

Bitter fruits of accumulation: The case of Caspar Georg Carl Reinwardt (1773–1854)

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Abstract

This essay analyses the career of the German chemist and government functionary Caspar Georg Carl Reinwardt (1773–1854) through the layered lens of governance and management. By conceptualizing governance as the historical result of the interaction between locally situated accumulation and management projects and the ‘metropolitan’ assessment of their value, it uses Reinwardt’s experiences to shed fresh light on the idiosyncrasies through which Europe and Southeast Asia were linked in the early nineteenth century. The discussion of three closely related episodes (the management of the botanical garden at Buitenzorg, the complexity of inquiries in the field and the failure of Reinwardt’s publication projects) exemplifies this point. Taken together, the essay problematizes simple center-periphery relationships by demonstrating that such global connections be understood through a comparison between ‘metropolitan’ and ‘colonial’ science. Rather it demonstrates the insights drawn from employing a framework that unites narratives of ‘imperial’ and ‘metropolitan’ histories of accumulation, and brings them under one analytical umbrella.

Keywords

Center-periphery, chemistry, colonial science, governance, natural history, Batavia

When the chemist, traveller and government functionary Caspar Georg Carl Reinwardt climbed the pulpit of Leiden University’s auditorium in early 1823 to deliver a long inaugural lecture, he was full of expectations.¹ On the one hand, he looked forward to commencing a position as professor for natural history, chemistry and botany and director of the academy’s famous botanical garden, which endowed him with solid financial means for his family’s support.² On the other hand, he fostered the hope that his

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appointment would allow him to capitalize on a large number of natural artefacts that he had laboriously accumulated during his previous stay in the Dutch colonies in the Indonesian archipelago.³ Boxes with notes, tables, measurements, field diaries, books, drawings, animals, plants and minerals were piling up in his house and the orangery of the University's botanical garden and awaited processing. Thus, while the majority of his friends and colleagues considered the festive event as an ideal occasion to socialize and welcome him after seven years of absence, for Reinwardt the inauguration formed just one episode in a longer historical trajectory of the governance and management of accumulation whose in-depth analysis forms the core of this essay.

Everything had begun in late 1814, when the Dutch king asked Reinwardt – by then professor of chemistry, botany and natural history at the Athenaeum Illustre and director of the Royal Natural Historical Cabinet in Amsterdam (*'s Lands Kabinet van Natuurlijke Historie*) – to participate in a government expedition to the Dutch colony in the Indonesian archipelago. After years of British occupation, Willem I and his ministers hoped that Reinwardt's expertise and skills as a chemist and plant expert would help safeguard the management of accumulation in Java and the neighbouring islands.⁴ A brief look at Reinwardt's instructions reveals what good management first meant in the context of his journey. On the one hand, Reinwardt was asked to help the colonial government with the liberalization of the Dutch trading system in the Indonesian archipelago. Instead of shipping all products to the staple market in Amsterdam, as the merchants of the former Dutch East India Company (VOC) had done in the two centuries before, the king aimed at opening Batavia's harbour for the fast-growing number of American and British traders in the region.⁵ In order to facilitate the long-term development of Batavia as an important centre of accumulation Reinwardt was, on the other hand, requested to identify as yet unexploited local natural and human resources in the area. The results of his survey had to be submitted in the form of a collection of specimens (plants, animals, industrial products, ethnographic items, etc.) and a long statistical report.⁶ In order to increase the attractiveness of the position, Willem I promised Reinwardt that, after his return from Batavia, he would help him reap the fruits of accumulation. The help might come in the form of lavishly illustrated natural historical publications, a funded position as director of the Royal Natural Historical Cabinet or appointment as a university professor.

In the end, the Dutch government's promises to Reinwardt led to little. In the years after his return, neither the Dutch king nor his minister were willing to relieve him of his heavy duties as academic teacher and manager of Leiden University's botanical garden and support his publication endeavours.⁷ While Reinwardt's manuscripts never passed the status of rough drafts, the king endowed his competitors, Coenraad Jacob Temminck (1778–1858), the director of a newly established National Museum for Natural History (*'s Rijks Museum van Natuurlijke Historie*, 1820) and Carl Ludwig Blume, head of the National Herbarium (*'s Rijksherbarium*, 1829), with both the funds and the status to capitalize on the colony's rich flora and fauna.⁸ By drawing upon the authority of their directorships, Temminck and Blume quickly launched large-scale publication projects, such as *Monographie de mammalogie* (1827–1841), the *Flora Javae nec non insularum adjacentium* (1826–1856) and the *Verhandelingen over de Natuurlijke Geschiedenis der Nederlandsche Overzeesche Bezittingen* [Proceedings on the Natural History of the Dutch Overseas Possessions] (1839–1847). These moves definitively prevented

Reinwardt from successfully asserting his authority as a virtuous manager of accumulation in the Netherlands.⁹

By analysing Reinwardt's failure through the layered lens of management and governance, this essay differs from existing studies on knowledge production in the context of the early nineteenth-century Dutch empire. While several historians have provided insightful and useful descriptions of various projects of learned inquiry in the Indonesian archipelago, others have based their narratives on issues such as the diffusion of 'pure' science to colonial areas (Lewis Pyenson) and the failure of 'enlightened' science in colonial and post-colonial Indonesia (Andrew Goss).¹⁰ In particular, Pyenson's attempt to separate 'colonialism' and 'science' into two independent narratives has received much scholarly criticism.¹¹ Goss's analysis is more nuanced but shares the disadvantage that it also relies on a normative notion of how science should have been developed in the Indonesian archipelago. In his view the continuous intervention of the colonial state prevented the seeds of 'enlightened' science from falling on fertile ground in the Dutch colonies. Seen from this perspective, it does not surprise that every scientific inquiry in the region must appear, as Goss puts it, as a 'footnote in the history of science'.¹² Unlike historians such as Pyenson and Goss, this essay does not divide the analysis of the governance and management of knowledge accumulation into separate 'metropolitan' and 'colonial' trajectories. By conceptualizing governance as the evolving consequence of interaction between accumulation and management projects (whose own evolving situation often bridged colonial settings and Europe) and 'metropolitan' assessments of their value, it rather uses Reinwardt's experiences to shed light on the idiosyncrasies through which Europe and Southeast Asia were linked in the early nineteenth century.¹³

In order to carry out this analysis, this essay focuses on three interconnected episodes of accumulation in which Reinwardt was involved. The first, which focuses on the management of the botanical garden at Buitenzorg in the hinterland of Batavia, shows that making accumulation work required Reinwardt to reconcile local interests with claims formulated elsewhere. Soon after his arrival in Batavia, it appeared that the garden's productivity could only be guaranteed through the support of the colonial government, which secured the garden's funding, integration in regional networks of exchange, and help from his friends at home, who supplied the garden with seeds and seedlings from Europe and elsewhere. Owing to the garden's quick rise and the intervention of his friends, the government endowed Reinwardt with funds to establish a collectors' network and depart on a longer journey to the hinterland of Batavia. The second episode illustrates that accumulating knowledge in the field was a complicated endeavour. In order to move his European and non-European helpers through a complex social and natural landscape in a productive way, Reinwardt was pressed to negotiate and exchange gifts with a myriad of groups and individuals. The third episode contextualizes the triangular relationship between Reinwardt, Temminck and Blume. It thereby illustrates that successful accumulation overseas did not automatically translate into metropolitan scientific authority. Together these three episodes show that conferring scientific authority over, and value to, materials was a heavily managed and globally distributed process. Only if one succeeded in managing the networks, funds, expectations, authority and expertise that each of the traversed localities required, could one eventually hope to reap the fruits of accumulation at home.

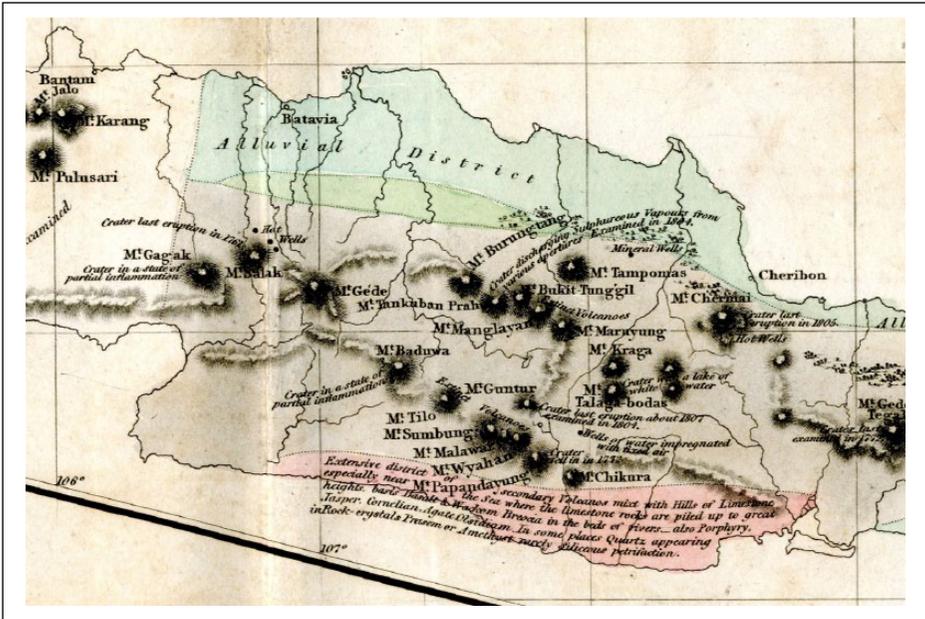


Figure 1. Mineralogical map of the hinterland of Batavia by the American naturalist Thomas Horsfield.

