

From Autonomy to Partial Alignment: National Malaria Programs in the Time of Global Eradication, Brazil, 1941-1961

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Abstract. This article analyses the Brazilian experience in the battle against malaria from 1941, when the Serviço Nacional de Malária (National Malaria Service) was created and a large-scale national program for malaria control begun, until the end of the Kubitscheck administration (1956-61) when Brazil joined the Global Malaria Eradication Program (MEP), led by the World Health Organization (WHO). We will discuss the relationship between the national program, aimed at controlling—and, in short order, eliminating—malaria using Brazilian strategies and methods and the international health organization's exclusively eradication-based program. Of particular importance is the role played by malariologist Mário Pinotti, who developed a special method for malaria control in the Amazon region, based on chloroquinated cooking salt, and who wielded tremendous political influence upon Brazil's public health path during the 1940s and 1950s. The article also highlights the implications of changes in Brazilian-US relations during the Kubitscheck term for Brazil's adoption of a malaria eradication program according to the WHO model.

Résumé. Cet article analyse l'expérience brésilienne de la lutte contre la malaria de 1941, quand Serviço Nacional de Malária (Service national de malaria nationale) a été créé et qu'un programme national à grande échelle pour le contrôle de malaria a commencé, à la fin de l'administration de Kubitscheck (1956-61) quand le Brésil a joint le programme global d'éradication de la malaria (MPE), mené par l'Organisation mondiale de la santé (OMS). Nous discuterons des relations entre le programme national, visant à contrôler et, à court terme, à éliminer la malaria en utilisant les stratégies et les méthodes brésiliennes, et le programme d'éradication exclusif aux organisations internationales. Une attention particulière est accordée au rôle joué par le malariologiste Mário Pinotti, qui a développé une

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méthode spéciale de contrôle de la malaria dans la région de l'Amazone, basée sur le sel de cuisine choroquiné, et qui a exercé une influence politique énorme sur la santé publique du Brésil pendant les années 1940-50. L'article met aussi l'emphasis sur les implications des changements dans les relations brésilio-américaines au terme du gouvernement de Kubitscheck dans l'adoption au Brésil d'un programme d'éradication de la malaria selon le modèle de l'OMS.

Resumen. Esse artigo analisa a experiência brasileira no combate à malária de 1941, ano da criação do Serviço Nacional de Malária quando se inicia um programa de controle da malária, até o ano de 1961, fim da administração de Juscelino Kubitscheck, durante a qual o Brasil começou a aderir a Campanha Global de Erradicação da Malária liderada pela Organização Mundial de Saúde (OMS). Discute as relações entre um programa nacional que se propunha controlar e, no médio prazo eliminar, a malária por meio de estratégias e métodos nacionais e as recomendações das agências da saúde internacional para adoção de programas exclusivos de erradicação. Destaca o papel fundamental do malarologista Mário Pinotti, o método por ele idealizado para o combate à malária na Amazônia—o sal de cozinha cloroquinado, e a sua influência política nos rumos da saúde pública brasileira nas décadas de 1940 e 1950. Ressalta a importância da reconfiguração das relações com os Estados Unidos durante o governo Juscelino Kubitscheck para o início da adoção de um programa de erradicação da malária pelo Brasil nos moldes propostos pela OMS.

INTRODUCTION

Malaria is really no longer the most serious public health problem in Brazil! —Juscelino Kubitscheck, presidential candidate, 1955

The eradication of malaria is one of the main goals of the public health system. —Juscelino Kubitscheck, President of Brazil, 1958

In the mid-1950s, Brazil, having restored democracy at the end of 1945, was engaged in an intense debate on the possible paths of economic development, on the national integration and modernization of the Brazilian hinterlands, and on the future of the country. The physician Juscelino Kubitscheck de Oliveira (JK), Governor of the State of Minas Gerais (1951-55), was running for President on a platform calling for Brazil's increased participation in the capitalist world through intensified industrialization based on import substitution. Elected in October 1955, he took power on 31 January 1956 for a five-year mandate. Kubitscheck's motto, *50 years in 5*, coupled with his ambitious plans for Brasília—the new modernist capital to be built in the interior of the country—revealed the optimism of the ongoing political process, which reinforced the role of the state in planning for and supporting development.

The *Programa de Metas* (Program of Goals) that Kubitscheck presented after taking office contained 30 specific objectives in 5 sectors: energy,

transportation, food, heavy industry, and education.¹ There were no objectives specifically concerning health, although health would be indirectly affected by increases in agricultural production and in human resources training for development. Even during the government of Eurico Dutra (1946-50), when health was part of the first overall state development plan (Salte Plan: Health, Food, Transport, and Energy), little was done in this area. According to some analysts, health was included in Brazil's post-1945 state plans more as rhetoric than as concrete objectives and actions for development.²

Even though health was not a priority for JK's administration, his health plan—signalling important changes—nonetheless figured in his 1955 electoral campaign. First, he insisted that Brazil could no longer be known as a country devastated by diseases and epidemics. He believed that significant improvements had been made with the elimination of epidemic diseases such as yellow fever, and in other fields of public health. Kubitscheck sought to avoid the pervasive characterization of Brazil as a "huge hospital," as first mentioned by the physician Miguel Pereira in 1916. Pereira's notion led to an important political movement for the sanitation of Brazil, resulting, by 1920, in the creation of the first national public health organizations and activities. For Kubitscheck, the stamp "sick country"—if true in the early 20th century—had become meaningless in the context of advancements in the fields of medicine and health. Rejecting this negative image, he declared: "o Brasil não é só doença,"—"there is more to Brazil than disease."³

Secondly, JK placed at the top of his sanitary agenda the control of mass diseases, particularly rural endemic diseases, a concern of public health physicians since the 1910s. However, there were important rhetorical and practical changes to this agenda. Not only was malaria an "almost resolved" problem restricted to a few areas of the national territory, it was to be removed from the group of endemic diseases marked as priorities for government action. For Kubitscheck, malaria could soon be "banished" from Brazil and was no longer the nation's greatest health problem, an accomplishment he credited to the long-term and persistent work of Brazilian malariology and disease control programs.⁴ The victory over malaria, then, was a victory for Brazilian science and public health.

In May of 1955, as JK was campaigning for President, the 8th World Health Assembly, held in Mexico City, approved a resolution to launch a global-scale malaria eradication program under the coordination of the World Health Organization (WHO). The program was to start immediately with the aim of achieving eradication within a limited time period. The year before, in Santiago, Chile, the Pan-American Sanitary Bureau (PASB), in 1958 renamed the Pan-American Health Organization (PAHO) had passed a similar proposal for the Americas.⁵

Notwithstanding JK's pronouncements, Brazil was considered one of the key locales for any international effort in the battle against malaria. Between 1939 and 1941 the country experienced a breakthrough with the elimination of one of the mosquito transmitters of malaria, *Anopheles gambiae*, through a joint effort between the Brazilian government and the International Health Division (IHD) of the Rockefeller Foundation. Starting in 1941, with the creation of the Serviço Nacional de Malária (National Malaria Service), Brazil carried out systematic activities for the control of malaria, endemic to several regions of the country's vast territory. Organizational infrastructure was created, research activities were pursued, drugs and insecticides were tested, produced and distributed, and regular campaigns were undertaken. In this process, a well-organized group of malariologists emerged, who were recognized for their actions on behalf of Brazilian public health.⁶ Kubitscheck, together with Brazilian malariologists and international agencies, shared a sense of optimism regarding the control—and even the eradication—of transmissible diseases thanks to new drugs, insecticides, and the rational organization of the public health sector. What made Presidential candidate JK's proposal different from the recommendations by the WHO and PASB/PAHO was its strategy to reach these goals.

Despite JK's initial position during his electoral campaign, by 1958 the Brazilian government was slowly accepting malaria eradication as a goal. However, the country's maintenance of both control and eradication actions, as well as the malaria program's intermediate level within the Ministry of Health hierarchy—a subordinate location which lasted until 1965—were in disagreement with PASB/PAHO and WHO guidelines. This peculiarity of the Brazilian response must be understood in terms of political and institutional resistance to change in the structures, practices, and techniques for malaria control that had been in place since 1941, and which were widely viewed as successful, innovative, and adapted to the national reality. At the same time, an eradication program offered the Brazilian government the opportunity to obtain valuable international funding; which could enable public health physicians to finish the work they had begun in the 1940s and to be recognized for the elimination of malaria in Brazil.

Among the decisive factors for the Brazilian government's shift in attitude between 1955 and 1958 were the changes in the international environment and in Brazilian foreign policy, particularly its relations with the United States and the role the US came to play in the Malaria Eradication Program (MEP) of the WHO. In this period the issue of financing for economic development, particularly for the construction of infrastructure needed for industrialization, dominated the national agenda and led to increasing demands for resources to combat poverty and overcome underdevelopment.⁷ As such, in 1958 the main diplo-

matic initiative of the Kubitscheck government was presented—the Operação Pan-Americana (OPA) (Pan-American Operation), based on the premise that the US should accept political and financial responsibility for eliminating Latin-American underdevelopment. During the Cold War, this multilateral pact was presented by JK as consistent with the strategic interests of the US. Underdevelopment was seen as a cause of political instability in the continent which left open the possibility that “exogenous” ideologies—namely communism—could gain influence due to the low living standards of Latin American populations.⁸ The “war against malaria,” declared by Dwight Eisenhower in his second term as US President was transformed into “reality” through the deep involvement of the International Co-operation Administration (ICA), a US State Department agency, in funding and providing technical assistance for the eradication of malaria as of 1957.⁹

Malaria was thus addressed at the intersection of national health policies, international agency activities, development projects, and US interests. As such, the Brazilian programs for malaria control and eradication of the 1940s and 1950s must be understood as having emerged at a crossroads of national and international interests which shaped their development in a dynamic fashion.¹⁰

This article analyses the encounter between the Brazilian experience in fighting malaria in the mid-20th century and the range of international health efforts that sought to influence Brazil’s approach to malaria, paying special attention to the debate on economic development that grew during the Kubitscheck administration and of changes in US-Latin American relations. It begins by examining the establishment of national efforts against malaria with the creation of the Serviço Nacional de Malária in 1941 and the intensive use of DDT after World War II. It then discusses the specific strategy for malaria control in the Amazon Region proposed by Brazilian malariologist Mário Pinotti: the free distribution of chloroquinated cooking salt. The third part of the article explores Brazil’s change of heart in relation to the WHO’s eradication program, linked to a combination of internal and external factors, such as funding for development, the new pattern of Brazil-US relations, and the participation of both countries as partners with PAHO/WHO for the eradication of malaria. The final section focuses on the relationship between national programs and international organizations in the health field, based on Brazil’s trajectory as an important actor in the international health arena.

