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Tracing pharmaceutical networks in the Portuguese tropics

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João Curvo Semedo (1635–1719), a Portuguese physician with a prosperous sideline as a seller of exotic drugs, was not one to suffer fools gladly. “If this service that I have done for the common good is not seen to merit thanks, it also does not deserve rebuke,” he wrote in the prologue to his popular medical compendium *Polyanthea Medicinal*. “Though I know full well that there exist men of such depraved spirits that they do out of malice what babies do out of innocence, suckling their mother’s milk, yet biting the very breast that feeds them.”¹ Semedo had good reason to be defensive. He was, after all, among the most active disseminators of what he called “the experience of the moderns” (*a experiencia dos modernos*) and of non-European knowledge in a baroque Iberian world that historians have typically portrayed as opposed to medical or scientific novelty. Semedo himself had legitimate bona fides as a licensed physician in the traditional, Galenic mold. A graduate of the University of Coimbra, Semedo’s mental universe turned on the writings of Hippocrates, Celsus, Galen, and other eminent Greeks and Romans, as well as Persian and Arab scholars like Avicenna (Ibn Sīnā). Mentions of Galen, Hippocrates, and Avicenna account for over a quarter of all citations in *Polyanthea Medicinal*, despite the fact that Semedo’s lengthy tome referenced an astonishing range of authorities, some 527 in all.²

However, when we read Semedo’s drug recipes (*receitas*) more closely, we find that he was also an ardent advocate of tropical medicines that would have been utterly unfamiliar to his forebears. These included not only Amerindian remedies like guaiacum, copaiba, and the famous Peruvian bark which had been popularized earlier in the seventeenth century, but also far less well-known cures such as Zambian *mutututu* root, wildebeest hooves from Mozambique (*nhumbo*), and powdered cobra spines from Angola (*zuchi*).³ As these recipes suggest, Portuguese warehouses and medical chests – no less than Portuguese bodies – abounded with what Semedo’s contemporary, the Franco-Portuguese apothecary João Vigier, called *drogas modernas*: “modern drugs” that had no entries in classical texts and no grounding in traditional European practice.⁴ Not coincidentally, these *drogas* played an important role in the medical experimentation of emerging natural philosophical organizations like the Royal Society. Yet key actors involved in this trade – not only Iberian physicians and merchants, but also the African,

Amerindian, and Asian informants they relied upon – became largely invisible in the decades and centuries that succeeded them.⁵

João Curvo Semedo and his *Secretos Curvianos* (“Curvian Secrets”) serve here as an embarkation point for an examination of the networks of the tropical drug trade in the seventeenth and eighteenth centuries.⁶ Works like Semedo’s *Polyanthea Medicinal* connected apothecary shops in Lisbon to the shores of the Maldives and the Moluccas, towns from Bahia and Bengal, and experts in Amboina and Angola. Semedo was thus not wrong when he compared his work to a *roteiro*, or rutter, the collection of portolan charts used by early modern mariners to navigate unfamiliar coastlines.⁷ His profession was equally reliant on long-distance travel, and almost as fraught with danger. Semedo’s information about African, American, and Asian drugs was highly unreliable, depending as it did upon second-hand sources, flawed translations, and knowledge that was all too often gained from behind the point of a sword.⁸ Yet even these misunderstandings and epistemological gaps would prove to be highly significant with the advent of industrialized pharmaceutical manufacture in the nineteenth and early twentieth centuries. By applying a long-standing European culture of medical secrecy to non-European remedies and natural knowledge, figures like Semedo helped initiate the global pharmaceutical trade – even as they simultaneously nurtured a persistent set of anxieties surrounding the commerce in and consumption of “*drogas modernas*” that could not be fully integrated into Western medical practice.

Semedo’s secrets

Despite the wide compass of his interests, the cures that João Curvo Semedo mentioned most frequently in his own works could be found at a place closer to home: Semedo’s front door. His eponymous “*Bezoartico Curviano*,” Semedo wrote, “is for sale at my residence, because I am the Author who invented it.” Evidently the demand for this artificial version of the famed poison-neutralizing bezoar stone was substantial.⁹ Already by the first edition of *Polyanthea* in 1697, Semedo had extended distribution rights to two business associates,

the apothecary at the São Domingos monastery and Antonio Thomas de Almeyda, who lives in front of Burlap Alley [Beco ~~de~~ ^{da} Estopa, a street in Lisbon], for these apothecaries have the true Bezoartico truly made by myself, which they come to buy at my house.¹⁰

Semedo remained coy about the precise composition of this fever- and poison-fighting remedy, for, as he explained, “I can not publish all the ways of preparing my *segredos* ... because in truth I am not obliged to reveal the composition of *segredos* which cost me great effort and which give me credit.”¹¹ By 1706, Semedo was boasting in another pamphlet that his bezoartico had grown popular enough to be “sold throughout the kingdom,” but still refrained from detailing its contents except to state that it “consists of sixteen ingredients” which had “effects that were practically miracles.”¹² However, versions of the recipe seem to have

circulated through correspondence networks. A 1735 Spanish text purporting to make public “the sixteen secrets of Curvo” included what it called “a genuine and true recipe for the Bezoartico of Curvo” that was supposedly communicated from Semedo to the eminent Spanish Paracelsan physician Suárez de Rivera, and from him to the text’s author, José Díez de Medina.¹³ The recipe was highly eclectic, relying on a mixture of *materia medica* from both the East and West Indies, from land and sea, and spanning the animal, vegetable, and mineral realms.¹⁴

The recipe’s mingling of precious stones like white amber with exotica like “sea unicorn” was not as idiosyncratic as it may appear to modern eyes. The compound drugs of the late seventeenth and early eighteenth centuries built upon a long tradition of blending dozens of exotic ingredients to create expensive substances such as the remedies known as mithridatium and theriac (Venetian treacle).¹⁵ Combining gold and coral with animal products like “the talons of a hare” and then relabeling it as a secret preparation would not have been unusual to an apothecary of Semedo’s time – or, indeed, of his great-grandfather’s time. The key difference was the mixing of New World remedies that had only recently become accepted as appropriate for European bodies (like quina) with the traditional exotica of the medieval compound remedies. Even Semedo’s reference to the location of his house – “facing the riverside of the *Junto do Comercio*” – spoke to his close participation in the Indies trade. This address in Lisbon’s docklands ensured that Semedo was as close as possible to the ships of the *Junto*, which maintained exclusive trading rights with Brazil.¹⁶

Another difference lay in Semedo’s approach to branding: whereas the names of medieval remedies often referenced classical antiquity, Semedo coined a new

Table 13.1 Recipe for Bezoartico Curviano according to José Díez de Medina, *Declaracion de los verdaderos diez y siete secretos de Curvo, de la incertidumbre de los publicados por el Doctor Rivera* (Madrid: Antonio Denferzan, 1735).

