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From Colonial Agro-Industrialism to Agro-Industrialism: game changing evolution of the Dutch transoceanic cinchona-quinine enterprise (1940s–1960s)

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By the turn of the twentieth century, the Dutch colony of the Netherlands Indies dominated the worldwide supply of antifebrifuge (to reduce fever) cinchona bark, the raw material for quinine, an antimalarial medicine. Over the next four decades, the high-quality and laboratory-conditioned cultivation of cinchona became the backbone of a Dutch transoceanic cinchona-quinine enterprise that dominated the international quinine markets. However, in the two decades after the Second World War, the Netherlands Indies' cinchona bark dominance ended, and the Dutch transoceanic cinchona-quinine production and trade network collapsed. How can we explain this shift? In this study, we argue that this change was part of a process of globalization of cinchona bark production that created new sources and transoceanic production and distribution chains and hence new networks of control that were increasingly less associated with a specific nation than with multinational companies. Colonial networks of control were replaced by new industrial networks of control, and the colonial agro-industrial system was reconfigured into a global agro-industrial system. At the same time, this study also shows that the economic decolonization of Indonesia forced a process of deglobalization that resulted in a translocation of the cinchona-quinine trade networks. As such, this study shows a mix of globalization and deglobalization happening in tandem with Indonesian decolonization and agricultural globalization.

Keywords: Cinchona-quinine, Indonesia, pharmaceutical industry, agro-industrialism, globalization, decolonization.

Introduction

By the turn of the twentieth century, the Dutch colony of the Netherlands Indies dominated the worldwide supply of antifebrifuge (to reduce fever) cinchona bark, the

raw material for quinine, an antimalarial medicine. Over the next four decades, the high-quality and laboratory-conditioned cultivation of cinchona became the backbone of a Dutch transoceanic cinchona-quinine enterprise that controlled the international quinine markets. However, in the two decades after the Second World War, the Netherlands Indies' cinchona bark dominance ended and the colonial transoceanic cinchona-quinine production and trade network collapsed. How can we explain this shift? In this study, we will argue that this change was part of a process of globalization of cinchona bark production sites. Colonial networks were replaced by new industrial networks and the colonial agro-industrial system was reconfigured into a global agro-industrial system.

Agro-industrialism conceptualizes the development of a specific configuration of science, commerce, industry, and the nation-state within the context of the modernization process of the nineteenth century. For example, in the southern United States an agro-industrial system incorporating research on commodity crops like sugar, cotton, and tobacco had emerged by the beginning of the twentieth century. Planters' associations working in cooperation with the U.S. Department of Agriculture established science-based technology, research, and education centres, programs that promoted the use of artificial selection and elaboration, and other activities.¹ Colonial agro-industrialism refers to a particular subset of this broader category of activity, whereby tropical crops were made exploitable and profitable by both colonial governmental and private agricultural laboratories led and organized by university-trained scientists. Elite groups of policymakers, planters, bankers, and industrialists had come to realize that scientific knowledge and technical prowess were keys to wealth and power. This group of stakeholders recognized that efficient overseas transport networks allowed tons of raw plant material to be processed by large-scale industrial complexes using the integrated management of labour, extraction, and standardization technology, as well as expertise, capital, and distribution networks in the colonial motherland.²

The reconfiguration from colonial agro-industrialism to agro-industrialism and the game changing shift of networks of control were closely linked to a process of globalization of agricultural production during the 1950s and 1960s. In cotton fields in the southern United States, for example, farmers, agricultural planners and scientists accepted that mechanization was inevitable, and this provoked changes in the organization of production and distribution, as well as social organization and the nature of rural life. In this time period, the main cotton production sites shifted from fields east of the Mississippi to western states such as Texas, California, and New Mexico.³ Recently, scholars have tried to understand the globalization of agricultural production since the end of the Second World War, arguing that globalization's impact on rural localities is revealed not as domination or subordination, but rather as negotiation, manipulation, and hybridization.⁴ In other words, globalization is a process of borderless network-building and integration on an ever more global scale. In their study about agricultural globalization, Lawrence Busch and Arunas Juska have argued that networks of production, distribution, and consumption reached across localities, regions, and nations and included new actors, products, and

technologies that were becoming less associated with a specific nation, but rather integrated into a global economic system managed by a relatively small number of increasingly powerful parties.⁵

In this study, we will show how between about the 1940s and 1960s, a similar process of globalization for cinchona bark created new networks of production and distribution, and hence new networks of control that were increasingly less associated with a single, specific nation, but rather became more identified with multinational companies. In this process, cinchona bark production sites were gradually integrated into the international (Dutch and German) quinine industry, henceforth restructuring the production processes of the entire product chain from raw material (cinchona bark) to final product (quinine). At the same, in line with the argument of Geoffrey Jones, that decolonization led companies to divest and invest elsewhere, this study also shows that the economic decolonization of Indonesia forced a process of deglobalization affecting international business networks that had been formed around the cinchona-quinine network earlier in the twentieth century.⁶ As such, this study shows a mix of globalization and deglobalization happening in line with Indonesian decolonization and at the same time that agriculture was becoming globalized.

