

Travels to the center of the periphery

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In the early twentieth century, the Brazilian government sponsored several scientific trips to the country's interior. The main interest was to modernize these areas and to incorporate them into the larger national project begun during the Brazilian Empire and that continued when Brazil became a republic in 1889. It was in this context that the Brazilian bacteriologist Oswaldo Cruz (1872-1917) visited the Amazon on four occasions between 1905 and 1911. In the following year, in 1912, he coordinated from a distance the medical team that went to the region to evaluate the public health policy in areas where rubber extraction was highly concentrated.

Two reports were published related to these expeditions. The first was delivered in 1910 to the Madeira-Mamoré Railway Company, responsible for building the railroad in the region. The second report was submitted to the Ministry of Agriculture, Industry and Commerce in 1913.

During his expeditions to the Amazon, Oswaldo Cruz often wrote to his wife, Emilia da Fonseca Cruz (1873-1952), whom he called “Miloca.” This paper proposes a comparative approach between two types of narrative: private and public. That is his personal correspondence and the official reports he contributed to write.

The reports's version used here was edited by the *Getúlio Vargas Foundation*, in Rio de Janeiro, and published in Manaus, Amazonas, in 1972. The edition's foreword was written by Arthur Cezar Ferreira Reis, Amazonian historian and former governor. The introduction was written by the Amazonian physician and writer Djalma Batista.

The correspondence mentioned here is in the original manuscript format and they are in the archives of *Casa de Oswaldo Cruz* (COC), from *Oswaldo Cruz Foundation* (Fiocruz), in Rio de Janeiro. The documents belong to Personal Correspondence file, a set of 80 items (304 pages), produced between June 25, 1910 and July 24, 1911, which comprises the period of the building of Madeira-Mamoré railroad and Belém's yellow fever campaign.

The paper is organized into three parts. The first part consists of a short biography of Oswaldo Cruz. The second part provides an economic and political overview of the region at the time. The third part focuses on describing the circumstances of the missions Cruz conducted in the Amazon. It explores his letters to his wife in order to compare them to the official reports and discover to what extent they bring additional or more accurate information, and in which way the same fact appear in the two different speeches.

Part One: Osvaldo Cruz

Osvaldo Cruz was born on August 5, 1872 in São Luiz do Paraitinga, a small town in the state of São Paulo, Brazil, where his father, Bento Gonçalves Cruz, worked as a general practitioner. The family moved to Rio de Janeiro when he was five years old. In 1892, at the age of twenty, he received his medical degree with a thesis entitled “Microbial Transmission in Water” (*Veiculação Microbiana pelas Águas*), focusing on a field in its infancy: microbiology.

The same year, Cruz lost his father and he married Emilia da Fonseca in the following year.

There is little information about Emilia Fonseca. On the “Memory Project” website, a project by the *Banco do Brasil*, we can read that “she was an intelligent and lively, advanced for her time, enjoyed nice clothes and to bet on horses at the Jockey Club in Rio de Janeiro, where she used to go by herself in an open two-horse carriage”.

In 1896 Osvaldo Cruz moved to Paris to pursue his studies in microbiology at the Pasteur Institute where he stayed for two years. When he returned to Rio de Janeiro, he was commissioned to stop an epidemic of bubonic plague at the Harbor of Santos, in São Paulo.

To fight the epidemic the Brazilian government created in 1900 a serotherapy institute in Rio de Janeiro, under his direction. Six months after the institute’s creation, the first vaccines were delivered and the epidemic of bubonic plague controlled.

In 1902, Osvaldo Cruz was appointed to be the country’s director of public health by President Rodrigues Alves, focusing on fighting yellow fever, smallpox, and bubonic plague. Against a law mandating the obligatory smallpox vaccination, the population of Rio de Janeiro began a riot, in November 11, 1904. This episode is known as the “vaccine riot”. It was in this context that he Osvaldo Cruz travelled to supervise the ports of Brazil going from the south to the north of the country, arriving in the Amazon at the end of 1905. It was the first time he travelled to the region, whose economy was growing very fast (Benchimol, 2005, p.83).

Parte 2: Brazil’s Amazon and the rubber boom

Since the vulcanization method was developed by American chemist Charles Goodyear (1800-1860) in 1844 rubber began to be used in many industrialized products, which catapulted the latex prices in the following decades. But the trees that produced the “white gold” were concentrated in the Amazon.

Between 1898 and 1900, rubber was responsible for 25.7% of Brazil’s total exports, ranking as the second most exported product (coffee was the first, with 52.7% of exports). The rubber extraction industry generated wealth and promoted the development of the cities of Manaus, Belém, and Porto Velho (Daou, 2000, pp.18-23).