De Quinaquina muy buena ʒβj	Very good quina: 1 ½ ounces
De jacintos preparados, de margaritas orientales preparadas, de coral rojo preparado, de cuerno de ciervo preparado, y de tierra sellada, anà. ʒvj	Prepared hyacinths, oriental pearls, red coral, deer horn, and medicinal clay, mixed: 6 drachms
De saphiros orientales preparados ʒij	Prepared oriental sapphires, 2 drachms
De esmeraldas orientales preparadas, de succino blanco, y de unicornio marino verdadero, anà. ʒj	Prepared oriental emeralds, white amber, and “true sea unicorn” [narwhal?], mixed: 1 drachm
De huesso de corazon de ciervo, de ojos de cangrejo preparados, de los talons de liebre, y del ojo de los lucio, anà. ʒj	Bone of the heart of a deer, prepared crab eyes, the talons of a hare, and the eyes of the pike, mixed: 1 drachm
De cedoaria, ʒj	White turmeric (<i>Curcuma zedoaria</i>), 1 drachm
De hojas de oro num. xv	Gold foil, 15 leafs
Mezclese todo, y hagase polvo subtilissimo, y con zumo de escordio se formen trociscos, los que despues de bien secos se guarden.	Mix all, and pound into a fine powder, and form into lozenges using <i>escordio</i> juice, then store it after it is fully dry.

word (Bezoartico) and proudly combined it with his own name (Curvo). Just as avowedly “modern” apothecaries like Semedo mingled both temperate and tropical remedies, medicine and pharmacy, and products of land and sea, they also merged medieval tradition with seventeenth-century materials and modes of self-fashioning.¹⁷ Moreover, although he shrouded the details of his cures in mystery, Semedo’s works also abounded in empirical observations grounded in public demonstrations.¹⁸ These included dozens of case studies involving Semedo’s testing of experimental remedies on real patients whom he identified by name, as well as references to animal trials and extensive descriptions of the function of remedies within specific geographic regions, climates, and astrological configurations that Semedo based upon interviews with long-distance travelers whom he deemed trustworthy.¹⁹

Semedo was ideally positioned to perform this balancing act between the traditional rhetorical modes of the early modern European medical establishment and what **J**úlia Ferreira Furtado has called the “tropical empiricism” of the Portuguese colonies.²⁰ His many printed works appear to have won substantial audiences, with the *Polyanthea* running into at least five editions between 1697 and 1741 and appearing in a partial Spanish translation in 1735.²¹ Semedo’s repeated textual references to his sale of drugs from his house in Lisbon’s docklands suggest that he maintained a thriving sideline as an apothecary in addition to his official position as “Medico da Caza Real,” or physician to the household of King Alphonso VI.

Whereas the earliest surviving frontispiece portrait of Semedo identified him simply as a physician, in later portraits Semedo broadcast his worldly success not only with his lavish wig but also via encircling laurel wreaths and a caption that declared the author to be a Royal Physician, a Knight of the Order of Christ and a *familiar* (lay member) of the Inquisition. As Timothy Walker has shown, joining the Inquisition was a common strategy for professional advancement among early modern Portugal’s medical elite.²² In some ways, membership in the Inquisition and in the Order of Christ functioned as a Catholic, Iberian analog to the tenacious guild-based ladder-climbing and legal wrangling of the London physicians studied by Harold Cook.²³

Semedo was also careful to note the intellectual debts he owed to foreign (*estrangeiro*) physicians, particularly those in the medical centers of Bologna, Padua, and Montpellier. Strikingly, however, Semedo’s citations also included abundant references to Protestant proponents of chemical medicine and Cartesian theories. The intellectual network that emerges from an analysis of the citations in *Polyanthea Medicinal* is exceptionally eclectic. Semedo’s citations reveal his indebtedness to English, Dutch, and French physicians of his own generation who were pursuing experiments that explicitly conflicted with the tenets of Galen, Dioscorides, and Hippocrates – not to mention Catholic censors. Indeed, it was only via his status as a *familiar* of the Inquisition that Semedo would have been permitted access to banned authors like Francis Bacon and Descartes, both of whom he cited approvingly.

Surprisingly, the tenth-most-cited authority in Semedo’s work – Jan van Helmont – is conspicuously absent from the “Index of authorities” that occupies



Figure 13.1 The title page of Smedo's *Polyanthea Medicinal* in its third edition (Lisbon, 1716). Engraving by M. Dossier.

Credit: Wellcome Images.

the front matter of *Polyanthea*. It is difficult to imagine that the tenth-most-cited author (out of a total of 527) could have been left off this list by accident. Rather, it seems likely that either Smedo or his publisher thought it wise to omit any mention of van Helmont in the index of the book. Van Helmont was famous throughout Europe as an alchemist and follower of Paracelsus, and perhaps Smedo or his collaborator, the royal printer Miguel Deslandes, feared that listing such a figure would push the book too far into heretical territory. Yet buried in its nearly 1,000 pages are citations not only of censored alchemists, but also of African and South Asian healers. In *Polyanthea*, Smedo negotiated a dangerous balance between outward obeisance to the norms of acceptable medical practice and an eclectic approach to drug preparation that was aggressively cosmopolitan in outlook.

Much of Smedo's success in this role depended on minimizing any explicit references to non-European influences even as he hinted at his secret knowledge of foreign medicaments. He relied upon a local network of apothecaries and printers to sell his books and drugs in Lisbon, but even more on go-betweens in Portugal's tropical colonies. Out of the 61 drugs that Smedo singled out as worthy of attention in his *Memorial de Varios Simples*, fully 52 hailed from

outside Europe, and the majority were from the Portuguese tropical colonies in Brazil and Amazonia, Angola, Mozambique, and Goa.

Semedo claimed that *Polyanthes*'s drug recipes were partially based on interviews with "certain persons who have travelled in the Indies and other regions of the earth," and boasted that he had "discovered various manuscripts which have informed me of the virtues of the aforesaid stones, powders, roots, and fruits."²⁴ Other references in the text to non-European experts like African healers and Indian *pandits* makes it clear that not all of these manuscripts and informants were Portuguese. "The experience of the Moors and Gentiles [i.e., Hindus] of Asia was the teacher which gave us knowledge of the use of such remedies," he wrote. In other words, mapping the origins of Semedo's drugs highlights a disconnect between his citations of European authorities (who dealt almost exclusively with medicines known to Greco-Roman authorities) and the actual remedies he prescribed. Similarly, Semedo was also an advocate for experimental remedies involving chemicals, animal parts, and minerals. The current scholarly emphasis on colonial botany tends to obscure the fact that a substantial proportion of early modern "exotic" remedies relied on materials derived from non-botanical sources.²⁵ A majority (32 out of 61) of Semedo's medicinal "simples" were derived from the hoofs, bones, eyes, and teeth of animals or from mineral sources rather than from plants.

The works of Semedo show how the transplantation of *information* depended upon *material* movements of both human beings (such as African slaves) and of creatures and substances that are all but invisible in most early modern medical and scientific texts.²⁶ This Portuguese trade in both tropical drugs and in human beings highlights how material networks of global exchange shaped Enlightenment thought.²⁷

Drug networks in an age of Portuguese imperial decline

The trade in tropical *drogas* drove the Portuguese Empire's commercial success in the sixteenth century, but it also led to disastrous defeats at the hands of the Dutch in the seventeenth. The remarkable scale of Dutch aggression (which included the establishment of Dutch Brazil in a newly conquered Pernambuco, the capture of Sri Lanka, Luanda, and Malacca, and a lengthy blockade of Goa) was a strategic response to the Portuguese monopoly on Indies drugs and spices that had prevailed in the sixteenth century, capitalizing on a period of Portuguese weakness immediately before and after the dissolution of the Hapsburg "joint monarchy" that had united Portugal and Spain between 1580 and 1640. Leaders of the Dutch trading companies were quick to understand the commercial implications of these events. The *Groot Desseyn* ("Grand Design") formulated in the 1620s by the directors of the newly formed Dutch West India Company hinged on a confluence of imperial, commercial, and ecological ambitions: by seizing Portuguese colonies in Africa, Asia, and the West Indies, Dutch merchants hoped to establish commercial dominance over a range of tropical commodities including brazilwood, nutmeg, and guaiacum bark.²⁸



Figure 13.2 Geographic origins and characteristics of the 61 “simples” (medicinal drugs) described by Semedo in his *Memorial de Varios Simplices*.

Credit: Map by the author.

