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a comparative study of *Historia Naturalis Brasiliae*
(1648) and *Hortus Malabaricus* (1678-1693)**

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1 Locating Knowledge in Early Modern Brazil and India

A Comparative Study of *Historia Naturalis Brasiliae* (1648) and *Hortus Malabaricus* (1678–1693)¹

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Introduction

The emergence of a print culture in early modern Europe, focused on the study of nature, was deeply linked to information gathering and knowledge production in numerous parts of the world. Historicizing the discipline of knowledge production and history of science from the perspective of numerous cultures is indispensable. Taking up two examples of tomes that were published in the seventeenth-century Low Countries, in this chapter we aim to compare and connect the processes of early modern knowledge production from a post-colonial perspective. The *Historia Naturalis Brasiliae*, published in 1648 (henceforth HNB) and based on colonial Latin America (Brazil), and the *Hortus Malabaricus*, published between 1678 and 1693 (henceforth HM) and based on South Asia (Malabar, India), serve our purpose of studying historical processes of knowing the natural world, gathering information about it in an intercultural context, and subsequently publishing natural history treatises.

While several scholars continue to embrace the idea of “the rise of Europe,” others called for a review of this subject that led to a new set of history writing from revised non-Eurocentric perspectives.² With regard to the production of knowledge in the early modern period, it has been argued for the need of an expanded view on the making of modern science in intercultural contexts.³ The globalization of knowledge in the “Old” and “New” World led to classifying, controlling, and selling it as “European” since early modern times. This has been a much studied and debated phenomenon.⁴ Most recently in the history of the global interaction and construction of knowledge, especially that of history of science, there has been a call to think about history of knowledge without the idea of the “Scientific Revolution.”⁵ The historiography on knowledge in the Dutch expansion in the Indian Ocean and the Atlantic world is also growing. This set of historiography brings about knowledge production that depended on the Dutch trading networks of the seventeenth and eighteenth centuries. These works explore how the circulation of people

and products led to the production of knowledge in Eurasian and Latin American societies, focusing on epistemic changes in historiography, geography, religion, and philosophy.⁶

The aim of this chapter is to analyze the process by which Dutch men in service of the West India Company (WIC) and Dutch East India Company (VOC) gathered local knowledge in Brazil and South Asia and brought them into the context of knowledge production in the Low Countries. How and why did such remarkable treatises come into being? We shall analyze the different stages of information gathering, their taxonomy, illustration, and description, leading to the final production of the tome. We will assess Dutch overseas expansion and the impact of trade and colonial empire-building in global knowledge production. How did knowledge production on nature within the Dutch network of traders, scholars, soldiers, artists, and ordinary men and women come about? Studies in the history of medicine in particular have emphasized the contribution of Indigenous and local peoples in providing information and sets of practices that were incorporated into a Western body of knowledge, particularly so in the case of botany.⁷ These studies have not, however, taken such knowledge as comparable to European science. Indigenous peoples remain relegated to the place of intermediaries, cultural brokers, or informants. In this chapter, we will attempt to focus on knowledge present in the HNB and the HM as a way of locating non-European epistemologies and worldviews. We lean on Chris Bayly's definitions on information and knowledge: "information implies observations perceived at a relatively low level of conceptual definition, on the validity of whose claims to truth, people from different regions, cultures, and linguistic groups might broadly agree. Knowledge implies socially organized and taxonomized information, about which agreement would be less sure."⁸

With the arrivals of Christopher Columbus, Pedro Álvares Cabral, and Vasco da Gama on the coasts of America and South Asia in the late fifteenth century, the scene was set for a global and comparatively accelerated circulation of biological material and information.⁹ This was particularly beneficial for the production of knowledge in Europe as more commodities flowed from Asia and the Americas to Europe, rather than the other way around. Flow of goods and commodities from Europe to other parts of the world started only after the industrialization process and is a feature of what is referred to as the modern world. While several historians have described the information gathering and bringing of botanical knowledge of "Old" and "New" World into the context of knowledge production in Europe, it remains to be researched how exactly the process took place in an intercultural global setting. In the next two sections, we present two examples of early modern treatises about the natural worlds of South Asia and Brazil, which were created within the context of Dutch expansion. In the two sections following this, we have outlined in detail the process of knowledge creation and attempted to locate local knowledge in them. In the

concluding section, we argue that multiple knowledge systems converged in print form in Amsterdam. This global connected perspective enables us to demonstrate the polycentric nature of the emergence of knowledge on nature in the early modern world.

The *Historia Naturalis Brasiliae* (1648)

In 1648, Johannes de Laet published Willem Piso and Georg Marcgraf's HNB, a treatise in two parts, containing 12 "books," on the botany and zoology of Brazil. In an encyclopedic format, it brings together information about the natural world, linguistics, astronomy, and geography of South America as understood and experienced by multiple groups of people, including Luso-Brazilians, Tupi and other Indigenous Brazilian peoples, Africans, and Afro-Brazilians. Its method of construction embodies the intercultural connections that shaped practices of knowledge production in colonial settings across the globe, and is one of the most important published examples of such from Brazil.

This beautiful tome is part of the legacy of the historical period now commonly known as "Dutch Brazil": the quarter of a century when the Dutch WIC managed to conquer and control a significant portion of the sugar-producing northeastern captaincies of Portuguese America (1630–1654). During those years, the WIC was able to take over the production chain of sugar from cultivation and processing to commerce and distribution in Europe. The Dutch colony was governed at first by a body of colonial administrators hired by the WIC, but in 1637 it appointed Johan Maurits of Nassau-Siegen (1604–1679) to be governor-general of the colony. He was a German count, descendant of the leader of the Dutch Revolt against the Spanish Habsburgs William the Silent (1533–1584), with successful military experience in the army of the Dutch Republic. He was, likewise, remarkably interested in the arts and sciences, so much so that he personally hired a group of artists and scientists to accompany him to the "New" World. The task of Johan Maurits' entourage, which included aforementioned naturalists Willem Piso and Georg Marcgraf, as well as painters Frans Post (1612–1680) and Albert Eckhout (ca.1610–1666) among others,¹⁰ was to observe, collect, study, and register Brazilian fauna, flora, and inhabitants.

The excursions into the hinterland to collect information included members of the Dutch colony and employees of the WIC, often accompanied by Indigenous Brazilians. At least the first one of those expeditions did not have exploratory or knowledge-gathering aims: as Ernst van den Boogaart and Rebecca Parker Brienen have convincingly shown, the goal of the voyage to Ceará in 1639 was to capture and enslave Indigenous people to work for the Dutch colony. The only still extant piece of Marcgraf's diary – identified and translated by Van den Boogaart and Brienen – contains a brief description of this 1639 expedition. Marcgraf writes short sentences describing the main activities of the day, the distances traveled, and often small notes on

the animals they encountered on the way. He mentions pigs, an ostrich, a few opossums, and a jaguar.¹¹ The interaction with Indigenous peoples is also clearly mentioned in this diary excerpt, as Marcgraf explains how the Brazilians assisted in all types of tasks during the expedition: on a certain occasion, the Brazilians tried to capture an ostrich but were unable to hold the animal, which shoved them to the ground and ran away.¹² It is very likely that, even on an expedition to capture and enslave people, Marcgraf made notes that were later included in the HNB. However, as Safier points out, “the broader context for these excursions [...] is absent from the text itself as it describes the natural characteristics of a New World.”¹³