Managing a botanical garden

The geographical point of departure for Reinwardt's accumulation and management activities in the Indonesian archipelago was the port city Batavia at the mouth of the Ciliwung River and its southern suburb Buitenzorg situated in the mountainous hinterland of Batavia (Figure 1). Despite its swampy and unhealthy environment, ships called at the harbour of Batavia, not only from neighbouring Sumatra, Borneo, Celebes (Sulawesi), the Moluccas, the Lower Sunda Islands and Malaka, but also from China, the Philippines, Australia, Japan, New Zealand, Brazil, India, Siam, Ceylon (Sri Lanka), Europe and, most importantly, America. Beside passengers, they loaded and unloaded a broad array of cargo such as coffee, sugar, salt, tea, spices, rice, tobacco, sappan- and sandalwood, saltpetre, precious metals and luxury goods.¹⁴ Batavia's harbour thus constituted one of the more important sites in the region where people, commodities and politically related information from all over the Indonesian archipelago and beyond were gathered and exchanged.¹⁵ Moreover, Batavia's suburb Buitenzorg (current-day Bogor) functioned as a local hub for the Dutch administration of the island of Java, with its own accumulation of plant specimens and knowledge since the establishment of a botanical garden in 1817. In particular, the organizational reforms of the former Governor General Herman Willem Daendels (1762–1818) and his British successor Sir Thomas Stamford Raffles (1781–1826) had tied Buitenzorg and more peripheral provinces along the coast and in the hinterland together.¹⁶

Soon after Reinwardt's arrival in Batavia in April 1816, however, it became clear that projects such as a botanical garden could not be established and managed without the funds, authority and networks of the colonial government. In order to secure the colonial government's support, Reinwardt promised to develop the new garden into a productive repository and testing ground for the acclimatization of plants from across the far-flung archipelago. Moreover, the garden would serve as an important entry point for commercially exploitable and medicinal plants from Europe (mainly France and the Netherlands) and other colonial gardens in Asia and South America. After Reinwardt's plans had further ripened, he eventually proposed to the colonial government in early 1817 to use the land behind the governmental palace in the more mountainous Buitenzorg for the new institution. In contrast to coastal Batavia and its nearby suburbs, the venue offered, as Reinwardt argued, an ideal soil and climate for the cultivation of useful plants. The nearby Ciliwung River would supply the garden with sufficient water.¹⁷ Although it is not explicitly mentioned in letters, one can be sure that Reinwardt also hoped to profit from the fact that the seat of the governor general was nearby. Reinwardt had experienced how gardens could flourish if they were properly tied into commercial and governmental networks during his years as royal gardener in Haarlem.¹⁸

The actual construction of the garden at Buitenzorg started in May 1817, only a couple of weeks after the colonial government had approved Reinwardt's plans. According to an early schematic map, the garden was divided into different sections. In addition to beds and fields for local and European (cash) crops, herbals, flowers and trees, the garden possessed storage rooms for harvested crops, agricultural tools and accommodation for the indigenous workers. According to the garden's annual budget composed by Reinwardt in 1822, the garden employed around 65 local helpers who received three guilders a month. In order to facilitate the reworking of the soil, buffalos and cows were held in stables close to the garden area. Apparently, the garden was joined to the Governor-General's menagerie where pigs, an elephant, a rhino and horses were held. The administration of both institutions was not separated before 1822.¹⁹

Next to paid local helpers, Reinwardt could also draw upon the expertise and skills of James Hooper, William Kent, Adrianus Johannes (1790–1872) and Jannes Theodorus Bik (1796–1875) and the physician Carl Ludwig Blume. Hooper, who received a monthly salary of 150 guilders, had been trained at Kew gardens, one of the key nodal points of botanical research in the early nineteenth century. Hooper remained affiliated with the garden in Buitenzorg until 1830.²⁰ Kent, whom Reinwardt knew from his years as a professor, served as his personal botanical assistant. The Bik brothers were draftsmen who prepared sketches of plants, animals and landscapes.²¹ Blume, originally German like Reinwardt, had studied medicine in Leiden before arriving in Java in late 1818. Impressed by Blume's floral expertise Reinwardt quickly affiliated him with the botanical garden and the Department for Agriculture, Arts and Sciences that he directed; he even invited him to live in his house in Buitenzorg. Blume's subsequent appointment as inspector for the smallpox vaccination allowed him to investigate the floral world in various parts of Java. During these journeys Blume collected a large number of plants and seeds for the garden, but also on his own behalf.²²

Owing to Reinwardt's good management, the garden in Buitenzorg quickly developed into a centre for the acclimatization of domestic and foreign plants and trees. According

to a catalogue compiled by Blume in 1823 – one year after Reinwardt had returned to the Netherlands – the garden contained more than 900 plant and tree species, among which were included camphor and cinnamon trees. While the majority of the plants and trees came from Java and the Moluccas, the garden had also witnessed the arrival of specimens from China, Japan, Bengal, Sri Lanka, Europe and Brazil. In his introduction to the catalogue, Blume noted that almost all of the attempts to grow foreign seeds had turned out to be a success.²³ As Reinwardt had written to his most important broker and best friend in the Netherlands, Martinus van Marum (1750–1837), secretary of the Dutch Society of Sciences and director of Teyler's Museum and Library in February 1818:

We are progressing nicely with the garden. I am sure that it will have a beautiful layout, such as only a few have in Europe. From *China* I have received many nice plants. From *Japan* I was sent some, but they have suffered so much during the journey that only a few will remain alive.²⁴

Of particular importance for the garden in Buitenzorg were relations with the economic gardens of the British Empire, the number of which had increased tremendously as the British gained territorial power on the Indian subcontinent in the second half of the eighteenth century.²⁵ Triggered by the growing need for timber and other natural resources after the Seven Years War, British administrators had set up gardens in Calcutta, Madras, Samulcottah, Bombay, Colombo, at the Cape and on the Atlantic island of St. Helena and St. Vincent in the West Indies.²⁶ The links with the British gardens were also mirrored in plant names. In order to honour the superintendent of the botanical garden in Calcutta, Nathaniel Wallich (1786–1854), Reinwardt established a new plant genus (*Wallichia*) according to his family name.²⁷

The garden in Buitenzorg also included plants from the Netherlands. In early 1817, for instance, Reinwardt requested Van Marum, to send him seeds of flowers, trees, herbals and economic plants from his private garden in the outskirts of Haarlem. Reinwardt explicitly asked for, among others, tulip and hyacinth bulbs, carnations, buckwheat, flax, spruce, acorns, birches and fruit trees. Reinwardt in turn regularly sent Van Marum small boxes with seeds and living plants for his private garden as well as for the academic gardens in Amsterdam, Gent, Groningen, Utrecht and Leiden.²⁸ Owing to his prominent position in the Dutch learned world, Van Marum had established an extensive exchange network with private planters and (academic) gardens in Brussels, Britain, Flanders, Denmark, Sweden, Prussia, Austria and France.²⁹ In 1810, Van Marum's private garden counted more than 2900 plant specimens from all over Europe, the Cape, the Mediterranean, the Americas, Asia and Australia (New Holland).³⁰ This was a special achievement considering that only a minority of transported specimens ever reached their destination. Next to shipwrecks and incompetent gardeners on ships, it was in particular the disloyalty of carriers that destabilized this cycle of accumulation.³¹

Despite his good management of the botanical garden, Reinwardt's authority as the local expert on Java's flora and fauna did not remain uncontested. When he discovered Blume's efforts to dispatch plants and notes to the Netherlands under his own name, Reinwardt sought the assistance of the governor general in Batavia. The governor general eventually confirmed Reinwardt's claims, confiscated Blume's herbarium, and

placed it under Reinwardt's supervision.³² This policy was later codified in a set of instructions for Blume, who stayed on in Java as director of the botanical garden until 1827.³³ In the years after Reinwardt's departure, Blume collected and described a large number of plant specimens that eventually formed the basis for a series of botanical studies such as the *Tabellen en platen voor de Javaansche orchideën* [Tables and plates of Javanese orchids] (1825), the *Bijdragen tot de Flora van Nederlandsch Indië* [Contributions to the flora of the Netherlands Indies] (1825–1827) and the *Enumeratio plantarum Javae* (1827–1828). These publications, which were published in Batavia and Leiden, comprised descriptions of various plant families in the form of long lists and a few illustrations. They were partly written in Latin and partly in Dutch.³⁴ Together, as we will see, their accumulated knowledge and illustrations would provide weight to Blume's later efforts to supplant Reinwardt as a recognized (and well rewarded) authority.