Given this geopolitical context, it has long been taken for granted that the Portuguese Empire of the seventeenth and eighteenth centuries was a state in decline, and that the intellectual networks it sheltered were as moribund as the empire's armies.²⁹ Yet closer attention to the tropical drug trade casts a different light on the supposed intellectual conservatism that prevailed in Portugal and its empire. It was precisely during this era of imperial political decline that healers, surgeons, and apothecaries in colonial Brazil, Angola, Mozambique, and Goa emerged as alternatives to European physicians. The transatlantic careers of figures like the West African-born healer Domingos **Á** **A**lvares were shaped by a host of factors, from the dynamics of the slave trade to the devastation wrought by newly global pandemics.³⁰ Yet it seems clear that they also benefited from a rising demand both inside and outside Europe for what Vigier called "modern drugs ... from both the Indies and Brazil."³¹ During the same timeframe, local experts in Amazonia, Africa, and South Asia became informants for bioprospectors and natural philosophers working across imperial and linguistic boundaries, like the members of London's Royal Society. These participants in an emerging global drug trade were much more than purveyors of knowledge and materials: they helped constitute the modern notion of drugs as a societal, commercial, and scientific category, bringing colonial debates about purity, adulteration, bodily degeneration, addiction, and non-Christian spirituality into the salons of Europe.³²

Yet what precisely did it mean to debate drugs in the seventeenth and eighteenth centuries? Early modern writers frequently employed the words *drug*, *drogue*, and *droga* to describe the raw materials, or "simples," that apothecaries prepared and combined to create medicines. The term "drug" thus encompassed a vast range of substances, from celery root and syrup of violets to "unicorn" horn, pulverized pearls, and moss scraped from the skulls of executed criminals – not to mention opium, cannabis, and alcohol.³³ The most popular of these – such as cinchona, ipecacuanha, guaiacum, bezoar stones, tea, cacao, tobacco, rhubarb, china root, and opium – were more than *materia medica*.³⁴ They were objects of alchemical experimentation, prized commodities, ornaments of curiosity cabinets, icons of sociability and status, and in some cases, even religious sacraments. Furthermore, as James Sweet has pointed out, an early modern drug could double as a poison depending on context and dosage.³⁵ These overlapping valences make the historical trajectories of drugs difficult to track, but also hugely important for understanding how pharmaceutical knowledge shifted to suit new social and cultural contexts as it passed between early modern Europeans, indigenous Americans, African, and Asians.

Pharmaceutical networks also played an important environmental role. The drug trade was both a biological and a human system, and efforts to transplant drugs and knowledge about them could transform landscapes as well as economies. The regions that Europeans called "the Indies" – largely coterminous with the tropical belt – emerged as especially important sites in the global drug trade.³⁶ This was due not only to the inherent biodiversity of tropical ecosystems, but also because climatic similarities between far-flung points along the equator prompted

new theories and experiments regarding the long-distance transplantation of plants, animals, and peoples.³⁷

Many of the most valuable drugs that came from tropical plants and animals, it was found, could be established in new ecosystems along the equatorial belt.³⁸ For instance, the sugarcane and indigo that Dutch planters nourished in Pernambuco found new homes in the Dutch West Indies and in the sophisticated botanical garden at the Cape Colony, which had been established as a way station for transplantation schemes in the 1650s.³⁹ These transplantations allowed Dutch planters to wage economic war on their Luso-Brazilian rivals long after the demise of Dutch Brazil in 1654.⁴⁰ To control the trade in a medicinal plant, one needed to control not only its *current* growing regions, but also the flow of cuttings, seeds, roots, and knowledge about how to transplant it to *new* regions.⁴¹

Although such transplantations of materials and knowledge about drugs occurred with increasing frequency, they were far from frictionless. One striking example reaches us from the first decade of the seventeenth century, when the Mughal emperor Akbar received a gift of a jeweled pipe and a pouch filled with an unfamiliar herb from a courtier and collector of curiosities named Asad Beg.⁴² “This is tobacco, which is well known in Mecca and Medina,” Akbar was informed. The emperor summoned his apothecary, who could find “no mention of it in his books, but that it was a new invention.” A debate ensued over the safety of the new drug: Asad Beg pointed to china root (which “has been newly discovered”) as an example of a novel drug with proven value, whereas Akbar’s chief physician protested against the unthinking adoption of an untested European custom.⁴³ Although the emperor refrained from taking up the habit after a trial puff or two, Asad Beg claimed that “the custom of smoking spread rapidly” throughout Akbar’s realm from that point onward. Akbar’s son Jahangir attempted to ban the drug in 1617 “in consequence of the disturbance that tobacco brings about in most temperaments and constitutions.”⁴⁴ (Interestingly, Jahangir felt no such qualms about his own heavy use of opium, despite witnessing a close friend die from an overdose of the drug.)⁴⁵

The emperor’s attempt to ban tobacco was unsuccessful. Similar efforts by the Ottoman sultan Murad IV (1633) and the Russian tsar Michael I (1634) also failed.⁴⁶ By around 1630, a Portuguese friar named Sebastian Manrique observed tobacco being cultivated in Bengal for the Southeast Asian market, and Portuguese trade networks had likely carried seeds from Bahia in Brazil to India even earlier, since an English East India Company clerk named William Methwold claimed that tobacco was being grown around Golkonda “a few years” prior to his arrival in the kingdom in 1618.⁴⁷ By the mid seventeenth century, the drug had become widely adopted throughout India. Indeed, tobacco cultivation has become so common in India that even today it is sometimes erroneously claimed that the plant is native to South Asia rather than the New World.⁴⁸

These early attempts at drug regulation highlight the profound societal disruption that the introduction of a novel intoxicant like tobacco could induce – as well as the improvisational nature of the early modern drug trade, which relied far

more on local contingency, hearsay, and unexpected exchanges than on strategic planning of any sort. Within a century, the Portuguese in the East Indies had begun combining Indian-grown tobacco with opium and importing it to China, initiating a vastly profitable trade that would culminate with the First Opium War (1839–1842).⁴⁹ A drug exchange also played an unexpectedly important role in Portugal's foreign policy closer to home. Queen Catherine of Braganza, the daughter of the reigning monarch of Portugal and the bride of Charles II of England, carried a chest of an obscure Chinese herb called *cha* to England as part of her royal dowry. The example set by Catherine and her courtiers helped create a fad for the exotic stimulant among the wine-sodden English aristocracy. Anglophones today know the plant as “tea.”⁵⁰

In some cases, novel drugs traded by the Portuguese reached non-European peoples in advance of Europeans themselves. Tobacco, for instance, appears to have been cultivated in the African interior by the early decades of the sixteenth century, moving along river valleys at the hands first of Portuguese *pombeiros* (hinterlands merchants) and then of native African merchants and cultivators.⁵¹ In a case such as this, an Amerindian substance could become widely adopted without substantial cultural input from the European intermediaries who trafficked in it, creating unexpected cultural and medical hybridizations.

Integrating tropical drugs into the history of science and medicine

How, then, were figures like Semedo able to pay obeisance to classical authorities and Catholic censors, while simultaneously advocating for the widespread adoption of untested tropical drugs? The case for *drogas modernas* typically relied upon two factors: first, that patients consuming a novel drug had seen positive and even “miraculous” results relative to a more traditional remedy, and second, that these highly public proofs of efficacy relied upon the apothecary's privileged access to secret information about the proper method by which the drugs were to be collected, prepared, and applied. A typical example is the case of Senhora Arango and her treatment with African Butua root in Semedo's *Polyanthea Medicinal*:

This root takes the name from the Kingdom of Butua where it grows; they call it the same along the Rivers of Sena among the Gentiles; among the Portuguese it is called Wild Pepper [*Parreyra Brava*] or Butua root ... The powder of the said root, mixed with vinegar in such a way as to make a paste, resolves abscesses when applied on them and relieves any such condition when applied for six to eight days in succession. This I observed many times, principally in the wife of Manoel de Arango, living near the Church of the Annunciation [*Igreja de Annunciada*]. The said woman had a leg swollen to such a state of deformity that all believed it impossible for her to escape death. And when I applied this root in the form of a paste, she was saved within six days without the need for any other remedy.⁵²

The Kingdom of Butua bordered the Zambezi river in present-day ~~Mozambique~~.⁵³ Yet Semedo's second case study of Butua root's miraculous powers reached him via a fellow physician in India:

Doctor Francisco Roballo Freyre, knight of the Order of Santiago and Chief Physician in the Estado da India, certifies that he gave a powder of this root for three days in a row to a woman, who had in her womb [*na região de madre*] a phlegmatic swelling, which he had not been able to cure for some time, and only with the decoction of the Butua root did he resolve the abscess, which broke and released many humours.⁵⁴

Buttressed by these two specific examples, Semedo listed numerous other diseases that the Butua root supposedly cured: everything from “pain of the teeth” (when cooked with poppies), pleurisy, sore throat, and “all the suppressions of urine,” to strokes and tumors.⁵⁵ Here, the traditional forms of medieval and early modern European medical writing remain intact – the close attention to humoural balance, the unlikely profusion of diseases cured by a single substance. Yet this scholarly apparatus has here been repurposed to celebrate the virtues of a sub-Saharan African herb that reached Lisbon via the networks of the Atlantic slave trade, and which was now being used to treat patients simultaneously in Europe and India.