COMBINING INSECTICIDES AND DRUGS: FIGHTING MALARIA IN BRAZIL, 1941-55

The period corresponding to the end of the first mandate of President Getúlio Vargas (1930-45) was marked by decisive moments for Brazil-

ian politics¹¹: the rupture in 1930 from the so-called oligarchic republic (1889-1930), which was organized along an agricultural export-driven economic model, and the early steps towards a state-led industrialization process. In this period, particularly during the Estado Novo (1937-45), when Vargas governed as a dictator, important reforms in the public health system were undertaken. One landmark was the creation in 1930 of the Ministry of Education and Public Health, with the goal of increasing the state's organizational and technical capacity to act throughout the entire national territory. The new public health system emerged as a consequence of a slow but continuous process of reforms for the expansion of rural sanitation and health services begun in the mid-1910s, especially involving campaigns against rural endemic diseases. This process, in turn, derived from demands of the medical-hygienist movement, with its strong statist and nationalist ideologies.¹² After 1945, the year democracy was restored, public health became the heir of the system built during the Vargas years, characterized by the institutionalization and bureaucratization of the health sector.¹³

In the early 1940s, the first permanent national sanitary facilities were created to combat malaria, which was considered by many to be the main national problem in the field of health. In 1941, the Serviço Nacional de Malária (SNM) was created. In 1942, the Serviço Especial de Saúde Pública (SESP) (The Special Public Health Service) was created as a joint project with the US government through the State Department's Institute of Inter-American Affairs (IIAA), and as a result of Brazil's involvement with the Allied forces during World War II.¹⁴ Among other responsibilities, SESP was in charge of malaria control in areas of strategic natural resource extraction, including rubber and ore. Notably SESP activities took place without the participation of SNM.¹⁵ These two organizations, especially the SNM, reflected a new stage of Brazilian government involvement with malaria, replacing the previous episodic responses to epidemic crises that characterized actions against malaria until the end of the 1930s.

This more permanent and consistent action for malaria control was facilitated by the introduction of new techniques and technologies in public health and malariology. Starting in the 1930s, these included larvicides, pesticides, drugs and models for campaign organization and administration of services, as well as new knowledge on the epidemiology of malaria, on mosquitoes and their ecology, on the biology of parasites, and on industrial chemistry. World War II increased the demand for pesticides and insecticides for the war in the Pacific and for synthetic substitutes for quinine, whose supply was strongly affected by wartime conditions.

It is important to note that starting in the mid-1910s, Brazilian sanitary services had worked closely with the Rockefeller Foundation. At first, joint efforts were aimed at battling hookworm; later, they turned to a

huge program against the yellow fever mosquito and to vaccine production. Eventually, Rockefeller-Brazilian co-operation led to the elimination of the mosquito *Anopheles gambiae* from the Brazilian Northeast between 1939 and 1941, under the leadership of Fred L. Soper. Other key initiatives included the establishment of public health and nursing schools.¹⁶ Although this long-term co-operation was important for the diffusion and assimilation of the Rockefeller model of health campaigns, by no means did it result in the subordination of the Brazilian government's role nor did it substitute for national actions and traditions in the field of public health. The elimination of *A. gambiae* reinforced the notion that anti-malarial actions should focus on attacking the parasite and vector (rather than on the human host), and encouraged Brazilian and Rockefeller physicians, particularly Soper, to continue their work by moving the resources and equipment used during the campaign in the Northeast to other endemic regions in Brazil. Even so, the origins of the Serviço Nacional da Malária cannot be traced to the IHD nor was the SNM directly inspired by it. To the contrary, the opportunity for and founding of the SNM were primarily the result of centralization reforms of the Ministry of Education and Health.¹⁷ This model envisioned national organizations as coordinators of programs against specific diseases for the entire country even though activities might be undertaken via agreements with states and municipalities.¹⁸

The SNM's creation was also linked to Vargas's public health and sanitation plans for the Amazon Region; to this end a team of physicians and hygienists had been organized under the leadership of Evandro Chagas (1905-40), the oldest son of Carlos Chagas and a researcher at the Instituto Oswaldo Cruz (Oswaldo Cruz Institute). Evandro wanted a malaria service for the region, which would eventually become a national service.¹⁹ His premature death in November 1940, as well as the involvement of the US and Brazil in World War II aborted not only the Brazilian project for the Amazon Region, but also Soper's intention to continue his work against malaria in other regions with the same campaign structures as used against *A. Gambiae*. As such, both Soper and João de Barros Barreto—the all-powerful director of the Departamento Nacional de Saúde (National Department of Health)—were displaced when SESP was created as an independent bilateral Brazil-US agency.²⁰ Although SESP was not under Barreto's control, the SNM pursued its work in other parts of the country.

In the first few years of SNM activities, actions were geared toward the attack on water-stages of malaria-transmitting mosquitoes in endemic areas. In order to eliminate the problem of stagnant water as breeding sites the SNM operated drainage works and applied larvicides such as Paris green and pyrethrum. At the same time the SNM sponsored epidemiological and entomological surveys and research. The sys-

tematic use of Dichloro-Diphenyl-Trichloroethane (DDT) and of the new anti-malaria products developed since the 1930s as alternatives to quinine began in 1946.²¹

The SNM structure and board of directors were barely affected by the end of the Vargas government or by the re-democratization of the country in 1945. SNM became the main foundation for the sanitary actions in the interior of Brazil until 1956, when part of the national services were brought to the Departamento Nacional de Endemias Rurais (DNERu) (National Department of Rural Endemics Diseases).²² In 1942, Mário Pinotti became the head of SNM and was the most prominent actor in Brazilian public health in the years after World War II; he later became the director of DNERu (1956-58) and Kubitschek's Minister of Health (1958-60).²³ Starting in 1946, malaria was discussed in all presidential messages sent to the National Congress, referred to as one of the main problems in public health and an obstacle to land and rural labour productivity. In his message to the National Congress in 1949, for example, President Eurico Gaspar Dutra (1946-50) expressed his optimism that the anti-malaria actions during his government would be successful and commented upon the importance of malaria as:

the most pernicious (disease), because of the virulence of the problem and the amplitude of its zones of incidence. However, the objective that up to a few years ago seemed unachievable—the liberation of more than 8,000,000 Brazilian victims of the malaria calamity—has begun to offer the possibility of being reached due to the campaign undertaken by the Government, which promises to yield even more auspicious results.²⁴

One of the demands by SNM professionals was the creation of a scientific research institute to provide support for field activities. The Instituto de Malariologia (Malariology Institute) (IM) was founded during President Dutra's term as a school and specialized centre for malaria studies to train technicians and enhance working methods based on scientific premises. The IM was inaugurated in May 1948 in the city of Duque de Caxias, in the state of Rio de Janeiro. The Institute focused its research and training activities in the areas of chemistry, parasitology, entomology, and sanitary engineering, in addition to ecological studies on malaria-transmitting mosquitoes. The IM also manufactured DDT and pioneered the production and testing of the insecticide benzene hexachloride (BHC), and began its use in 1950 during the first campaign against Chagas disease and filariasis.²⁵

According to the evaluation of its staff, the SNM could control malaria on the Brazilian coast and waterways through the application of insecticides and the distribution of synthetic anti-malarial products.²⁶ These actions were carried out mainly in endemic areas, such as the São Francisco River valley (states of Minas Gerais and Bahia), Baixada Flumi-

nense (large areas surrounding the city of Rio de Janeiro, then the federal capital), and along the southern coast of the country. DDT was introduced in Brazil in 1945, and starting in 1946 it became more systematically and intensively used during the campaign in the São Francisco River region, covering endemic areas of the northeastern states (Bahia, Alagoas, and Sergipe) and an important southeastern state, Minas Gerais; these areas were sparsely inhabited, extremely poor, and predominantly rural. During this initial period, DDT spraying was combined with the distribution of anti-malarial drugs, as well as with drainage works and anti-larval actions.²⁷ In the Brazilian Amazon and the Rio Doce Valley, an important ore-producing area in Minas Gerais, these actions remained under the responsibility of SESP and its North-American technicians between 1942 and 1950.²⁸

At the end of 1947, the "DDT era" took over Brazil. The main national newspapers announced in their pages the beginning of a large campaign for the use of DDT in the State of Rio de Janeiro. The campaign would last for two months and include 1821 locations in 30 municipalities, from the north to the south of the state, including all municipalities within the boundaries of the federal capital. The campaign provided new guidelines for actions against malaria throughout the country and was launched within a few months of the passage of an August 1947 agreement between the federal and Rio de Janeiro state governments for DDT spraying over the entire malaria region known as Baixada Fluminense. Envisioned by Pinotti, the actions were based on the smaller-scale campaign carried out the year before in the São Francisco River valley.²⁹ The 1947 campaign is considered one of the first in South America to use mass DDT spraying in urban and suburban homes as its main strategy for endemic areas.³⁰ From a broader perspective, the goal was to free the area of malaria and to divide and colonize the land, allowing for better land use and economic recovery of the region, which was poor and degraded although contiguous to the capital of the country.

The campaign conducted in Baixada Fluminense also served as an experiment in the provision of drugs to patients with malaria through the free distribution of chloroquine, an anti-malarial drug that had gained importance after World War II. For this purpose, a large network of Unidades Distribuidoras de Antimaláricos (UDAs) (Anti-Malarial Distribution Units) was organized all over the region, and included not only the existing public health centres, but also public and private schools, farms, city and town halls, post offices, and churches. Pinotti implemented for the first time the administration of one-dose chloroquine; according to him, the goal was the immediate clinical cure of the patient to avoid the interruption of his or her activities. He argued that the drug had great advantages over previous anti-malarials that required longer treatments under the care of specialists. The shorter one-dose

treatment, which could be provided by the UDAs, precluded the need for complex and expensive facilities. After that, chloroquine became the most prescribed anti-malarial drug in the SNM arsenal.³¹

With wide coverage and dissemination by the local and national press, the campaign against malaria in Baixada Fluminense was compared—as was typical with this kind of sanitary intervention—to a military crusade in the “anti-malarial battle”; the working teams were called “anti-malarial armies” or “shock brigades,” and the DDT aspersions equipment called “armaments,” metaphors employed in the militarized model of yellow fever campaigns since the early 20th century. According to official data and newspaper accounts, 130,419 buildings were sprayed with DDT in an area of almost 28 million square meters where approximately 700,000 people lived.³² In the first trimester of 1948, SNM technicians sought to verify the results of the campaign by inspecting a large number of previously DDT-sprayed buildings. They found a significant decrease in household anopheline density as compared to the three previous years, demonstrating the residual effectiveness of DDT. Furthermore, there was a notable reduction in malaria incidence according to data on malaria morbidity and results of blood tests in inhabitants of several locations. In 1947, DDT and chloroquine were considered the best weapons to control mosquitoes and parasites, thus establishing the technical and organizational bases for subsequent SNM actions and malaria control in Brazil. As of that time sanitary engineering works were no longer a responsibility of the SNM, reverting to other departments and sectors in the Ministry of Education and Health.