To understand this process, this study touches on two important historical changes in the 1940s and 1950s in the Netherlands, and Dutch industry in particular: a shift in industrial objectives and economies of scale, and the decolonization of the Netherlands Indies. After a period of protectionism between the two world wars, the globalization process after the Second World War dramatically shifted European companies' industrial objectives from securing adequate access to raw materials to producing and marketing finished products.⁷ For example, in the chemical and pharmaceutical industrial sectors, the development, production, and marketing of new and better pharmaceuticals became a core business strategy. To accomplish this, a process of acquisitions, mergers and vertical integration in these industries was set in motion, which created larger industrial companies.⁸ In the Netherlands, this shift was influenced by the decolonization process of the Netherlands Indies.⁹ In the decade after the independence of the Republic of Indonesia in 1949, there was an economic decolonization as Indonesian managers gradually replaced the Dutch managers of various financial, plantation, and trade enterprises. This culminated in the massive nationalization of Dutch enterprises in 1957–58 and the exodus of thousands of Dutch managers and personnel from Indonesia.¹⁰ The result was a shift in emphasis from the production of and access to raw material in the colony to the production and marketing of the finished product in the newly independent state.

This article is arranged as follows. In the first section, we will give a short overview of how the Dutch established their transoceanic cinchona-quinine enterprise and consolidated control over the international quinine markets and the entire product chain from cinchona to quinine during the first decades of the twentieth century. Then we will show how the Dutch transoceanic cinchona-quinine enterprise became isolated as new networks of control emerged as a result of the Second World War. In the third section, we will show how the Dutch enterprise tried to regain control over

the raw material and revitalize their prewar colonial networks of control amidst the process of Indonesian decolonization and the presence of competitive cinchona cultivation in the Congo during the 1950s. In the last section, we will show how the networks of control shifted from a transoceanic colonial agro-industrial network to a global agro-industrial network by the late 1950s.

The Dutch cinchona-quinine enterprise before the Second World War

The foundation for control of the international quinine markets by Dutch cinchona and quinine traders and producers was laid at the end of the nineteenth century. At the turn of the century, three German pharmaceutical companies that had formed the first international pharmaceutical cartel in 1894 dominated the worldwide cinchona and quinine markets. At the same time, cinchona cultivators in the Netherlands Indies built on the laboratory-oriented *Cinchona Ledgeriana* species and positioned themselves as the world's leading supplier of cinchona bark.¹¹ The simultaneous emergence of a Dutch quinine industry, in close connection to cinchona cultivation in the Netherlands Indies, created conditions that allowed the Dutch to challenge German control of the international quinine cartel.

In the early 1910s, the emerging Dutch transoceanic cinchona-quinine enterprise (strongly supported by the Netherlands Indies colonial government through the active involvement of the director of the colonial Department of Agriculture) took the initiative to form a worldwide cinchona and quinine convention. The result was the 1913 signing of the Cinchona Agreement among 122 cinchona producers in the Netherlands Indies and the seven major quinine manufacturers in the international quinine cartel. The objective was to gain control over the worldwide production and distribution of cinchona and quinine by matching cinchona bark production directly with quinine sales and bring stability to the highly volatile cinchona and quinine markets.¹² The Cinchona Bureau was established in Amsterdam to manage the daily business of this new convention. From the start, the Dutch dominated and led the Cinchona Bureau, although the German pharmaceutical industry remained a strong and influential partner within the quinine cartel.¹³

The outbreak of the First World War in 1914 was a catalyst for the Dutch transoceanic cinchona-quinine enterprise to establish control over the international quinine markets. Dutch neutrality and the German pharmaceutical industry's isolation resulted in the Dutch gaining control of the Cinchona Bureau. In 1918, a new Cinchona Agreement was signed among the cinchona producers and the three Dutch quinine manufacturers—the Amsterdamsche Chininefabriek (ACF), the Nederlandsche Kininefabriek (NKF), and the Bandoengsche Kininefabriek (BKF). Henceforth, German quinine manufacturers and other non-Dutch members of the international quinine cartel were supplied with cinchona bark by the Dutch manufacturers through so-called subcontracts. Furthermore, the 1918 Cinchona Agreement enhanced the role of the Cinchona Bureau as the decision-making centre by granting it the authority to set production quotas for cinchona bark and worldwide quinine prices. In this way, the

Dutch transoceanic cinchona-quinine enterprise (formalized by the 1918 Cinchona Agreement) controlled the entire product chain from raw material to final product.¹⁴

During the 1920s, the Dutch domination of the Cinchona Bureau further strengthened. In 1920, the three Dutch quinine manufacturers organized into a group called the *Combinatie*, and in 1927, the cinchona producers founded the Cinchona Producers Association. These two umbrella organizations collaborated within a transoceanic enterprise. This resulted in strong transoceanic colonial networks. By the 1930s, the Dutch-led Cinchona Bureau tightly controlled the entire product chain and dominated the international quinine markets. Through the promotion of quinine sales, the Bureau succeeded in capitalizing on the international public health effort to fight malaria, which was led by international organizations like the League of Nations' Malaria Commission and the Rockefeller Foundation.¹⁵