A close look at the HNB reveals the extent to which its authors, and its editor Johannes de Laet, relied on or discussed pieces of Indigenous and local knowledges in its various chapters. In Part I of the treatise, Willem Piso’s treaty on tropical medicine, the practical usefulness of Indigenous knowledge in treating diseases is essential. The chapter on poisons and antidotes is a compelling example thereof. Piso tried to obtain information from local populations but apparently only succeeded in getting accounts from Indigenous collaborators. Historian Junia Ferreira Furtado states that “Piso does not denigrate native knowledge about American nature because he realizes that they could be useful to European medicine.”¹⁴ Moreover, she argues that Piso separated the practical knowledge he learned from Indigenous peoples from what he thought were their “beliefs and superstitions,” thereby suggesting a division between practical or empirical pieces of information and full knowledge systems. Likewise, historian H. Carneiro claims that Piso’s prejudice kept him from learning extensively and properly from his Indigenous informants: for instance, due to his discrimination, the Dutch doctor would have failed to understand the practical efficiency of painting one’s body with the black ink of the *jenipapo*, which would protect the skin from insects and from the sun.¹⁵ While Piso’s prejudice against Indigenous cosmologies and ways of life may be apparent in his writing, the very fact that he had to depend on their medicinal practices to conduct his work in the tropics and, moreover, the fact that he reports on them in his writing, is strong evidence of the importance and continued presence of Indigenous knowledge in the creation of Western medicinal practices. This argument has been put forward by Timothy Walker in regards specifically to Portuguese medical accounts about South America: “Indigenous peoples of Brazil thus made important contributions to ‘Western’ medicine during the early modern period, but typically did so anonymously and indirectly through European intermediaries, who often failed to discuss the original human sources for this knowledge.”¹⁶ At specific points, the HNB hints at how these Indigenous and local practices were incorporated in everyday life by the Dutch in Brazil. For instance, the roots of the *caapeba* herb (*Piper marginatum*) were then considered excellent against kidney stones and Marcgraf reports that “a Portuguese man used to give it to Mr. Vander Dussen, with great results.”¹⁷

Part II of the HNB, Marcgraf's eight books on the botany and zoology of Brazil, includes abundant examples of how Indigenous practices were translated and made comprehensible to the European readership of this treatise. Safier argues that Marcgraf's regular use of Indigenous terminology in the HNB contributed toward "establishing the reputation of the HNB as a reliable source."¹⁸ More than just citing names, however, Marcgraf in fact compiled a catalogue of Indigenous uses of diverse plants and animals. In its edition by De Laet, the treatise was transformed into one of comparative botany and zoology, contrasting examples from Marcgraf's work in Brazil with that of earlier scholars in Spanish America.

Most examples of Marcgraf's engagement and research with Indigenous informants can be found in the botanical section of the HNB, namely, Marcgraf's first three chapters (on the herbs, the plants, and the trees of Brazil). In those chapters, one can read and learn about multiple practical uses of diverse plants and identify Marcgraf's amazement with some of the skills shown by the local populations. For instance, he describes how Indigenous peoples make fire without using stones: "... without hitting the stone with a steel instrument, [they] take a dry piece of stem or root of this tree [*ambaiba*]; make a small hole on the ground, introduce a pointy stick into it and move it around, holding that piece of stick firmly with the feet and applying dried leaves of trees or cotton into the hole. So [they] spark the fire as they please, and thus everywhere [they] can light the stove."¹⁹ Marcgraf paid attention to Indigenous ways of life in many aspects. He reports on multiple uses of the same plants: not only is the trunk of the *jataboca* tree used to build the walls of houses, it is also carved out in the form of a large vessel to transport water to faraway and desert places.²⁰ The fruit of the calabash tree or *cuiete* (*Crescentia cujete*), the author notes, is frequently used as "plate, cup or bottle."²¹ The ripe fruit is thrown into hot water and left to cook thoroughly. Then, they "perforate it to make a hole. If you want to cut it in the form of a plate or any other [form], you place a large cord around the cooked fruit, disposing it in the format that you want to get, then apply some hits to the cord with a wooden hammer and so the fruit is cut off." In a more or less confessing tone, Marcgraf goes on and comments that "if we try the same technique with a knife, it will be a useless waste of time."

Examples of Indigenous food practices are also to be found in the HNB, as well as some hints as to how they can be useful to Europeans. Marcgraf writes about the potato, the *ietuca* (Indigenous term) or *quiquoaquianputu* (in the Congo language), as a delicious edible item that the Indigenous peoples ferment with water into a drink.²² The *quiya uca*, or pepper, is used as a spice in the preparation of meals "just like we use salt."²³ The Indigenous Brazilians mix it with fish and *farinha* (manioc flour) and take it on long trips. Out of the cashew fruit or *acaiaiba* (*Anacardium occidentale*), the Indigenous Brazilians make a type of wine; the fruit's nuts are used to count years of life, one cashew nut per year, and the tree's wood to make

canoos.²⁴ Many other examples can be listed, including references to body paint with the juice extracted from certain fruits and the making of feathered ornaments with the feathers of *guaras* (*Scarlet ibis*) and parrots.²⁵

The author and the editor also carefully indicate the plants and animals that were transported from other parts of the world to Brazil, and particularly from western Africa, mainly Angola and Congo, from which the Portuguese and later the Dutch continuously imported enslaved people to work in plantations. Marcgraf didactically explains, in the case of the *sesamum*, that “it does not have a special Indigenous name for it is not [native to] this region, having been brought from Africa by the Portuguese.”²⁶ The HNB provides a good measure of the influx of West African species into the natural world of Brazil. The *quiyaqui* or chili pepper (*Capsicum frutescens*) came originally from Angola.²⁷ The *inaia guacuiba*, called originally *ejaquiambutu* in the Congo, is the infamous coconut tree, whose fruit is called *inajaguacu* by the Indigenous Brazilians.²⁸ The author goes on to explain its production and mentions that in 1640, about 300 men were employed in the transportation of such trees, already grown and 24 years of age, to the gardens of Mauritsstad. He furthermore mentions that the coconut shell is excellent to make drinking vessels. Marcgraf certainly saw and possibly drank from one of those coconut shells. There is evidence of a few coconut shells, beautifully carved out with native Brazilian themes, having belonged to the collection of Johan Maurits.²⁹ Marcgraf also alludes to a species of chicken brought from Sierra Leone to Brazil, as well as a number of species of monkeys from Guinea and the guinea pig.³⁰

While Marcgraf pointed out the presence of West African animals and plants in Brazil, Johannes de Laet, editor of the treatise, did the work of adding dozens of notes comparing Marcgraf’s findings with those of other, earlier naturalists who had been in the Americas. Especially the first three chapters of Marcgraf’s part contain abundant notes referring to Francisco Ximenes’ *Quatro Libros de la Naturaleza, y Virtudes de las Plantas, y Animales*.³¹ In these notes, De Laet compares Brazilian Indigenous knowledge and use of plants to those of what he calls “Mexicans,” or the inhabitants of “the islands,” that is, the Caribbean, as described by Ximenes. These comparisons not only focus on terminology, but also take into account the Indigenous practical uses of elements. The aloe vera, or *caraguata* for the Indigenous Brazilians, is, according to De Laet, called *maguey* or *metl* by the Mexicans.³² The plant *quiya*, which includes different species of pepper, is called *chili* by the Mexicans and *axi* on the Caribbean island of Hispaniola.³³ The use of plants and fruits to make paint is a noteworthy example of botanical and ethnographic comparisons. For instance, according to Marcgraf the Indigenous Brazilians use the *urucum* plant – in Latin, *Bixa Orellana* – to make both a drink against poisons and a red paint with which they adorn their bodies and the vessels made out of calabash.³⁴ De Laet adds a note reporting that, according to Ximenes, this plant is called *achiotl*, *changuaricam*, or *pomaquan* in New Spain and the Caribbean; the paint which is made

from it called *roucu* by the Mexicans while the inhabitants of the (Caribbean) islands use it to paint their body in an elegant manner.³⁵ Likewise, De Laet compares Marcgraf's writings on the *jenipapo* tree with Ximenes' information on the *xahuali*. While Marcgraf makes no note of its use by Indigenous Brazilians, De Laet adds that "the barbarians, in their feasts or when they go to war, paint themselves with this liquid [made of the fruit of the tree] so that they would look more dangerous to their enemies."³⁶