Nonetheless, the big challenge for the “DDT era” in Brazil was the endemic malaria problem in the huge rural zone in the Amazon Basin, where a dispersed population lived in and around an enormous network of waterways with difficult access. The region’s principal economic activities were hunting, fishing, mining, and rubber extraction carried out by a population living in precarious homes. The non-domiciliary habits of the main mosquito-transmitter of malaria in the region also hindered the efficient use of DDT in dwellings and shelters. In 1950, when SESP transferred to SNM the responsibility for controlling malaria in the Amazon Region, Pinotti and his collaborators at the IM were looking for alternatives to DDT in stopping the transmission of the disease in the region.³³

In 1952, Mário Pinotti pinned his hopes on experimental research at the IM and in the field to develop a prophylactic drug to resolve the endemic malaria problem in the Amazon Region. At this time chloroquinated cooking salt or, as it is better known, “Pinotti’s method” was developed.³⁴ The idea was borrowed from the successful addition of iodine to cooking salt to prevent endemic goiter. Iodine additives became mandatory in Brazil in 1953.³⁵ Pinotti’s anti-malarial method consisted of

mixing 50 mg of chloroquine to every 10g of cooking salt and distributing it for free, expecting that under normal conditions an individual using 10-15g of salt per day would take in 50-75 mg of chloroquine. The expected result of the distribution and consumption of chloroquinated salt was the elimination of all sources of infection among the population using the salt. The transmission would be interrupted for a period of 3 to 4 years, eliminating the parasites in human carriers. The first experiments to observe the degree of toxicity, chloroquine stability, parasitological results, and acceptability of the salt's taste by the population were conducted in 1952-53 on hospitalized patients and rural populations in endemic areas of different states. The entire process involved epidemiological studies and surveys to evaluate effectiveness as well as the production, transportation, and distribution of the anti-malarial product added to cooking salt.³⁶ Even the workers at the IM participated in the experiment: for two months in 1952, the food served for lunch was seasoned with chloroquinated salt.³⁷

In 1953, the free distribution of chloroquinated salt for consumption by the Amazon Region population turned into an SNM proposal as the main strategy for malaria control in Brazil. Pinotti and other Brazilian malariologists started to seriously contemplate the possibility of eradicating malaria by combining insecticides, chemotherapy, and the chloroquinated salt.³⁸ Given the country's size and the differences among endemic areas, SNM needed to use different strategies.³⁹

The logistics for undertaking this "contextual strategy"—which was based on the specific characteristics of malaria in Brazil and in the Amazon Region—would both depend on and strengthen SNM's capacity to mobilize resources and operational facilities for research, mainly for using DDT and chloroquine in endemic zones of different regions in the country. Distributing the chloroquinated salt in the interior of the Brazilian Amazon Region proved to be a challenging task. The complex endeavor entailed everything from air transportation and the combination of SNM vessels and smaller boats for navigating in streams, to the building of facilities for salt production, the mobilization of teams to distribute the medicine, and epidemiological research. These actions revealed the difficulties of eliminating the disease from large areas with sparse populations, precarious homes, and scarce transportation.

Although the chloroquinated salt method responded to specific conditions, it was planned and implemented within the same framework as its counterpart in the rest of the Brazilian program—DDT. In other words, chloroquinated salt was regarded as a "Brazilian magic bullet" that did not require deep knowledge or negotiation with the local populations who would take it; it was expected that not only would Amazonian populations consume the salt provided to them for free, but they would be protected from malaria because of this measure.

According to Mário Pinotti, in 1953 the chloroquinated salt had already shown its effectiveness in stopping malaria transmission in different regions of the country, including the Amazon, where it was prescribed as a substitute for residual insecticides in areas where they were unable to control malaria due to technical or economic reasons.⁴⁰ Recognition of the prophylactic and therapeutic method occurred immediately in the Brazilian media and in specialized fora. In December 1953, Rio de Janeiro newspapers placed on their front pages news of the “new discoveries of Brazilian science,” on “immunization against malaria,” and the “definitive cure for the disease” and published interviews with Pinotti on the chloroquinated salt. The same newspapers wrote about the success of Pinotti in presenting his method in international forums such as the 5th International Congress on Tropical Diseases and Malaria in Istanbul, held in September 1953.⁴¹ The Xth Brazilian Congress of Hygiene in Belo Horizonte (capital of the state of Minas Gerais), held in October 1952 under the auspices of then State Governor Kubitschek served as the stage for the consecration of both chloroquinated salt, still undergoing field experimentation, and for its inventor, Mário Pinotti.

Carlos Alvarado, Director of Public Health in Argentina and himself a famous international malariologist corroborated the enthusiasm for Pinotti’s malaria chemotherapy in situations when insecticides did not work. He also recognized the Pinotti method as a valuable contribution for the control and eradication of malaria in the Americas, praising the scientists who had “the ingenious idea” of mixing chloroquine with cooking salt in order “to control malaria wherever the wonderful insecticides of residual action have failed.”⁴² Alvarado made this declaration before some of the world’s most important and respected malariologists, including Venezuelan Arnaldo Gabaldón, who, in his own speech on the Venezuelan experience, emphatically defended eradication.⁴³

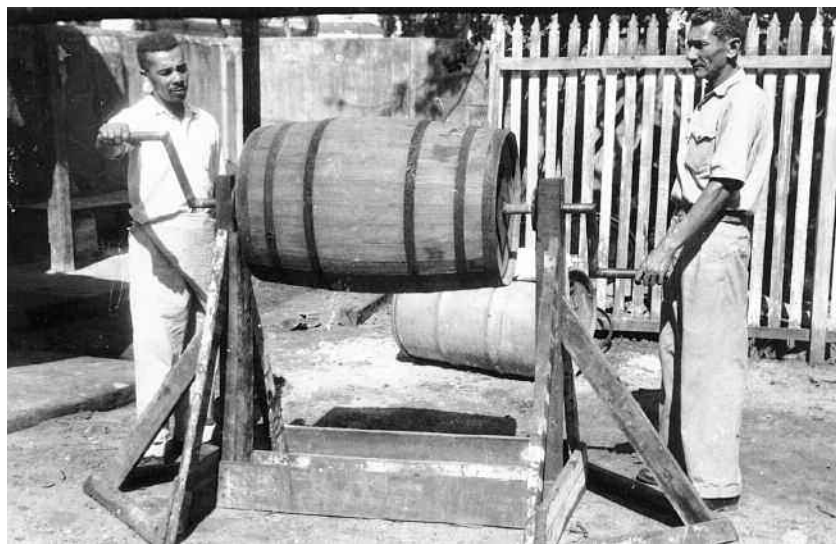
In sum, the first few years of the 1950s offered promising prospects both in Brazil and abroad for the eradication of endemic diseases, particularly malaria. The eradication of malaria was atop the sanitary agendas of numerous governments and international agencies involved with health, such as WHO, PASB, and UNICEF.⁴⁴ The overwhelming enthusiasm for insecticides and chemotherapy—despite early indications that mosquitoes were becoming resistant to DDT—created a situation whereby national governments, international agencies, and the malariology community agreed that there was no alternative, as Randall Packard has argued, to the adoption of an urgent global eradication program, ultimately undertaken by WHO.⁴⁵

Although this debate was echoed in Brazil, the main leaders of the battle against malaria were convinced that eradication could be achieved only slowly, autonomously, and safely. In 1947, and for almost a decade, a considerable part of the Brazilian endemic areas and respective popu-

lations were reached by DDT and chloroquine. All observations pointed to a significant decrease in the number of cases in areas where the SNM worked. One indication of the large investments in the malaria program and of the growing power of Pinotti and his fellow malariologists was that in the early 1950s the SNM had become a powerful, extremely hierarchical, and complex organization with responsibilities that went well beyond malaria to include battles against Chagas disease, filariasis, leishmaniasis, and schistosomiasis. SNM had 8,000 employees, approximately 450 vehicles of different kinds, plus airplanes and boats.⁴⁶ It produced DDT and conducted research and tests of new techniques, therapeutics, and insecticides. The SNM budget and personnel expenses were larger than the sanitary services in all other countries in the Americas with endemic malaria. The organization was well respected by the international scientific community and as of 1949, it published a renowned journal, the *Revista Brasileira de Malariologia e Doenças Tropicais* (Brazilian Journal of Malariology and Tropical Diseases), which regularly issued the results of SNM activities.⁴⁷

According to Fernando Bustamante, one of the main Brazilian malariologists and subsequently director of the national eradication program (1958), malaria, which was one of the main national problems in 1945, was “on its way to being solved” by 1952, even as chloroquinated salt was still being tested.⁴⁸ As echoed by Getúlio Vargas in his presidential message to

Figure 1



Aspects of Production of Chloroquinated Salt, Amazon Valley, 1953. Courtesy of the Casa de Oswaldo Cruz-Oswaldo Cruz Foundation, Rostan Soares papers.

Figure 2



Chloroquinated Salt Distribution, Capim River, Amazon Valley, c. 1955. Courtesy of the Casa de Oswaldo Cruz-Oswaldo Cruz, Aristides Lima Verde Papers.