The Second World War, independence and Congo cinchona: loss of control

With Germany's invasion of the Netherlands in May 1940, and the Japanese occupation of the Netherlands Indies in 1942, the activities of the Dutch transoceanic cinchona-quinine enterprise came to a halt. Only the Rio de Janeiro and New York offices remained active, though with few resources and the ability only "to observe and take notes."¹⁶ The Cinchona Bureau continued to function, but rather quickly lost control, as illustrated by the German quinine manufacturers' conduct. Before the Second World War, every new contract signed by German or other companies had to be reviewed and approved by the Cinchona Bureau. During the war, however, German manufacturers ignored the Cinchona Bureau: "manufacturers have informed the firm Buchler that this is not permitted, however still no answer is received" (see table 1).¹⁷ Furthermore, the German occupation government obliged the Dutch quinine manufacturers to hand over their remaining cinchona bark and quinine stocks to German companies "without consulting the Cinchona Bureau."¹⁸ The German chemical giant I. G. Farben then sued the Cinchona Bureau in an Italian court because of alleged "slander" by the Cinchona Bureau when they distributed two pamphlets about Farben's synthetic antimalarial medicines, plasmoquine and atebrine. These pamphlets claimed that Farben's synthetic medicines were less effective than natural quinine in the treatment of malaria.¹⁹ Thus, the Cinchona Bureau's control was undermined by the German industry during the war.

In the years directly after the war, the Dutch-led Cinchona Bureau vigorously tried to restore the prewar balance of power. The first priority was to ensure control over cinchona bark in the Netherlands Indies and hence the control over the worldwide supply of this raw material. In contrast to other agricultural export crops, the Japanese had not neglected the cinchona plantations during their occupation.²⁰ According to the head of the cinchona department of the Central Association for Field Stations (*Centrale Proefstations Vereeniging*) P. M. Prillwitz in 1946, "the general condition of the cinchona enterprises can be regarded as satisfying."²¹

However, the Japanese had shipped tons of quinine and cinchona bark from the Netherlands Indies to Japan.²² By 1948, one of the Cinchona Bureau's first priorities was to regain control over this large quantity of bark and quinine. The Cinchona Bureau made several requests to the Dutch Ministry of Foreign Affairs to send two quinine experts—members of the Cinchona Bureau—to Japan to “assess the situation in Japan with regard to what is necessary to settle the case ... and bring the [quinine and cinchona bark] under control of the Cinchona Bureau.”²³ But the Americans were not keen to allow representatives of the Cinchona Bureau into Japan. Ultimately, a solution was found and the Dutch mission in Japan began to “quietly” send the bark and quinine cargos to Batavia, Netherlands Indies, where they were handed over to representatives of the Cinchona Bureau.²⁴ The Cinchona Bureau in Amsterdam was not completely satisfied with this solution, since the cargos were assigned to the Cinchona Bureau but not safely stored in its warehouses in Amsterdam.

An important reason for this dissatisfaction was the changing political climate in the Indonesian Archipelago, which ultimately led to the recognition of the new Republic of Indonesia in 1949. Before the Second World War, the colonial state had been a reliable and trustworthy ally of the Cinchona Bureau. Through legislation, the colonial state had regulated and controlled the production and export of cinchona bark in the Netherlands Indies, thus aiding the dominance of the Dutch transoceanic cinchona-quinine enterprise.²⁵ Although the new Indonesian government did not change the legislation, its standpoint on cinchona cultivation was radically different from that of the former colonial government.²⁶ Instead of aiding the Dutch enterprise, the young Republic strived for control over the production and distribution of cinchona. So the Cinchona Bureau ordered its representative in Jakarta to “provide the Government of Indonesia all the information the Cinchona Bureau possesses and provide advice [to the government].”²⁷ The cinchona-quinine enterprise was thus able to continue its activities in Indonesia, but had to acknowledge Indonesian control over cinchona cultivation.²⁸

Another factor that disrupted Dutch control over the entire product chain was the emergence of cinchona cultivation in the Belgian Congo in the late 1930s and 1940s. On 22 September 1950, the Dutch newspaper *De Telegraaf* published an article with the headline “Congo breaks the Indonesian cinchona monopoly,” describing how the dominance of Indonesian cinchona bark had ended as a result of the emergence of cinchona cultivation in the Belgian Congo.²⁹ In 1899, the Belgian colonial government had begun experimenting with cinchona cultivation in the Kivu region of eastern Congo, a project that remained generally experimental during the following decades.³⁰ By the 1930s, however, the Belgian government had established an experimental field station in the Kivu region for the purpose of testing and experimenting with high-quality seeds sent from the Netherlands Indies.³¹ Led by a chemical engineer “who had spent several years on Java examining the mountain crops [like cinchona]” and with the strong financial backing of the Belgian colonial government, these experiments resulted in highly competitive cinchona crops in the Belgian Congo by the 1940s.³² Strongly stimulated by the war, the yield grew quickly,

Table 1. The main organizations and companies involved in the cinchona and quinine business during the 1940s–50s