Food customs receive the same comparative addendum by the editor of the HNB. For instance, while Marcgraf describes in detail the process of growing, harvesting, and processing manioc by the Indigenous Brazilians and by the Portuguese in Brazil, De Laet reports that, in New Spain, the same root is called *quauhcamotli* and in the Caribbean, it is known as *yucca* and is used to make a bread called *cassava*.³⁷ Johannes de Laet inserted these comparative notes almost exclusively on the botanical sections of the HNB, with the exception of the description of the bird *urubu* (vulture), which according to him is called *tzopilotl* by the Mexicans and *aura* by "the others" (Caribbean Indigenous peoples).³⁸ In one of his few ethnographic observations, De Laet recounted that Spanish men in New Spain claimed to have been cured of venereal diseases by eating vulture meat. The ethnobotanical study that Marcgraf had compiled with information on the Brazilian natural world and the species brought from West Africa was thereby expanded by De Laet in a continuous comparison with examples from Spanish America.

The *Hortus Malabaricus* (1678–1693)

The *Hortus Malabaricus* is attributed to the efforts of Hendrik Adriaan van Reede, a Dutchman born in Utrecht in 1636. He joined the service of the VOC in 1657.³⁹ Not much is known about his early life and career in the VOC. In 1661 and 1662, Van Reede was among the VOC personnel who fought the Portuguese in Cochin, on the southwest coast of India.⁴⁰ The VOC had laid siege to the coast of Malabar and wanted to drive the Portuguese away in order to have access to trade in Cochin. It is currently known as Kochi and was an important and strategically located port city in the territories of the raja of Cochin.⁴¹ The Portuguese had a settlement there since 1500.⁴² It was valued by Europeans for its rich hinterland that produced pepper. The Dutch operated there between 1663 and 1795. It was then taken over by the British.⁴³

Van Reede was made commander of Malabar in 1669. He held the office for seven years, i.e., till 1676. Van Reede was impressed by the region's rich flora from the very first moment that he saw it. Although, as expected, he first concentrated on the political and commercial matters of establishing the VOC there, he remained inquisitive of the flora and was interested in gathering more knowledge about it. In 1674, Matthew of St. Joseph, a

missionary experienced in the making of illustrated manuscripts on medicinal plants, arrived in Cochin and the idea of compiling a book, the HM, came into being. Matthew had compiled the *Viridarium Orientale*, which he wanted to publish after a professor of Oriental Languages at Leiden had worked on it. This plan was never realized and the manuscript ended up in Italy, where Giacomo Zanoni, professor of botany at Bologna, published parts of it. Notes and drawings of *Viridarium Orientale*, compiled by Matthew of St. Joseph, served as a template for the first version of the manuscript of the HM. When the German naturalist Paul Hermann (1646–1695), who was collecting information on the flora of Ceylon, visited Cochin, a second and more definitive version of the HM came into being. Hermann served the VOC as a medical officer from 1672 to 1677. After his return to the Dutch Republic in 1679, he held a chair of botany at Leiden University, where he created an exceptionally fine botanical garden, the *Hortus Botanicus*.

Van Reede was a foreigner in Malabar. He had very little knowledge about the region, and most of his time and resources were spent in the service of the VOC. His main task would be having pepper and other commodities collected from the hinterland at agreeable prices from the local agents and corresponding with Ceylon, Batavia, and the Netherlands on the company's affairs on the Malabar. He had to gather information on rival Europeans, like the Portuguese, the French, the Danes, and the English, all of whom were actively competing in the region for political allies and commercial agents. A large part of his time would go into taking care of the affairs of the VOC, its personnel, forts, etc. Van Reede's interest in Malabar's plants was purely personal. Yet he also managed to use all possible resources of the company to gather information about regional plants, most of all through his position as commander, his office, ink and paper, and the personnel of the VOC. He invited locals to share their knowledge about plants with him and specially requested medics to visit him. He collected information on the medicinal qualities of the plants, their growing seasons, and other characteristics. Many of his informants were learned men and physician healers (*vaidyas*) of Malabar who had knowledge of plants and their healing powers. He appreciated the knowledge of the Brahmins with whom he came in contact; sent out messages that anyone who had any information about plants or access to plants could visit him; and wrote letters to princes and chiefs in an attempt to collect all oral and written botanical knowledge as well as specimens of the plants of Malabar and the Konkan Coast. Van Reede had become a trusted friend of Vira Kerala Varma, the Raja of Cochin, who must have supported his initiative. Van Reede himself traveled to Travancore and met people there to gather information from the hinterland.

One of Van Reede's informants was Itty Achuthan, a traditional *vaidya* at that time, who provided knowledge on medicinal plants. From the notes of Van Reede, we know that Itty Achuthan had hereditary palm leaf manuscripts. This is our only evidence of ethnomedical knowledge that circulated

in Malabar at that time. We know that Itty Achuthan carried a palm leaf manuscript with him, but Van Reede does not give any further information on the name, content, author, or language of the text. Information about plants and their medicinal properties were written down and preserved in palm leaf *olas* and they were most probably handed down from one generation to the next; this knowledge-based society limited the access to knowledge to the ruling elite and priestly class, thereby limiting its circulation.

Another set of informants that Van Reede met and mentions in the HM were three Konkani priest physicians, Vinayaka Pandit, Ranga Bhatt, and Appu Bhatt. These three Brahmins had access to the *sāstrās*, the classical knowledge system of South Asia. Van Reede does not mention any books that the Brahmins read or brought with them to the meetings, but he emphasizes that they were exceptionally quick in delivering oral information on plants once they were told their names. Van Reede was impressed by their memory. The Brahmins thus had an orally transferred knowledge of plants and their characteristics or healing properties, which they had received either through their families or from their Brahmin teachers and was passed from one generation to the next. In this way, they supplemented the information given by Itty Achuthan.

In South Asia, efforts to locate manuscripts that could inform us about their systems of knowledge has yielded no results. Traditionally, knowledge in South Asia was mostly held and information passed on from one generation to another orally, and often within the family. Although it was not a highly literate society, it was acutely aware of literacy. Oral as well as written information moved swiftly through the medium of merchants, pilgrims, soldiers, or marriage parties. Knowledge was unevenly distributed within society; families and communities among the religious elites attempted to guard knowledge and reserve it for their descendants. Many influential groups recorded information in scripts and dialects which only a few people could understand.⁴⁴

Thus, the exploration of nature, collecting useful and reliable information about it, and preserving and circulating knowledge about it in oral and written form was part of the Malabar intellectual milieu. Knowledge was openly shared with those interested in the field, even foreigners. No doubt, within different peoples of Malabar, caste formed opaque walls through which communication was limited. The people of Malabar had found different ways of knowing about nature. And they had found different ways of preserving that knowledge. It was a well-established long tradition of knowledge creation that had led to what Van Reede ultimately collected from them.