This section has analysed how the botanical garden in Buitenzorg gradually developed into a well-managed and productive centre of accumulation. In particular, Reinwardt's ability to reconcile local interests with claims formulated at remote sites allowed him to configure the garden as a site that witnessed the arrival of a huge number of plant and tree specimens from across the Malay archipelago, Europe, Asia and South America. Owing to Reinwardt's good management, the head of the colonial government, Godert Alexander Gerard Philip, Baron Van der Capellen (1778–1848), even dreamt of transferring the entire production of spices from the Moluccas to Java, in order to cut costs for the administration of the remote islands.³⁵ The section below shows how Reinwardt used his reputation as a successful manager of the garden at Buitenzorg to acquire fresh funds for his own exploration of Java's flora and fauna.

Investigating Nature in the field

Beside the acclimatization of local and foreign plants and trees, the botanical garden at Buitenzorg also functioned as a point of departure for a large expedition to the hinterland of Batavia, the so-called Preanger region. In order to get the expedition funded, Reinwardt had to send several pleas to the colonial government in Batavia. However, instead of sending money, the colonial government obliged Reinwardt to compile long and detailed reports on various issues, such as the copper plating of ships, the production of saltpetre in Gresik and the minting of silver coins in Surabaya.³⁶ In June 1818, Reinwardt even received orders to travel to Semarang to open a military school there. This journey to the eastern part of Java lasted one month. In a letter to Jeronimo de Vries (1776–1853) in The Hague, Reinwardt bluntly complained about the fact that he again had to postpone his expedition: 'If I had not been obliged to go to Semarang, I would have already been on my scientific [*physische*] journey; now I am again busy with preparations for it.'³⁷ In particular, the requirement to summarise all observations in the form of a 'report' – a central feature of the colonial government's management at that time – seemed to have exceeded Reinwardt's capacities.

When Reinwardt's friends and colleagues in the Netherlands heard about this heavy workload, they reacted furiously. Since they had expected that he would spend most of his time collecting natural history specimens in order to satisfy the growing public interest in colonial nature and society at home, Van Marum and others sent angry letters to

Cornelis Theodorus Elout (1767–1841), a central figure within the colonial government, in which they demanded that Reinwardt be released from administrative tasks and given more time and funds for his natural inquiries. Although Elout's first reaction was rather reserved, the interventions from the Netherlands bore fruit.³⁸ In April 1818, Elout reported to Van Lennep that the colonial government had given Reinwardt a spacious house close to the botanical garden in Buitenzorg where he could live for the rest of his stay in the colony. Moreover, he promised to provide financial means for longer natural history expeditions to the hinterland of Batavia.³⁹

Both expeditions, which were eventually fully paid for by the colonial government, were dedicated to enriching the botanical garden at Buitenzorg with new plant specimens and to gather items for the State Cabinet of Natural History (*'s Landskabinet van Natuurlijke Historie*) in Amsterdam, which had been under Reinwardt's directorship since 1810. During his absence, the cabinet was under the directorship of his friend Martinus van Marum and the Amsterdam bird expert and owner of a large private cabinet, Coenraad Jacob Temminck (1778–1858). By focusing in on crucial episodes of this journey, this section shows that travelling and investigating nature in the field was a complex endeavour that involved strategic planning and careful management on Reinwardt's part. During his journeys Reinwardt was continuously forced to secure the assistance of local guides, wealthy land-owners, colonial civil servants and indigenous rulers by gift exchange, deception and other forms of persuasion and negotiation.

The expedition to the mountainous Preanger region started in March 1819. Although Dutch and British merchants had penetrated the region since the end of the eighteenth century in their efforts to establish the cultivation of coffee on a large scale, large parts of the Preanger had remained *terra incognita* to the Dutch colonial authorities. Owing to the lack of well-maintained roads between the main settlements and the high price of food and accommodation, travelling was a difficult endeavour.⁴⁰ In order to facilitate work in the field, Reinwardt was forced to rely on the networks and expertise of a group of landowning families. In Ciampea, a large estate a couple of miles west of Buitenzorg, Reinwardt and his European helpers were, for instance, accommodated in the spacious country house of the Riemsdijk family. The Riemsdijks were one of the biggest landowners in the hinterland of Batavia.⁴¹ In April 1819, the caravan, which consisted of more than a hundred local porters, hunters and collectors, reached Sukabumi, where they were welcomed by Andries de Wilde (1781–1865). De Wilde was co-owner and administrator of the large private estate that stretched as far as the southern coast of the island of Java.⁴² One day after their arrival in Sukabumi, Reinwardt, De Wilde and the local colonial civil servant (*resident*) organized a meeting to plan their forthcoming tour to Gunung Gede, a nearby volcano.⁴³ For Reinwardt, who knew nothing about the Preanger region's geography, their knowledge and expertise were indispensable.

One week later, the caravan reached the top of Gunung Gede, where they set up a large camp. The fieldwork at the volcano was a cooperative enterprise. Reinwardt and his crew used the days to collect plants and animals, investigate the geology of the crater, and to measure the position and height of the neighbouring mountains. His draftsmen, the Bik brothers, made sketches of the collected items, the crater and the surrounding area. However, gathering, classifying and naming plants was a complex endeavour in which various local helpers played an important role. In one of the entries of his travel

diary, Jannes Theodorus Bik put it as follows: 'We were accompanied by a local who knew many names of plants, mountains and rivers.'⁴⁴ The trek was also regularly visited by indigenous elites who often accompanied Reinwardt and his helpers for a while and sometimes even organized gamelan and dance performances or offered fresh food.⁴⁵ In the small village of Cipetir, near the border of the Bandung district, they were received by a local noble named Rajamandala. The regent had ordered Rajamandala to welcome Reinwardt and guide him through the district. Rajamandala had previously helped the cartographer and soldier Pieter Johannes Beetjes to prepare a topographical map of the Preanger region in 1814.⁴⁶

Reinwardt's close relationship with rich landowners in the Preanger region did not remain free of tensions. Since previous reforms of the colonial government in Batavia had limited their political influence, many of them secretly hoped that Reinwardt would help to protect their economic wealth in the hinterland of Batavia. Figures such as De Wilde made a fortune by trading the coffee that Javanese peasants had produced on large tracts of cheaply leased land. For Reinwardt, contact with these persons was thus an ambiguous endeavour. On the one hand, he depended heavily on their local authority and networks in order to manage the complexities of travelling in the field. On the other hand, he had to maintain a critical distance in order to secure his reputation as a virtuous manager in the colony and at home. Reinwardt's superiors had long believed that such private agricultural enterprises would be essential to Java's development as a financially rewarding enterprise. However, after they had heard about the inhumane work conditions, which had led to local uprisings, they requested in 1819 that Willem I decide on the issue.⁴⁷

Reinwardt's presence in the field also aroused hostile curiosity among Javanese villagers. On their way to Gunung Parang, another private estate in the southern part of the Preanger region, a group of local inhabitants started to question Reinwardt's collecting activities. In particular, the large number of metal drums, which contained plants, stones and animals, attracted the locals' attention. Only with some effort could the travellers manage to dispel their doubts. Bik recorded in his travel diary:

It was not easy to answer this question and to give them a good understanding of what we are doing. We said that the professor was an important healer [*doekun besar*] and that all the plants and animals were collected in order to prepare various medical drugs in order to be able to cure all diseases. This answer, which was partly true, satisfied them and even made them think highly of us.⁴⁸

Besides governing the gathering of plants, animals and sketches in the field, Reinwardt was still obliged to assist the colonial government in Batavia. Attention to the administration of the military school in Semarang and the compilation of reports on Java's health system were especially costly in terms of time.⁴⁹ In October 1819, Reinwardt eventually received a letter from his superiors ordering him to depart immediately for Semarang in his function as curator of the military school and administrator of the health service. Since Reinwardt expected that his stay would be of considerable length, he decided to send the caravan back to his house in Buitenzorg. He further instructed his companions to prepare the large number of collected birds, plants, stones and animals for shipping to the cabinet in Amsterdam.⁵⁰