Throughout Semedo's *Memorial*, as well as similar works like João Vigier's list of “the virtues of modern drugs from both Indies and Brazil,” the emphasis is not simply on tropical drugs, but on the *proper use* of tropical drugs.⁵⁶ Only via the proprietary knowledge of a medical authority like Semedo or Vigier – a medical authority who just so happens to be generously sharing his hard-won knowledge with a vernacular reading public – do these remedies gain their true potency. Even a remedy “experimented” and “tested” by “curious men,” might still “miss its target” (as Semedo phrased it) if it failed to be accompanied by intimate first-hand knowledge of dose, diet, climate, and constitution. In short, physicians and apothecaries like Semedo who advocated for the adoption of non-European remedies tended to advocate not for a wholesale adoption of non-European medical practices, but for their own specific *way of integrating* novel cures into an existing epistemological context. Without expert knowledge, even the most potent drugs (like the bezoar stones that Semedo complained were being improperly prescribed by “barber-surgeons, who are the Physicians of the ordinary folk”) would become “infamous for killing patients – and for money ill spent.”⁵⁷

Early modern pharmaceutical networks thus proceeded from a specific form of information asymmetry. While long-distance shipping allowed a *material* movement from places like the banks of the Zambezi and the Amazon to places like Paris and Lisbon, the intellectual contexts surrounding these materials were often lost. Thus we find Semedo prescribing Batua root for headaches when mixed with traditional European remedies like borage or rosewater. The only hint that the drug is in fact an African remedy is his initial remark that “it is named Batua after the Kingdom of Batua from whence it comes.”⁵⁸ Despite the fact that

a significant proportion of Semedo's list of simples came from sub-Saharan Africa and the Neotropics, the theoretical underpinnings for these cures – and many of the other drugs blended together with them – remained grounded in pre-colonial European practices.

Although essentially forgotten today, *Polyanthea Medicinal* remained influential and popular after Semedo's death: we find it being cited by Portuguese authors (as well as the Victorian adventurer Richard Burton) well into the nineteenth century.⁵⁹ In 1760s Lisbon, the long-dead Semedo appears to have remained famous enough to merit extended discussion in a series of pamphlets regarding the role of apothecaries in daily life.⁶⁰ And when an anonymous Portuguese Jesuit sought in 1766 to catalog the “various receipts and particular secrets ... composed and experimented by the best Physicians and most celebrated Apothecaries ... of Portugal India, Macao, and Brazil,” he documented a total of 14 receipts by Curvo Semedo (complete with citations to specific page numbers in *Polyanthea*) as well as two additional “Curvian” receipts that had been adapted by the Jesuit apothecaries in Recife and Macau – thus, perhaps not coincidentally, bringing the total of “segredos” to Semedo's favorite number, 16.⁶¹ Yet it is not the direct influence of Semedo's writings that is most relevant here – it is the submerged pharmaceuticals networks which we glimpse in his works. The information asymmetry evident in the works of apothecaries like Semedo is not, in itself, a new finding: thanks to work by scholars like Londa Schiebinger, Neil Safier, and Susan Scott Parish, we know that it was typical for indigenous knowledge to be reconfigured (and oftentimes erased) as it crossed cultural and geographic boundaries.⁶² The Portuguese context explored in this chapter adds a further dimension to this body of scholarship. It also, I hope, suggests certain new questions that can inform future research.

One of the most prominent lacunae in the history of science and medicine in the Iberian empires – and in the historiography of the Atlantic world in general, I would argue – concerns the epistemological role of African informants. Semedo's list of drugs contains at least 16 references to African medicaments, including several (like the roots that Semedo calls *Nhumbo*, *Minhaminha*, and *Mutututu*) that directly employ Bantu names.⁶³ Nor was Semedo exceptional in this regard. The National Library of Portugal houses a manuscript apparently written in 1731 by a Portuguese cavalry officer stationed in Angola for the previous two decades, one Francisco de Buytrago.⁶⁴ In this unusual text, Buytrago writes at length about the “miraculous effects” of a healing bark which he calls *casca da vida* and which he learned about from “the blacks of this land [of Angola].” Buytrago openly acknowledged his debt to traditional African healing techniques, writing that “there are no people with a greater faculty for creating extraordinary and miraculous cures than the folk of this land,” and boasting that “the secrets of experience that exist in this Kingdom are passed to others in lands outside it only infrequently.”⁶⁵ For Buytrago, the anti-demonic and “alexipharmic” (anti-poison) properties of the bark arose not only from its inherent biological qualities, but from the complex experiential knowledge surrounding its use – knowledge which he claimed to have acquired through discussion with African healers. Meanwhile,

other travelers, like the Portuguese Jesuit and Africa missionary Jeronimo Lobo, offered private communications about African nature to the natural philosophers of London's Royal Society, who used lusophone merchants and missionaries to establish secret contacts and send "inquiries" about non-European natural knowledge to informants in the Iberian colonies.⁶⁶

Yet the very act of integrating African (or Amazonian) pharmaceutical knowledge into European medical practice depended in part upon effacing the contexts in which "modern" drugs originated. A case in point is the calumba root. Calumba root is native to Mozambique and has long been used by medical practitioners in East Africa. But because it was routed through the Portuguese Estado da India, based in Goa, it became known to Europeans as an Indian medicine. The name morphed to Columbo root, and it was associated with the city of Colombo in Sri Lanka. Similarly, Amazonian quina, rebranded as "English water" (*Agua de Inglaterra*), became a popular proprietary medicine in Portugal. The drug's name likely derived from the English doctor Robert Talbor, who famously used quina to treat the malaria of kings Charles II and Louis XIV.⁶⁷ It was not the first, and certainly would not be the last, time that the origins of a controversial drug were intentionally obfuscated to suit the sensibilities of drug-buyers in European urban centers.

Conclusion

Harold Cook has written of the rise of the concept of the "specific" in the late seventeenth and eighteenth centuries as demonstrating a new sense among European medical professionals that human bodies, regardless of sex or geographic origin, could be treated using the same set of cures and the same theoretical understandings of disease.⁶⁸ This belief privileged the universal application of a single remedy (like quina) rather than its careful mixing with other remedies designed to regulate individual constitutions and humors. Simultaneously, as Alix Cooper has noted, many physicians and apothecaries in Europe began to advocate for the rejection of all tropical remedies and a return to home-grown herbal cures that could be found in local cottage gardens and backwoods rather than in fever-ridden tropical ports.⁶⁹ In his 1745 pamphlet *Antithetica, Essay on Mithridatium and Theriac*, for instance, William Heberden attacked the "ostentation and wantonness" of apothecaries who offered up a "heap of drugs," arguing that the ill-considered mixing of so many exotic drugs results in a "medley of discordant simples ... a dissonant crowd collected from many countries, mighty in appearance, but in reality, an ineffective multitude that only hinder one another."⁷⁰