How Van Reede was able to gather information from different communities of Malabar who would normally not share space and information with each other due to caste and class restrictions is really remarkable. Van Reede brought people together and created for himself a network of informants that would contribute to the compiling of information from different systems of learning, preserving, and circulating knowledge. People

who spoke Malayalam, Konkani, Portuguese, and Dutch and those with knowledge of Sanskrit, Arabic, and Latin were organized in a complex system of translation and transliteration so that all possible information on the names, characteristics, growing seasons, seeds, fruits, flowers, roots, and leaves, along with the medicinal values of the numerous plants and trees was written down. Van Reede hired draftsman to sketch precise images of the seeds, fruits, flowers, leaves, stems, and roots of the plants and trees. All plants were described and illustrated with their local Malayalam names, written in Roman, Malayalam, and Arabic scripts. In most cases, their Konkani, Portuguese, and Dutch names were also given. Van Reede thus had benefited from the knowledge and skills of many assistants and collaborators in Malabar. Some of them were Europeans, others mixed (*mestizos* and *castizos*), and many were local people of Malabar who contributed particular information to the making of Van Reede's manuscript. Perhaps Van Reede had learnt about a system of plant classification that was used by the Brahmins or by Itty Achuthan, who might have classified plants into different groups according to the local system(s) of classification. But this cannot be confirmed as we do not have Van Reede's personal notes and therefore we cannot report on Malabar's local plant classification system.⁴⁵

In 1676, Van Reede was transferred to Batavia as an extraordinary member of the Council of the Indies. Thus, the first stage of the book-making process, i.e., the collection of data, came to an end. In Batavia he worked on the manuscript with the assistance of, among others, Willem ten Rhijne who was also an employee of the VOC. Ten Rhijne was a physician and had an interest in plants. He had worked in Deshima, Japan, where he had created a network of people who informed him about Japanese medicine and systems of healing. In 1676, he too was transferred to Batavia, where he met Van Reede. Van Reede and Ten Rhijne thus had a common interest: collecting knowledge in Asia about plants, their medicinal values, and other systems of healing. Ten Rhijne went on in 1683 to publish a treatise, which became the first detailed Western study on the art of using needles to cure bodily ailments. In 1677, Van Reede returned to the Dutch Republic. The information he had gathered in Asia had convinced him of its importance and he wanted to publish it in the Dutch Republic. The making of the HM now entered the next stage: preparation for publication in Europe.

Once back in the Dutch Republic, Van Reede took distance from his VOC network. He aspired to a career in politics and bought honorific titles for himself and his family name. Furthermore, he started to compile the information and drawings he had collected on the flora of Malabar as he aimed to publish his manuscript and drawings. Van Reede got in touch with Arnold Seyn, professor of botany at Leiden. As editor, Seyn reorganized the information according to the classification system prevalent in Europe at that time. Johannes van Someren and Jan van Dyke agreed to publish the books. Between 1678 and 1693, in total 12 volumes of the HM were published, with many challenges in between.

The first two volumes were published in 1678 and 1679. The first volume incorporated translated testaments of authenticity about knowledge from Malabar. The two volumes joined the vast corpus of knowledge about flora and fauna that had steadily grown in Europe, especially in the Low Countries since the printing press had been introduced and the study of nature popularized. The Low Countries and larger Europe were not only publishing on nature in Europe, but all over the globe. In 1681, Van Reede signed new publishing contracts and reorganized the editorial team. Johannes Munnicks, professor of botany at Utrecht, became editor, while Jan Commelin, an amateur botanist, continued as commentator. In 1682 the third volume was published. It had an extensive preface where Van Reede explained the aim, scope, and genesis of the work along with his impressions and feelings about the people and flora of Malabar. In 1684, Van Reede once more received a chance to travel to Asia for the VOC. He took up the post of commissioner general of Western Quarters. While Van Reede toured the Western Quarters, he also continued to gather botanical information especially at Cape Town and in Ceylon. Using the VOC's shipping, he sent plants and seeds from all these places to Amsterdam's Municipal Garden. In India, he traveled throughout the west and east coast of the peninsula up to Bengal. In December 1691, Van Reede died on board a VOC ship between Malabar and Surat, where he remains buried.⁴⁶ Nine more volumes of the HM were thus published posthumously. His original extensive notes and drawings that he had collected during his first stay in Malabar remained the basis. Different people co-edited the volumes, the titles mention: vol. I Joannes Caesarius and Arnoldus Syen, vol. II Joannes Caesarius and Joannes Commelinus, vols. III–V Joannes Munnicks and Joannes Commelinus, vol. VI Theodorus Janssonius van Almelveen and Joannes Commelinus, vols. VI–XII Joannes Commelinus and Abraham van Poot. In 1693, the last of 12 Latin volumes appeared in print. All volumes state as author, acknowledge, or pay tribute to the work and efforts of Van Reede. In total, the 12 volumes contain the illustrations and descriptions of 742 plants of Malabar, belonging to 691 modern species.

Three editions of the HM from the early modern period are known. The first and original Latin edition of 12 volumes in folio was published in Amsterdam between 1678 and 1693. A reissue of this edition with new title pages was printed in Amsterdam in 1686. The second edition is a Dutch translation of the first two volumes published as *Malabaarse Kruidhof*, also printed in Amsterdam in 1689.⁴⁷ This was supposed to be a more popular version, which would sell numerous copies. A reissue of this popular and marketable Dutch edition with new title pages appeared in The Hague in 1720. The third edition came out in 1774. It was a modified Latin version, in quarto, of only the first volume, entitled *Horti Malabarici Pars Prima*, edited and annotated by John Mill and published in London. Van Resandt incorrectly states that it was also translated into English.⁴⁸ Since then, it has been as late as 2003 when K.S. Manilal published the first set of 12 volumes

in English; in 2006, he published a complete set in Malayalam.⁴⁹ In this protracted way, with the efforts, vision, knowledge, and understanding of many different people, this set of 12 remarkable volumes of the HM came into being. It has a long history of circulation between Europe and Asia. No doubt, its impact has been global.

Production and Knowledge Creation in the Low Countries

A culture of collecting information on nature developed in the seventeenth-century Low Countries following the examples and practices of other European empires whose overseas possessions predated those of the Dutch. With maritime connections established with the “Old” and “New” Worlds, information flowed into the Low Countries at a far faster pace than ever before. Along with the print culture, in the early modern period, there emerged a culture of exhibiting exotic plants from around the world by setting up botanical gardens, such as those in Leiden and Amsterdam. The networks established by the VOC and the WIC contributed to this by shipping information as well as plants, seeds, fruits, animals, etc. to the Low Countries. Both companies pursued a policy of encouraging their personnel to gather information on tropical flora and fauna, especially medicinal and edible plants. These would be useful for the well-being of their servants, as well as profit making. The VOC and WIC were bio-prospecting agencies of the early modern period. Naturalists such as Georg Marcgraf and Willem Piso served the WIC and explored Latin America, while Georg Rumphius (1627–1702) and Paul Hermann explored the islands of Ambon and Ceylon for the VOC. Van Reede’s works were completely in line with the policy of the company concerning the provisions of medicaments and the search for useful plants. The same can be said for Marcgraf’s and Piso’s work that resulted in the HNB. Rumphius’ *Het Amboinsche Kruidboek* or *Herbarium Amboinense*, a catalogue of 1200 plants of Ambon, was published posthumously in 1741. Willem ten Rhijne, who collected information in Japan and was mentioned earlier, also belonged to this genre. These men gathered, assimilated, and translated culturally specific knowledge into a written, general format recognizable to a European readership, thereby adding to the model or tradition of plant description that can be traced back to Dioscorides’ *De Materia Medica* (c. 40–90 CE) and Pliny the Elder’s *Naturalis Historia* (c.23–79 CE). The HNB and the HM became additions to this traditional European knowledge system.

