of Science of Lisbon,” which contained, among other things, a “sculpted stone from Brazil and [on] a reliquary, the coat of arms of this Academy,” which – Sampaio explains – “in the absence of teachers of carving and sculpture I was obliged to make, all with the delicacy that my curiosity allowed,” as well as another reliquary bearing the face of the queen. He ended by stating that when he addressed the mineral kingdom, he would give a “notion of their qualities, which are in truth when estimable.” In addition, Sampaio mentions having sent a “description of this Village of Cachoeira” and a map, “all with illuminated prints and numbers of the Souls not only of this Parish of Cachoeira, but also of seven others included under this term,” and perhaps in this same shipment there also went the volume on minerals. It would appear, however, that the aforementioned “case” was lost or misappropriated (Sampaio, 2008, p.15-16).¹⁶

Something else of note in Sampaio’s scientific work and healing practices is the evidence of the circulation and use of knowledge about plants and animals that involved various social agents, both from lower strata, which certainly included unlicensed healers, who were often vilified as sorcerers (Souza, 1995; Nogueira, 2016), and also ones who were better positioned than Sampaio in the spaces and hierarchies of men of science in the Portuguese-Brazilian Enlightenment, such as the aforementioned university graduate Joaquim de Amorim e Castro, appointed magistrate of Cachoeira in 1787.

Thus, the local inhabitants appear in his treatise on natural history in general terms as “commoners,” “plebeians,” “rustics of this land” etc. It immediately becomes clear that this was done deliberately to conceal or discredit the therapeutic practices and knowledge of subaltern groups from Cachoeira.

A good example of this narrative strategy occurs in Sampaio’s description of the therapeutic properties of the lead-vine (*cipó-chumbo*), from Minas Gerais. When comparing his own knowledge and practices with those of a “commoner” who claimed the plant had “almost infinite virtues,” being used for “all manner of wounds, both external and internal,” especially injuries caused by firearms (hence the plant’s name), but also for gonorrhea, coughs, bleeding, and other ailments, Sampaio states ironically that “I never reaped such fortunate utility that the natives would have me believe.” He concludes by saying that he depended on the vine as a “gentle thickener of humors [that are] too fluid,” boiling it then using it as an internal remedy in cases of diarrhea, hemoptysis, and other hemorrhages (Sampaio, 1969, p.27-28).

The presentation of the “uses and virtues” of *urucum* (*Bixa orellana*) reveals even more strikingly his desire to make a clear distinction between the knowledge and work of a qualified surgeon with a license to “cure of all medicine” and the knowledge and work of “rustics.” In Sampaio’s (1969, p.29-30) own words:

I know that the small fruits or berries known as *urucum* are of medicinal virtue, of which few laypersons are aware, and I deem that no teacher. In the country where I have walked, I have seen them being applied successfully, albeit ‘without method,’ because ‘after all, these are laypersons without the principles or the lessons of the men’ who in those wild regions heal (emphasis added).¹⁷

Keen though he was to set himself apart from popular healers, a closer look at the way he expounds his knowledge and therapeutic practices reveals that Sampaio learned a great deal from those people who were not licensed to heal and from other subaltern groups in his area of influence, not to mention the likely circulation of materials that these contacts would have enabled, along with the complex mechanisms of circulation and resignification of knowledge and methods.¹⁸ As mentioned above, Sampaio was terse and even insulting in his descriptions of the people with whom he lived in Cachoeira. Yet much of the knowledge he acquired came precisely from his interaction with locals of native or African descent, whose knowledge was then adapted and its provenance overlooked, according to the prevailing scientific beliefs. The case of the Linnaeus-based taxonomy (which, as mentioned, Sampaio only partially observed) is indicative of an explicit desire to gain distance from local knowledge. The use of medical theories, certain experimental

protocols, and other elements¹⁹ similarly demonstrates his desire to translate and adapt the knowledge and practices of the “commoner” to a scientific discourse that was in the process of being legitimized, universalized, and standardized in the final decades of the eighteenth century.

Thus, a first element that draws attention is the number of plants Sampaio claims were cultivated and which “grew in gardens.” When describing the luffa (*bucha-de-paulista*), he tells us that “this plant is wild,” but that at the “present time” it was already duly domesticated, because “its good effects have attracted it to the enclosures and fields, wherein those inhabitants sow it, and conserve it for their needs.” At another point in the treatise, he also mentions that aloe, which he “roasted” then removed its husk and applied the pulp directly to pustules as a “good resolutive,” was to be found growing “in gardens and enclosures, sometimes being cultivated, other times without” (Sampaio 1969, p.46, 47). In short, it is to be assumed that in order to acquire these plants to produce his remedies and do his experiments to ascertain their medicinal qualities, he must have had access to the countryfolk through relationships of collaboration and social interaction, making use of their “gardens” and “enclosures” as a material source for their recipes. In this way, his healing arts seem to have been at least partially the expression of collective and shared knowledge.