From 1840 to 1910 the price of rubber increased more than 1,000%, which attracted a population of half a million immigrants into the Brazilian Amazon, in special immigrants from the northeastern part of Brazil who fled the drought.

However, these immigrants had to pay for the trip and the tools needed to work. To feed themselves and their families, they had to buy food from the rubber farm owners, which put them in a eternal dependent position (Cunha, 1995, pp. 278-279 and Furtado, 1987, pp.133-134).

Part Three: Oswaldo Cruz's Trips to the Amazon

1905 – The first trip

As we have seen, Oswaldo Cruz first travelled to the Amazon in the middle of the rubber boom, when the ports of Manaus and Belém received hundreds of immigrants each week. At the International Conference of Paris in 1903, Brazil's government signed an agreement with other countries to promote the control of cholera, bubonic plague, and yellow fever. In view of this mandate, Oswaldo Cruz travelled to these areas to supervise the sanitation conditions of the main ports of the country (Lima, Mar-Jun 1997, p.161 e Cruz, Chagas e Peixoto, 1972, Introdução, s.p.).

There is no report from this expedition at Fiocruz archives. However, there is a set of letters in the Personal Correspondence dossier, with 29 items, produced between September 29, 1905 and February 4, 1906 which comprises this trip. Unfortunately, the set is incomplete, as there is no letters sent from the Amazon, though Oswaldo Cruz reached Manaus in this occasion. For this reason, the personal correspondence of this set is not contemplated in this paper.

Accompanied by his secretary João Pedroso, he travelled on the tugboat *República* all along the Atlantic coast of Brazil, entering the Amazon River. Cruz and his assistant visited 24 harbors during 68 days, from September 27 to December 6, 1905.

1910 – The second trip

In the second part of the nineteenth century, Brazilian rubber tappers went up the Purus River, occupying an area that belonged to Bolivia, in search of new places for latex extraction This massive influx generated a series of armed conflicts between the two countries that ended with the Treaty of Petrópolis signed on November 11, 1903. The treaty determined that Brazil would have the territory of Acre (today a Brazilian state), equivalent to 191,000 km², in exchange for 3,000 km² of Brazilian territory, as well as a monetary payment of two million British pounds. In addition, Brazil had to build a railway between Bolivia and Brazil to transport products from Bolivia.

After two failed initiatives to build the railroad, the contract was awarded to the American entrepreneur Percival Farquhar in 1907. Since the beginning, the area's sanitary conditions posed the main obstacle to

the project. In the medical team of Madeira-Mamoré Railway Co. there were five physicians who had also worked on the Panama Canal that was being built at the time (Cruz, Chagas e Peixoto, 1972, Introdução, s.p.). To work with the medical team of the railway the company engaged Osvaldo Cruz.

He left Rio de Janeiro on June 16 with his assistant Belisário Pena. They inspected 133 km of the railroad and stayed there until August 7. When they were back to Rio de Janeiro, they wrote a report named “Madeira-Mamoré Railway Company – General considerations about the sanitary conditions of Madeira River” delivered to the company’s representative in Brazil on September 6, 1910.

In this report Osvaldo Cruz exposed his indignation in view of the poor sanitary conditions of the area, writing that “*the attempts to build this railway have been marked by real hectacombes*” (Cruz, Chagas e Peixoto, 1972, p.6). He was not exaggerating, only in the third phase of the railway building, from 1907 to 1912, the official death rate was 1,593 (Hardman, 1988, p. 105). However, it is possible to estimate a higher rate, considering that it was in the third phase that the area was sanitized. In view of that, Madeira-Mamoré was named the “Devil’s Railway”, and it was said that each railroad tie costed a life.

In this report, Osvaldo Cruz listed the main diseases he found: malaria, yellow fever, tuberculosis, beriberi, dysentery, hookworm infection, pneumonia, measles and alcoholism. However, among all diseases, malaria was the great terror of the region. According to the bacteriologist, malaria infection was so common that “to people (of that area) the condition of being sick was normal”. (Cruz, Chagas e Peixoto, p.32).

It is important to note that it was only in the end of the nineteenth century, in 1897, that the British medical doctor Ronald Ross realized that malaria was transmitted by a mosquito. And it was only in 1900 that the Cuban Carlos Finlay proved the same transmission method for the yellow fever. Thanks to the work of these two researchers the chief of the medical team of Panama Canal, American William Gorgas reduced the death rate in the region, in 1904. In the first phase of the Canal’s building, called the French period (1879-1889), approximately 25,000 people died, while in the American phase (1904-1914) the official number is 5,000 deaths (McCullough, 1977, p.206).

However, when Osvaldo Cruz visited the region of Madeira-Mamoré works, in 1910, there was a established profylaxis for malaria and yellow fever in the world. In his report, he observed that there was no preventive action against malaria. Besides, the population’s access to treatment was expensive and difficult, as there were some traders that delievered a mixture of starch and baking soda in place of quinine, used in the disease’s prevention (Ibidem, p.12).