Those who advocated for tropical drugs confronted controversy at every turn. The Republic of Letters that linked Iberian, British, Dutch, and French physicians encouraged the spread of new knowledge about tropical phenomena, but also reinforced differences in the ways that this knowledge was presented, framed, and used. Semedo's drug recipes were highly eclectic and cosmopolitan, but it is worth noting that most of the substances he advocated were not, it would

seem, widely adopted by European consumers. For instance, comparing the drugs prescribed by Semedo to the actual records of drug imports studied by Patrick Wallis reveals that very few of Semedo's remedies became popular in the English medical marketplace.⁷¹ Yet it was entirely possible for a colonial drug that found few adherents in Europe to win new ones in a different colonial setting, after it had been passed through metropolitan networks. Júnia Ferreira Furtado writes of a "boomerang effect" in the history of early modern science and medicine, wherein the "practical knowledge" of healing plants and herbs native to the Americas and Indies became restructured by elite medical authors in Portugal, whose works were then shipped out to the colonies to serve as guidebooks and references.⁷² This boomerang effect was at work not only on an epistemological level, but on a material one as well. Strikingly, seventeenth- and eighteenth-century Brazilians appear to have imported tropical medicinal drugs like cinchona from Peru via Lisbon rather than directly across Amazonia – despite the fact that cinchona's native range actually crossed over into Portuguese America.⁷³

It is also evident that even if Portuguese-traded drugs failed to win mass popularity in regions like Britain or the Low Countries, pharmaceutical knowledge from the Portuguese Empire played a key role in shaping European understandings of tropical nature. In his *Museum Regalis Societatis* of 1681, Royal Society member Nathaniel Grew attached an appendix to the main body of his text solely in order to describe a set of items associated with a group he called "the Portugal Negros." All of these items appear to have been *materia medica*: "Sagu"; "the Mallaca gum"; Poco Sempie, "a Golden Moss ... accounted a great Cordial"; Rizagon, a "root brought from Bengala, of good use," and others.⁷⁴ The Royal Society also sent letters of inquiry to Jesuits with experience in Brazil and Portuguese Africa in this period, like the inquiries for Brazil sent by Henry Oldenburg to an anonymous Jesuit in Bahia, Brazil which ask "whether the native Brazilians are excellent botanists" and inquire specifically about the medicinal uses of a number of new world drugs like tobacco, guaiacum bark, copaiba balsam, and ipecacuanha.

Why did the Portuguese fail to profit from their early leads in pharmacological knowledge? The Portuguese Empire was, in truth, little more a thin scrim of underpaid and understaffed fortresses overlaid on a vast expanse of tropical ecosystems, which remained almost completely independent from royal control in Lisbon. In such a situation, information did not equal power. Thus, while Portuguese physicians, apothecaries, and traders like Semedo were central to the *networks* of the global drug trade in the sixteenth and seventeenth centuries, it fell to the British, the Dutch, and the French to realize their ambitions. For instance, letters sent by the Portuguese ambassador to Paris, Duarte Ribeiro de Macedo, and the influential Jesuit Antonio de Vieira point to a fairly well-established plan to secretly smuggle the most prized plants of the Dutch East Indies spice monopoly – cinnamon, mace, nutmeg, and ginger – to Brazil.⁷⁵ At the same time, Jesuits in Brazil were experimenting with cacao plantations both there and on the island of Sao Tome off the coast of Angola. But the full-fledged transplantation of tropical plants like these became economically viable only in the nineteenth-century British and French empires.

As Gabriel Paquette has pointed out, Portuguese intellectual networks “represented a fusion of two worlds.”⁷⁶ In the European context, Portugal was indeed “a minor player on the periphery,” with a relatively small population, a minuscule industrial base, and a conservative intellectual culture centered on the Inquisition and the University of Coimbra. Yet if we restrict our analysis to Europe alone, we miss a far richer picture, one in which Lisbon and Rio de Janeiro are the twin capitals of a cosmopolitan collection of tropical territories and spheres of influence. It was largely in this tropical zone that something resembling a “modern” trade in medicinal pharmaceuticals and recreational drugs emerged. Although Portugal had become a marginal player in European politics by the eighteenth century, individuals in a wider Portuguese tropical world played pivotal roles in shaping how consumers, merchants, and natural philosophers thought about novel drugs.

This influence, however, was not one directed from centers of power in Lisbon, and it rarely worked to further Portuguese imperial interests. The figures who shaped the emergence of a global trade in tropical drugs, from Semedo in his Lisbon study to *sertanejos* (prospectors) in the backlands of the Amazon, did so for their own reasons: personal enrichment, social capital, professional advancement, or the attainment of spiritual power. Not to mention the most basic of human needs, the pursuit of health and the desire to escape imminent death from poison or disease. The importance of these pharmaceutical networks is belied by their improvisational and disaggregated nature – and, consequently, by the difficulty of tracing them through time and space.

The improvised quality of pharmaceutical networks is in many ways still with us. Contemporary lexical and legal distinctions between legal and illegal drugs give an illusion of permanence and legitimacy. In reality, the line between what is a legal pharmaceutical and what is an illegal drug is redrawn anew with each passing year. And, although the way societies draw this line can reflect biological realities, it also reflects a historical inheritance of cultural practices, folk beliefs, and economic forces that have accrued around drugs in the past five centuries. In early modern medical texts, opium, cannabis, and coca leaves occupied the same category (“Indies drugs”) as substances like coral, musk, and ambergris. In the twenty-first century, our conceptual boundaries continue to shift as cannabis becomes legal in certain parts of the United States, and “gray market” pharmaceuticals produced in Chinese labs for sale online cause societal upheavals like the wave of press attention devoted to so-called “bath salts” (typically the stimulants MDPV and mephedrone) in 2012–2013.⁷⁷ Psychoactivity and the biological action of drugs on mind and body played a role in shaping how this *mélange* of early modern exotica became scientifically cataloged, lexically divided, and eventually codified in law. But the networks and relationships that carried these substances around the globe did too. Drugs that were more readily counterfeited, easily mislabeled, or which originated in the theologically suspect realm of non-European spiritual practice became subject to increased scrutiny. They still are.

Notes

- 1 João Curvo Semedo, *Memorial de Varios Simples* (Lisbon, n.d. [1716?]), 1. This 34-page octavo pamphlet appears to have been printed Lisbon in at least two editions between 1704 and 1716 and to have been frequently bound with later editions of Semedo's longer work, the first edition of which was João Curvo Semedo, *Polyanthea Medicinal. Noticias Galenicas e Chymicas* (Lisbon: Miguel Deslandes, 1697). All copies of the third (1716) and fourth (1727) printings of *Polyanthea* that I have been able to consult contain the pamphlet as a tipped-in addition.
- 2 João Curvo Semedo, *Polyanthea Medicinal. Noticias Galenicas e Chymicas* (Lisbon: Antonio Pedrozo Galram, 1727). All citations of *Polyanthea* that follow are of the 1727 printed edition. In this edition, Semedo cited Galen 254 times, Hippocrates 190 times, and Avicenna 84 times. The total number of marginal citations in the 1727 edition of *Polyanthea* is 2,054 by my count, although I do not claim complete accuracy. See note 21 below for more information on *Polyanthea's* print history.
- 3 On the growing range of mutututu (*Apodytes dimidiata*), see John Eric Burrows and Christopher K. Willis, *Plants of the Nyika Plateau: An Account of the Vegetation of the Nyika National Parks of Malawi and Zambia* (Pretoria: Southern African Botanical Diversity Network (SABONET), 2005), 183.
- 4 João Vigier, "Tratado das virtudes e descrições de diversas plantas e partes de animais do Brasil e das mais partes da América ou Índia Ocidental," a pamphlet bound with Vigier's *Pharmacopea Ulyssiponense, Galenica e Chymica* (Lisbon: Pascoal de Sylva, 1716), 391–402.
- 5 One notable exception is the work of Timothy Walker, especially his "Acquisition and Circulation of Medical Knowledge within the Early Modern Portuguese Colonial Empire," in *Science in the Spanish and Portuguese Empires, 1500–1800*, ed. Daniela Bleichmar and Paula de Vos (Stanford, CA: Stanford University Press, 2009). Also notable is the late A. J. R. Russell-Wood's pioneering chapter on Portuguese biological and scientific networks in his *A World on the Move: The Portuguese in Africa, Asia and America, 1415–1808* (Baltimore, MD: Johns Hopkins University Press, 1992), ch. 5.
- 6 Although Semedo appears to have been quite well known in his own lifetime and in the decades after his death, he has not attracted a substantial amount of scholarly attention, excepting José Pedro Sousa Dias, "Terapêutica química y polifarmacia en Portugal: La contribución de João Curvo Semedo (1635–1719)," in *Construyendo las Ciencias Químicas y Biológicas*, ed. P. A. Pastrana (Mexico City: Universidad Autónoma Metropolitana, 1998), 67–88. This may be changing, however, with the recent work of Tania Souza Lourenço, "O Médico Entre a Tradição e a Inovação: João Curvo Semedo," Master's thesis, Universidade Federal Fluminense, 2016; and Hugh Glenn Cagle, *Assembling the Tropics: Science and Medicine in Portugal's Empire, 1450–1700* (forthcoming, Cambridge University Press, 2018). On the legacy of Semedo's cures in colonial Brazil, see Danielle Sanches de Almeida, "Entre lojas e boticas: O comércio de remédios entre o Rio de Janeiro e Minas Gerais (1750–1808)," Master's thesis, University of São Paulo, 2008.
- 7 Semedo, *Memorial*, 2. On seventeenth-century Iberian *roteiros*, see Brian Jones, "Making the Ocean: Global Space, Sailor Practice, and Bureaucratic Archives in the Sixteenth-Century Spanish Maritime Empire," PhD dissertation, University of Texas at Austin, 2014.
- 8 Antonio Barrera-Osorio's *Experiencing Nature: The Spanish American Empire and the Early Scientific Revolution* (Austin, TX: University of Texas Press, 2006), and Neil