The HNB is a posthumous work. Georg Marcgraf died in Angola around 1644, four years before the publication of the treatise. Before departing to Africa, he had entrusted Count Johan Maurits with his studies and notes about Brazil. Moreover, when he passed away, he left two chests containing a book, an Arabian dictionary, a herbarium, various manuscripts (two of which in Portuguese), natural history manuscripts and drawings, an

astronomical manuscript, zoological specimens, seeds, dried roots, fruits, and insects.⁵⁰ Apart from the insects, which were sold in an auction in Haarlem, the remaining items were distributed between the University of Leiden and a few fellow naturalists. One of them was Johannes de Laet, who had been corresponding with Marcgraf about Brazilian natural history and therefore was given his colleague's natural history drawings and manuscripts, as well as his herbarium.⁵¹ In this way, he became responsible for editing what would soon become the HNB. In fact, Johan Maurits personally commissioned the edition and publication of the treatise; his patronage is clearly indicated in the title page of the tome.⁵²

De Laet, born in Antwerp to a well-to-do Protestant merchant family, was indeed the ideal choice for this task. Having studied theology and classic languages, this Leiden scholar had already published books about philology, theology, geography, and history by the time he was given Marcgraf's papers. Likewise, he had translated and edited works of natural history (such as Pliny the Elder's *Naturalis Historia*) and had a profound personal interest on this subject. In 1625, he had published *Nieuuwe Wereldt ofte Beschrijvinghe van West-Indien*, which could serve as a guide for colonization projects in the Americas.⁵³ Furthermore, he was one of the founders of the WIC and served as one of its directors. As such, he had access to a wealth of information about the Americas and could make sure that the HNB would be published in a lavishly illustrated and well-prepared edition.

Organizing Marcgraf's notes was certainly a challenge, for the naturalist had written them in ciphered code, fearful that someone might steal them.⁵⁴ Apparently, he trusted the key to the codes to Johan Maurits, who in turn gave it to De Laet. In the preface to the HNB, De Laet explains to the reader that the manuscripts were "imperfect and disordered" when given to him.⁵⁵ In addition to decoding the ciphers and transcribing Marcgraf's and Piso's notes, he also wrote and added more than a hundred notes, mostly about botany. As to the illustrations, he included some missing images of plants, which he supposedly drew according to dried specimens left by Marcgraf in his herbarium. Other plants to which De Laet had no direct access were sent to him by fellow naturalists. In fact, De Laet was one of the nodal points in a network of scholars that built an intense and lively circuit of knowledge exchange in the early modern Low Countries.⁵⁶ According to Eric Jorink, "De Laet generously shared the information and artefacts with his fellow scholars and collectors. His collection was the basis for his publications and speculations. Objects, drawings, descriptions and inscriptions were constantly related to the classical and contemporary literature."⁵⁷ Consequently, De Laet's contribution in the HNB cannot be ignored: his textual and visual additions, as well as the way he organized the chapters, are a critical part of what this treatise became and the impact it had for centuries. For instance, both the HNB and the HM became some of the main sources of information for Swedish botanist Carl Linnaeus (1707–1778), who used the information on the tropical flora of Malabar

and Brazil, along with several other books published in Europe about plants in Asia, Africa, and Latin America, in his 1735 *Systema Naturae*, that soon became the standard system for the classification of plants.

Professional artists, draftsman, and people who specialized in printing made a living in the rapidly expanding printing industry in Amsterdam and Leiden. Both the HM and the HNB benefitted from this expertise. In the case of the HM, although sketches of the plants, seeds, and flowers in the books and the enlarged details were from Malabar, as well as all information on their medicinal usage, they were incorporated into the format of a European book. The design and sketch on the title page, as well as the style of preface and introduction in the HNB and the HM, were European. The system by which some plants and animals were classified together or put in different categories was also European. The South Asian input, therefore, was limited to names of plants in Malayalam, Arabic, and other local languages and to information on their medicinal usage. The content of the HM was thus essentially South Asian but the structure in which it was organized for publication was European, i.e., based on Pliny's classification order. Elements of medico-botanical knowledge with illustrations from Malabar based on Ayurvedic epistemologies and precepts had been incorporated into an entirely European format and structure of knowledge. A similar argument can be made for the HNB, whose title page became a model for other works on natural history, including Piso's 1658 *De Indiae utriusque*.

The context in which the two treatises were produced partly in Latin America and South Asia and partly in Europe is by no means an exhaustive explanation to the creation, collection, and circulation of knowledge. For example, it does not do justice to the many layers of historical and intellectual experiences that helped shape these treatises. Nor does it take into consideration the heavy contribution of Indigenous experts and local populations in the making of these treatises. Recently, art historian Amy Bueno has introduced the concept of "catalogue" to understand the HNB, a treatise – she argues – which aspires to present a systematic listing of its subject and "presents a selection, a curation, of Brazil's plants and animals and orders them according to the simple taxonomy of plants, fish, insects, etc."⁵⁸ This description is also apt for the HM. In the next section, we advance the argument and propose that the HNB and HM are catalogues of knowledge on the natural world, read and presented through the lens of early modern scholarship.

Locating Knowledge in the HNB and HM

Publishing the HNB and HM entailed the transformation of local information from the northeastern coastal regions of Brazil and Malabar respectively into a format that could reassert universal validity.⁵⁹ It is remarkable, however, that the people of South Asia and Brazil did not receive the final

product of knowledge about their milieu. South Asian knowledge, handed down over generations mostly in oral form and some in written form, was lost. Early modern Malabar held some parts of its knowledge in Malayalam and others in Sanskrit. There were also continual links to the classical Sanskrit learning and to which additions were made from time to time creating “systemic knowledge.” The palm leaf *olas* of Itty Achuthan are an example of Malabar’s systematic documentation of botanical knowledge and medicinal practices, but their content is lost forever. Even if the HM provides evidence of local knowledge, it does not conserve it beyond information. From the HM, the Malabar traditions of classification cannot be discerned, they were probably not considered worthy of preserving. In contrast, oral knowledge and knowledge practices of Indigenous peoples and of the descendants of enslaved African peoples continued to be passed onwards in oral traditions in Suriname and Brazil and in non-systematized forms, as recent work by ethnobotanist Tinde van Andel and others has been pointing out.⁶⁰ More research is needed, however, to understand the relationship between seventeenth-century Tupi and African knowledges as presented in the HNB and contemporary practices in South America.

The making of the HNB and HM demonstrates combined efforts of several agents – American, African, Asian, and European – in transforming knowledge to the European system. A complex network of agents allowed for the final production of the treatises: Brahmins, vaidyas, kings and chiefs, savants, merchants, and craftsmen of Malabar, and similarly in South America, local informants who spoke different Tupi or Gê (“Tapuia”) languages and culturally belonged to different ethnic groups, as well as (the descendants of) enslaved Africans in Brazil, and, in the Low Countries, university professors, editors, publishers, and savants. Yet it was the combination of infrastructures such as universities, publishing houses, and the social milieu where individuals could socially and economically benefit from producing books in Europe that eventually led to the centralization of knowledge in Europe. In Europe, knowledge had become a commodity and there was a market for books. In Malabar, access to knowledge was a privilege of a select few – the Brahmins. In Indigenous Brazil, access to knowledge and the ability or right to put knowledge into practice was directly related to the different social organizations of the Tupi and other Indigenous groups, for instance, dividing practical knowledge into male/female tasks or restricting medical and ritualistic practices to shamans.

Some historians have brought forward the role of brokers or middlemen who operated in the “contact zones” transferring information and knowledge between cultural and linguistic barriers.⁶¹ It has been proposed that the new knowledge was thus “hybrid” knowledge, as it took the best of both; yet one ought not to forget that trade in pharmacological substances existed in the Indian Ocean and Latin American and Caribbean region long before the arrival of the Portuguese and the Dutch.⁶² The European contribution to the structure of trade and transfer of knowledge was to link them to

Europe by sea and bring together information from Asia, West Africa, and the Americas to Europe, and subsequently publish it in printed format.

The HNB and HM merged information from Latin America and South Asia with that from Europe. They declared their own hybridity. No names of individual Indigenous informants are stated in the HNB but clearly their contribution was substantial. Writing a little bit later, Van Reede clearly attributes the information in the HM to Itty Achuthan, Vinayaka Pandit, Appu Bhatt, and Ranga Bhatt, and even published their letters in the first volume. In the third volume, he explained the process of how he had accumulated all the knowledge from Malabar. The HM shows how knowledge moved from one intellectual and practical setting to another and how some aspects of it were preserved, while others were lost. The same can be read in the HNB, despite the fact that the names of Indigenous and African informants and, many times, their ethnic identities remain uncertain.