At the end of the report, Osvaldo Cruz established a series of twenty measures that had to be executed in order to improve the sanitation of the area. The measures were as effective as they were coercive. For instance: the company should designate a quinine distributor to every 50 employees. This quinine distributor would deliver a signed ticket after checking that the employee ingested the substance. Employees would not receive payments for the days, which they could not present a signed ticket. The company should build camps protected with mosquito screens to accommodate 100 employees each. At

the evening, everyone should be confined there. The measures also aimed other disease's prevention, with the distribution of drinking water, shoes and the prohibition of selling alcoholic beverages. Thanks to this systematic plan, the railroad could be finished and opened on August 1, 1912 (Ibidem, p.42-44).

The last trips – the sanitation of Belém

On the occasion of the Madeira-Mamoré trip, when Oswaldo Cruz arrived in Belém, capital of Pará, the governor João Coelho commissioned him to improve Belém's sanitary conditions. The city suffered from a yellow fever epidemic, among other diseases. In a letter to his wife Emilia da Fonseca dated June 28, 1910, Oswaldo Cruz comments on this commission:

“I decided a matter today that will make our lives easier. The governor of Pará asked me to direct the campaign against yellow fever here, which I have accepted to do. When I will be back from the Madeira (river), I will go to Rio, gather the best of my people¹ and I will return here again, where I will stay for 15 days, in order to implement the sanitation service under the direction of someone close to me. I will return two or three times more. I don't know anything about the conditions that will be offered to me yet. The governor, very embarrassed, sent someone to ask me how much I wanted. I answered that I will leave this matter of value under his consideration. But judging by the enthusiasm of the man, our advantage seems to be large. To me, the thing will be very easy and I count on obtaining good results, thus providing a huge service to the country. I was told that more than two hundred people were killed by yellow fever last month.”

Extract of a letter from Oswaldo Cruz to his wife Emilia da Fonseca Cruz, Casa Oswaldo Cruz (COC) Archives (Manuscripts).

“Resolvi hoje aqui uma questão que nos vai tornar a vida mais suave. O Governador do Pará me pediu para assumir a direção da campanha contra a febre amarela aqui, o que aceitei. De volta do Madeira, irei até o Rio buscar a flor da minha gente² e de novo voltarei até aqui, onde passarei uns 15 dias para pôr o serviço em andamento, sob a direção de pessoa de minha confiança. Voltarei ainda no decurso de mais umas duas ou três vezes. Ainda não sei das condições que me serão oferecidas. O Governador, com grande acanhamento mandou me perguntar quanto eu desejava. Mandei-lhe dizer que deixava ao alvitre dele os valores. Mas, a julgar pelo entusiasmo em que está o homem, as nossas vantagens parecem (que) serão bem grandes. Para mim, a coisa será muito mansa e conto obter resultados seguros, prestando assim um colossal serviço ao país. Segundo me informam, só no mês passado morreram duzentas e tantas pessoas de febre amarela.”

Trecho de carta de Oswaldo Cruz para sua esposa, Emilia da Fonseca Cruz, Arquivo Fiocruz.

Sure enough, when he returned to Rio he put together a sanitation team to fight yellow fever in Belém. The team was composed of 87 people including physicians, assistants, guards, and a manager, to which seven local physicians were added.

¹ Author's emphasis.

² Grifo do autor

Oswaldo Cruz accompanied them to Pará to implement the services in November 1910 and the last reported case of a person infected with yellow fever in Belém was on May 1911. That month, the bacteriologist went to Dresden, in Germany, where he represented Brazil at the Hygiene International Exhibition, having his daughter Elisa with him. But at the end of the month, he went back to Pará, still in the company of his daughter, who he made sleep without a mosquito curtain, to prove that he had full trust in the work of the group he had left in Belém. On May 9, he wrote to Emilia:

“We arrived here yesterday. We were unexpected because the ship arrived one day earlier. We were received by our local colleagues, who were surprised at lunchtime by the vessel’s arrival. We have settled at the *Laje da Palavra* house. The eldest daughter of Belisário³ is also there and she is a splendid company to Liseta.”

Extract of a letter from Oswaldo Cruz to his wife Emilia da Fonseca Cruz, Casa Oswaldo Cruz (COC) Archives (Manuscripts).

“Aqui chegamos desde ontem. Chegamos sem ser esperados porque o navio antecipou de um dia sua viagem. Recebidos pelos colegas daqui que foram surpreendidos à hora do almoço com a entrada do navio, nos instalamos na casa da comunidade da *Laje da Palavra*. Lá está também a filha mais velha do Belisário⁴, que está fazendo esplêndida companhia à Liseta⁵.”