Beside his own attempts to gather specimens and observations about the area's natural resources for the cabinets in the Netherlands, Reinwardt also managed – by drawing upon his authority as the director of the botanical garden and as a high-ranking government functionary – to establish a small network of external collectors who continuously enriched the garden's repositories. By the time the plants, animals, notes and observations arrived at Buitenzorg they had passed through the hands of hunters, colonial civil servants, sailors and harbour workers in various parts of the far-flung Indonesian archipelago. Reinwardt's most important external collectors were Jacob d'Arnaud van Boeckholtz and the pensioned German soldier August Franz Treffz (1770–1819).⁵¹ Boeckholtz was a special emissary whom the colonial government had sent to Borneo to secure Dutch influence there.⁵² Beside his diplomatic duties, Boeckholtz collected various items for Reinwardt. An inventory for a shipment in September 1817 lists two young living orang-utans, two prepared bear skins, six monkeys, a box with various rock, clay and coal samples, and a large number of clothes, weapons and ethno-graphical items. In an accompanying letter Boeckholtz described the difficulties he faced in the field. His lack of expertise as a 'naturalist' was compounded by the scarcity of experienced helpers for tours to the mountainous interior of Borneo.⁵³ Reinwardt's other collector, Treffz, was a former member of the so-called Kapregiment, a group of around 3200 soldiers that the Duke of Württemberg had leased to the VOC in 1786 in order to secure its outposts in Ceylon, the Coromandel Coast, Java, Celebes and at the Cape. Treffz, whose salary – thanks to Reinwardt's intervention – was regularly paid by the colonial government, sent him items from Makassar in Celebes (Sulawesi).⁵⁴

This section has focused on the complexities of investigating nature in the field. In order to make field inquiries a productive endeavour Reinwardt was forced to acquire funds and to recruit and steer a broad array of helpers *in situ*. The acquisition of funds followed a complex trajectory. Despite the quick rise of the botanical garden at Buitenzorg, it was Reinwardt's influential friends in the Netherlands who triggered both the colonial government to finance a longer expedition to the Preanger region and the establishment of a network of external collectors. While external collectors needed to be endowed with funds, collecting equipment and instructions, the management of the investigations in the Preanger region was a delicate enterprise. In order to move the long caravan through the heterogeneous natural and social landscape of the Preanger region, Reinwardt had to rely on and compensate the help of others. While local porters, guides and hunters received a gift in the form of a small salary, rich landowners were granted direct access to Reinwardt who, as high-ranking advisor to the colonial government, played an important role in the colony's administration. Many of them hoped that Reinwardt – in his function as advisor – would help them protect their accumulated wealth, which was based on the cheap leasing of land and lax control by the government in Batavia.

When Reinwardt left the Netherlands Indies in late 1822 he could look back on a rather successful period as colonial administrator *and* accumulator of foreign nature. Next to the establishment of a fast-growing botanical garden, he had produced a myriad of written recommendations for the colonial government in Batavia. Moreover, he had managed to configure the botanical garden as an important depot and workplace for natural inquiry. However, as the section below will show, good management overseas was

not enough to claim authority at home. By following Reinwardt back to the Netherlands, where he was eventually appointed as professor for chemistry, natural history and botany and director of the botanical garden at Leiden University, the section below illustrates that the accumulation of materials and knowledge overseas was only the first step in creating a persuasive metropolitan identity as a chronicler of foreign nature. Although Reinwardt was more than aware of this fact he eventually failed to reap the fruits of his experience as naturalist-manager of the Indonesian archipelago.

Bitter fruits of accumulation

During his successive years as an academic in Leiden, Reinwardt developed various strategies to pave the ground for his own publications on the nature of the Indonesian archipelago.⁵⁵ However, unlike his situation in the Indonesian archipelago, where he had managed (with the support of his friends in the Netherlands, the colonial government, rich landowners and a myriad of local helpers) to establish and maintain an almost exclusive monopoly on accumulating and interpreting local nature he now faced three major challenges: heavy teaching obligations, severe competition and the lack of a strong patron. While earlier research on Reinwardt has attributed his failure mainly to his weak personality, this section expands the search for explanations to the political sphere.⁵⁶ By focusing in on his years in Leiden, it shows that the early nineteenth century Netherlands witnessed the rise of a culture of colonial governance in which experienced colonial managers such as Reinwardt were marginalized. Unlike in Batavia and Buitenzorg, Reinwardt now failed in steering and coordinating cycles of accumulation in a way that was productive for his status. Although he desperately tried to invoke his authority and success as a virtuous manager of accumulation, he never succeeded in recruiting the resources needed for his planned publications in the Netherlands to be realized.⁵⁷

Reinwardt's concerns regarding the development of his career as chronicler of the Indonesian archipelago's nature and societies dated back to his years in Batavia. In January 1819, shortly after his return from the expedition to the Preanger region, he sent Van Marum sketches made by his draftsmen and living specimens of five plants that, in his opinion, had not been described by other botanists such as Georg Everhard Rumphius in his *Herbarium Amboinense* (1741). Reinwardt asked Van Marum to cultivate and care for the plants in his hothouse in Haarlem until his return. Moreover, he informed Van Marum that he had prepared enough written descriptions and illustrations of birds, insects and snakes to serve as the basis for an illustrated work on the fauna of Java. Since Reinwardt was insecure regarding how to go about preparing and arranging the publication of a *Flora and Fauna Javanicorum*, he asked Van Marum for advice. Reinwardt was particularly concerned about whether sufficient funding and a suitable engraver could be found in the Netherlands. One of the few options was the engraver Van Beek, who had produced the plates for Dietrich Kieser's *Mémoire sur l'organisation de plantes*, which had appeared as the eighteenth volume of Teyler's Second Society in 1814. Reinwardt even authorized Van Marum to forward the drawings to Van Beek or someone else, in order to produce proof plates that could be used to attract sponsors for his publications.⁵⁸

To foster curiosity and deliver proof of his good management in the colonies at home, Reinwardt regularly forwarded accumulated items and observations to newspapers, friends and cabinets in the Netherlands. In April 1819, newspapers in Haarlem and Utrecht published a detailed narrative of how Reinwardt had managed to climb and measure the height of an erupting volcano in the Preanger region.⁵⁹ One year later, a newspaper in Middelburg informed its readers that Amsterdam had witnessed the arrival of a huge and spectacular crocodile prepared by Reinwardt who, as the author put it, had not spared energy, time or costs to present his fellow countrymen with an intriguing piece of colonial nature.⁶⁰ Moreover, many of his letters to friends and colleagues in Amsterdam, Utrecht and Haarlem and to his family in Lüttringhausen contained plant seeds, living animals, small landscape sketches, candles, baskets, Javanese antiquities, wood samples and boxes with ginger roots and fruits, which were accompanied by detailed observations about their origin and use.⁶¹

Reinwardt's first official shipment of items left Batavia in September 1817 in the warship *Amsterdam*. According to an article published in the *Bataviasche Courant*, a Batavian newspaper, the boxes were filled with a huge number of prepared notes, drawings, animal skins, insects, birds, skeletons and other anatomical items preserved in bottles filled with alcohol.⁶² The specimens that Reinwardt had received from Boeckholtz formed an essential part of his second shipment to the Netherlands. In order to prevent loss by shipwreck, the boxes were spread over two ships that left the harbour of Batavia in late 1818 and in early 1819.⁶³ Larger shipments from Batavia were – according to his instructions – addressed to the Royal Natural Historical Cabinet in Amsterdam, whose directorship he was supposed to take up again after his return to the Netherlands.

Reinwardt's plans to establish himself as chronicler of the nature of the Indonesian archipelago received its first setback in summer 1819 when he was still in Batavia. While Van Marum regularly informed him about the current state of the small cabinet in Amsterdam, Temminck, the bird expert and owner of a huge private cabinet, used his position as interim-director to make several long journeys and meet numerous collectors in Germany, France, Austria, Italy and Switzerland.⁶⁴ Moreover, he prepared two multi-volume ornithological monographs containing detailed descriptions of prepared bird specimens that he had examined in various European cabinets.⁶⁵ In order to consolidate his position in the Dutch kingdom, Temminck eventually urged King Willem I to establish in July 1819 a new national museum with himself as director.⁶⁶ Temminck's trump card was – next to his reputation as bird expert and book author – a huge and valuable collection of birds and mammals that he had inherited from his father, a former treasurer of the Dutch East India Company (VOC).⁶⁷ In a long letter written to Falck, minister for education, national industries and colonies, dated July 1819, Temminck threatened to leave the country with his valuable cabinet if the king declined to establish a 'magnificent monument of natural historical studies'⁶⁸ under his directorship either in Brussels or Amsterdam.

The king and his minister first hesitated to meet Temminck's demands, but after the sudden death of the Leiden professor for botany, natural history and chemistry Sebald Justinus Brugmans (1763–1819) in July 1819, Temminck's wishes were at least partly fulfilled. In August 1820, the king decided to merge the State Cabinet in Amsterdam with the academic cabinet of the university in Leiden and Temminck's bird and mammal

collection under the roof of a new national museum for natural history to be established in Leiden.⁶⁹ Temminck also received ample financial compensation for relinquishing his collection to the Dutch kingdom. Beside the directorship, the king granted him a lifelong pension and an annual compensation of 2000 guilders above his regular salary.⁷⁰ In order to compensate Reinwardt for the loss of his function as director of the State Cabinet in Amsterdam, it was decided to appoint him as professor for chemistry, botany and natural history and director of the botanical garden at the University in Leiden – a position that Reinwardt accepted only grudgingly.⁷¹ Since academic professors were expected to offer rather general courses in their respective fields, Reinwardt feared that the position's heavy teaching load would prevent him from working on his publications on the Indonesian archipelago's flora and fauna.