Figure 3



Epidemiological Inquiry Conducted by SNM, State of Pará, Amazon region, c. 1952-53. Courtesy of the Casa de Oswaldo Cruz-Oswaldo Cruz Foundation, Rostan Soares papers.

the National Congress in 1953, the decline of malaria cases in Brazil was encouraging thanks to DDT, prophylactic drugs and the work of the SNM:

Considered the worst problem in the country just over five years ago, malaria today is on its way to a solution. The disease occurred in approximately 75 percent of the municipalities in the Country corresponding to an area of approximately [7500 square km], with a population of over 20 million inhabitants. The number of malaria cases per year was 8 million, according to a reasonable estimate, and the deaths went from 50 to 80 thousand. It is easy to imagine the economic damage caused by such a situation. With the discovery of D.D.T. and the great campaigns against malaria undertaken by the Government, malaria is no longer a big health problem in most of the national territory and the decrease in morbidity is already 90% or more. The disease is not a cause of death in protected areas nor an obstacle for their inhabitants' work.⁴⁹

MALARIA IN TIMES OF CHANGE: THE KUBITSCHEK ADMINISTRATION AND THE SLOW SHIFT FROM CONTROL TO ERADICATION

Juscelino Kubitschek's election and his first year in government were characterized by challenges to the election results by the defeated political parties and groups, several military rebellions aimed at stopping him from taking office or at overthrowing him, and by an unfavourable economic situation.⁵⁰ The political turbulence derived partly from the structural economic problems and political crisis that led former President Getúlio Vargas to commit suicide in August 1954, which itself caused widespread political and economic instability in 1954-55. Kubitschek's platform of "50 years in 5" was launched in March 1956, with the announcement of his "Program of Goals" mostly involving economic infrastructure and industrialization.⁵¹

At the international level, the Cold War was intensifying while at the regional level, the first steps were taken towards a change in US foreign policy toward Latin America involving heightened US participation in the region's development process. Poverty, underdevelopment, and the communist threat came to be seen as increasingly intertwined elements and targets of growing concern, particularly after the 1959 Cuban Revolution.⁵² Kubitschek's challenge, then, was to bring about the political stability needed to implement his state-led economic development program. Economic stability was particularly germane in terms of balance of payments, foreign debt, and inflation. As such, relations with the US and international financial agencies were fundamental and influenced Brazil's domestic strategies, including those related to public health. During Dwight Eisenhower's second term (1957-61), the United States played a more important and direct role in malaria eradication by funding national programs either directly or through PASB/PAHO and WHO, in conjunction with the transformation of US foreign policy towards Latin America.⁵³

In the health field, the emphasis given by Juscelino Kubitscheck to rural endemics in his public health program immediately turned them into policy. In March 1956, the Departamento Nacional de Endemias Rurais (National Department of Rural Endemics) (DNERu) was created by a law passed by the National Congress⁵⁴; this law would also play a crucial role in the recently established Ministry of Health, which was separated from the Ministry of Education in 1953.⁵⁵ The DNERu incorporated the structures and responsibilities of some of the national services created in 1941 and was charged with organizing and implementing control programs for the main endemic diseases in the country, including malaria, leishmaniasis, Chagas disease, bubonic plague, brucellosis, yellow fever, schistosomiasis, hookworm, filariasis, hydatidiosis, endemic goiter, yaws, and trachoma.⁵⁶ The DNERu followed a model based on vertical actions co-ordinated by the federal government as internationally adopted, but it also became responsible for actions previously spread through different public health services. The states and municipalities continued their contributions for federal anti-malarial actions and some, such as the State of São Paulo, maintained specific state-level services.⁵⁷

The integration of the Brazilian hinterlands—"Central Brazil" and the Amazon Region—and the inclusion of their populations in national development plans inspired DNERu's creation and activities, in accordance with Kubitscheck's numerous projects and, especially, the goal of building a new capital "in the heart of Brazil" during his Presidential term.⁵⁸ In 1956-58, Mário Pinotti, who had been in charge of the SNM since 1942, became the DNERu Director, and was frequently mentioned as a possible Minister of Health, a position he had actually held during the last months of Vargas' second term in 1954. Pinotti had gained respect among journalists, physicians, sanitarians, and politicians during the previous ten years.⁵⁹ Due to the SNM's size, to Pinotti's own prestige and power, and to the prominence of the international public health agenda, malariologists and malaria control, "a problem in the process of being solved," occupied a privileged position in the new department.⁶⁰

During the first two years of the Kubitscheck term, Pinotti and the malariologists now working at the DNERu continued their discussion over the success of malaria control and the predictable eradication of the disease as a result of the actions started in 1945, which combined insecticides and anti-malarial drugs, with the free distribution of chloroquinated salt. Neither the recommendations by PASB (1954) and WHO (1955) to convert Brazil's malaria control approach into an exclusively eradication-focussed program with financial, technical and political autonomy nor the participation of Brazil in the Global Malaria Eradication Program, seemed urgent and were even deemed unnecessary by some malariologists.⁶¹ Indeed, the creation of the DNERu itself in 1956 went in the opposite direction from the WHO's recommendations that

governments create specific and separate organizational entities for malaria eradication. Furthermore, Brazil seemed an inappropriate candidate for uniform programs and global timetables because of two other characteristics: the country's size and the nature of the Amazon Region.

Furthermore, any alterations in the Brazilian program could threaten the power and prestige achieved by Brazilian malariologists at home and abroad and could lead to changes in the large and complex organizational structures responsible for malaria control actions based on methods considered to be original and Brazilian. Such changes could also lead to new power relations within the Ministry of Health, potentially subordinating Brazilian malariologists to international organizations involved with eradication, such as WHO and PASB. Even though these agencies were directed by, respectively, a Brazilian, Marcolino Candau, and a North-American with strong ties to Brazil, Fred L. Soper, Brazilian policies did not become aligned with the Global Malaria Eradication Program's guidelines between 1954 and 1958.⁶²

The stance taken by Brazil at the end of 1956 can be found in a WHO report written following the completion of a survey of Latin American countries conducted by Argentinean Carlos Alvarado, at the time a WHO/PASB Malaria Regional Consultant.⁶³ Compared to other countries in the region, the data on Brazil were impressive. Alvarado reinforced the importance of the successful experiments with chloroquinated salt and mentioned that in Latin America, only Brazilian and Venezuelan physicians had graduated in their own countries (all others had studied in the Malariology School in Venezuela). Alvarado pointed out that 90% of the malarious areas in Brazil were reached by malaria services and 12% of the public health budget was allocated to the disease. In addition, he noted that disease statistics and surveillance were improving in conjunction with legislation and operational capacity, that only Brazil used chloroquine as the exclusive anti-malarial drug, and that until 1954 there was no record of international funding for the Brazilian program. As far as planning for the future was concerned, the government responded to the PASB/WHO survey by assuring that it would extend the reach of DDT spraying, intensify the distribution of chloroquine in endemic areas with low population density, and try to eradicate the disease in specific areas of Brazil. The report also mentioned that although Brazil was in favour of joint coordination of anti-malaria activities with its neighbouring countries, it was alone among the large endemic countries in the Americas not to consider the financial or technical collaboration from other countries or international agencies to be necessary.⁶⁴

However, the Brazilian government and the malariologists soon began to reposition themselves in relation to the MEP and sought to adhere to WHO guidelines. This change became clearer in 1957, when Brazil started to negotiate with the International Co-operation Admin-

istration (ICA) and PASB/WHO for technical and financial support for malaria eradication.

In 1957, Fernando Bustamante, coordinator of the malaria program at DNERu, who a few years before had mentioned that malaria had become “almost history,” said that

Brazil, with the largest malaria control program in the Americas and one of the largest in the world, is taking preparatory actions and trying to obtain the necessary funding to transform its malaria control program into an eradication program.⁶⁵

The following year, Kubitscheck declared in his speech at the annual opening session of the National Congress that “by accepting expert recommendations which were endorsed by the 9th World Health Assembly, the administration has decided to change the current control programs into eradication plans.”⁶⁶ Kubitscheck justified this turnabout in government guidelines as a response to the increasing resistance of mosquitoes to insecticides—as a consequence of long-term control actions—and in anticipation of the benefits from an agreement being negotiated with the United States:

Malaria eradication is considered one of the main goals for the health sector and shall count on the agreed upon technical and financial collaboration of international organizations and the Government of the United States of America. In this respect, understandings with the International Co-operation Administration of the Government of the United States (Point IV) are already far advanced, and the eradication work shall begin this year.⁶⁷

While JK’s rationale was narrowly based on the malaria problem, the change also reflected shifts in national and international politics and funding strategies. The Brazilian government was facing difficulties in funding social programs because of the investment priority accorded to infrastructure for economic development. In addition mounting costs associated with the construction of Brasília began to put in question whether the transfer of the capital from Rio de Janeiro to the interior before the end of Kubitscheck’s term would take place. The problem was worsened after a US decision that, beginning in 1958, funding for malaria control through ICA would be exclusively channeled to national eradication programs.⁶⁸ Eisenhower’s “battle against malaria,” declared in his “State of the Union” speech of January 1958 was clearly echoed in the path followed by the Brazilian program and in Kubitscheck’s speeches of 1958.⁶⁹ The funding problem, the WHO decision to accelerate malaria eradication in 1958, and the entrance of the US as a key partner in the MEP began to restrict Brazil’s options.

The year 1958 was also marked by changes in inter-American relations. Even though Brazil had been fully inserted within the area of US

influence since the end of World War II, relations between the two countries were affected by increasing differences in points of view, particularly in the economic realm. On the one hand, Brazil and other Latin-American countries with chronic economic problems, which were aggravated after the end of the war, still expected the US to take responsibility for aiding them in accelerating their economic development. On the other hand, Washington insisted that economic development was each country's concern and, as such, should be resolved through the adoption of liberal economic policies and by encouraging a favourable environment for private investment. Accordingly, US public funding was to be concentrated in regions viewed as priorities in stopping communism, particularly Europe and Asia, the latter in an intense decolonization process. Tensions between Latin America and the United States reached a critical level when Richard Nixon, the US Vice-President visited several Latin-American countries in the beginning of 1958 on what he wished to portray as a "goodwill mission" and was met with virulent anti-American popular demonstrations.⁷⁰

Kubitschek took advantage of the anti-US sentiment and the broader Cold War context to attempt to refashion the meaning of Pan-Americanism. On 28 May 1958 he sent a letter to President Eisenhower lamenting the degree of deterioration in regional relations and proposing a new role for the US in the continent. The Brazilian diplomatic initiative, named the Pan-American Operation (PAO), was launched in June 1958. It was based on the idea that the US should accept political responsibility for eradicating Latin-American underdevelopment through public investments, both contributing to political stability and stopping communism.⁷¹ Although no immediate changes were made and bilateral crises continued to occur, such as the rupture between Brazil and the International Monetary Fund in July 1959, Eisenhower visited Brazil in February 1960. The Brazilian and US positions were brought closer together in the "Ata de Bogotá," issued in September 1960, in which policies for regional social and economic development were proposed, including the creation of the Inter-American Development Bank (IADB).