In a rare passage of his work in which he describes the therapies of a “common” healer, the apparently commonplace circulation of products, practices, and knowledge via different colonial agents can be seen all the more directly. Although he does not fail to distinguish his explanation and rationality from the “superstitions of the ignorant commoner,” Sampaio (1969, p.61) goes on to explain:

Take the nutgrass root; grind it well in the mouth with teeth, and once its most subtle particles are full moistened by the movement this should give, one and another are transformed in a kind of paste: then pass a cord (of any kind) through the mouth so that its fibers and pores receive that paste in sufficient quantity; leave to dry in the shade and maintain to use when need arises with the certainty that the effect of its virtue is conserved for as long as the cord remains.

There was a man with whom I was well acquainted by the name of Sebastião Gomes, who was born in this village of Cachoeira and lived in it for many years, who successfully cured all the snake bites that came to his attention solely by tying a cord above the bitten part, and all healed as I witnessed many times, then the ignorant commoner attributed this occurrence to diabolic superstition.

At another point in his treatise, despite the overwhelming tone of insult and detraction, there is another reference to the circulation of folk knowledge. When dealing with the preparation and therapeutic uses of “cassava paste,” which he defines as one of the “most powerful detergents to have been discovered in the vegetable kingdom,” Sampaio attributed this discovery and application to the “wise enquiries of the laypersons of this country” (Sampaio, 1969, p.20-21).

At the other end of the spectrum of the relationships Sampaio nurtured was the magistrate and former student of the naturalist Vandelli, Joaquim de Amorim e Castro. References to this relationship are scant. We know for a fact that Castro personally

delivered to Sampaio the academy’s reply to one of the letters he sent. It is likely that this reply reached Bahia along with other administrative documents, and perhaps even instructions and other books of a scientific and instrumental nature that the magistrate and naturalist had brought with him. The circulation of texts and artifacts through people tasked with the parallel, interrelated function of managing overseas possessions on behalf of the king was common (Raminelli, 2008; Kury, 2004; Pereira, Cruz, 2012). In fact, Castro was an agent of the utilitarian and progressive perspective of the Enlightenment, belonging as he did to the lettered elite who studied at Coimbra and then returned to their respective homelands or other colonies²⁰ to devote themselves to the observation and study of colonial nature.

The historical archives of the Overseas Council contain Castro’s considerable correspondence, along with some “memoirs” he wrote on plants that had significant economic appeal, mainly tobacco and timber.²¹ In addition, Castro was responsible for shipments of specimens, with the aim of enlarging the collection of the Academy’s museum (Pataca, 2006, p.370 ff.). He was very active with the Lisbon Academy of Sciences, becoming a “corresponding member” in 1780 and publishing two “memoirs” for the institution, in 1790 and 1791 (Lima, 2009, p.101, 159).

In what may be his first correspondence to the metropole – a letter addressed to Minister Martinho de Melo e Castro – besides reporting that he had “arrived ailing” and was ready to take on the position assigned to him, he reported the urgency of starting his work, particularly stressing his “observations” about a copper mine encountered in the region. One revealing fact is that he mentions that “the forces of a naturalist are not enough to extract from nature the products worthy of all observation,” going on to suggest that he should receive the collaboration of other agents (Carta..., 28 mar. 1787). Despite the pithy nature of his discourse, it may be inferred that such actors could be surgeons, like Sampaio, as well as military men²² and others who worked locally collecting, studying, and experimenting with the three kingdoms of nature, although none of this is mentioned explicitly. However, later in the letter, Castro makes a point of drawing a distinction between different types of training and legitimation of knowledge when he writes that the systems of mineralogy and “most branches of natural history [are] entirely unknown in this country;” concluding that “nature offers a thousand products in this country” and that “the naturalist’s hand is what brings forth their value through his repeated observations.” In other words, Castro marks the difference between his skills and those of men without adequate training as a naturalist.

However, some of Castro’s scientific work seems to bear more direct relation to knowledge produced by Sampaio. In 1796, the governor of Bahia issued a letter in which he confirmed the shipment of “2 cases” containing plants to the Botanical Garden of Lisbon (Ofício..., 16 jul. 1796). One of them was from Ignácio Ferreira da Câmara, a physician who had trained in Montpellier and was a corresponding member of the Academy of Sciences of Lisbon; the other was from Castro.²³ The latter crate contained four plant species (whiteweed, *tanhará*, Brazilian peppertree, and Piperaceae), duly listed and classified according to the Linnaean system; three of them are also present in the natural history treaties written by the surgeon Sampaio.