Convergence of Multiple Knowledge Systems

Collecting and compiling oral knowledge about the natural world is a universal phenomenon. The many different peoples of Brazil and South Asia were active collectors of knowledge. They had their own systems of classification and their own ways of understanding and registering the natural world. When the Europeans arrived in these regions, a whole new process of intercultural knowledge production and circulation emerged. Both in Brazil and South Asia, it is within the Portuguese empire that such knowledge-making processes were first put in motion. As Timothy Walker has shown, Jesuits played a major role in collecting medical knowledge from South American Indigenous groups and disseminating that information throughout the Portuguese colonial empire.⁶³ Jesuits relied on local informants, often the same local people they were trying to convert as part of their missionary work, to explain the use of South American drugs, as well as native healing methods. Subsequently, that information was compiled and described in manuscript accounts and letters that circulated through the Portuguese colonial empire from South America to Europe, Africa, and Asia.

However, while the information collected and spread within the Portuguese empire remained largely limited (in access) to the Portuguese empire itself, as it was considered “strategic imperial commercial information,” one century later, the Dutch were particularly fast in publishing their findings and making it accessible to broad audiences.⁶⁴ The making of both the HNB and the HM demonstrates very similar and comparable processes in place. Because of the emergent print and visual culture in the seventeenth-century Low Countries, these two exemplary treatises on the natural world got published in beautifully illustrated multiple volumes, which appealed to European readerships. It is not fortuitous that the

HNB was put together and published within five years after Johan Maurits' return from Brazil to Europe, as Johan Maurits had a clear political agenda of self-aggrandizement. The publication of the HM took much longer due to the death of editors, lack of funding, and eventually also the sudden death of Van Reede. Yet, the HM volumes continued to be published posthumously and even had multiple editions and a Dutch translation. Van Reede and other editors also gained social capital through the publication of the HM.

These remarkable treatises had multiple locations of production. For the case of Brazil, historiography has argued that book publishing during the colonial period was incidental, and remained centered on religious books and materials used for the conversion of Indigenous peoples.⁶⁵ It was only after the arrival of the Portuguese royal family, escaping from the Napoleonic wars in Europe in the early nineteenth century, that libraries and book printing gained momentum in Brazil. Book publishing for profit was also unknown in South Asia. There was little social and economic incentive to write down all the information available and publish a book on the local flora in Malabar. Neither the head of the state, the Raja of Cochin, nor the Brahmins and vaidyas, nor laymen had any motivation to compile information under one title and make it available through publication. On the contrary, social status was gained by maintaining knowledge within the family, furthering it first by mastering the classical texts and then putting forward new thoughts and proofs through the delicate art of debate, persuasion, and skillful convincing. While Johan Maurits and Van Reede gained from the process of publication of the treatises, the case in Brazil and Malabar was different.

There is little documentation of knowledge flowing from the Low Countries toward South Asia and Latin America and then becoming popular at this early stage of interaction, especially about the natural world. At least in the sixteenth, seventeenth, and eighteenth centuries, in the Low Countries knowledge remained accessible because of book printing. The fact that most such books were in Latin helped in cross-cultural reading among Europeans.⁶⁶ Individuals like Johan Maurits, Piso, and Van Reede, and many of their contemporaries, used this industry to articulate new knowledge gathered from overseas and in the process gained social status and wealth.

Scholarly engagement with local knowledge and local informants did not end with collecting information. On the contrary, the process came full circle when that same knowledge once reached Europe and needed to be confirmed, expanded, or tested. Examples from published correspondence show that early modern scholars relied on their "New" World networks to ask and inquire, from Indigenous and local peoples and others with first-hand experience in South America, whether certain pieces of information were useful and reliable. Authentication or confirmation of information was therefore an essential part of early modern knowledge-making practices. That was the case for scholars in the Low Countries and in Britain alike. Henry Oldenburg, secretary of the London Royal Society, was responsible

for requesting objects and information from all parts of the world. Via contacts in Lisbon, he reached Portuguese America and, in August 1671, wrote a long letter to a Jesuit in Bahia with numerous questions about the air, water, earth, medicinal flora, and fauna in Brazil.⁶⁷ A. Rupert Hall and Marie Boas Hall have identified the HNB as one of the main sources of information from which Oldenburg derived his detailed questionnaire.⁶⁸ The extended use of Tupi names to describe the different plants and animals is remarkable in this letter. In the same manner, Oldenburg frequently asks if Piso's reports of Indigenous Brazilians using certain plants and animals for medicinal purposes were correct: "do the more villainous Brazilians hang the aforesaid toads in the sun, collect their bile and foamy spittle, and keep these for their more secret and slow-acting poisons?"⁶⁹ Whether or not this letter was ever answered is thus far unknown. Likewise, the physical presence of Indigenous people in Europe was well-known to scholars as they reached out to them as a source of gathering and expanding information on the natural world in the Americas. In a letter from London physician Dr. Charles Goodall to the philosopher John Locke, dated July 1687, Goodall thanks Locke for having sent him samples leaves of the quinquina tree (*Cinchona pubescens*, native to the Andes and a source of quinine). He proposes a series of questions about the growth of this particular tree, as well as of its uses by the people of South America to be asked "to any of the natives of Peru brought into Europe, or any Spaniards, who were born and lived some time in that Countrey: To any Merchants, who have long traded at Lima, Quito or other parts of Peru: To any Priests who have Spent some years there."⁷⁰

Surely much more research is needed to establish the perceived differences in epistemologies and views of the natural world between and within Europe, Latin America, and South Asia. Judging from the case of the HNB and HM, Latin American and South Asian attitudes to nature were not very different from those of Europe, in terms of the awareness of a necessity to classify plants and collect information on their growth, usage, and medicinal values. The idea of an epistemological difference was conceived by scholars of a later period, writing with a nationalistic zeal. Intellectual trends of information gathering and knowledge production, a characteristic of the early modern world, were without any doubt a global phenomenon.

This shows that a process of inquiring, gathering, and verifying information about the natural world took place with an aim to draw from them organized and taxonomized information, which is referred to as knowledge. In other words, other than a center-periphery binary of information gathering (in Brazil and South Asia) and knowledge creation (in Europe) in the early modern period, knowledge of the natural world was continuously constructed in multiple locations concomitantly, which converged in print form in Europe.