Company	Location	Activity
Cinchona Bureau (1913–60s)	Amsterdam, the Netherlands	Decision-making organization of the Dutch transoceanic cinchona-quinine enterprise (ca. 1918-1950s).
N. V. Nederlandsche Combinatie voor Chemische Industrie (Nedchem) (1920–67)	Amsterdam, the Netherlands	Joint venture of the ACF, BKF, and NKF for the joint purchase of cinchona bark and marketing of quinine products & member of the Cinchona Bureau.
Cinchona Producers Association (1927–60s)	Amsterdam, the Netherlands	The umbrella organization of the approximately 120 Dutch cinchona planters and traders (producers) & member of the Cinchona Bureau.
N. V. Amsterdamsche Chininefabriek (1881–1967)	Amsterdam, the Netherlands	The oldest Dutch quinine company. Member of the international quinine cartel, the Cinchona Bureau and Nedchem.
N. V. Bandoengsche Kininefabriek (1896–1958)	Bandung, Indonesia	Established in the Netherlands Indies by a cooperative of cinchona planters and the Dutch colonial government. Nationalized in 1958 and today part of Kimia Pharma.
N. V. Bandoengsche Kininefabriek (1953–67)	Amsterdam, the Netherlands	Dutch split off of the company in Bandung.
N. V. Nederlandsche Kininefabriek (1903–67)	Maarsse, the Netherlands	Member of the international quinine cartel, the Cinchona Bureau and Nedchem.
C. F. Boehringer & Sohne (1859–1997)	Mannheim, Germany	German pharmaceutical company, one of the first mass-producers of quinine and leading company in the international quinine cartel.
Chininfabrik Braunschweig Buchler & Co.	Braunschweig, Germany	German pharmaceutical company and today the largest quinine manufacturer in the world.
Societe Cooperative “Congokina” (1940–55)	Bukavu, Congo	Cooperative of cinchona planters in the Belgian Congo.
Francis Peck & Co.	London, Great Britain	Trading house in tropical agricultural products.

from 200 tons in 1943 to more than 900 tons in 1948. With the emergence of this high-quality Congolese cinchona bark, the German quinine manufacturers were no longer dependent on Dutch cinchona bark and were able to cast off the yoke of the Dutch cinchona-quinine enterprise.³³

The change from a colonial government to a new independent Indonesian government and the appearance of Congolese-grown cinchona had thus resulted in dramatic changes in the product chain from raw material to final product and hence the Dutch transoceanic cinchona-quinine enterprise's control. The colonial agro-industrial system gave way to an agro-industrial system of multiple production sites and new centers of control—Indonesia, Congo, the German quinine industry, as well as the Cinchona Bureau. During the first half of the 1950s, the Dutch cinchona-quinine enterprise (via the Cinchona Bureau) nonetheless tried to regain control over the entire product chain and the colonial transoceanic networks.

Nationalization and changing production and trade networks in the 1950s

The shift of networks of control is well illustrated by a report from the Dutch Consul-General in Leopoldville, Congo (now Kinshasa), in November 1952, which included a conversation with the chairman of the Congo Cinchona Planters Association, Mr De Beve. The report stated that Mr De Beve had made the impression that “he was not so certain anymore if the Cinchona Bureau was still in control over the market, production, and sales of cinchona in Indonesia.”³⁴ In the same conversation, De Beve also mentioned that the Indonesian government had proposed a convention. In his words, the Indonesian Ambassador stated “it is not the Cinchona Bureau that controls the Indonesian cinchona market but the Indonesian government and hence it would be better for the Congo [planters] to deliberate directly with the Indonesian government.”³⁵ In the Netherlands, however, these remarks were dismissed as nonsense by the director of the department of economic relations of the Ministry of Foreign Affairs, J. M. H. Timmermans: “They do not tally with the good relationship between the Indonesian government and the Cinchona Bureau, all the more because the interests of the Indonesian government and the Cinchona Bureau run parallel.”³⁶

Since Indonesia's independence in 1949, state officials had been questioning the Cinchona Agreement (the collaboration between the cinchona producers and quinine manufacturers) and hence the Cinchona Bureau's control of Indonesian cinchona cultivation. They regarded the agreement as an obstacle to their improving Indonesia's market position for cinchona bark over the Congolese and sought to open up the Indonesian cinchona market by diminishing the Cinchona Bureau's control.³⁷ The Cinchona Bureau, however, regarded this option as a disastrous step for all cinchona markets worldwide. They argued that “if the supplier of a raw material had no monopoly position, it would have the weakest position in the economic interest battle with the buyers of the material, because these could go somewhere else if the prices did not please him.”³⁸ Instead, the Cinchona Bureau opted for collaboration with the Congo cinchona planters in order to bring stability and control back to the

international markets. The Cinchona Bureau believed that they were the institution with the most experience to handle such complex conventions and thus should have control. In this way, the Cinchona Bureau hoped to regain control over the worldwide supply of cinchona bark and henceforth the entire product chain from raw material to final product.

In 1951, an agreement was signed between the Cinchona Bureau and the largest cinchona planters association in the Congo, the *Société Coopérative "Congokina."* The objective was to stabilize international markets and to "avert that the Congo, with her continuously raising production, would be a direct competitor for Indonesia on the worldwide markets."³⁹ In other words, the Cinchona Bureau's collaboration with Congokina aimed at re-establishing colonial networks of control by centralizing the worldwide supply at the Cinchona Bureau. However, the collaboration was not successful, and by 1955, the Cinchona Bureau ended the agreement due to Congokina's noncompliance with production quotas and price agreements (for example, they had sold bark to parties outside the agreement) and Congokina's financial liability.⁴⁰ In the belief that Indonesian cinchona cultivation would not regain its former position, Congokina had invested heavily in expanding cinchona production and built its own quinine factory, Pharmakina, in Bukavu. Unfortunately, declining demand for quinine as a result of the growing demand for synthetic antimalarial medicines turned out to be disastrous for Congokina. Nevertheless, Congokina's management had repeatedly stated to the Cinchona Bureau that Congokina's existence was assured.⁴¹ Ultimately, the Dutch ambassador in Brussels reported to the Minister of Foreign Affairs, "the management of the Cinchona Bureau in Amsterdam should realize that, despite what Congolese cinchona planters are saying, the liquidation [of Congokina] is a fait accompli."⁴²