Saifer's *Measuring the New World: Enlightenment Science and South America* (Chicago, IL: University of Chicago Press, 2008) similarly explore the asymmetrical relationship between Europeans seeking new knowledge and their colonial subjects. What makes the history of the tropical drug trade different is not only that it shifts scholarly emphasis from astronomy, cosmography, and mensuration to the life sciences and medicine, but that it connects not only indigenous informants and European natural philosophers, but also the consumers around the world who purchased and consumed experimental remedies.

- 9 On bezoars and their "oriental" and "occidental" variants, see Marcia Stephenson, "From Marvelous Antidote to the Poison of Idolatry: The Transatlantic Role of Andean Bezoar Stones during the Late Sixteenth and Early Seventeenth Centuries," *Hispanic American Historical Review* 90: 1 (2010).
- 10 Semedo, *Polyanthea* (Lisbon, 1696), 239.
- 11 *Ibid.*, 756.
- 12 João Curvo Semedo, "Manifesto que o Doutor Joam Curvo Semmedo, Medico, morado em Lisboa, faz aos amantes de saude, & attentos as suas consciencias," a pamphlet apparently printed in Lisbon in 1706 and later bound with the 1718 edition of Semedo's *Observationes Aegritudinum feré incurabiliū* (Lisbon: Pascoal da Sylva, 1718).
- 13 José Díez de Medina, *Declaracion de los verdaderos diez y siete secretos de Curvo, de la incertidumbre de los publicados por el Doctor Rivera* (Madrid: Antonio Denferzan, 1735), 32. On Rivera, see Allen G. Debus, *Chemistry and Medical Debate: Van Helmont to Boerhaave* (Canton, MA: Science History Publications, 2001), 173–174.
- 14 Curvo claimed to possess 16 distinct secret recipes, while also noting that his bezoartico recipe consisted of 16 individual ingredients or "simples." The version printed in Medina's *Declaracion* also contains 16 ingredients (see Table 1).
- 15 On theriac and its history, see J. P. Griffin, "Venetian Treacle and the Foundation of Medicines Regulation," *British Journal of Clinical Pharmacology* 58, no. 3 (September 2004): 317–325; and Giuseppe Olmi, "Farmacopea antica e medicina moderna: la disputa sulla Teriaca nel Cinquecento bolognese," *Physis* 19 (1977). Although the original formula for mithridatium promulgated by Galen contained "only" 41 ingredients, by the fourteenth and fifteenth centuries, some apothecaries were blending literally hundreds of different substances into panaceas sold under the names of mithridate, mithridatium, or theriacum.
- 16 Semedo, "Manifesto," 1 ("Morador a S. Paulo defronte da Ribeira da Junta do Commercio"). For more on the Junto (known formally as the Junta da Companhia Geral do Commercio da Estado do Brazil), see Esteves Pereira, *Portugal: Dicionario Historico, Biographico, Bibliographico* (Lisbon, 1907), vol. 3, 1075.
- 17 Stephen Greenblatt, *Renaissance Self-Fashioning: From More to Shakespeare* (Chicago, IL: University of Chicago Press, 1980); Hannah Chappelle Wojciehowski, *Group Identity in the Renaissance World* (Oxford: Oxford University Press, 2011).
- 18 Portuguese drug manuals can be remarkably obscure from a literary standpoint. One of Semedo's peers, the Franco-Portuguese apothecary João Vigier, quite unhelpfully described his métier as the study of "an infinite syncategorematical number of diverse entities." Vigier, *Pharmacopea Ulyssiponense* (1727), "Prologo," n.p.
- 19 See, for instance, Semedo's references to experiments involving horses and the "transplantation" of diseases in *Polyanthea*, 78.
- 20 Junia Ferreira Furtado, "Tropical Empiricism: Making Medical Knowledge in Colonial Brazil," in *Science and Empire in the Atlantic World*, ed. James Delbourgo and Nicholas Dew (New York: Routledge, 2008), 127–151.

- 21 The first edition of the *Polyanthea Medicinal* was issued by the well-known Lisbon printer Miguel Deslandes in 1697, and a second in 1704 by Antonio Pedroso Galram. A third “augmented” edition appeared in 1716, and a fourth in 1727, both printed by Galram. The 1704 edition was dedicated to the future Pope Innocent XIII, who was at that time resident in Lisbon as the papal nuncio to the king of Portugal. The other imprints are dedicated to Luis de Sousa, the archbishop of Lisbon and Portuguese Councillor of State, although by the third this has become a posthumous dedication (he died in 1701). In the first edition, Semedo is described simply as a “physician,” whereas by the second he is “physician to the royal family,” and by the fourth edition he is himself deceased, the reprint being seen into print by his son, the Rev. Ignacio Curvo Semmedo. Some (but not all) of the copies I have consulted also include a separately printed folio page of “Advertencias” to the reader that complain of quacks “in Paris and in other lands who know some singular remedy and affix various papers in public roads,” but which then proceeds to list Semedo’s own remedies “which I prepare at my house.” The same notice (“Advertencias Dignas de Serem Sabidas”) was also bound with Semedo’s Latin treatise *Observationes Aegritudinum*.
- 22 Timothy Walker, *Doctors, Folk Medicine and the Inquisition: The Repression of Magical Healing in Portugal during the Enlightenment* (London: Brill, 2005).
- 23 Harold Cook, *The Decline of the Old Medical Regime in Stuart London* (Ithaca, NY: Cornell University Press, 1986).
- 24 Semedo, *Memorial*, 1–2.
- 25 Londa Schiebinger and Claudia Swan, eds., *Colonial Botany: Science, Commerce, and Politics in the Early Modern World* (Philadelphia, PA: University of Pennsylvania Press, 2008).
- 26 On the “transplantation” of domesticated animals, see Benjamin Breen, “‘The Elks Are Our Horses’: Animals and Domestication in the New France Borderlands,” *The Journal of Early American History* 3 (December 2013): 188–205.
- 27 On natural knowledge across cultures, see Harold Cook, *Matters of Exchange: Commerce, Medicine and Science in the Dutch Golden Age* (New Haven, CT: Yale University Press, 2007); Londa Schiebinger, *Plants and Empire: Colonial Bioprospecting in the Atlantic World* (Cambridge, MA: Harvard University Press, 2004); Simon Schaffer, Lissa Roberts, Kapil Raj, and James Delbourgo, eds., *The Brokered World: Go-Betweens and Global Intelligence, 1770–1820* (Sagamore Beach, MA: Science History Publications, 2009).
- 28 On Dutch ambitions in the West Indies, see Benjamin Schmidt, “The Dutch Atlantic: From Provincialism to Globalism,” in *Atlantic History: A Critical Appraisal*, ed. Jack P. Greene (Oxford: Oxford University Press, 2008). For the ecological and commercial ambitions of the Dutch mercantile companies in the seventeenth-century, see Siegfried Huigen, Jan L. De Jong, and Elmer Kolfin, eds., *The Dutch Trading Companies as Knowledge Networks* (Brill, 2010); and Harold Cook, *Matters of Exchange*.
- 29 Charles Boxer described eighteenth-century Portugal as “more priest ridden than any other country in the world with the possible exception of Tibet,” while Charles Withers writes of a Portuguese Enlightenment “characterized less by its nationals working without and more by foreign intellectuals acting within.” See Charles W. J. Withers, *Placing the Enlightenment: Thinking Geographically about the Age of Reason* (Chicago, IL: University of Chicago Press, 2007), 36 and Charles Boxer, *The Portuguese Seaborne Empire, 1415–1825* (New York: Alfred A. Knopf, 1969), 189. Lusophone historians of science and medicine have similarly portrayed the