Notes

- 1 This chapter was researched by Anjana Singh during a postdoctoral fellowship at the London School of Economics: *Useful and Reliable Knowledge in Global Histories of Material Progress in the East and the West (URKEW)*, which has received funding from the ERC grant agreement no. 230326. Mariana Françaço's research for this chapter is part of the ERC project *BRA-SILIAE. Indigenous Knowledge in the Making of Science*, directed by Dr. Mariana Françaço at Leiden University and funded by the European Research Council Horizon 2020 Research and Innovation Programme (Agreement No. 715423). Unless otherwise indicated, all translations in this chapter are our own.
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- 3 Kapil Raj, *Relocating Modern Science: Circulation and the Construction of Knowledge in South Asia and Europe, 1650–1900* (Basingstoke, UK: Palgrave Macmillan, 2007).
- 4 Harold J. Cook, *Matters of Exchange: Commerce, Medicine, and Science in the Dutch Golden Age* (New Haven, CT: Yale University Press, 2007); Jürgen Renn, ed., *The Globalization of Knowledge in History: Based on the 97th Dablen Workshop*, Max Planck Research Library for the History and Development of Knowledge Studies 1 (Berlin: Edition Open Access, 2012); Dániel Margócsy, *Commercial Visions: Science, Trade, and Visual Culture in the Dutch Golden Age* (London, UK: University of Chicago Press, 2014).
- 5 Kapil Raj, "Thinking Without the Scientific Revolution: Global Interactions and the Construction of Knowledge," *Journal of Early Modern History* 21, no. 5 (2017): 445–458, doi: [10.1163/15700658-12342572](https://doi.org/10.1163/15700658-12342572).
- 6 Susanne Friedrich, Arndt Brendecke, and Stefan Ehrenpreis, *Transformations of Knowledge in Dutch Expansion*, Pluralisierung & Autorität 44 (Berlin: De Gruyter, 2015); Siegfried Huigen, Jan L. de Jong, and Elmer Kolfin, *The Dutch Trading Companies as Knowledge Networks* (Leiden: Brill, 2010).
- 7 Londa Schiebinger, *Plants and Empire: Colonial Bioprospecting in the Atlantic World* (Cambridge: Harvard University Press, 2004).
- 8 Christopher Bayly, *Empire and Information: Intelligence Gathering and Social Communication in India, 1780–1870* (Cambridge, UK: Cambridge University Press, 1996), 3–4.
- 9 Richard Grove, *Green Imperialism: Colonial Expansion, Tropical Island Edens and the Origins of Environmentalism, 1600–1860* (Cambridge, UK: Cambridge University Press, 1995), passim and especially 79.
- 10 Michiel van Groesen, "Abraham Willaerts: Marine Painter of Dutch Brazil and the Atlantic World," *Oud Holland: Journal for Art of the Low Countries* 132, no. 2–3 (2019): 65–78, doi: [10.1163/18750176-1320203002](https://doi.org/10.1163/18750176-1320203002).
- 11 Ernst van den Boogaart and Rebecca Parker Brienen, eds., *Informações do Ceará de George Marcgarf (Junho-Agosto de 1639)* (Rio de Janeiro: Index/Petrobrás, 2002), 9–10.
- 12 Van den Boogaart and Brienen, *Informações do Ceará*, 9–10.
- 13 Neil Safier, "Beyond Brazilian Nature: The Editorial Itineraries of Marcgraf and Piso's *Historia Naturalis Brasiliae*," in *The Legacy of Dutch Brazil*, ed. Michiel Van Groesen (New York, NY and Cambridge, UK: Cambridge University Press, 2014), 175.
- 14 Júnia Ferreira Furtado, "Tropical Empiricism: Making Medical Knowledge in Colonial Brazil," in *Science and Empire in the Atlantic World*, ed. James Delbourgo and Nicholas Dew (London, UK: Routledge, 2008), 136.

- 15 Henrique Carneiro, "O Saber Indígena e os Naturalistas Europeus," *Revista Trajetos* 7, no. 13 (2009), 55.
- 16 Timothy Walker, "The Medicines Trade in the Portuguese Atlantic World: Acquisition and Dissemination of Healing Knowledge from Brazil (c.1580–1800)," *Social History of Medicine* 26, no. 3 (2013): 403–431, doi: [10.1093/shm/hkt010](https://doi.org/10.1093/shm/hkt010), 407.
- 17 Willem Piso and Georg Marcgraf, *Historia Naturalis Brasiliae: In qua non tantum Plantae et Animalia, sed et Indigenarum Morbi, Ingenia et Mores Describuntur et Iconibus supra Quingentas Illustrantur* (Leiden and Amsterdam: Elsevier, 1648), 25–26. See also Georg Marcgraf, *História Natural do Brasil* (São Paulo: Imprensa Oficial, 1942 [1648]), 25–26.
- 18 Safier, "Beyond Brazilian Nature," 177.
- 19 Marcgraf, *História*, 92.
- 20 Ibid, 4.
- 21 Ibid, 123.
- 22 Ibid, 17.
- 23 Ibid, 39.
- 24 Ibid, 94–95.
- 25 See Marcgraf, *História*, 203–205 for the feathers.
- 26 Ibid, 21.
- 27 Ibid, 39.
- 28 Ibid, 140.
- 29 Mariana Françaço, *De Olinda a Holanda: O Gabinete de Curiosidades de Nassau* (Campinas: Ed. Unicamp, 2014), 204–205; Virginie Spénlé, "'Savagery' and 'Civilization': Dutch Brazil in the Kunst- and Wunderkammer," *Journal of Historians of Netherlandish Art* 3, no. 2 (2011), doi: [10.5092/jhna.2011.3.2.3](https://doi.org/10.5092/jhna.2011.3.2.3).
- 30 Marcgraf, *História*, 192, 227–230.
- 31 Francisco Ximenes, *Quatro Libros de la Naturaleza, y Virtudes de las Plantas, y Animales* (Mexico: en casa de la viuda de Diego Lopez Daualos, 1615).
- 32 Marcgraf, *História*, 38.
- 33 Ibid, 40.
- 34 Ibid, 61.
- 35 Ibid, 61–62.
- 36 Ibid, 93.
- 37 Ibid, 68.
- 38 See Marcgraf, *História*, 108.
- 39 Information on his life and works are available in the scholarship of Hugo K. s'Jacob and Johannes Heniger. Johannes Heniger, *Hendrik Adriaan van Reede tot Drakenstein (1636–1691) and Hortus Malabaricus: A Contribution to the History of Dutch Colonial Botany* (Rotterdam: A. A. Balkema, 1986). Heniger gives a complete picture of the life of Van Reede and the making of the *Hortus Malabaricus*. Unless otherwise stated, all information on Van Reede has been collected from this biography.
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- 41 Hugo K. s'Jacob, *The Rajas of Cochin, 1663–1720: Kings, Chiefs and the Dutch East India Company* (New Delhi: Munshiram Manoharlal, 2000).
- 42 Pius Malekandathil, *Portuguese Cochin and the Maritime Trade of India: 1500–1663* (New Delhi: Manohar, 2001).
- 43 Anjana Singh, *Fort Cochin in Kerala, 1750–1830: The Social Condition of a Dutch Community in an Indian Milieu*, Tanap Monographs on the History of Asian-European Interaction, V. 13 (Leiden: Brill, 2010).
- 44 Bayly, *Empire and Information*, 13.