Amidst this changing environment, in February 1958 the Brazilian Government created by decree a Working Team to plan and carry out a malaria eradication campaign in Brazil (CEM) (Campanha de Erradicação da Malária) under the DNERu.⁷² On 14 February, just 10 days after the creation of the Grupo Técnico para Erradicação da Malária (GTEM) (Technical Team for Malaria Eradication), the Brazilian administration and ICA signed the first agreement for malaria eradication. GTEM's president was Mário Pinotti, director of DNERu. GTEM was formed by the coordinator of the campaign against malaria at DNERu, Fernando Bustamante, by the Brazilian participant in the Point IV Program,⁷³ and by representatives of ICA, PASB/PAHO, and other Brazilian and inter-

national organizations that had signed agreements to eradicate malaria, during the opening session of the GTEM.⁷⁴

At the time GTEM was created, Mauricio de Medeiros, the Minister of Health, argued that although malaria was under control in the country, the disease could be eradicated with the support of the US and WHO. Medeiros defended the adhesion of Brazil to the global campaign:

The American interest is that it is not possible to think of eradication of a disease transmitted by insects unless the work is coordinated by several nations in the continent. Considering that the American Government and the World Health Organization are concerned with malaria eradication in the world and consequently in the South-American continent, Brazilian collaboration was indispensable,...[as] it was one of the few countries not to have adhered or entered the international plan.⁷⁵

During the same ceremony, Pinotti was very concerned about the malaria situation in the country and called for immediate actions against the disease. The weapons shown by Pinotti in the eradication battle would be DDT (against the mosquito) and chloroquinated cooking salt (against the parasite). The time to eradicate the disease was set at five years, according to WHO recommendations. However, Pinotti argued that such a goal could only be achieved with the help of the US government; otherwise, eradication would take seven or more years. For Pinotti, eradication in Brazil, to complete the work done by Brazilian malariology, would be a matter of funding:

Now, what I want to point out is: even with the control program, there was in fact significant capital investment for the economic recovery of vast areas in the country which were previously abandoned. Needless to say, in 1940, with a population of 40 million people, our estimate was 8 million malaria cases in Brazil, whereas nowadays, in 1957, with a population of 62 million people we have only 250 thousand cases of malaria...we are already in a position to face the malaria eradication program. First, because the Government...has provided the budget resources and second, because the co-operation with the American Government by means of Point IV will provide us with impressive help in this eradication campaign, and lastly, the Pan American Sanitary Bureau, which is always present in works of international scope.⁷⁶

Pinotti's speech and the Brazilian government's decisions reveal the reasoning behind the integration of national programs and international guidelines in public health. Yet at the same time as Brazilian leaders aligned themselves with the hegemonic position in international health, they emphasized the success of Brazilian malariology in controlling the disease and the need to maintain a strategy for distribution of chloroquinated salt as a complementary to DDT spraying.⁷⁷ Although malariologists recognized the urgent need for international funding to complete their work, they continued to support control actions. Moreover,

they placed the eradication campaign under the administration of a Ministry of Health department, rather than making it a separate entity directly under the Minister. These moves signalled that Brazil was not accepting the international recommendations for an exclusive focus on eradication and for a politically autonomous campaign structure. Brazilian malariologists argued that they had the tools to complete the work they had started in 1941, and that in 1958 all they lacked were financial resources. Reinforcing this perspective, Fernando Bustamante argued that malaria eradication would be more of “a financial and administrative problem than a technical one.”⁷⁸

On 3 July 1958, Mário Pinotti finally reached the pinnacle of his career trajectory and prestige by becoming Minister of Health, a position he held until August 1960.⁷⁹ Although he was undoubtedly the most prominent post-war public health physician, Pinotti was also promoted due to his political relations with Ademar de Barros, former Governor of the State of São Paulo and leader of a small political party—the Partido Social Progressista (PSP) (Progressist Social Party), one of the congressional coalition parties supporting JK. In his speech upon taking office, Pinotti promised that malaria would be eradicated in ten states and four territories in the Northeast and the Amazon region “before the end of the present administration,” through completion of the initial stage of the eradication plan. In the other southeastern and southern states, the disease was already under control and undergoing a rapid decline. After the eradication of malaria, Pinotti promised, the government would be able to concentrate on the control of rural endemics long considered crucial: Chagas disease, leishmaniasis, goiter, yaws, and trachoma. In a rhetorical exercise, Pinotti guaranteed that in two and a half years, malaria would be a museum piece to be “given” to the Director of the Museu Histórico Nacional (National Historical Museum) in Rio de Janeiro.⁸⁰ The new Minister reinforced the assessment that the impulse for the idea of eradication came from anopheline DDT resistance. For him, this threat could be avoided:

by the intense attack on transmitters and sources of infection simultaneously to other prophylactic methods such as chloroquinated salt; these will be, under any circumstances, the resources of greatest value for the work to control and eradicate the disease.⁸¹

In September 1958, GTEM was separated from DNERu and became directly subordinated to the Ministry of Health, less as a result of the recommendations of international agencies and more because of Pinotti’s long term control and power over the anti-malarial policies in Brazil. The great novelty was that the Brazilian malaria program would be for the first time funded and supervised by ICA and PAHO/WHO. Until the end of Kubitscheck’s term in January 1961, ICA, succeeded by the

United States Agency for International Development (USAID),⁸² had agreed to provide over 8 million dollars to eradicate malaria in Brazil.⁸³ The co-operative project that started in 1958 required that CEM action and resources be assessed annually and audited by USAID. According to USAID reports, the Brazilian government provided less funding than the amount agreed upon for the years 1959-60, critical years in economic terms for Brazil. This smaller than planned Brazilian contribution made malaria eradication in Brazil increasingly dependent on international organizations and bilateral co-operation with the US.⁸⁴

Between 1958 and 1961, Brazilian public health—and especially malaria—was characterized by a transition from control to eradication; this was maintained after Pinotti left office in August 1960, when a new configuration of political parties emerged in anticipation of the presidential elections slated for October 1960.⁸⁵ Soon after leaving the administration, Pinotti was accused of irregularities and remained isolated until his death in 1972. An emergency plan was carried out at the beginning of the preparatory stage for the eradication campaign. The plan consisted of the intensification of DDT spraying—which ended up using a large amount of the funding provided by USAID and PAHO/WHO—combined with the distribution of anti-malarial drugs and chloroquinated salt.⁸⁶ The distribution of chloroquinated salt throughout the Amazon Region began in June 1959 and the DDT spraying only in January 1960, officially due to financial and technical reasons. This order of events indicates that the eradication program was inaugurated with the “national method,” whose logistics were already very well organized. One interesting aspect of this approach is that the 1959 and 1960 PAHO reports on eradication status in the Americas explicitly recognized the distribution of chloroquinated salt in the Amazon Region as a central part of, not an accessory to, the malaria eradication program in Brazil.⁸⁷ Thus the Brazilian malaria strategy was formally recognized by the international health agencies, even though it had been brought into the MEP in 1958.

The Brazilian method, however, was eventually challenged due to the political decline of its creator after 1960. Contemporary critics of the method, as well as those who commented on the politics of malaria control subsequently, argued that the Pinotti method faced the following difficulties in reaching results: not all the salt ingested in areas where the method needed to be applied was chloroquinated; some of the target populations consumed little salt, thus requiring a greater amount of chloroquine; the chloroquine diphosphate to be added to cooking salt was highly soluble in water, which caused ground salt to absorb much water in humid areas and therefore, decrease the salt concentration in the mixture; nursing women and breastfed babies did not eat the salt; younger children ate little salt and the chloroquinated salt, although free, was sometimes rejected due to taste. Some studies suggest that parasite

resistance to chloroquine was caused by uncontrolled salt distribution.⁸⁸ According to these criticisms, both the chloroquinated salt method and the DDT method—although responses on some level to local conditions—failed because they did not take into account the consequences of intervention into the culture and practices of the target populations.⁸⁹

The Kubitscheck government managed to achieve a balance among economic development goals, the need for foreign funding, well-organized public health organizations, and an international health agenda led by Brazil's most important commercial partner, funder, and leader of the Western capitalist bloc. Nonetheless, the transition from malaria control to eradication was not completed during Kubitscheck's term nor in the subsequent presidential terms of Jânio Quadros (1961) or João Goulart (1961-64)—periods of great political instability that culminated with the civilian-military coup of 31 March 1964. In the context of worsening Cold War conditions, the Quadros and Goulart administrations may be understood as Brazil's effort to forge an "independent foreign policy" by strengthening its relations with the so-called Third World and, consequently, distancing itself from the US.⁹⁰ The coup buried both the democratic experience begun in 1945 and Brazil's attempts to promote its own and independent foreign policy.

A further indication that the relations between Brazil and the US were central to WHO's global eradication strategy was the deep engagement of Brazil in the MEP during the military dictatorship. In 1965, Brazil adopted all of the MEP's objectives and guidelines, intensifying its relations with USAID and the US as a whole. The intensified campaign started precisely at the time eradication and its main tool, DDT, was being openly challenged following the publication of Rachel Carson's powerful book, *Silent Spring* (1962). As well, there was growing criticism of the vertical model of public health campaigns even as there was a radical decline of the number of cases in Brazil during the 1960s.⁹¹ As a consequence, the Brazilian eradication program lasted only five years and was suspended in 1970, also due to the abandonment of the malaria eradication strategy bolstered by PAHO/WHO.

CONCLUSION

There are surprisingly few studies—either in the Brazilian or international scholarly literature—on the enormous campaign to control and eradicate malaria undertaken by Brazilian public health agencies from the 1940s to the 1960s. In the last few years, much has been written on the history of public health policies in 20th century Brazil, corresponding to the Republican experience that began in 1889. Malaria, a disease of crucial importance for the country has been object of analyses and memoirs by historians, epidemiologists, social scientists, and health professionals. Yet

little is known about the eradication campaign that mobilized huge amounts of human and financial resources and strived to follow international guidelines while working with international and multilateral organizations in an original way; that is by producing and maintaining local approaches to address Brazil's particular political and public health problems. The defeat of the eradication effort, the criticisms of vertical and authoritarian campaign models, the association of the malaria program with personalities who became historically controversial, such as Mário Pinotti, the co-operation with USAID and the beginning of the military dictatorship in 1964 help to explain this "active silence."

The history of malaria control in post-World War II Brazil is one of an encounter between planning and uniformity with the aim of eradication, as proposed by PAHO/WHO, and a well-consolidated and nationalist tradition in public health and malariology. On the one hand, the country had a long-standing and active relationship with international health and its organizations; on the other, starting in 1941 Brazil was investing in the preparation of a large malaria control and research apparatus, rooted in an important and powerful community of malariologists led by the main personality in public health during the so-called national-developmentist period (1945-64), Mário Pinotti. A *sui generis* approach meant to deal with local specificities of malaria was transformed into an internationally recognized and exported method. Brazil's strategy reinforced the autonomy of its program vis-à-vis the international agenda and strengthened the idea that malaria was under control and would soon be eradicated from the country. The change in the Brazilian position from control to eradication illustrates how the intersections between internal and foreign processes led to results that ranged from autonomy to partial alignment. Alignment was partial because Brazil did not completely change its malaria control program during the democratic experience prior to 1964. Subsequent alignment with PAHO/WHO and USAID methods for eradication was certainly a consequence of the military government's alignment with US foreign policy.

This chapter in the history of international health from a Latin American perspective highlights the analytic conception that there are asymmetries in the relations among agencies, governments, expert communities, and individual personalities. These asymmetries—either through long processes or at particular junctures—influence the design of health policies and institutions. Such intertwining results in dynamic arenas in which local actors, trans-national professionals, and international agencies interact, model themselves, and remodel each other. The Brazilian experience in malaria control and eradication after World War II involved several encounters and adjustments with international health actors and was closely connected to the post-war democratic period. This combined approach ended with the military coup, which enabled

conditions for a complete and subordinated alignment with US and dominant international health interests. As we approach these intersections, we may be surprised by the occasional dilution of ideas of centre and periphery and of historical determinism: the “periphery” can become the “centre”; the “national” decants and incorporates the “international”; the “local” determines the “national” that shelters it; the empire might not be so imperious after all, and individual personalities leave their imprint on the collective experience by producing material results such as institutions and policies.