By 1954, the Belgian government took over the Congolese quinine factory and the Congokina cooperative gradually fell apart.⁴³ However, the Belgian government had no intention of managing its newly acquired factory and plantations. They tried to sell these assets to the Belgian firm Union Chimique Belge (part of the Solvay group), but without result. Thereafter, German companies like Bayer and Buchler showed interest, but according to the Dutch ambassador in Brussels, the Belgian government was not willing to have German interests in the Belgian Congo. So, the Dutch ambassador in Brussels asked the Ministry of Foreign Affairs whether, if the Cinchona Bureau was not interested in buying the Congolese assets from the Belgian government, "Would it not be wise if the Dutch would already associate themselves with another supplier of cinchona than Indonesia?"⁴⁴ In the end, the Cinchona Bureau did not take action and by 1955, the Congolese factory and several plantations were sold to the German pharmaceutical company, C. F. Boehringer & Söhne.⁴⁵

An important reason why the Cinchona Bureau did not become directly involved in the Congolese cinchona cultivation was the revitalization of the Dutch quinine industry in the international market. In early 1954, the director of the NKF and member of the Cinchona Bureau, Ir. J. Homan van der Heide, informed his fellow

members of the Cinchona Bureau that Nedchem (see table 1) had been able to improve its position on the United States market. As a result, German companies were showing renewed interest in collaborating with the Dutch, and talks were opened with the two largest German quinine manufacturers, Buchler & Co. and Boehringer.⁴⁶ In a meeting of the Cinchona Bureau, representatives of the quinine manufacturers emphasised the goal of the talks by stating, “we have to avoid that these manufacturers [the Germans] will buy their barks in Congo” and second, “the higher the number of manufacturers committed to the [Cinchona Producers] Association, the more advantages this has for it [the Association].”⁴⁷

Thus, the Dutch still believed in a revival of their prewar colonial networks of control in which the Cinchona Bureau would once again be the decision-making centre for controlling international cinchona and quinine markets. In 1955, for example, the representative of the Cinchona Bureau in Jakarta, H. J. Gorter, strongly advised Kaslan A. Tohir, chairman of the Commission for Cinchona Affairs of the Ministry of Agriculture of the Indonesian government, to abandon the policy of stockpiling cinchona bark in Indonesia; instead, it should be sent to the Cinchona Bureau in Amsterdam. Otherwise, he warned, “[quinine] manufacturers would not have quick access to the raw material” and henceforth Indonesian cinchona cultivation would not only offer a poorer product, but also provide less service than cinchona cultivators in the Congo. He added that because of the failure of the Dutch collaboration with Congokina, “a fierce competition between these two production areas” is now a reality.⁴⁸ In other words, holding on to the Cinchona Bureau system would be beneficial for both the Dutch and the Indonesians.

At the same time, however, the Indonesian government was working to change the colonial agro-industrial system of control that required that the cinchona bark be shipped to Amsterdam before being sold to the quinine manufacturers.⁴⁹ For example, the Indonesian representatives in Brussels were actively lobbying the Belgian government and the Congolese cinchona producers to come to an agreement independent of the Cinchona Bureau. By 1957, the Dutch ambassador in Brussels reported that the Indonesian representative had informed the Belgian Minister of Colonies to be “prepared to make direct contacts regarding the subject of cinchona between Indonesia and the Belgian Congo, preferably without the Dutch.”⁵⁰ The Belgian government was quite willing to discuss these matters with the Indonesians. Belgian officials were already raising questions in 1953, asking whether the Indonesian government could be persuaded to collaborate more actively with Congolese cinchona cultivators, “if the Cinchona Bureau lost its Dutch identity and were located elsewhere, for example Brussels, without the Dutch.”⁵¹ So, whereas the Cinchona Bureau believed in a revival of its position of control over the Indonesian cinchona cultivation, the Indonesian government had quite other intentions. As the Dutch ambassador in Brussels saliently remarked in April 1957, “I fear the managers of the Cinchona Bureau in Amsterdam are making too much an illusion of the real intentions of the Indonesian authorities.”⁵²

These intentions became a harsh reality when on 5 December 1957, Indonesian labour union members, students, and soldiers began seizing control of and expropriating more than 700 Dutch enterprises and businesses.⁵³ On 18 December 1957, the members of the Cinchona Bureau were informed that the Bureau's office in Jakarta had been taken over by state officials of the Indonesian Department of Agriculture and that students and soldiers had seized several cinchona plantations.⁵⁴ Although it took almost a year for the Indonesian government to legalise the seizures and declare a complete nationalization of all Dutch businesses, cinchona was fully nationalized by the summer of 1958. The Indonesian government, eager to take complete control of cinchona cultivation, had used the seizures to contract with the British trading firm Francis Peek & Co. making it the only company allowed to export cinchona bark from Indonesia.⁵⁵ In other words, by mid-1958 the Cinchona Bureau had lost control over Indonesian cinchona cultivation and had become completely dependent on the exports of a British trading firm and its client, the Indonesian government.