Regarding whiteweed, Castro and Sampaio seem to agree about its resolute properties, that is, its ability to relieve tumors and inflammation of different sorts. Regarding the peppertree, there are also strong similarities between the two texts, especially regarding its disobstructive effects, which both mention, for the treatment of dropsy and “pain in the bowels” (Sampaio, 1969, p.16, 54). Another reference can be found in a “memoir about the different qualities of wood,” offered to the queen in 1790. When describing the “lightness” of *tamburê* (*Enterolobium timbouva?*), Castro compares it to *mulungu* (*Erythrina*), which he defines as “the cork of Brazil;” the same property and terms stressed by Sampaio in his *History* (p.11-12).

Although such references are not direct, we consider it likely that Castro may have come into contact with the manuscript produced by the surgeon, alongside direct contacts and exchanges of mutual learnings through oral instruction. Another possibility (which does not cancel out the previous one) is that, after three years working as a magistrate and naturalist in Cachoeira, Castro also counted on “commoners” as informants for his collections, studies, and comparisons of diverse species of flora and fauna from the region upon being sent there to work on behalf of the Crown.

Based on the above, what is revealed by comparing the documents analyzed here – added to the history of the map probably produced by the surgeon Sampaio’s painter and subsequently appropriated by the magistrate – is the perception that the magistrate and naturalist Joaquim de Amorim e Castro ended up drawing upon the knowledge, studies, and fieldwork of individuals like Sampaio to guarantee a greater volume and repertoire for his natural history “observations.” His familiarity with Sampaio’s work probably supplemented the content of his letters to the queen and other officials, in which he provided news about and wrote “memoirs” on plants of therapeutic use from Portugal’s American colony, as well as the collection and remittance of specimens for the metropole’s scientific establishments. Thus, considering the materiality (and contingencies) and the power relations that surrounded the production of knowledge and what was at stake – positions, royal patronage, the potential publication and circulation of scientific texts and artifacts etc. –, Castro seems to have known how to exploit his training in Coimbra and his familiarity with Vandelli, his greater intimacy with the world of books and the Linnaean system, not to mention the fact that he was better situated and enjoyed higher social status, which would also count more in his favor when it came to legitimizing and lending credence to his scientific output in the context studied here (Schaffer, 2018; Biagioli, 2006).

As for Francisco Antônio de Sampaio, in spite of his steady output of relevant work and first-hand experience with local plants and their uses for the most diverse ailments and his work in spaces such as the hospital and chamber of Cachoeira, his 217 handwritten sheets of natural history about the plant kingdom were, it would seem, of no use or utility to the men of science of the metropole. His “first-hand” knowledge and his ability to recognize “the great errors many authors have written about these same products,” as he wrote in one of his letters (Sampaio, 2008, p.11), gave him local recognition and prestige. Without the necessary formal learning and conditions (access to libraries, correspondents, live herbaria, and pressed plants) to work along the lines of Linnaeus’s botany, which at the time would have been a factor of legitimation and pertinence of scientific knowledge,

all the knowledge he built from his experience did not guarantee him due recognition by the men of science in Lisbon.

Ultimately, the study of individuals such as the surgeon Sampaio and, in contrast, the Coimbra-trained naturalist Castro allow us to inquire about the concrete and specific conditions of scientific production in colonial areas. It is about trying to understand how readings, practices, training, instructions, and models for doing science were adapted to a praxis specific to a local situation, revealing complex processes of production and circulation of knowledge and practices, different interactions between individuals from different strata and parts of society, power relations and hierarchies, and material conditions of production that, far beyond diffusionist conceptions, reveal the dynamic and contingent nature of science and men of science in the context of the Portuguese-Brazilian Enlightenment.

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NOTES

¹ We do not understand knowledge of botany and knowledge of plants to be the same thing. All human cultures and civilizations have developed knowledge of plants. As such, in this article we take “botany” to be a scientific specialty that emerges in Europe as of the sixteenth century and becomes relatively homogeneous as of the eighteenth century.

² A few of the authors with whose work ours most closely interacts include: Dias (2005; published originally in 1968); Domingues (2012); Kury (2004, 2015); Brigola (2003); Pereira and Cruz (2016); Pereira (2017); and Pataca (2006).

³ In this and other citations of texts from non-English languages, a free translation has been provided.

⁴ The few studies that investigate Sampaio’s scientific output in more detail include Cergueira (2018) and Conceição (2016, 2018).

⁵ The Overseas Council archives demonstrate the work of these agents, such as Sampaio himself, who, despite not having a university education, devoted himself to collecting and doing experiments on specimens from the three kingdoms in Portuguese America and writing about these endeavors. A well-known and exemplary case of this kind of work is João Pereira Manso (1750?-1820), who was self-taught, like Sampaio, and undertook a number of studies and activities in the field involving mineralogy and chemistry, while also improving machines for the production of salt, pottery, and *cachaça*, working in the captaincies of Minas Gerais (where he was born), Rio de Janeiro (where he studied at the seminary Nossa Senhora da Lapa), and São Paulo (Filgueiras, 1993).