Reinwardt's most immediate tool to counter Temminck's growing authority and status while fashioning his own was his inaugural lecture held in Leiden in 1823. Next to giving Leiden's academic world a rough overview of his fieldwork in the Indonesian archipelago, Reinwardt used the event to discredit Temminck and to search for sponsors for his planned publication projects. While many of his old friends from Amsterdam, Haarlem and Harderwijk came to attend the festive inauguration, the director of the new National Museum of Natural History in Leiden, Temminck, remained absent; he and his wife were on a short trip to Paris.⁷² In order to increase the impact of the lecture Reinwardt applied several strategies. First, he took care that a Dutch translation of his lecture was published and spread among the country's learned and administrative elite.⁷³ Second, Reinwardt introduced himself to the king and his fellow countrymen as someone who had selflessly risked his life overseas to manage accumulation and survey nature for the public good. Third, Reinwardt stressed the economic benefit that could be gained by the immense fertility and extreme diversity of nature in the Dutch colony. Fourth, he informed his readers that only a new 'natural history' that was based on the meticulous examination of plants, animals and minerals *within* their indigenous environment would help to identify and exploit the natural resources of the Indonesian archipelago in a productive way.⁷⁴ By announcing a natural history that differed wholly from the descriptive natural history practiced by sedentary naturalists such as Temminck, Reinwardt thus offered the Dutch public an alternative account that was backed by his reputation as virtuous colonial manager of accumulation.⁷⁵

However, Reinwardt's urgent pleas to the king and the Dutch public remained unheeded. The reason for the royal denial of the claims voiced in his inaugural lecture lay in the political sphere. By the time Reinwardt climbed the pulpit of Leiden University's auditorium in 1823 to inform his listeners about how knowledge production had helped the Dutch crown to manage accumulation in Batavia, metropolitan notions of colonial management had fundamentally changed. While the Dutch crown and the government in Batavia had first pursued a colonial policy of investment oriented towards long-term profits, rising colonial debts and public pressure forced them to shift towards less costly forms of management in which knowledge production and accumulation hardly played a role. In particular, in the mid-1820s, when Reinwardt praised the economic prospects that might be gained from tying field-based knowledge production to colonial management, the king gradually became aware that the Dutch colony was far from being a direct source of financial reward.⁷⁶ To the contrary, a thorough examination of newly compiled

trade statistics revealed that recent attempts to improve the colony's management (Reinwardt's journey to the East was one of them) had resulted in a tremendous increase of costs for surveys, administration and warfare, along with growing British dominance in the area.⁷⁷ In 1825 Willem I turned his back on his former colonial policy and publicly denounced colonial managers such as Reinwardt for their inability to secure short-term profits for the Dutch crown.⁷⁸

Reinwardt's hope to receive support from the Dutch king received a second setback in the summer of 1825 when his former assistant Carl Ludwig Blume returned to the Netherlands with a huge collection of botanical and zoological specimens, notes and illustrations.⁷⁹ A few months after his return, the Dutch government approached Blume about whether he would be willing to sell his botanical and zoological collection to the king. Blume's reaction to the king's request was positive. Like Temminck a couple of years earlier, Blume offered his collection and expertise to the king, but with several preconditions. Apart from a substantial financial compensation, he claimed the directorship of a new institution for botanical research as well as financial and political support for the publication of an illustrated *Flora Javae* that should, Blume suggested, comprise around 400 pages of text and 1600 partly coloured lithographs. Blume promoted his costly project by noting that Reinwardt's teaching and other obligations allowed the latter hardly any time to work on his own publications.⁸⁰

Since Blume avoided linking his publication endeavour to the management of accumulation in Batavia, his request did not go unnoticed in The Hague. After the Ministry of the Interior sought the advice of Temminck, the king decided to buy Blume's rich collection of dried animal skins, skeletons, minerals and fossils in exchange for an annual stipend of 5000 Dutch guilders.⁸¹ Blume's second precondition, the publication of a *Flora Javae*, was only realized after a further series of lengthy negotiations.⁸² In the end the king decreed that Temminck and Blume should work on a joint publication on the natural history of the Indonesian archipelago. Reinwardt was excluded by the king since he had hardly delivered any written proof of his expertise. Reinwardt's former ally Van Marum was too old to intervene on his behalf. To finance the costly undertaking, the king granted Blume and Temminck 7000 Dutch guilders each, while Reinwardt was asked to hand over his private herbarium, illustrations and all notes that he had compiled in the Netherlands Indies.⁸³ Again, Reinwardt could do nothing more than follow orders and complain that this made his preparations of a *Flora Javanicorum* useless.⁸⁴ Blume's third precondition was fulfilled in the spring of 1829. After months of negotiations during which Blume threatened to leave the country with his collection, the king eventually agreed to establishing a new national herbarium with Blume as its head.⁸⁵

Owing to Blume's wide-ranging claims and publications – the first instalment of his *Flora Javae* came off the press in the winter of 1828 – Reinwardt's plans to finish a *Flora Javanicorum* did indeed turn out to be unrealistic. Owing to the lack of alternatives, Reinwardt spent the years to come transforming his field notes and excerpts into a coherent account with a strong focus on the geological features of Java and its neighbouring islands. In an unfinished and highly fragmented manuscript that he also used as a basis for longer lectures at the Royal Institute of Sciences in Amsterdam and the Assembly of German Physician and Naturalists (Versammlung deutscher Naturforscher und Ärzte) in Berlin in 1828, Reinwardt placed his 'physical geography' (*physikalische*

aardbeschrijving) in the tradition of the Scottish soil expert, chemist, farmer and entrepreneur James Hutton (1726–1797), author of *Theory of the Earth with Proofs and Illustrations*, published in Edinburgh in 1795.⁸⁶ Similar to Hutton, Reinwardt presented the Indonesian archipelago's physiognomy as the historical outcome of a cyclical and divine interplay between soil, plants, rain, wind and volcanic activity in the area.⁸⁷ The account was based on his own observations in the field as well as his private library of travel narratives and monographs on the flora, fauna and mineralogy of the Mekong Delta in Cambodia, the Mena river in Siam, the South China Sea, the Yellow River and the Red River Delta in Vietnam that had accumulated in his house along Leiden's main canal, the Rapenburg.⁸⁸ However, owing to the lack of funds, networks and negotiating skills, Reinwardt's final attempt to recover his authority and reputation as chronicler of Indonesian archipelago's nature eventually petered out. Neither the lecture in Amsterdam nor the lecture in Berlin attracted sufficient attention to breathe new life into his publication endeavours.

By focusing on the triangular relationship between Reinwardt, the Amsterdam bird expert and owner of a unique private cabinet Coenraad Jacob Temminck and the German physician Carl Ludwig Blume, the last section of this essay sheds light on the traveller's unsuccessful management at home. While in the Indonesian archipelago, he had been able to recruit funds, skills and networks to transform the botanical garden at Buitenzorg into a productive centre of accumulation – one that still functions today as the Bogor Botanic Garden (Kebun Raya Bogor). Reinwardt faced serious obstacles, however, when he tried to reap the fruits of his productive presence in the Indonesian archipelago after returning to the Netherlands. Important reasons for his failure were the lack of a strong sponsor, severe competition, heavy teaching obligations and a shift in government policy goals. While Temminck and Blume aligned their expertise and collections with the king's goal to promote the scientific grandeur of the Dutch kingdom, Reinwardt publicized his work as a means to improve the management of accumulation in Batavia. However, owing to the rising costs of cultivating colonial dominion in the Indonesian archipelago and the lack of immediately visible rewards, neither the king nor his ministers were willing to support Reinwardt's endeavour. While Reinwardt was thus forced to spend most of his time and energy teaching and administrating Leiden University's botanical garden, Temminck and Blume used their accumulation of specimens, reputation and funds to develop the National Museum of Natural History and the National Herbarium ('s *Rijksherbarium*) into nodal points for natural inquiry in Europe.

Conclusions

Unlike historians such as Pyenson and Goss, this essay does not separate the analysis of the governance and management of knowledge accumulation into separate 'metropolitan' and 'colonial' trajectories. By conceptualizing governance as the historical result of interaction between locally situated accumulation and management and 'metropolitan' regulation (itself subject to influence from colonial settings), it rather uses Reinwardt's failure to shed fresh light on the idiosyncrasies through which Europe and Southeast Asia were linked in the early nineteenth century. By following Reinwardt to Batavia and then back to Leiden, this essay shows that ascribing 'scientific' authority over and value to

materials (in this case specimens, notes, illustrations and drawings) was a polycentric and historically open process in which shifts of governance play a pivotal role. Only if one succeeded in reconciling local management practices in both colonial and metropolitan settings to this shift could one hope to reap the full fruits of accumulation. The discussion of three closely related episodes (the management of the botanical garden at Buitenzorg, the complexity of inquiries in the field and the failure of Reinwardt's publication projects) exemplifies these points.