Contrary to what the Dutch were thinking in the mid-1950s, the changes to the networks of control could not be reversed. By the late 1950s, control of Indonesian cinchona cultivation was firmly in the hands of the Indonesian government. Meanwhile, German quinine manufacturers continued to buy Congolese cinchona—Boehringer even had its own Congolese cinchona plantations—and hence remained outside the Cinchona Bureau's control. The prewar colonial agro-industrial system was becoming a thing of the past and was gradually replaced by an industrial agro-industrial system based on new international networks with new centers of control.

New networks of control and the shift from colonial agro-industrialism to agro-industrialism (ca. 1960s)

With the Dutch loss of control over Indonesian cinchona cultivation in 1959, “the [quinine] manufacturers and the Cinchona Producers Association . . . agreed to give the manufacturers permission to buy [cinchona] bark wherever they want.”⁵⁶ At first, the Cinchona Bureau only granted this permission to the quinine manufacturers for the years 1959 and 1960. The cinchona producers still had high hopes that even if the old situation did not return, the Indonesian government would at least continue to export cinchona bark to the Cinchona Bureau. As the board's chairman stated during a meeting in September 1959: “I am aware that the Cinchona-Agreement and the Cinchona Bureau do not have the importance anymore of thirty years ago. Nonetheless, in the current circumstances the Cinchona-Agreement still has a useful function for the joined parties and maintaining it still provides some evident advantages for both parties.”⁵⁷

This optimism was based on the first two years after Indonesian independence when Francis Peek & Co. made “satisfactory” shipments of cinchona bark to the Cinchona Bureau, “which shows confidence for the future.”⁵⁸ However, by the mid-1960s, circumstances for the cinchona-quinine enterprise had changed for

the worse as the Indonesian government began selling cinchona bark to parties outside the Cinchona Bureau. In addition, Francis Peek & Co. had begun supplying cinchona bark to other quinine manufacturers, like the German company Buchler & Co. In a meeting with Francis & Peek in July 1960, the Dutch expressed “shock” at this change of events. They made it clear that they regarded Francis Peek as their “confidential agent” and were shocked at their behavior. “[W]e had expected that they would never do this [supply other quinine manufacturers], that they at least would have informed us regarding their intentions.”⁵⁹ The British responded that they did not regard themselves as the confidential agent of the Cinchona Bureau, but rather as the agent of the Indonesian authorities, and that the Dutch had no right to know their intentions.

The shocked response of the Dutch and Francis Peek’s reserved reaction clearly illustrates how the Dutch-led Cinchona Bureau had completely lost their decision-making powers and control over Indonesian cinchona cultivation by 1960, and henceforth their role in the international market. Without cinchona bark to supply to the quinine manufacturers, the core business of the Cinchona Bureau (which had given it such authority during the prewar decades) had ceased to exist. This coincided with a definitive collapse of the Dutch transoceanic network of cinchona-quinine production and trade. By December 1960, the chairman of the Cinchona Bureau announced that by November of that year the last stocks of cinchona bark had been allotted to the quinine manufacturers and after the last consignments of cinchona bark had been settled with Francis Peek, “a large part of the activities of the staff of the Cinchona Bureau would end.”⁶⁰ From January 1961, the Cinchona Bureau would abandon its headquarters on De Lairessestraat in Amsterdam and move their offices to the headquarters of D. C. & M. Watering & Co., a Dutch trading company and one of the largest cinchona producers, “to finish off the last activities.”⁶¹ Although the Cinchona Bureau was not completely abandoned, its activities were downgraded, the Cinchona Laboratory was liquidated, and their offices that had occupied since 1913 were abandoned. These were all clear signs that an end was coming to the decades-long collaboration between the cinchona producers and the quinine manufacturers centered on this once world-leading institution in the field of cinchona and quinine. In February 1961, the quinine manufacturers informed the cinchona producers, “With the stocks [of cinchona bark] of the [Cinchona Producers] Association exhausted, an end has come to its supplies and it is therefore no surprise that the manufacturers have taken the standpoint that at present an end has come [to our cooperation].”⁶²

By the early 1960s, after more than five decades, the close collaboration between cinchona producers and quinine manufacturers within the Dutch transoceanic cinchona-quinine enterprise was over. At the same time, Dutch quinine manufacturers had managed to position themselves at the forefront of the international quinine markets by opening alternative and flexible networks of raw material supply, and exchanging the colonial agro-industrial system for a globalized agro-industrial system. One central aspect that had changed considerably on the international

markets after the Second World War and contributed to the shifting networks of control was the rapidly declining role of quinine as an antimalarial medicine. As mentioned, significant funding from the United States government had resulted in the rapid development of safe and effective synthetic antimalarial medicines like atebriane and chloroquine.⁶³ This meant that the quinine industry was eager to find new markets for quinine and develop new medicines based on quinine. One of these was quinidine, a chemical extraction from quinine used in the treatment of cardiovascular diseases (or “disorders of the heart”).⁶⁴ By the late 1950s, the Dutch quinine industry (the Nedchem combination) and the German manufacturer Boehringer were the two largest quinidine producers in the world.⁶⁵ Furthermore, quinine became a much-in-demand ingredient for tonic production. Since the nineteenth century, quinine had been used in the production of tonics with branded names like *Schweppes Indian Tonic* and *Kina Lillet* (today known as *Lillet Blanc*).⁶⁶ During the 1950s and 1960s, the quinine market was gradually becoming a mixed market. However, control over the international markets (setting prices and controlling sales) was seen to be as necessary as it had been before the war, and this meant control over the entire product chain from raw material to final product.