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NOTES

- 1 On Kubitscheck’s Plano de Metas see Celso Lafer, *JK e o Programa de Metas (1956-61): Processo de Planejamento e Sistema Político no Brasil* (Rio de Janeiro: Editora FGV, 2002); Clóvis de Faro and Salomão Quadros da Silva, “A Década de 50 e o Programa de Metas,” in Ângela de Castro Gomes, ed., *O Brasil de JK* (Rio de Janeiro: Editora FGV, 2002): 137-54.
- 2 See Maria Valéria Junho Pena, “Saúde nos planos governamentais,” *Dados-Revista de Ciências Sociais*, 16 (1977): 69-96.
- 3 Juscelino Kubitscheck, *Programa de Saúde pública do Candidato* (São Paulo: L. Nicollini, 1955), p. 32.
- 4 Kubitscheck, *Programa*, p. 15-16.
- 5 For a discussion on how and why WHO and its committees proposed global eradication see Socrates Litsios, *The Tomorrow of Malaria*, rev. ed. (Karori, N.Z.: Pacific Press, 1997); Randall M. Packard, “‘No Other Logical Choice’: Global Malaria Eradication and the Politics of International Health in the Post-war Era,” *Parassitologia*, 40 (1998): 217-29; and John Farley, *To Cast Out Disease: A History of the International Health Division of the Rockefeller Foundation (1913-1951)*, (New York: Oxford University Press, 2004). On aspects of the WHO history see also Theodore M. Brown, Marcos Cueto, and Elizabeth Fee, “The World Health Organization and the transition from “international” to “global” public health,” *American Journal of Public Health*, 96 (2006): 62-72. On PAHO’s history see Marcos Cueto, *The Value of Health: A History of The Pan American Health Organization* (Rochester: University of Rochester Press, 2007), and on PAHO in Brazil, see Nísia Trindade Lima, “O Brasil e a Organização Panamericana da Saúde: uma história em três dimensões,” in Jacobo Finkelman, ed., *Caminhos da Saúde Pública no Brasil* (Rio de Janeiro: Editora Fiocruz, 2002).
- 6 Although specific data sources were not cited, the official speeches and texts of the time mention an estimated eight million cases of malaria in 1940, with only 200

- thousand cases in the mid-1950s. See Brasil. *Mensagem apresentada ao Congresso Nacional por ocasião da abertura da sessão legislativa de 1949 pelo General Eurico Gaspar Dutra, Presidente da República* (Rio de Janeiro: Imprensa Nacional, 1949); Kubitscheck, *Programa e Mário Pinotti, Vida e Morte do Brasileiro (saúde e doença no Brasil)*, (Rio de Janeiro: Editora Civilização Brasileira, 1959).
- 7 For JK's economic policy, see Luiz Orenstein and Antônio C. Sochaczewski, "Democracia com desenvolvimento: 1956-1961" in Marcelo de Paiva Abreu, ed., *A Ordem do Progresso. Cem Anos de Política Econômica Republicana 1889-1989* (Rio de Janeiro: Editora Paz e Terra, 1990): 171-95; on international economic relations during Kubitscheck's term, see Pedro S. Malan, "Relações econômicas internacionais do Brasil, 1945-1964" in Boris Fausto, ed., *História Geral da Civilização Brasileira* (São Paulo: Difel, 1986), p. 51-106.
 - 8 On Kubitscheck's foreign policy and OPA (Operação Pan-Americana), see Gerson Moura, *Sucessos e Ilusões: Relações Internacionais do Brasil durante e após a Segunda Guerra Mundial* (Rio de Janeiro: Editora FGV, 1991); Letícia Pinheiro, *Política Externa Brasileira (1889-2002)* (Rio de Janeiro: Jorge Zahar Editor, 2004); Paulo F. Vizentini, *Relações Exteriores do Brasil (1945-1964): O Nacionalismo e a Política Externa Independente* (Petrópolis: Vozes, 2004), and particularly Alexandra de Mello Silva, "Desenvolvimento e multilateralismo: um estudo sobre a Operação Pan-Americana no contexto da política externa de JK," *Contexto Internacional*, 14 (1992): 209-39.
 - 9 Eugene P. Campbell, "The role of the International Co-operation Administration in international health" *Archives of Environmental Health*, 1(1960): 502-11.
 - 10 A sampling of contextual approaches developed in Latin America includes Anne-Emanuelle Birn, "O nexo nacional-internacional na saúde pública: o Uruguai e a circulação das políticas e ideologias de saúde Infantil, 1890-1940" *História, Ciências, Saúde-Manguinhos*, 13 (2006): 675-708; Luiz A. Castro Santos and Lina R. de Faria, *A Reforma Sanitária no Brasil: Ecos da Primeira República* (Bragança Paulista: EDUSE, 2003); and Steven Palmer, "Saúde Imperial e Educação Popular: A Fundação Rockefeller na Costa Rica em uma perspectiva centro-americana, 1914-1921," in Gilberto Hochman and Diego Armus, eds., *Cuidar, Controlar, Curar: Ensaios Históricos sobre Saúde e Doença na América Latina e Caribe* (Rio de Janeiro: Editora Fiocruz, 2004), p. 217-48. The complexity of center-periphery relations in the region is discussed by Steve J. Stern, "The Decentered Center and the Expansion Periphery. The paradoxes of foreign-local encounter," in Gilbert M. Joseph, Catherine LeGrand and Ricardo D. Salvatore, eds., *Close Encounter of Empire. Writing the Cultural History of US-Latin-American Relations* (Durham: Duke University Press, 1998).
 - 11 Getúlio Vargas was overthrown in October 1945 and took office again after he was elected in 1950. He committed suicide in August 1954 amidst a serious political crisis. On Vargas's second presidential term, see Maria Celina D'Araujo, "Nos braços do povo: a segunda presidência de Getúlio Vargas," in Maria C. D'Araujo, ed., *As Instituições Brasileiras da Era Vargas* (Rio de Janeiro: Eduerj/Editora FGV, 1999), p. 97-118.
 - 12 On the sanitarian movement, see Luiz A. de Castro Santos, "O pensamento sanitaria na Primeira República: Uma ideologia de construção da nacionalidade," *Dados-Revista de Ciências Sociais*, 28 (1985): 237-250; Gilberto Hochman, *A Era do Saneamento—As Bases da Política de Saúde Pública no Brasil* (São Paulo: Hucitec/Anpocs, 1998); and Nísia T. Lima, *Um Sertão Chamado Brasil—Intelectuais e interpretações geográficas da identidade nacional* (Rio de Janeiro: Editora Revan, 1999). One of the few studies on the history of malaria control in 1900-20 was written by Nancy L. Stepan, "'The only serious terror in these regions'—malaria control in the Brazilian Amazon," in Diego Armus, ed., *Disease in the History of Modern Latin America: From Malaria to AIDS* (Durham: Duke University Press, 2003), p. 25-50.
 - 13 Gilberto Hochman, "A saúde pública em tempos de Capanema: continuidades e inovações," in Helena Bomeny, ed., *Constelação Capanema: Intelectuais e Políticas* (Rio de Janeiro: Editora FGV, 2001), p. 127-51; and Gilberto Hochman, "Cambio político

- y reformas de la salud pública en Brasil. El primer gobierno Vargas (1930-1945)," *Dynamis. Acta Hisp. Med. Sci. Hist. Illus*, 25 (2005): 199-226.
- 14 André Luiz Vieira de Campos, *Políticas Internacionais de Saúde na Era Vargas: o Serviço Especial de Saúde Pública, 1942-1960* (Rio de Janeiro: Editora Fiocruz, 2006).
 - 15 Malaria control in these areas was transferred from SESP to SNM in 1950.
 - 16 On the campaign against *Anopheles gambiae*, see Fred L. Soper, "Anopheles Gambiae in Brazil," in Fred L. Soper, *Ventures in World Health—The Memoirs of Fred Lowe Soper* (Washington, D.C.: PAHO, 1977); and Randall M. Packard and Paulo Gadelha, "A Land Filled with Mosquitos: Fred L. Soper, the Rockefeller Foundation and the *Anopheles gambiae* invasion of Brazil," *Parassitologia*, 36 (1994): 197-213. On the North-American military action to fight the disease on and around US military bases within the same region, in 1941-45, see André Luiz Vieira de Campos, "Combatendo nazistas e mosquitos: militares norte-americanos no Nordeste brasileiro (1941-45)," *História, Ciências, Saúde-Manguinhos*, 5 (November 1998/February 1999): 603-20.
 - 17 Hochman, "Cambio político y reformas."
 - 18 SNM was created by Law n.3171 passed on 2 April 1941 which reorganized the National Health Department. Other national services created at the same time focused on bubonic plague; tuberculosis; yellow fever, cancer, leprosy, mental diseases, public health professional training, regulation of the medical profession, port sanitation, biostatistics, and water and sewage.
 - 19 This intention of Evandro Chagas and of the Vargas administration is explicitly stated, for instance, in his correspondence with L. L. Williams, a physician at the National Institute of Health, in 29 October 1940. Casa de Oswaldo Cruz/Fundação Oswaldo Cruz (COC/Fiocruz), Carlos Chagas Filho papers (Evandro Chagas series—under organization), box 7.
 - 20 Soper's willingness to continue and expand the malaria program in co-operation with the Brazilian government was evident in his 1940-42 correspondence with Willbur A. Sawyer and George Strode, respectively Director and Associate Director of IHD. Soper tried to obtain authorization and funding for the program, a request denied by Sawyer. Soper was clearly disappointed, and in 1942 he gave up his project after the founding of SESP, which became responsible for sanitation of the Amazon Region under the coordination of North-American experts. See Letters from Fred L. Soper to Wilbur Sawyer, 1940, 20 November 1940. Rockefeller Archive Center (RAC), RF, Series 305—I, box 16, folder 140; Letters from Wilbur Sawyer to Fred L. Soper. 5 December 1940. RAC, RF, Series 305—I, box 6, folder 140; Letters from Fred Soper to George King Strode, May 5 1942. RAC, RF, Series 305—I, box 16, folder 142; Letters from Fred Soper to Wilbur Sawyer, 8 May 1942. RAC, RF, Series 305—I, box 16, folder 142; and Letters from Fred Soper to Wilbur Sawyer, 23 June 1942. RAC, RF, Series 305—I, box 16, folder 142. See also: COC/Fiocruz, Rockefeller Foundation papers, Letters from George King Strode to Wilbur Sawyer, 18 March 1942, doc. 210.
 - 21 Information in HÉlbio Fernandes Moraes, *SUCAM: sua Origem, sua História*, 2 vols, 2d ed., Vol 1 (Brasília: Ministério da Saúde, 1990):249-484. This book includes a section of homages to Pinotti, and also reprints several documents prepared by the SNM and Mário Pinotti, and is the best source on SNM works and Mário Pinotti's career.
 - 22 An assessment of SNM works is provided by Fernando M. Bustamante, "Síntese das atividades do Serviço Nacional de Malária do Brasil no decênio 1942-1951—Campanha contra a malária, a doença de chagas e a filariose," *Revista Brasileira de Malariologia e Doenças Tropicais*, IV (1952): 231-44; and Moraes, *SUCAM: sua Origem, sua História*, p. 404-71.
 - 23 Mário Pinotti was born in Brotas, in the interior of the State of São Paulo, where his Italian descended father owned a drugstore. In 1914, Pinotti graduated from the Escola de Farmácia de Ouro Preto (Estado de Minas Gerais) and in 1918, from the