In order to coordinate the accumulation of observations, notes and specimens of the Indonesian archipelago's nature, Reinwardt initiated the establishment of a botanical garden in the hinterland of Batavia. Owing to Reinwardt's stewardship, the garden became a nodal point for the acclimatization, collection and further circulation of plants and knowledge about them. In particular, his ability to tie the garden into local and long-distance networks of commerce, consumption and exchange ensured the garden's fast growth. Owing to the garden's success, the colonial government endowed Reinwardt with funds to set up a collectors' network and undertake a longer journey to the hinterland of Batavia. However, travelling and investigating nature in the field was a complex endeavour that needed careful and constant management. In order to move his European and non-European helpers through diverse social and natural landscapes in a productive way, Reinwardt was continuously forced to negotiate and exchange gifts with a myriad of groups and individuals. Owing to his deft management even the most tense moments in the field could be reconciled so that the accumulated materials were never really in danger. The last part of this essay shows that management and accumulation overseas do not naturally translate into 'scientific' authority and perceived 'economic' benefit at home. While his competitors Temminck and Blume managed to align their expertise and collections with Willem I's goal to promote the Dutch kingdom's scientific grandeur, Reinwardt failed to attract the king's attention. Owing to rising public debts and pressure by important stakeholders, the king went so far as to denounce colonial managers such as Reinwardt publicly for their inability to secure short-term profits overseas. Since Reinwardt lacked the funds, authority and networks to transform his accumulated observations, notes and specimens into book publications, he was forced to spend his time and energy on teaching and the administration of Leiden's botanical garden. Taken together the three episodes problematize simple-centre periphery relationships by demonstrating that such global connections be understood through a comparison between 'metropolitan' and 'colonial' science. Rather they demonstrate the insights drawn from employing a framework that unites narratives of 'imperial' and 'metropolitan' histories of accumulation and brings them under one analytical umbrella.

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Notes

1. Caspar G.C. Reinwardt, *Redevoering van C.G.C. Reinwardt over hetgeen het onderzoek van Indië tot uitbreiding der natuurlijke historie heeft toegebracht, gehouden den 3 Mei 1823* (Amsterdam, 1823), 1.

2. Reinwardt regularly transferred money to his family in Germany. Owing to the early death of Reinwardt's father, the family lived in rather poor circumstances. For more details see Teunis W. van Heiningen, *The Correspondence of Caspar Georg Carl Reinwardt (1773–1854)*, i (2011), 25–26.
3. Reinwardt expressed his fears about the high workload already in Batavia, immediately after he had heard about his appointment in Leiden, see, for instance: Royal Library, KB, 121 B 8, letter Reinwardt to De Vries, 20 September 1820.
4. For the high expectations of the Dutch government regarding the colonies see Thomas Stevens, *Van der Capellen's koloniale ambitie op Java. Economisch beleid in een stagnerende conjunctuur, 1816–1826* (Amsterdam, 1982), 216–219.
5. On the growing importance of British and American merchants in the region see James R. Fichter, *So Great a Proffit. How the East Indies Trade Transformed Anglo-American Capitalism* (Cambridge, 2010), chapters 3–6 and Leonard Blussé, *Visible Cities. Canton, Nagasaki, and Batavia and the Coming of the Americans* (Cambridge, 2008), 60–64.
6. For Reinwardt's instructions see Willem H. de Vriese (ed.), *Reinwardt's reis naar het oostelijk gedeelte van den Indischen Archipel, in het jaar 1821* (Amsterdam: 1858), 26–52 and Andreas Weber, *Hybrid Ambitions: Science, Governance, and Empire in the Career of Caspar Georg Carl Reinwardt (1773–1854)* (Amsterdam, 2012), 120–122.
7. For an initial sketch of his publication plans see Noord-Hollands Archief Haarlem, 529: Archive Martinus van Marum, letter Reinwardt to Van Marum, Buitenzorg, 10 January 1819.
8. On Blume see Jean MacLean, 'Carl Ludwig Blume and the Netherlands Indies', *Janus. Revue Internationale de l'Histoire des Sciences, de la Médecine, de la pharmacie et de la technique*, lxvi (1979), 15–31. On Temminck see Eulàlia Gassó-Miracle, 'The significances of Temminck's work on biogeography', *Journal of the History of Biology*, xli (2008), 677–716.
9. Agatha Gijzen, '*s Rijksmuseum van Natuurlijke historie, 1820–1915* (Rotterdam, 1938), 240–242 and Cornelis G.G. J. Steenis, 'The Rijksherbarium and its contribution to the knowledge of the tropical Asiatic flora', *Blumea*, xxv (1979), 55–77.
10. For the first see, for instance: Peter Boomgaard, 'For the common good: Dutch institutions and Western scholarship on Indonesia around 1800,' in P. Boomgaard (ed.), *Empire and Science in the Making. Dutch Colonial Scholarship in Comparative Global Perspective, 1760–1830* (New York, 2013), 135–164; Peter Boomgaard, 'The making and unmaking of tropical science. Dutch research on Indonesia', *Bijdragen tot de Taal-, Land-, en Volkenkunde* cxlii (2006), 191–217. For the latter see Lewis Pyenson, *Empire of Reason. Exact Sciences in Indonesia, 1840–1940* (Leiden, 1989); Andrew Goss, *The Floracrats. State-sponsored Science and the Failure of Enlightenment in Indonesia* (Madison, 2011); Lewis Pyenson, 'The enlightened image of nature in the Dutch East Indies: Consequences of postmodernist doctrine for broad structures and intimate life', *Historical Studies in the Natural Sciences* xli (2011), 1–40; A welcome exception to this pattern offers Marieke Bloembergen and Martijn Eickhoff, 'A moral obligation of the nation-state: archaeology and regime change in Java and the Netherlands in the early nineteenth century', in P. Boomgaard (ed.), *Empire and Science in the Making. Dutch Colonial Scholarship in Comparative Global Perspective, 1760–1830* (New York, 2013), 185–205.
11. P. Palladino and M. Worboys, 'Science and Imperialism', *Isis* 84 (1993), 91–102.
12. Goss, *The Floracrats* (ref. 10), 4.
13. This understanding of governance resonates with the current view of innovation practice, policy and theory as involved in an interactive 'dance'. See Stefan Kuhlmann, Philip Shapira and Ruud Smits, 'Introduction. A systemic perspective: the innovation policy dance,' in Ruud Smits, Stefan Kuhlmann and Philip Shapira (eds), *The Theory and Practice of Innovation Policy: An International Research Handbook* (London, 2010), 1–22.