- late-seventeenth- and eighteenth-century Portuguese world as spaces that the “new learning” flowed to rather than *from*. See, for instance, Joaquim de Carvalho, *Jacob de Castro Sarmiento et l'introduction des conceptions de Newton em Portugal* (Lisbon, 1935); Ana Simões *et al.*, “The Scientific Revolution in Eighteenth-Century Portugal: The Role of the *Estrangeirados*,” *Social Studies of Science* 30, no. 4 (August 2000): 591–619; and Rómulo de Carvalho, *Portugal nas Philosophical Transactions no séculos XVII e XVIII* (Coimbra: Tipografia Atlântida, 1956). In the Brazilian context, see Nancy Leys Stepan, *Beginnings of Brazilian Science: Oswaldo Cruz, Medical Research and Policy, 1890–1920* (New York: Science History Publications, 1976); and Simone Petraglia Kropf and Gilberto Hochman, “From the Beginnings: Debates on the History of Science in Brazil,” *Hispanic American Historical Review* 91, no. 3 (2011): 391–408.
- 30 James Sweet, *Domingos Álvares, African Healing, and the Intellectual History of the Atlantic World* (Chapel Hill, NC: University of North Carolina Press, 2012).
- 31 Vigier, “Tratado das virtudes e descrições de diversas plantas e partes de animais do Brasil e das mais partes da América ou Índia Ocidental,” a pamphlet bound with Vigier’s *Pharmacopea Ulyssiponense* (1716), 391–402. For quantitative evidence of the rising demand for “exotic” drugs in the seventeenth century, see Patrick Wallis, “Exotic Drugs and English Medicine: England’s Drug Trade, c. 1550–c. 1800,” *Social History of Medicine* 25, no. 1 (2012).
- 32 On the formation of drugs as a social and intellectual category, see David Courtwright, *Forces of Habit: Drugs and the Making of the Modern World* (Cambridge, MA: Harvard University Press, 2008), ch. 1, and Benjamin Breen, *The Age of Intoxication: Origins of the Global Drug Trade* (Philadelphia, PA: University of Pennsylvania Press, forthcoming 2019). Timothy Walker’s “The Medicines Trade in the Portuguese Atlantic World: Dissemination of Plant Remedies and Healing Knowledge from Brazil, c. 1580–1830,” in *Mobilising Medicine: Trade & Healing in the Early Modern Atlantic World*, a special issue of *The Social History of Medicine* 26, no. 3 (2013), offers an excellent overview of the drug trade in an early modern Portuguese context.
- 33 These examples are taken from John Jacob Berlu’s *The Treasury of Drugs Unlock’d* (London: John Harris, 1690). Despite the enormous range of items described as drugs in early modern usage, the underlying meaning of the word was tied up with the idea of medical utility: as Rafael Bluteau put it in his *Vocabulario Portuguez e Latino* (Coimbra: Real College das Artas da Companhia de Jesu, 1713), vol. 3, 207, a *droga* was “any ingredient that enters into the composition of a medicament, or other similar thing.” The terms “simple” and “drug” were often used interchangeably in seventeenth- and eighteenth-century accounts; for instance, in the first edition (1755) of his *Dictionary of the English Language* Johnson defined “drug” as “an ingredient used in physick; a medicinal simple,” while he defined “simple” as “A single ingredient in a medicine: a drug.” Likewise, one of Bluteau’s definitions for the early modern Portuguese word *simplez* was “to mix one drug with another” [*misturar hua droga cõ outra*] (Bluteau, *Vocabulario*, vol. 7, 650).
- 34 This is a subjective list of the most popular early modern drugs, informed both by my own database of drugs mentioned in early modern medical texts and the quantitative work of the economic historian Patrick Wallis, particularly Wallis’s table of drugs imported to early modern London ranked by value in his “Exotic Drugs and English Medicine,” 38.
- 35 Just as Paracelsus wrote that “Poison is in everything, and no thing is without poison” (all medicines are poisonous depending on dosage), Sweet describes a West African epistemology of healing in which “Medicines and poisons are really one and the

- same." For instance, the same Fon word for powder (*atin*) can be translated as both "medicine" and as "poison." See Sweet, *Domingos Alvares*, 124; and Paracelsus, *Four Treatises*, trans. and ed. Henry E. Sigerist (Baltimore, MD: Johns Hopkins University Press, 1996), 22.
- 36 My thinking here has been influenced by conversations with Ashley Cohen about the notion of a "global Indies" and the nebulous boundaries of the Indies in the eighteenth-century British (and, I would argue, the Portuguese) imperial imagination. Ashley L. Cohen, "The Global Indies: Reading the Imaginative Geography of British Empire, 1763–1871," PhD dissertation, University of Pennsylvania, 2013.
- 37 Alfred Crosby, *Ecological Imperialism: The Biological Expansion of Europe, 900–1900*, 3rd ed. (Cambridge: Cambridge University Press, 1987); Richard Grove, *Green Imperialism: Colonial Expansion, Tropical Island Edens and the Origins of Environmentalism, 1600–1860* (Cambridge: Cambridge University Press, 1995); Lucille Brockway, *Science and Colonial Expansion: The Role of the British Royal Botanic Gardens* (New Haven, CT: Yale University Press, 2002); Richard Drayton, *Nature's Government: Science, Imperial Britain, and the "Improvement" of the World* (New Haven, CT: Yale University Press, 2000).
- 38 On "pan-tropical networks of circulation" and transplantation, see Paul S. Sutter, "The Tropics: A Brief History of an Environmental Imaginary," in *The Oxford Handbook of Environmental History*, ed. Andrew C. Isenberg (Oxford: Oxford University Press, 2014). "People from outside the region constructed the tropics in countless acts of consumption" that obscured the labor which produced tropical commodities, Sutter writes, encouraging the belief that "tropical commodities were the products of a fecund nature and could be had with little or no labor" (*ibid.*, 185).
- 39 Alette Fleischer, "Exchanging Knowledge and Nature at the Cape of Good Hope, circa 1652–1700," in Huigen *et al.*, eds., *Dutch Trading Companies as Knowledge Networks*.
- 40 As Stuart Schwartz documents, competition from new sugar plantations in the Dutch, French, and British West Indies fragmented the global sugar market and caused a period of economic instability in mid-seventeenth-century Brazil; Stuart Schwartz, *Sugar Plantations in the Formation of Brazilian Society: Bahia, 1550–1835* (Cambridge: Cambridge University Press, 1986).
- 41 Christopher Parsons and Kathleen S. Murphy, "Ecosystems under Sail: Specimen Transport in the Eighteenth-Century French and British Atlantics," *Early American Studies* 10, no. 3 (Fall 2012): 503–529.
- 42 Asad Beg of Kazwin, "Wikaya-i Asad Beg" (1605), in *The History of India, as Told by Its Own Historians*, trans. and ed. Sir Henry Miers Elliot (London: Trübner and Company, 1875), 165–166.
- 43 *Ibid.*, 166. On debates over china root, see Anna Winterbottom, "Of the China Root: A Case Study of the Early Modern Circulation of *Materia Medica*," *Social History of Medicine* 28, no. 1 (2015): 22–44.
- 44 Jahangir, *The Jahangirnama: Memoirs of Jahangir, Emperor of India*, trans. Wheeler Thackston (Oxford: Oxford University Press, 1999), 217.
- 45 Annemarie Schimmel, *The Empire of the Great Mughals* (London: Reaktion, 2004), 195.
- 46 Matthew P. Romaniello, "Muscovy's Extraordinary Ban on Tobacco," in *Tobacco in Russian History and Culture: the Seventeenth Century to the Present*, ed. Matthew Romaniello (Abingdon: Routledge, 2009), 12–15.
- 47 W. H. Moreland, ed., *Relations of Golconda in the Early Seventeenth Century* (London: Hakluyt Society, 1931), 36; C. Eckford Luard, trans. and ed., *Travels of Fray*