- Faculdade de Medicina do Rio de Janeiro, at the time the capital of Brazil. In 1919 he started working for the federal public health services, beginning a long and important career as public health physician and health administrator. In 1924-25, he received a scholarship from the International Health Division of the Rockefeller Foundation to study at the Malaria School in Nettuno, Italy, as a student of Bartolomeo Gosio and Alberto Missiroli. He travelled the Italian malaria region and visited the malaria control works with Lewis W. Hackett, then in charge of the IHD Italian program and with Ettore Marchiafava, an important Italian malariologist. After his return, Pinotti worked for several federal services involved in controlling yellow fever. Pinotti later became an assistant to the director of yellow fever services under the Rockefeller Foundation. Mario Pinotti was appointed SNM Director in August 1942, a position he held until 1956, when the national services for malaria, bubonic plague, and yellow fever control were brought together into the National Department of Rural Endemic Diseases (DNERu). Pinotti was Minister of Health for a few months in 1954, during the second presidential administration of Getúlio Vargas (1951-54). Gilberto Hochman, "Mário Pinotti," in William F. Bynum and Helen Bynum, *Dictionary of Medical Biography*, 5v., Vol. 4 (Westport: Greenwood Press, 2007), p. 1013.
- 24 Brasil. *Mensagem apresentada ao Congresso Nacional*, p. 135. This 1949 Presidential Address was very much influenced by the speech given by the North-American Secretary of State, George Marshall during the opening session of the IVth International Congress on Tropical Medicine and Malaria held in 1948 in Washington, D.C., when he called on governments to the "conquest of the tropical diseases." George C. Marshall, *Welcome Address by the Honorable George Marshall, Secretary of State*, Proceedings of the Fourth International Congress on Tropical Medicine and Malaria, Washington D.C., 10-18 May 1948, vol. II (Washington D.C., 1948), p. 2.
 - 25 Moraes, *SUCAM: sua Origem, sua História*, p. 422; and Bustamante, "Síntese das atividades"; Mário Pinotti, "A Fábrica de Inseticidas do Instituto de Malariologia," *Ciência Médica*, 19 (1950): 313-19.
 - 26 See Moraes, *SUCAM: sua Origem, sua História*; Bustamante, "Síntese das atividades.
 - 27 Moraes, *SUCAM: sua Origem, sua História*.
 - 28 Campos, *Políticas Internacionais de Saúde*, part II.
 - 29 The "Plano de Aplicação de DDT nas Áreas Malarígenas do Estado do Rio" (Plan to Apply DDT in malarial areas in the State of Rio de Janeiro), had been previously presented and discussed in the largest public health gathering, the Vth Brazilian Hygiene Congress held in October 1947. Pinotti prepared a detailed report on the combination of DDT and one-dose chloroquine in a statement for Congress in November 1946. Mário Pinotti, *Primeira Campanha Antimalárica na Região do São Francisco—Baseada na administração de dose única de antimalárico e na aplicação domiciliar de inseticida de ação tóxica residual* (Rio de Janeiro: Imprensa Nacional, 1947).
 - 30 Mário Pinotti, Francisco Freire de Carvalho and Olimpo da Silva Pinto, "Plano de aplicação de D.D.T nas áreas malarígenas do Estado do Rio de Janeiro," *Anais do VI Congresso Brasileiro de Higiene* (Rio de Janeiro, 1947): 395-403; Mário Pinotti, "Do combate ao impaludismo no Brasil pelo Serviço Nacional de Malária," *Anais do VII Congresso Brasileiro de Higiene* (São Paulo, 1948): 365-70; and Bustamante, "Síntese das atividades"; Centro de Pesquisa e Documentação de História Contemporânea do Brasil—CPDOC/FGV, Clemente Mariani papers, "Atividades do Serviço Nacional de Malária no período de 1947 a abril de 1950," CMA / MES—pi 50.05/07.00—A3. Information on the Baixada Fluminense campaign in 1947 was also collected from the newspapers *A Noite*, *Correio da Manhã*, *Jornal do Brasil*, and *Diário de Notícias*, deposited at the National Library, Rio de Janeiro, Brazil.
 - 31 Moraes, *SUCAM: sua Origem, sua História*.
 - 32 Heitor P. Fróes, "Serviço Nacional de Malária," *Arquivos de Higiene* 18 (1948): 125-35. Pinotti, "Do combate ao impaludismo" e Mário Pinotti, "Combate à malária no Brasil," *Folha Médica*, 31 (1950): 41-43.

- 33 Ernest Paulini, "O passado revisitado: o Instituto de Malariologia e o Instituto de Endemias Rurais (INERu)," *História, Ciências, Saúde-Manguinhos*, 11 (2004): 143-58.
- 34 Given the difficulty in using the classical method for providing anti-malarial drugs to populations of large rural areas such as the Amazon Region, the Pinotti method involved the mixture of chloroquine diphosphate and cooking salt to be distributed, by a variety of means, to the populations of endemic regions, particularly in the Amazon Region, thus replacing the common cooking salt in daily nutrition. An estimated 15,000 tons of cooking salt entered the Amazonas River mouth and was distributed primarily by wholesalers in Belém (State of Pará), making it easier to prepare the mixture. Although tested and openly debated since 1952, the method and strategy were first published in a medical journal in 1953. Mário Pinotti, "Novo método de controle da malária pelo emprego de medicamentos misturados ao sal de cozinha, utilizado na alimentação diária," *Revista Brasileira de Medicina* 10 (1953): 241-46. The same process is described by Moraes, *SUCAM: sua Origem, sua História*, p. 421.
- 35 Law n.1.944 14 August 14 1953.
- 36 After making his method public in 1953, Pinotti wrote several articles alone or with collaborators, and with several IM colleagues, such as the chemist Ernest Paulini and the parasitologist Rostan Soares. The records of his early experiments with chloroquinated salt are in Mário Pinotti et al., "Experiências de campo com o sal cloroquinado," *Revista Brasileira de Malariologia e Doenças Tropicais*, 7 (1955): 5-23; and Mário Pinotti and Rostan Soares, "A erradicação da malária com o sal cloroquinado," *Revista Brasileira de Malariologia e Doença Tropicais*, VIII (1956): 253-65. An analysis of the photographic records of this experience is in Gilberto Hochman, Maria Teresa B. Mello, and Paulo R. Santos, "A malária em foto: imagens de campanhas e ações no Brasil da primeira metade do século XX," *Historia, Ciências, Saúde-Manguinhos*, 9 (Suppl, 2002): 233-73.
- 37 Information available in Moraes, *SUCAM: sua Origem, sua História*, p. 447.
- 38 The mosquito vector would not be infected after biting an infected person who had taken chloroquinated salt; therefore, transmission would be stopped in the region.
- 39 In 1954, Flávio de Castro, a federal congressman from the state of Amazonas, proposed to Congress a bill that made the use of chloroquinated salt by the population of areas in the Amazon region mandatory; the bill was not even brought to vote.
- 40 Pinotti, "A erradicação da malária com o sal cloroquinado"; and Rostan Soares, "Sal Cloroquinado, novo método de profilaxia da malária," *Revista Brasileira de Medicina*, 12 (1955): 448-55.
- 41 News from the newspapers *O Globo* and *A Noite*, on 1 & 2, December 1953. COC/Fiocruz, Rostan Soares papers, RS/DI/RJ/19460829, folders 229 and 230.
- 42 Carlos Alberto Alvarado, "Progresos de la lucha antimalarica en el continente," *Revista Brasileira de Malariologia e Doenças Tropicais*, IV (1952): 305.
- 43 Arnoldo Gabaldon, "Consideraciones sobre el futuro de la lucha antimalarica," *Revista Brasileira de Malariologia e Doenças Tropicais*, IV (1952): 307-18.
- 44 On this topic, see Gordon Harrison, *Mosquitoes, Malaria, and Man: A History of the Hostilities since 1880* (New York: Dutton, 1978); Socrates Litsios, *The Tomorrow of Malaria*; Javed Siddiqi, *World Health and World Politics: the World Health Organization and the UN System* (Columbia: University of South Carolina Press, 1995); and Amy L. S. Staples, *The Birth of Development: How the World Bank, Food and Agriculture Organization, and World Health Organization Changed the World, 1945-1965* (Kent: The Kent State University Press, 2006).
- 45 Packard, "No other logical choice."
- 46 See Fernando Machado Bustamante, "Síntese das atividades"; Carlos A. Alvarado, *Situacion de la lucha antimalarica en las Americas—V Informe*, Vol. 26, (Washington: PASB-Publicaciones Científicas, 1956); and Hélio F. Moraes, *SUCAM: sua Origem, sua História*.