14. On the unfavourable environmental conditions of the city see Peter H. van der Brug, *Malaria en malaise: De VOC in Batavia in de achttiende eeuw* (Amsterdam, 1994). For the growing role of American merchants in the region see Fichter, *So Great a Profit* (ref. 5).
15. For an overview of the complex commercial networks in which Batavia was tied in see Leonard Blussé, 'Port cities of Southeast Asia', in Peter Clark (ed.), *The Oxford Handbook of Cities in World History* (Oxford: 2013), 346–363; Victor Lieberman, *Strange Parallels. Southeast Asia in Global Context, c. 800–1830* (Cambridge: 2009), 857–878; Howard Dick and Peter J. Rimmer, *Cities, Transport and Communications. The Integration of Southeast Asia Since 1850* (New York, 2003), 9–12; Leonard Blussé, *Visible Cities* (ref. 5), 58–66; Nordin Hussin, *Trade and Society in the Straits of Melaka. Dutch Melaka and English Penang, 1780–1830* (Singapore, 2007), 1–68; Els M. Jacob, *Merchant in Asia. The Trade of the Dutch East India Company During the Eighteenth Century* (Leiden, 2006), 277–294; Howard Dick, 'State, nation-state and national economy', in Howard Dick, Vincent J.H. Houben, J. Thomas Lindblad and Thee Kian Wie (eds), *The Emergence of a National Economy. An Economic History of Indonesia, 1800–2000* (Leiden, 2002), 15–19; Ota Atsushi, "'Pirates or entrepreneurs?' The migration and trade of sea people in Southwest Kalimantan, c. 1770–1820", *Indonesia*, xc (2010), 67–95.
16. For a concise overview of the administrative reforms see Wim van den Doel, *De stille macht. Het Europees binnenlands bestuur op Java en Madoera, 1808–1942* (Amsterdam, 1994), 27–46. For a recent attempt to use archives as a lens to examine the range and functioning of administrative networks in Java see Charles Jeurgens, 'Information on the move. Colonial archives: pillars of global information exchange', in Charles Jeurgens and Ton Kappelhof (eds), *Colonial Legacy in South East Asia. The Dutch Archives* ('s-Gravenhage, 2012), 45–65.
17. The request by Reinwardt and the subsequent decision taken by the General Commissioners are reprinted in Melchior Treub, *Geschiedenis van 's Lands Plantentuin te Batavia. Eerste gedeelte* (Batavia, 1889), 2–4.
18. Weber, *Hybrid Ambitions* (ref. 6), 83–112.
19. Theo F. Rijnberg, 's Lands Plantentuin, *Buitenzorg 1817–1992* (Enschede, 1992), 136–139.
20. Theo F. Rijnberg, 's Lands Plantentuin, *Buitenzorg 1817–1992* (Enschede, 1992), 23.
21. On Kent and the Bik brothers, see Marie-Odette Scalliet, *Antoine Payen. Peintre des Indes Orientales. Vie et écrits d'un artiste du XIXe siècle (1792–1853)* (Leiden, 1995), 583–584. Idem, 'Beelden van Oost-Indië: de collectie Bik in het Rijksprentenkabinet,' *Bulletin van het Rijksmuseum* (2001), 345–348.
22. On Blume see Jean MacLean, 'Carl Ludwig Blume', (ref. 8), 15–31. For the exact collecting localities of Blume see, M.J. van Steenis-Kruseman, *Malaysian Plant Collectors and Collections Being a Cyclopedic of Botanical Exploration in Malaysia* (Jakarta, 1950), 64–66.
23. Carl Ludwig Blume, *Catalogus van Eenige der merkwaardigste zoo in- als uit-heemsche gewassen te vinden in 's Lands Plantentuin te Buitenzorg* (Batavia, 1823), 4.
24. Noord-Hollands Archief Haarlem, 529: Archive Martinus van Marum, letter Reinwardt to Van Marum, Buitenzorg, 6 February 1818.
25. Christopher A. Bayly, *Imperial Meridian. The British Empire and the World, 1780–1830* (London, 1989), 35–132.
26. Richard H. Grove, *Green Imperialism. Colonial Expansion, Tropical Island Edens and the Origins of Environmentalism* (Cambridge, 1995), 309–348. Richard Drayton, *Nature's Government. Science, Imperial Britain and the 'Improvement' of the World* (New Haven, 2000), 106–124. David Mackay, 'Agents of empire: the Banksian collectors and the evaluation of new lands', in David P. Miller and Peter H. Reill (eds), *Visions of Empire. Voyages, Botany, and Representations of Nature* (Cambridge, 1996), 38–57.
27. Blume, *Catalogus van Eenige*, (ref. 23), 10–11.

28. See, for instance, Noord-Hollands Archief Haarlem, 529: Archive Martinus van Marum, letter Reinwardt to Van Marum, Buitenzorg, 9 April 1817. Ibidem, Batavia 1 July 1817. Ibidem, Buitenzorg, 10 December 1817. Ibidem, Bandung, 16 August 1819. Ibidem, Batavia, 25 February 1821.
29. Maria-Johanna van Steenis-Kruseman, 'Botany and gardening', in R.J. Forbes (ed.), *Martinus van Marum. Life and work* iii (Haarlem, 1971), 127–174. On Van Marum in general see Bert Theunissen, A. Wichman and Lodewijk C. Palm (eds), *Een elektriserend geleerde. Martinus van Marum (1750–1837)* (Haarlem, 1987) and A.M. Muntendam, 'Dr. Martinus van Marum', in R.J. Forbes (ed.), *Martinus van Marum. Life and Work* (Haarlem, 1969), 1–72.
30. Martinus van Marum, *Catalogue des plantes cultivées au printemps 1810, dans le jardin de M. van Marum à Harlem* (Haarlem, 1810).
31. See, for instance, Noord-Hollands Archief Haarlem, 529: Archive Martinus van Marum, letter Reinwardt to Van Marum, Buitenzorg, 9 April 1817: here Reinwardt tells Van Marum that he had entrusted a British plant expert affiliated with the garden in Kew with the shipment of plants from Batavia and the Cape. From later letters it turns out that only a small fraction of Van Marum's share of the shipment reached its destination.
32. Archive Martinus van Marum, letter Reinwardt to Van Marum, Buitenzorg, 16 April 1820.
33. National Archives, The Hague, collectie Reinwardt, inv. 3: Extract uit het register der handelingen en resolutien van den Gouverneur Generaal in rade, Batavia, 11 June 1820.
34. For more information on the history of these publications, see C.G.G.J. van Steenis, 'Dedications', in *Flora Malesiana* x (1989), 7–21 and A. den Ouden, 'C.L. Blume, periode 1826–1832', MA thesis, Leiden University, 1979.
35. H.T. Colenbrander (ed.), *Gedenkschriften van Anton Reinhard Falck* ('s Gravenhage, 1913), 468, letter Van der Capellen to Falck, Sourabaya, 8 July 1817.
36. See, for instance: National Archives, The Hague, Ministerie van Koloniën, 1814–1849, inv. 2418, letter Reinwardt to governor general, 6 June 1818 and Ministerie van Koloniën, 1850–1900, inv. 368, 8: Muntwezen: Letter Reinwardt to Raad van Finantiën, Sourabaya, 5 October 1817. Reinwardt's report on saltpetre manufacture in Gresik is reprinted in De Vriese (ed.), *Reinwardt's reis*, (ref. 6), 181–198.
37. Koninklijke Bibliotheek, The Hague, 121 B8, letter Reinwardt to De Vries, 29 August 1818: 'Had ik niet naar Semarang moeten gaan, ik was reeds op mijne physische reis; nu houd ik me verder met voorbereidingen tot dezelve bezig.'
38. Jacob van Lennep (ed.), *Het leven van mr. Cornelis en mr. David Jacob van Lennep*, ii (Amsterdam: 1862), 155–161, letter Elout to David Jacob van Lennep, Batavia, 29 March 1818.
39. Jacob van Lennep (ed.), *Het leven van mr. Cornelis en mr. David Jacob van Lennep*, ii (Amsterdam: 1862), 162–163, letter Elout to David Jacob van Lennep, Buitenzorg, 24 April 1818.
40. Jan Breman, *Koloniaal profijt van onvrije arbeid. Het Preanger stelsel van gedwongen koffi-eteelt op Java, 1720–1870* (Amsterdam, 2010), 21–148.
41. Koninklijk Instituut voor Taal-, Land- en Volkenkunde, Leiden, H 596, Travel diary J.Th.Bik, entries 20–21 March 1819; G. Roger Knight, 'Estates and plantations in Java, 1812–1834', PhD thesis, University of London, 1968, 136–137. On influence and far-flung network of the Riemsdijk family see Jean G. Taylor, *The Social World of Batavia. Europeans and Eurasians in Colonial Indonesia* (Madison, WI, 2009), 73–75.
42. On De Wilde see Frederik de Haan, *Priangan. De Preanger-Regentschappen onder het Nederlandsch Bestuur tot 1811*, ii (Batavia, 1911), 287–309.
43. Scalliet, *Antoine Payen* (ref. 21), 269: Journal Payen I, entry, 13 April 1819.
44. Koninklijk Instituut voor Taal-, Land- en Volkenkunde, Leiden, H 596, Travel diary J.Th. Bik, entry 17 April 1819: 'Wij hadden een inlander bij ons welke zeer ervaren was in alle benamingen van planten, bergen, en rivieren.'