⁶ Although he often called himself a physician, he was formally a surgeon. He had obtained this license in 1762, which attested to his having “learned and practiced” the art and having passed an examination by unanimous approval (Carta..., s.d.). The fact that he was not university trained and he extrapolated his formal functions as a surgeon (as we shall see) earned him at least two fines from the Protomedicato (Portugal’s medical regulatory agency). We wish to thank Laurinda Abreu for kindly locating and transcribing the surgeon’s license granted to Sampaio.

⁷ Sampaio’s letters to the academy are published in Martins (2008).

⁸ Which does not mean the text and images did not circulate, even if they were not published; indeed, this was common in the context under study.

⁹ We wish to thank Nelson Sanjad for this observation made at a preliminary presentation of this study at the seminar “Plants and history: knowledge, uses, and circulation,” held at Fiocruz in August 2019.

¹⁰ For more on the quest for the legitimization of scientific work at a time when there was no such professional or social category as “scientist” and the production of science was indistinguishable from the social dynamics and power relations prevailing at the time, as in conceptions such as “honor,” “social

visibility/credibility,” privileges, and patronage, see: Biagioli (2006), Shapin (1995), and Schaffer (2018). It is worth noting that a “microscope” could well have been a setup involving a number of magnifying glasses, which were frequently used in studies and taxonomies of flora (Nickelsen, 2006).

¹¹ We believe he may have had an edition earlier than the 1758 tenth edition of *Systema naturae*, for it was in the tenth edition that Linnaeus introduced the category *mammalia*, replacing the term *quadrupedia*, which Sampaio used (Schiebinger, 1993).

¹² For approaches that address similarities between Sampaio’s descriptions and the method proposed by Linnaeus, including their specificities, see also Conceição (2018) and Kury and Nogueira (2018). Particularly with regard to the volume on animals, we agree with Conceição that Sampaio’s discourse and methodology was influenced by Linnaeus, even when he did not find an exact description of the animals in the latter’s work.

¹³ It is plausible that Sampaio would have come into direct contact with the Instructions or learnt of them by word of mouth, since there were individuals in the Cachoeira region who were intimates of Vandelli’s circle, including Castro himself, who studied under the Italian naturalist at Coimbra University and who we know, from letters to the academy, to have had direct contact with Sampaio.

¹⁴ In one of his letters to the academy, Sampaio mentions that he has a painter to produce the prints that accompany the manuscript.

¹⁵ In the case of plants, in one of his letters he said that he drew them “in patterns etched before the very originals in their natural setting” (Sampaio, 2008, p.12). Throughout his treatise on natural history, it is common to read expressions such “in its natural grandeur;” “all in their grandeur and natural state in which God created them;” branch with leaves and flowers faithfully represented” etc.

¹⁶ According to Fernandez e Oliveira (2007), the map Sampaio describes is likely the one in a manuscript by Castro dated 1792, entitled “Memoir of the tobacco species grown in Brazil, with observations on their cultivation, commerce, arts, with a botanical description of the new species, illuminated prints, and a map of the village of Cachoeira.” This map is now part of the archive of New York Public Library.

¹⁷ In fact, similar textual constructions recur often in his *História dos reinos*. For more perceptions in this sense and others, see pages 55, 61, and 67 (volume on plants) and pages 23, 54, and 68 (volume on animals).

¹⁸ We consider Kapil Raj’s (2010) analysis of the negotiations, power relations, circulation of knowledge, and other actions by different colonial agents, including his criticism of a view of scientific production that is exclusively from the center to the periphery, as well as Carlo Ginzburg’s (1998) considerations of social and cognitive realities through the contacts – which included direct or indirect involvement with books and reading – between “high” and “low” culture in modern Europe.

¹⁹ Not to mention an even more radical shift in these encounters, appropriations, and erasures of knowledge and deeds: from spoken words and practices to written words and practices, as Ginzburg (1998) also reminds us.

²⁰ Castro was born in the parish of Santíssimo Sacramento do Pilar, in Recôncavo Baiano.

²¹ Castro was also involved in tobacco production and the acclimatization of new species from other colonies, like Cuba and southern USA.

²² It is also worth noting, for example, that it was the lieutenant Henrique Dias who found a “large stone of copper” and the possible location of the mine to which Castro refers. This sample was later analyzed by Domingos Vandelli, who wrote about it in enthusiastic terms: “to date never has a mass so great been discovered anywhere ... which would serve to enrich the richest museum of Europe, and the Museum of Petersburg” (Ofício..., 11 mar. 1782; Memória..., s.d.).

²³ For more details on the work of Ignácio Ferreira da Câmara, see Pereira (2013).

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