- Sebastian Manrique, 1629–43* (London: Hakluyt Society, 1927), vol. 1, 380. B. G. Gokhale attributes the initial introduction of tobacco to Portuguese merchants in “Tobacco in Seventeenth-Century India,” *Agricultural History* 48, no. 4 (October 1974): 484–492, although it is impossible to know with any certainty.
- 48 See, for instance, the claim that tobacco smoking is attested in India by the seventh century CE in Kalayya Krishnamurthy, *Pioneers in Scientific Discoveries* (New Delhi: Mittal Publications, 2002), 52.
- 49 Carol Benedict, *Golden-Silk Smoke: A History of Tobacco in China, 1550–2010* (Berkeley, CA: University of California Press, 2011).
- 50 Benjamin Breen, “Empires on Drugs: The Early Modern Drug Trade and the Anglo-Portuguese Alliance,” in *Entangled Empires: The Anglo-Iberian Atlantic, 1500–1830*, ed. Jorge Cañizares-Esguerra (Philadelphia, PA: University of Pennsylvania Press, 2017).
- 51 On *pombeiros* in the African interior, see Mariana Candido, *An African Slaving Port in the Atlantic World: Benguela and Its Hinterland* (Cambridge: Cambridge University Press, 2013), ch. 3.
- 52 Semedo, *Polyanthea*, 15.
- 53 See Francisco de Sousa, *Oriente Conquistado a Jesu Christo Pelos Padres de Companhia de Jesus* (Lisbon, 1710), 835, which describes the Reyno da Butua as lying alongside the Zambeze and being “much known for its medicinal root.”
- 54 Semedo, *Polyanthea*, 16. Francisco Roballo Freyre was named *fisico-mor* (Chief Physician) of India in 1646 and returned to Portugal to live in Coimbra, where he received his medical degree. We can assume that Semedo spoke with him about Indian medicines around this time. He is also mentioned in Semedo’s entry for Pedra de Cobra de Dio (Cobra Stone of Dio): the unfortunate doctor’s child, according to Semdeo, was killed by “a beast of such venomous quality, that in less than an hour the arm had been deformed” and it was necessary to amputate (*Memorial*, 9).
- 55 Semedo, *Polyanthea*, 15–16.
- 56 Vigier, *Pharmacopea Ulyssiponense* (1716), “Prologo.”
- 57 Semedo, *Memorial*, 2.
- 58 Semedo, *Polyanthea*, 15.
- 59 Richard F. Burton, *Two Trips to Gorilla Land and the Cataracts of the Congo* (London, 1876), vol. 2, 329.
- 60 Joaquim de Santa Rita, *Academia dos humildes, e ignorantes* (Lisbon, 1770), a compilation of writings from the 1750s and 1760s. Pedro F. Catarino Luís, “A Academia dos Humildes e Ignorantes (1758–1770): as letras e as luzes para o homem comum,” Master’s thesis, University of Coimbra, 2009, discusses the historical context for these writings.
- 61 Archivum Romanum Societatis Iesu, Rome, Opp. Nn. 17, “Collecção de varias receitas” (Rome, 1764).
- 62 Schiebinger, *Plants and Empire*; Susan Scott Parish, *American Curiosity: Cultures of Natural History in the Colonial British Atlantic World* (Chapel Hill, NC: University of North Carolina Press, 2006).
- 63 Semedo, *Memorial*, 29–30. “[The Angolans] call it *Minhaminha*, because in the language of Angola ‘Minhaminha’ means ‘swallows’ for it swallows up the virtues of the other medicines.”
- 64 Biblioteca Nacional de Portugal, FR. 437 (microfilm), Francisco de Buytrago, “Arvore da Vida e Thesouro descuberto” (Lisbon, 1731).
- 65 *Ibid.*, fol. 5r.

- 66 Royal Society Archives, *Journal Book of the Royal Society* 3 (April 25, 1667): 70. For a fuller discussion, see Breen, "Empires on Drugs."
- 67 Robert Tabor, *Πυρετολογία, a Rational Account of the Cause and Cure of Agues; Whereunto Is Added a Short Account of the Cause and Cure of Feavers* (London, 1672). Mendes claimed to have carried the remedy to England in 1661, as the personal physician of Catherine of Braganza. In 1936 a scholar named Augusto d'Esaguy noted that the drug "can be found in all Pharmacopoeiae published between the years 1681 and 1821" and speculated that Agua de Inglaterra was "the most widely prescribed drug of its time." "Agua de Inglaterra," *Bulletin of the Institute of the History of Medicine* 4 (1936): 404–408. However, beyond mentions in the work of the historian of pharmacy, Jose Pedro Sousa Dias, the drug has attracted scant scholarly attention.
- 68 Harold J. Cook, "Markets and Cultures: Medical Specifics and the Reconfiguration of the Body in Early Modern Europe," *Transactions of the Royal Historical Society* (6th series) 21 (2011): 123–145.
- 69 Alix Cooper, *Inventing the Indigenous: Local Knowledge and Natural History in Early Modern Europe* (Cambridge: Cambridge University Press, 2007).
- 70 William Heberden, *Antithetica, Essay on Mithridatium and Theriac* (London, 1745).
- 71 Wallis, "Exotic Drugs and English Medicine," table 1. Unfortunately, the 1755 Lisbon earthquake destroyed many of the parallel commercial records in Lisbon, so no direct correlate to Wallis's economic work on the early modern drug trade is possible for Portugal.
- 72 Júlia Ferreira Furtado, "Barbeiros, cirurgiões e médicos na Minas colonial," *Revista do Arquivo Público Mineiro* (2005): 92.
- 73 This claim is based on an apothecary's workbook that survives in the Portuguese national archives, listing the drugs sent from the apothecary Manuel Ferreira de Castro to the Brazilian surgeon Antonio de Lima Gomes in 1738: Arquivo Nacional da Torre do Tombo (Lisbon, Portugal), Livros dos Feitos Findos no. 85, "Livro de Carregações de Productos de Botica de Manuel Ferreira de Castro."
- 74 Nathaniel Grew, *Musaeum Regalis Societatis* (London, 1681), 385. Grew records that these were donated by Dr. Christopher Merrett and Sir Robert Southwell.
- 75 Antonio Vieira, *Cartas do Padre Antonio Vieyra da Companhia de Jesus a Duarte Ribeiro de Macedo* (Lisbon: Eugenio Augusto, 1827), 211–212.
- 76 Gabriel Paquette, "Political Economy, Local Knowledge, and the Reform of the Portuguese Empire, c. 1750–1810," in *L'économie politique et la sphère publique dans le débat des Lumières*, ed. Jesús Astigarraga and Javier Usoz (Madrid: Casa de Velázquez, 2013), 245–258.
- 77 Jane M. Prosser and Lewis S. Nelson, "The Toxicology of Bath Salts: A Review of Synthetic Cathinones," *Journal of Medical Toxicology* 8, no. 1 (2012): 33–42.