45. Koninklijk Instituut voor Taal-, Land- en Volkenkunde, Leiden, H 596, Travel diary J.Th.Bik, entry 14 April 1819 and Scalliet, *Antoine Payen* (ref. 21), 269: Journal Payen I, entry: 24 April 1819.
46. Scalliet, *Antoine Payen* (ref. 21), 269: Journal Payen I, entry: 25 April 1819.
47. Knight, 'Estates and plantations' (ref. 41), 18; Stevens, *Van der Capellen's koloniale ambitie*, (ref. 4), 113–162. Bart de Prins, *Voor Keizer en Koning. Leonard du Bus de Gisignies. 1780–1849. Commissaris-generaal van Nederlands-Indië* (Amsterdam, 2002), 104–110.
48. Koninklijk Instituut voor Taal-, Land- en Volkenkunde, Leiden, H 596, Travel diary J.Th. Bik, entry 20 and 21 March 1819: 'Het was niet 'Het was niet gemakkelijk om deze vraag te beantwoorden en hun daarvan eene goede begrip te geven. Wij zeiden hun dat professor eene doekun besar [sic!] was, en dat alle die planten en beesten, moesten dienen om daaruit verschillende geneesmiddelen te bereiden om alle ziekten te kunnen genezen. Dit antwoordt dat gedeeltelijk waarheid bevatte was voor hun bevredigend en deed hun tevens een goede dunk van ons op vatten.'
49. Koninklijk Instituut voor Taal-, Land- en Volkenkunde, Leiden, H 596, Travel diary J.Th. Bik, entry 6 May 1819: '[H]et regende dan soms ook van officiële brieven waartoe hij [A.W.: Reinwardt] meestal den avond koos om dezelve te beantwoorden en gingen dikwijls bundels met stukken naar Batavia terug waarop Professor zijn consideratiën en advies had gegeven.'
50. Koninklijk Instituut voor Taal-, Land- en Volkenkunde, Leiden, H 596, Travel diary J.Th.Bik, entry 22 September and 13 October 1819.
51. For other collectors delivering items see Van Heiningen, *The Correspondence* (ref. 2), 174 and Weber, *Hybrid Ambitions* (ref. 6), 137.
52. Nicholas Tarling, *Anglo-Dutch Rivalry in the Malay World 1780–1824* (London, 1962), 86–88. Graham Irwin, *Nineteenth-Century Borneo. A Study of Diplomatic Rivalry* (s' Gravenhage, 1955), 35–51.
53. National Archives, The Hague, collectie Reinwardt, inv. 4, letter Boeckholtz to Reinwardt, Sourabija, 4 September 1817.
54. National Archives, The Hague, collectie Reinwardt, inv. 4, letters Treffz to Reinwardt, Makassar 23 July 1819 and 4 September 1819.
55. The following section is largely based on Weber, *Hybrid Ambitions*, (ref. 6), 181–213.
56. For the first see Willem Otterspeer, *Groepsportret met de dame. De werken van de wetenschap, de Leidse Universiteit, 1775–1876* (Amsterdam: 2006), 274–277; Marius J. Sirks, *Indisch natuuronderzoek* (Amsterdam, 1915), 86–97; Willem H. de Vriese, 'Reinwardt's leven en werken, eene bijdrage tot de geschiedenis der natuurkundige wetenschappen, inzonderheid in betrekking tot Nederlandsch Oost-Indië, en als inleiding tot de uitgave zijner reize naar de Ooster-eilanden van den Indischen archipel', in *Reinwardt's reis* (ref. 6), 1–98.
57. For a list of his lectures he gave after his return from the Indonesian archipelago see De Vriese, *Reinwardt's reis* (ref. 6), 24.
58. Noord-Hollands Archief Haarlem, 529: Archive Martinus van Marum, letter Reinwardt to Van Marum, Buitenzorg, 10 January 1819.
59. *Opregte Haarlemsche Courant*, 1 April 1819 and *Utrechtsche Courant*, 2 April 1819.
60. *Middelburgsche Courant*, 29 April 1820.
61. Leiden University Library, Special Collections, BPL 2425, inv. 5 and, for instance, Noord-Hollands Archief Haarlem, 529: Archive Martinus van Marum, letter Reinwardt to Van Marum, Batavia, 15 December 1816 and Batavia, 9 April 1817 or Koninklijke Bibliotheek, The Hague, 121 B 8, letter Reinwardt to De Vries, Batavia, 15 June 1817.
62. *Batavijsche Courant*, 5 September 1818 reprinted in De Vriese, *Reinwardt's reis* (ref. 6), 223–224.

63. *Bataviasche Courant*, 30 January 1819 reprinted in De Vriese, *Reinwardt's reis* (ref. 6), 225–227.
64. A.M. van Lynden-de Bruïne, *In vogelvlucht door Europa. De reisjournalen van Dionysia Catharina Temminck-Cau, 1807–1824* (Zutphen, 2001), 125–253.
65. Here I refer to Temminck's, *Manuel d'ornithologie, ou tableau systématique des oiseaux qui se trouvent en Europe* (first edition 1815; second edition 1820–1840) and his *Nouveau recueil de planches coloriées d'oiseux (1820–1839)*. On Temminck's vision and publications see Eulàlia Gassó-Miracle, 'The significances of Temminck's work on biogeography', *Journal of the History of Biology*, xli (2008), 677–716.
66. For a more general view on Willem I's museum policy see Rudolf Effert, *Royal Cabinets and Auxiliary Branches. Origins of the National Museum of Ethnology, 1816–1883* (Leiden, 2008), 17–26 and Susan Lègene, *De bagage van Blomhoff en Van Breugel: Japan, Java, Tripoli, en Suriname in de negentiende-eeuwse Nederlandse cultuur van het imperialism* (Amsterdam, 1998), 327–397.
67. Coenraad J. Temminck, *Catalogue systématique du cabinet d'ornithologie et de la collection de quadrumanes de C.J. Temminck. Avec une courte description des oiseaux non-décrits* (Amsterdam, 1807) and Van Lynden-de Bruïne, *In vogelvlucht* (ref. 64), 14.
68. National Archives, The Hague, collectie Falck, 85, letter Temminck to Falck, Amsterdam 17 July: '... schitterend monument der natuurkundige studiën...'
69. For a concise history of the three collections mentioned here, see Lipke B. Holthuis, *1820–1958: Rijksmuseum van Natuurlijke Historie* (Leiden, 1995) and most important Agatha Gijzen, 's *Rijksmuseum van Natuurlijke Historie, 1820–1915* (Rotterdam, 1938), 22–42.
70. Holthuis, *1820–1958: Rijksmuseum van Natuurlijke Historie* (ref. 69), 9–10.
71. Koninklijke Bibliotheek, The Hague, 121 B 8, letter Reinwardt to De Vries, 30 June 1820.
72. Van Lynden-de Bruïne, *In vogelvlucht door Europa* (ref. 64), 258.
73. Caspar G.C. Reinwardt, *Redevoering van C.G.C. Reinwardt over hetgeen het onderzoek van Indië tot uitbreiding der natuurlijke historie heeft toegebracht, gehouden den 3 Mei 1823* (Amsterdam, 1823).
74. Caspar G.C. Reinwardt, *Redevoering van C.G.C. Reinwardt over hetgeen het onderzoek van Indië tot uitbreiding der natuurlijke historie heeft toegebracht, gehouden den 3 Mei 1823* (Amsterdam, 1823), 11, 17–19, 22–25 and 29.
75. For similar tensions between Cuvier and Von Humboldt see Dorinda Outram, 'New spaces in natural history', in Nicholas Jardine, et al. (eds), *Cultures of Natural History*, (Cambridge, 1996), 249–265.
76. Jan Luiten van Zanden and Arthur Riel, *Nederland 1780–1914. Staat, instituties en economische ontwikkeling* (Amsterdam, 2000), 121–132 and Stevens, *Van der Capellen's koloniale ambitie* (ref. 4), 216–230.
77. For a detailed analysis see E. Horlings, 'Miracle cure for an economy in crisis? Colonial exploitation as source of growth in the Netherlands, 1815–1870', in Bob Moore and Henk F.K. van Nierop (eds), *Colonial Empires Compared. Britain and the Netherlands, 1750–1850* (Aldershot, 2003), 145–151.
78. E. van Raalte (ed.), *Troonredes, Openingsredes, Inhuldigingsredes* ('s-Gravenhage, 1964), 37–39: King's speech, 17 October 1825.
79. For a detailed and thorough study of Blume's activities in Leiden see the excellent MA thesis of A. den Ouden, which is stored in the library of the National Herbarium Leiden: Den Ouden, 'C.L. Blume, periode 1826–1832' (ref. 34).
80. Blume expected the entire publication would cost 163.500 guilders. For his initial calculations, made up in Leiden in March 1827, see National Archives, The Hague, Ministerie van Binnenlandse zaken, 1813–1870, inv. 2778, Royal decision, 23 July, no. 152.

81. Den Ouden, 'C.L. Blume' (ref. 34), 21–32.
82. Den Ouden, 'C.L. Blume' (ref. 34), 33–46.
83. National Archives, The Hague, Ministerie van Binnenlandse zaken, 1813–1870, inv. 2778, Royal decision, 23 July 1827, 152.
84. National Archives, The Hague, Ministerie van Binnenlandse zaken, 1813–1870, inv. 4379, letter Reinwardt to Van Ewijk, Leiden 3 December 1827.
85. For a concise overview see Den Ouden, 'C.L. Blume' (ref. 34), 63–72.
86. University Library Leiden, Special Collections, BPL 2425, 20. For the Berlin lecture see Caspar G.C. Reinwardt, *Über den Charakter der Vegetation auf den Inseln des Indischen Archipels: Vortrag, gehalten in der Versammlung deutscher Naturforscher und Ärzte in Berlin am 20. Sept. 1828* (Berlin, 1828).
87. See, for instance, University Library Leiden, Special Collections, BPL 2425, 20, p. 154.
88. For Reinwardt's library see *Catalogue des livres relatifs aux sciences naturelles, géologie, botanique, zoologie, médecine et ouvrages divers, qui composaient de la bibliothèque de Mr. C.G.C. Reinwardt: vente 12 Mars 1855* (Leyden, 1855).