In 1956, the three Dutch manufacturers—Amsterdamse Chemie Farmacie, Nederlandsche Kininefabriek, and Bandoengsche Kininefabriek—decided to reorganise their collaboration and strengthen their joint venture, Nedchem. By 1953, the BKF was already split into separate Dutch and Indonesian businesses, with the Dutch business forming a partnership with the ACF and NKF.⁶⁷ Second, the BKF’s activities were diversified between two production sites. The bulk production of the semi-finished product of quinine sulphate was concentrated on the premises of the NKF in Maarssen, south of Amsterdam, while the production of fine chemicals was to remain on the ACF premises in Amsterdam. Distribution activities were housed in a new subsidiary, the N. V. Pharmaceutische Groothandel. Third, the various laboratories that had been organized in the NKF and ACF by the late 1930s were brought together in the aforementioned Nedchem, located in Amsterdam.⁶⁸ Last, but not least, more emphasis was placed on the production of other medicines, like sulphonamides, anticoagulants, and iodine, which had begun slowly during the 1930s.⁶⁹ By bringing these various parts of quinine production and distribution into a more tightly controlled organization, Dutch quinine manufacturers anticipated new international developments and the scaling-up that occurred during the 1950s in the pharmaceutical and chemical industries.⁷⁰ Furthermore, they were able to act more cohesively and to position themselves within the changing networks of control of the cinchona and quinine markets.

Therefore, when Dutch collaboration with Congokina failed to secure the control over worldwide cinchona cultivation through the Cinchona Bureau by the mid-1950s, Nedchem’s management turned to the United States, where the government had announced the sale of their quinine stockpile of 13,8 million ounces (approximately 400.000 kilograms) “on the grounds that new synthetic antimalarials had made quinine obsolete.”⁷¹ Based on the small international quinine and quinidine markets,

this United States stockpile represented a large pool of raw material that could provide the Dutch with an alternative to Indonesian cinchona bark, and hence control over the international quinine markets. As a memorandum of the General Service Administration (the American agency entrusted with selling the stockpile) stated in 1956, "If the Dutch were to purchase the stockpiled quinine it would mean that no bark from the Dutch East Indies [e.g. Indonesia] would be required for many years until the U.S. Government stocks have been worked up and sold."⁷²

However, the purchase of this American stockpile proved to be more complex than anticipated. The Dutch re-established the international quinine cartel in 1959, to ensure that this precious source of raw material was not broken up into small parts and sold to various parties thus diminishing Dutch control. In collaboration with the German manufacturer Boehringer, Nedchem cunningly constructed a cartel in which three British and four French manufacturers agreed not to bid on the United States' stockpile in return for a share in the stockpile and raw material from Indonesia and Congo, which by 1959 were still largely controlled by Nedchem and Boehringer respectively.⁷³ In 1962, Nedchem succeeded in buying four-fifths of the stockpile and thus secured an important source of raw material. By this time, however, Nedchem had liquidated the cartel and the stockpile was only shared with the German company Boehringer. An important reason for Nedchem to break up the cartel was that it supposedly supplied Indonesian cinchona bark to British manufacturers and another German manufacturer, Buchler & Co. in 1961. In a meeting in 1961, the Dutch became "furious" when they heard that one of the British manufacturers had bought quinine from Bandung and "forced it to turn it over to the Convention to be shared."⁷⁴ However, British and German manufacturers' purchases of Indonesian cinchona bark, which the Dutch still regarded as theirs despite the loss of control three years earlier, gave Nedchem a reason not to share the stockpile and hence they maintained control of this important source of raw material.

In addition to the United States' stockpile, by the 1960s Nedchem began to build other networks of control through the acquisition of cinchona plantations in Congo, Rwanda, and Guatemala, and the purchase of totaquina, a crude form of quinine from the Boehringer-owned Pharmakina factory in Bukavu, Congo.⁷⁵ By 1963, Nedchem had bought approximately 800 hectares of cinchona plantations in Congo and Rwanda, of which 100 hectares were planted with cinchona trees through a "sound policy of maintenance" by 1965.⁷⁶ Agronomists in the service of Nedchem were able to improve the quality of the cinchona bark product on these African plantations in time for quinidine production, which by the early 1960s had become the most attractive quinine-derivative medicine to produce.⁷⁷ Furthermore, by the mid-1960s, Nedchem was collaborating with Buchler & Co. to buy the old cinchona plantations in Guatemala that had been established by the American pharmaceutical company Merck & Co. and the U.S. Department of Agriculture during the 1930s.⁷⁸ So, in the 1960s, the Nedchem combination, which had merged into one holding group called the *Amsterdamse Chemie Farmacie (ACF)* in 1967, succeeded in integrating their African and Central American agricultural production sites for

cinchona bark into their industrial complexes and take control over the entire product chain from raw material to final product.

Conclusion

In their study about networks and agricultural globalization, Busch and Juska have argued that as a result of contemporary advances in telecommunication and transportation technologies, multinational corporations have been increasingly dominant in agriculture by restructuring production processes and creating new forms of competition among suppliers of primary products.⁷⁹ Three closely linked reasons illustrate how this study fits with Busch and Juska's argument and show how through a similar process of globalization, colonial networks of control were replaced by new industrial networks of control and ultimately a colonial agro-industrial system was reconfigured into an agro-industrial system.