- 47 Data from 1954 show that in US dollars, Venezuela (US\$ 4,284,900) and Brazil (US\$ 4,103,400) had the largest anti-malaria budgets; both were four times bigger than the budget for malaria services in Colombia, which was the third largest budget in the Americas. Carlos A. Alvarado, *Situación de la lucha antimalarica*.
- 48 Bustamante, "Síntese das atividades," p. 236.
- 49 Brasil, *Mensagem ao Congresso Nacional apresentada pelo Presidente da República Getúlio Vargas por ocasião da abertura da sessão legislativa de 1952* (Rio de Janeiro: Imprensa Nacional, 1952), p. 229-30.
- 50 Gomes, "O Brasil de JK."
- 51 The goal of completing Brasília before 1960 was added to the Plan shortly before it was launched. On the Plano de Metas, see Lafer, *JK e o Programa de Metas (1956-61)*.
- 52 Silva, "Desenvolvimento e multilateralismo."
- 53 Staples, *The Birth of Development*; and Siddiqi, *World Health and World Politics*, p. 141-45; and Campbell, "The role of the International Co-operation Administration."
- 54 Law n. 2743, 6 March 1956.
- 55 On the creation of the Ministry of Health, see Wanda Hamilton and Cristina M. O. Fonseca, "Política, atores e interesses no processo de mudança institucional: a criação do Ministério da Saúde em 1953," *História, Ciências, Saúde-Manguinhos*, 10 (2003): 791-826.
- 56 DNERu, under the Ministry of Health, was formed by a Board of Directors, a Prophylaxys Division, a Co-operation and Health Propaganda Division, and two IM heirs, the Instituto Nacional de Endemias Rurais (INERu) (National Institute for Rural Endemics) and the Prophylatic Products Service (which would be in charge of insecticides production for the programs, among other responsibilities). DNERu was divided into 25 districts that correspond to the Federal District, States and Territories, with headquarters in the respective state capitals. INERu, was supported by research units in several regions where studies on the endemics were carried out and activities implemented.
- 57 On the malaria programs in São Paulo, see Rita B. Barata, *Malária e seu Controle* (São Paulo: Hucitec, 1998) and Marina Ruiz de Matos, *Malária em São Paulo. Epidemiologia e História* (São Paulo: Hucitec/Funcraf, 2000).
- 58 On moving the capital to the interior as a Nation- State building project and process see Vania M. L. Moreira, *Brasília: a Construção da Nacionalidade. Um Meio para Muitos Fins* (Vitória: Editora da Universidade Federal do Espírito Santo, 1998).
- 59 Some called him the "DDT of politics," as cited in an editorial of the newspaper *O Globo*, 15 June 1953, p. 2. COC/Fiocruz, Rostan Soares papers, RS/DI/RJ/19460829, folders 229 and 230.
- 60 Some indicators of the prestige of Mário Pinotti include: in 1953, two scientists at the Instituto Oswaldo Cruz (IOC) and IM communicated the discovery of a new species of the malaria parasite found in birds, naming it *Plasmodium Pinotti*; the news was widely publicized in the media. See *O Globo*, 1 December 1953, p. 1. Rostan Soares papers, COC/Fiocruz, RS/DI/RJ/19460829, folders 229 and 230. In 1955, the prestigious Academia Nacional de Medicina (ANM) (National Academy of Medicine) created the "Prêmio Mário Pinotti" (Mário Pinotti Prize) for works in public health, first awarded to Rostan Soares, an IOC researcher and main collaborator of Pinotti at IM. Rostan Soares, "Sal Cloroquinado, novo método de profilaxia da malária," *Revista Brasileira de Medicina*, 12 (1955): 448-55. Pinotti entered the prestigious Academy as a "membro titular" (full member) in 1957, after his method was acknowledged, bringing his name and work to public health circles. His thesis to enter the Academy (ANM) was on the method he developed, and has been reproduced in Moraes, Hêlbio F. Moraes, *SUCAM: sua Origem, sua História*, 317-52. See also the Arquivo da Academia Nacional de Medicina, Rio de Janeiro, Pasta do Acadêmico. There is significant evidence that Pinotti wrote a large part of Kubitscheck's "Programa de Saúde" for 1955 elections, which gave him the credentials to hold important positions in the new administration. The Program introduction was written by Pinotti and reproduces entire passages of his articles.

- 61 A synthesis of the guidelines and the model of eradication program proposed by WHO is found in Emílio J. Pampana, "La erradicación de la malaria," *Boletim da Oficina Sanitária Panamericana*, XIV (1958): 300-13. The program outlined 4 phases that had to be adopted by all participating countries: preparatory, attack, consolidation, and maintenance phases.
- 62 Candau had a very close relationship with Soper, his former colleague in Brazil; he first worked at SESP, an organization viewed with mistrust due to its autonomy from the Ministry of Education and Health and its "North-American" origins. Pinotti, although trained by the Rockefeller Foundation and having worked in IHD yellow fever programs in Brazil, did not have strong personal or professional ties with Candau and Soper.
- 63 Alvarado, *Situación de la lucha antimalarica en las Americas*. The data used by Alvarado refers to the 1951-54 period.
- 64 Alvarado, *Situación de la lucha antimalarica en las Americas*, p. 30-36.
- 65 Fernando Machado Bustamante, "Distribuição geográfica e periodicidade estacional da malária no Brasil e sua relação com os fatores climáticos. Situação atual do problema," *Revista Brasileira de Malariologia e Doença Tropicais*, IX (1957): 188-89.
- 66 Brasil, *Mensagem ao Congresso Nacional remetida pelo Presidente da República Juscelino Kubitschek de Oliveira por ocasião da abertura da sessão legislativa de 1956* (Rio de Janeiro: Imprensa Nacional, 1956), p. 273.
- 67 This was a key argument used by malaria experts and the US International Development Advisory Board to convince WHO and the US administration of the need to accelerate and fund a Global Malaria Eradication Campaign. See Packard, "No other logical choice."
- 68 Litsios, *The Tomorrow of Malaria*; José A. Najera, "Malaria control: achievements, problems and strategies," *Parassitologia*, 43 (2001): 1-89; and Siddiqi, *World Health and World Politics*, p. 141-45.
- 69 See Brasil, *Mensagem ao Congresso Nacional remetida pelo Presidente da República Juscelino Kubitschek de Oliveira por ocasião da abertura da sessão legislativa de 1958* (Rio de Janeiro: Imprensa Nacional, 1958), p. 272-73.
- 70 Silva, "Desenvolvimento e multilateralismo" e Vizentini, *Relações Exteriores do Brasil (1945-1964)*.
- 71 "Letter from Juscelino Kubitschek to Dwight Eisenhower," Rio de Janeiro, 28 May 1958, CPDOC/FGV/ Negrão de Lima papers, nl ad-m 1958.05.28 d2 and "Discurso sobre a Operação Pan-Americana," Rio de Janeiro, 20 June 1958, CPDOC/FGV, Negrão de Lima papers, nl ad-m 1958.05.28 d5.
- 72 Decree n. 43.174, 4 February 1958.
- 73 Foreign assistance as a national policy originated with the Marshall Plan in 1947 when US economic support helped rebuild Europe following World War II. President Harry S. Truman initiated the Point IV program to provide technical assistance to the less developed countries.
- 74 "Noticiário," *Revista Brasileira de Malariologia e Doenças Tropicais*, X (1958): 213-20.
- 75 "Noticiário," p. 214.
- 76 "Noticiário," p. 216.
- 77 This strategy was recognized as important by the head of WHO's eradication program, Emilio Pampana, and published in *Time* magazine in an article on the emphasis on malaria in Eisenhower's 1958 speech, *Time* (Monday, 20 January) "The war on Anopheles," www.time.com. Accessed on 23 December 2006. See also Pampana, "La erradicación de la malaria," p. 302.
- 78 Fernando Machado Bustamante, "Estado atual do problema da malária," *Revista Brasileira de Malariologia e Doenças Tropicais*, X (1958): 98.
- 79 In 1959, the National Congress passed a motion to nominate Pinotti for the 1960 Nobel Prize. The petition was signed by 240 congressmen and women from different parties. See Moraes, *SUCAM: sua Origem, sua História*, p. 354-58; and "Mário Pinotti," in Israel Beloch and Alzira Alves de Abreu, ed., *Dicionário Histórico-Biográfico Brasileiro, 1930-1983* (Rio de Janeiro: Editora FGV, 1984), p. 2741-42.

- 80 "Discurso do Ministro Mário Pinotti" is in Hêlbio F. Moraes, *SUCAM: sua Origem, sua História*, p. 296-97.
- 81 "Discurso do Ministro Mário Pinotti," p. 297.
- 82 In 1961, ICA and Point IV were incorporated into a new agency, the United States Agency for International Development (USAID).
- 83 AID/United States AID Mission to Brazil. "Audit Report of Malaria Eradication under Project Agreement n.512-11-510-014 for the period 1 November 1960 through 30 September 1964." Rio de Janeiro, 9 December 1964. Villalobos, E. et al. "Evaluation of The Malaria Eradication Program in Brazil," USAID, 1964.
- 84 AID/United States AID Mission to Brazil. "Audit Report of Malaria Eradication," p. 13.
- 85 Former São Paulo Governor Ademar de Barros, the defeated candidate in the 1960 Presidential elections and a political supporter of Pinotti's, argued with Kubitscheck over the agreements with the State of São Paulo, which was governed by the latter's political enemy, Jânio Quadros, who would become Kubitscheck's successor. Pinotti's team remained in important positions until 1970. See Hochman, "Mário Pinotti" and Israel Beloch and Alzira Alves de Abreu, ed., "Mário Pinotti."
- 86 AID/United States AID Mission to Brazil. "Audit Report of Malaria Eradication under Project Agreement n.512-11-510-014 for the period 1 November 1960 through 30 September 1964." Rio de Janeiro, 9 December 1964.
- 87 PAHO/WHO, "Report on the status of malaria eradication in the Americas—VII Report," (Washington, D.C.: PAHO, 1959); and PAHO/WHO, "Report on the status of malaria eradication in the Americas—VIII Report," (Havana: PAHO, 1960).
- 88 René G. Rachou, "O Método Pinotti nas atuais campanhas de combate à malária," *Revista Brasileira de Malariologia e Doenças Tropicais*, XII (1960): 329-37; Moraes, *SUCAM: sua Origem, sua História*; Jacques Verdrager, "Localized Permanent Epidemics: The Genesis of Chloroquine Resistance in *Plasmodium Falciparum*," *Southeast Asian Journal of Tropical Medicine and Public Health*, 26 (1995): 23-28; Mariano Zalis, "Malaria drug resistance," *Ciência e Cultura*, 52 (2000): 213-19; and A. Spielman, "Ethical dilemmas in malaria control," *Journal of Vector Ecology* 31 (June, 2006): 1-8. There are indications that the method was tested in Colombia, Asia, and Africa. Pampana, "La erradicación de la malaria" and Paulini, "O passado revisitado: o Instituto de Malariologia e o Instituto de Endemias Rurais (INERu)." Until recently, some specialists argued in favor of the continued use of chloroquinated cooking salt in the Amazon Region. See Pedro Tauil, Leônidas Deane, Paulo Sabroza, and Cláudio Ribeiro, "A malária no Brasil," *Cadernos de Saúde Pública*, I (1985): 71-111.
- 89 Another example of conflict between international eradication programs and local contexts can be found in Marcos Cueto, "Appropriation and Resistance: Local Responses to Malária Eradication in México, 1955-1970," *Journal of Latin American Studies*, 37 (2005): 533-59.
- 90 Pinheiro, *Política Externa Brasileira*; Vizentini, *Relações Exteriores do Brasil*.
- 91 For a more positive evaluation see Loiola, C. C., C. J. Da Silva, et al. "O Controle da Malária no Brasil: 1965 to 2001," *Revista Panamericana de Salud Publica/Pan American Journal of Public Health*, 11(2002): 235-44.