- 45 Anjana Singh, “Botanical Knowledge in Early Modern Malabar and the Netherlands: A Review of Van Reede’s *Hortus Malabaricus*,” in *Transformations of Knowledge in Dutch Expansion, Pluralisierung & Autorität* 44, Susanne Friedrich, Arndt Brendecke, and Stefan Ehrnpreis (Berlin: De Gruyter, 2015), 187–208.
- 46 *De Lijkstatie van Baron van Rheede te Suratte*, 1693, engraving, 165×267 mm. Inscription states: Burial Procession of Baron Hendrik Adriaan van Reede, Lord of Mijdrecht, died on 15 December 1691 and buried in January 1692.
- 47 Also written as *Malabaarsche Cruythof* and other versions of the spelling. Hendrik Adriaan van Reede tot Drakenstein, *Malabaarse Kruidhof, vervattende het Raarste Slag van Allerlei Soort van Planten die in het Koninkrijk van Malabar Worden Gevonden: Nevens der selver Blommen, Vruchten en Saden* (Amsterdam: de weduwe van Joannes van Someren, de erfnamen van Jan van Dyck, Henrik Boom en de weduwe van Dirk Boom, 1689). The title of the Dutch edition translates to “Malabar’s Garden of Spices: Consisting of the rarest types of all sorts of plants that were found in the kingdom of Malabar, including their flowers, fruits, and seeds. The book was published in Amsterdam by the widow of Johannes van Someren, the inheritors of Jan van Dyck, Henrik Boom and the widow of Dirk Boom.”
- 48 W. Wijnaendts van Resandt, *De Gezaghebbers der Oost-Indische Compagnie op hare Buiten-comptoiren in Azië* (Amsterdam: Uitgeverij Liebaert, 1944), 182.
- 49 See K.S. Manilal, ed., *Van Reede’s Hortus Malabaricus English Edition: With Annotations and Modern Botanical Nomenclature*, 12 vols. (Thiruvananthapuram: University of Kerala, 2003). K.S. Manilal, ed., *Van Reede’s Hortus Malabaricus Malayalam Edition: With Annotations and Modern Botanical Nomenclature*, 12 vols. (Thiruvananthapuram: University of Kerala, 2008)
- 50 Peter Whitehead, “Georg Marcgraf and Brazilian Zoology,” in *Johan Maurits van Nassau-Siegen 1604–1679: Essays on the Occasion of the Tercentenary of his Death*, ed. Ernst van den Boogaart (The Hague: The Johan Maurits van Nassau Stichting, 1979), 432–433.
- 51 For a discussion of De Laet’s use of Marcgraf’s herbarium, as well as its trajectory and use in Denmark where it is presently kept, see Peter Wagner, “Das Markgraf-Herbarium,” in *Sein Feld war die Welt: Johan Moritz von Nassau-Siegen (1604–1679)*, eds. Gerhard Brunn and Cornelius Neutsch (Münster: Waxmann, 2008), 233–245. For a detailed account of the judicial battle for Marcgraf’s inheritance between Marcgraf’s brother Christian and Leiden professor Jacob Gools, see Th. J. Meijer, “De Omstreden Nalatenschap van een Avontuurlijk Geleerde,” *Jaarboekje voor Geschiedenis en Oudheidkunde van Leiden en Omstreken* 64 (1972), 63–76. Meijer argues that Marcgraf’s herbarium was given to Jacob Gool, who later gifted it to Adolph Vorstius.
- 52 Johan Maurits of Nassau-Siegen had already commissioned another book in this same time period: the *Rerum per Octennium in Brasiliae*, a panegyric history of the eight years of his governorship in Brazil, written by Dutch humanist Caspar Barleus (1584–1648) and published in Amsterdam in 1647. Caspar Barleus, *Rerum per Octennium in Brasilia et alibi nuper Gestarum sub Praefectura Illustrissimi Comitissae I. Mavritii, Nassoviae* (Amsterdam: Joan Blaeu, 1647).
- 53 For De Laet’s earlier work, see Johannes de Laet, *Nieuwe Wereldt ofte Beschrijvinghe van West-Indien, wt Veelderhande Schriften ende Aen-teeckeninghen van Verscheyden Natien by een Versamelt* (Leiden: Isaack Elzevier, 1625). The *Nieuwe Wereldt* had four editions: the first one, in Dutch, appeared in 1625; a second one, also in Dutch, in 1630; a third one, translated to Latin, in 1633; and, finally, an edition in French in 1640. Each new edition presented new, updated information about the “New” World.

- 54 Specifically, he seems to have been afraid that Piso would take his notes and publish them as if they were his own. See Whitehead, “Georg Marcgraf,” 434 and Rebecca Parker Brienen, “Georg Marcgraf (1610–c.1644): A German Cartographer, Astronomer and Naturalist-Illustrator in Colonial Dutch Brazil,” *Itinerario* 25, no. 1 (2001): 85–122, doi:[10.1017/S0165115300005581](https://doi.org/10.1017/S0165115300005581), 93.
- 55 De Laet in Marcgrave, *História*, no page number.
- 56 Sven Dupré and Christoph Lüthy, eds., *Silent Messengers: The Circulation of Material Objects of Knowledge in the Early Modern Low Countries*, Low Countries Studies on the Circulation of Natural Knowledge 1 (Berlin: LIT, 2011).
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- 58 Amy Buono, “Interpretative Ingredients: Formulating Art and Natural History in Early Modern Brazil,” *Journal of Art Historiography* 10, December (2014), 1–21, doi: [10.17613/M6610VR5Z](https://doi.org/10.17613/M6610VR5Z), 6–7.
- 59 Grove, *Green Imperialism*, passim.
- 60 Tinde van Anel, “The Reinvention of Household Medicine by Enslaved Africans in Suriname,” *Social History of Medicine* 29, no. 4 (2016), 676–694, doi: [10.1093/shm/hkv014](https://doi.org/10.1093/shm/hkv014).
- 61 Simon Schaffer, Lissa Roberts, Kapil Raj, and James Delbourgo, *The Brokered World: Go-Betweens and Global Intelligence, 1770–1820*, Uppsala Studies in History of Science 35 (Sagamore Beach, MA: Science History Publications, 2009); and Cook, *Matters of Exchange*.
- 62 Anna Winterbottom, *Hybrid Knowledge in the Early East India Company World*, Cambridge Imperial and Post-Colonial Studies (London, UK: Palgrave Macmillan, 2016). See also Anna Winterbottom, “Company Culture: Information, Scholarship, and the East India Company Settlements 1660–1720s” (PhD diss., Queen Mary University of London, 2010). Panchanan Maheshwari and Kapil Raj, “A Short History of Botany in India,” *Journal of the University of Gauhati* 9 (1958), 3–32.
- 63 Walker, “The Medicines Trade,” 404, 411–412.
- 64 Walker, “The Medicines Trade,” 428. See also Junia Ferreira Furtado, “Tropical Empiricism,” 132. Recent studies have been pointing to the importance of Iberian naturalists and Iberian networks of scholars and connoisseurs in the Americas. They guaranteed an enormous influx of information on the fauna and flora of the “New” World that would eventually reach other parts of Europe, even if not always in the format of published books. See Maria Luz López Terrada, “Flora and the Hapsburg Crown: Clusius, Spain, and American Natural History,” in Dupré and Lüthy, *Silent Messengers*, 43–68.
- 65 Lawrence Hallewell, *O Livro no Brasil: Sua História* (São Paulo: Edusp, 2005 [1982]). See also Aníbal Bragança and Márcia Abreu, eds., *Impresso no Brasil: Dois Séculos de Livros Brasileiros* (São Paulo: Editora Unesp; Rio de Janeiro: Fundação Biblioteca Nacional, 2011) and Luiz Carlos Villalta, “Montesquieu’s Persian Letters and Reading Practices in the Luso-Brazilian World (1750–1802)” in *Enlightened Reform in Southern Europe and Its Atlantic Colonies, c. 1750–1830*, ed. Gabriel Paquette (London, UK and New York, NY: Routledge, 2009), 119–141.
- 66 Cook, *Matters of Exchange*.
- 67 Henry Oldenburg, “Inquiries for Brazil” in *The Correspondence of Henry Oldenburg*, volume VIII, eds. Alfred Rupert Hall and Marie Boas Hall (Madison, WI: The University of Wisconsin Press, 1971), 220–248 (letter 1780). This letter was a reply to an earlier correspondence sent to Oldenburg by Thomas Hill in Lisbon, where he offers the services of “... a Jesuit, son of a Dutch man, who is very curious, ingenious and inquisitive man, and especially desirous to serve the

R.S” and, having travelled all over Brazil, was able to respond to any questions Oldenburg may have. Thomas Hill to Henry Oldenburg, 13 July 1671, in Hall and Hall, *The Correspondence of Henry Oldenburg*, 155 (letter 1747). See also Dominik Collet, “Big Sciences, Open Networks, and Global Collecting in Early Modern Museums,” in *Geographies of Science*, eds. Peter Meusburger, David Livingstone, and Heike Jons (New York, NY: Springer, 2010), 124.

68 Hall and Hall, *The Correspondence of Henry Oldenburg*, 248.

69 Oldenburg, “Inquiries for Brazil,” 247.

70 Edward S. de Beer, ed., *The Correspondence of John Locke*, volume 3 (Oxford, UK: Clarendon Press, 1989), 233.