First, the networks within the entire product chain from raw material (cinchona bark) to final product (quinine) changed from the 1940s to the 1960s. Before the Second World War, the product chain was built on access to only one raw material production site: cinchona cultivation in the Netherlands Indies. With the emergence of new production sites in the Congo and Central America, however, raw material production sites became less central in the product chain. In this way, the connections between the various links in the chain from cultivation to sales became looser, and this resulted in new forms of competition among the suppliers of the primary product of cinchona bark. This process of globalization of the raw material (agricultural) sites was thus strongly influenced by the Japanese occupation of the Netherlands Indies and the subsequent decolonization of Indonesia. Not only became the Dutch trans-oceanic enterprise isolated during the Second World War, Congolese cinchona cultivators were strongly motivated to improve and expand their high-quality cinchona bark production. The subsequent process of Indonesian economic decolonization and the deglobalization of Dutch business networks in Indonesia during the 1950s further stimulated this process of (agricultural) globalization.

Second, ownership of agricultural cinchona bark production gradually shifted to the quinine industry. Whereas, initially, the cinchona producers controlled the production site of cinchona bark in alliance with the Cinchona Bureau, by the late 1950s, the quinine industry had gained control over the product chain. The Indonesian decolonization process of the 1950s and the Dutch cinchona producers' loss of control over Indonesian cinchona cultivation both influenced the change in control of the product chain. These events resulted in the disintegration of the close collaboration between cinchona producers and quinine manufacturers within the Cinchona Bureau.

Third, the shift in industrial priorities to production and marketing of the final product and away from a focus on raw material access commercialized the agro-industrial system in such a way that the price of the raw material became more important than its geographic location. In this sense, distribution lines between the

Congo and Europe were commercially shorter and more profitable than the longer lines between Indonesia and Europe. This was strongly influenced by the changing economy of scale in both the Dutch and international quinine industry. During the 1950s, the three Dutch quinine manufacturers strengthened their cooperation by further integrating the production and distribution processes and hence gradually emphasized the production and marketing of the final product over access to raw material. At the same time, three pharmaceutical companies began to strongly dominate the international quinine industry: the Amsterdamsche Chininefabriek in the Netherlands and Buchler & Co. and Boehringer in Germany.

This study thus reinforces Thomas Lindblad's argument that Indonesian economic decolonization was a much more drawn out process than merely the transfer of political power in 1949. At the same time, this study shows how in the case of cinchona and quinine, the process of globalization of the agricultural production sites of cinchona bark created new networks of control for the entire product chain and a reconfiguration of a colonial agro-industrial system into an agro-industrial system. Finally, this study of the globalization of the cinchona and quinine product chain is exemplary for the powerful, transformational forces of the globalization process in the postwar international pharmaceutical industry.

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NA = National Archive, The Hague:

— NHM = Archives of the Nederlandse Handel Maatschappij, the Netherlands Trading Association.

— Londens Archief = Archives of the Ministerie van Buitenlandse Zaken te Londen, the Ministry of Foreign Affairs in London.

— Code Archief = Archives of the Ministerie van Buitenlandse Zaken: Code Archief 1955-1964, the Ministry of Foreign Affairs: Code Archief 1955-1964.

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— KIT = Colonial Collection.

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Notes

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- 1 Fitzgerald, “Beyond Tractors,” and Daniel, *Breaking the Land*. See also, Roersch van der Hoogte and Pieters, “From Javanese Coca to Java Coca.”
 - 2 Roersch van der Hoogte and Pieters, “From Javanese Coca to Java Coca.”
 - 3 Daniel, *Breaking the Land*, chapter 11.
 - 4 Ibid, 487.
 - 5 Busch and Juska, “Beyond Political Economy,” 689–94.
 - 6 Jones, “Multinational Strategies and Developing Countries in Historical Perspective.”
 - 7 Homburg and Rip, “De chemische industrie in de twintigste eeuw,” 405. See also Baggen, Faber, and Homburg, “The Rise of a Knowledge Society,” Faber, *Kennisverwerving*, and Sluyterman, *Dutch Enterprise*, chapter 3.
 - 8 Homburg, Selm, and Vincken, “Industrialisatie en industriecomplexen,” Reynders en Van Winden, *De Farmaceutische Industrie*, and De Jong

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- 9 See Sluyterman, *Dutch Enterprise*, chapter 3.
 - 10 Thee Kian Wie, "Indonesianization," Lindblad, *Bridges to new business*, chapter 7, and Lindblad and Post, *Indonesian Economic Decolonization*. See also Doel, *Afscheid van Indië*, and Bogaerts and Raben, *Van Indië tot Indonesië*.
 - 11 Roersch van der Hoogte and Pieters, "Science in Service of Colonial Agro-industrialism."
 - 12 Roersch van der Hoogte and Pieters, "Science, Industry and the Colonial State."
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- 73 Ibid, 3–8.
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- 75 NA, N.V. Nederlandsche Combinatie voor Chemische Industrie aan de Vereen- iging van Kinabast-Producenten, 7 februari 1961, NHM 9001, Heuschen, “Maars- sen en de Nederlandsche Kinine- fabriek NKF (1905–1967),” 46–47 and De Telegraaf, 12 April 1986.
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- 78 Heuschen, “Maars- sen en de Nederlandsche Kininefabriek NKF (1905–1967),” 46–47, and United States, *Prices of Quinine and Quinidine*, 3.
- 79 Busch and Juska, “Beyond Political Economy,” 694.