Trecho de carta de Oswaldo Cruz para sua esposa, Emilia da Fonseca Cruz, Arquivo Fiocruz.

The report about the yellow fever campaign sent to the governor of Pará has not been found. The only documents we have from the campaign are these correspondences and the article published in the newspaper of the time. On September 7 1910, the governor João Antunes Luís Coelho wrote in the annual report published for the Congressmen of Pará:

“Pará had the chance to host for the second time the distinguished Brazilian bacteriologist Dr. Oswaldo Cruz, on his way to the Amazon, where he went to make scientific investigations at the working sites of Madeira-Mamoré Company. He arrived in Belém on June 26. [...] His arrival coincided with my resolution to start the fight against yellow fever, which you know is my intention since the beginning of my government”.

Annual Report of Pará State, September 7, 1910, Pará, pp. 6-7. National Library Archives (BNDigital, Hemeroteca).

O Pará teve a fortuna de hospedar, pela segunda vez, o distinto bacteriologista brasileiro Dr. Oswaldo Cruz, em trânsito para o Amazonas, onde foi proceder a estudos científicos na sede dos trabalhos da Companhia Madeira-Mamoré. Aportou ele a Belém em 26 de junho último. [...]Coincidiu com a sua chegada a minha resolução de encetar o combate à febre amarela, o que, como sabeis, é minha cogitação desde os primeiros dias de governo.”

³ Belisário Pena, physician that accompanied Oswaldo Cruz in the mission against yellow fever.

⁴ Belisário Pena, médico que acompanhou Oswaldo Cruz na campanha contra febre amarela.

⁵ Elisa Cruz, filha de Oswaldo Cruz.

Relatório Anual do Estado do Pará, 7 de setembro de 1910, Pará, pp. 6-7. Arquivo da Biblioteca Nacional. (BNDigital, Hemeroteca).

On April 3, 1911, *Gazeta de Notícias* newspaper published a long article about yellow fever, focusing on Osvaldo Cruz's work in Pará:

“Yellow fever was a mysterious evil that every year since 1840, its third and definitive appearance among us (since it had failed to establish itself here), decimated our population with more or less extensive ‘*poussées*’ (outbreaks).

[...] The yellow fever prophylaxis measures were a complete success in Cuba. The measures were applied in Rio, and the yellow fever disappeared. Now the focus is on Pará, and following is the transcript of a telegram received from the capital of the state yesterday: ‘At the end of March only one case of yellow fever was recorded’. [...] We believe that in view of such evidences there will be no more doubts about the great services our eminent Dr. Osvaldo Cruz is providing to Brazil.”

Gazeta de Notícias, April 3, 1911, Rio de Janeiro, p.1. National Library Archives (BNDigital, Hemeroteca).

“A febre amarela era um mal misterioso, que todos os anos, a partir de 1840, data do seu terceiro e definitivo aparecimento entre nós (em invasões anteriores não conseguira se firmar no Brasil), todos os anos dizimava nossa população, com ‘*poussées*’ mais ou menos extensas.

[...] Fez-se a profilaxia da febre amarela em Cuba e o sucesso foi completo. Fez-se no Rio e a febre amarela desapareceu. Agora está em foco o Pará. E eis o que diz um telegrama de ontem, da capital paraense: ‘No mês de março findo foi aqui registrado apenas um caso de febre amarela’. [...] Creemos que, depois de tão concludente prova, não restará mais dúvida alguma quanto aos grandes serviços ao Brasil que tem prestado o nosso eminente patricio Dr. Osvaldo Cruz.”

Gazeta de Notícias, 3 de abril de 1911, Rio de Janeiro, p.1. Arquivo da Biblioteca Nacional. (BNDigital, Hemeroteca).

On May 23, *Correio da Manhã* newspaper published a note about Cruz trip to Belém:

“Dr. Osvaldo Cruz, presidente of the Brazilian delegation for the International Hygiene Exhibition, held annually in Dresden, sent a telegram to the minister of Interior yesterday, informing the minister that he is going back to Pará, after the exhibition's opening, leaving Dr. Cardoso Fontes in charge of Brazil's delegation”.

Correio da Manhã, May 23, 1911, Rio de Janeiro, p.4. National Library Archives. (BNDigital, Hemeroteca).

“O Dr. Osvaldo Cruz, presidente da delegação brasileira na Exposição Internacional de Higiene, reunida anualmente em Dresden, telegrafou ontem ao ministro do Interior, participando-lhe que foi instalada aquela exposição e que segue para o Pará, deixando a direção da delegação do Brasil confiada ao dr. Cardoso Fontes”.

Correio da Manhã, 23 de maio de 1911, Rio de Janeiro, p.4. Arquivo da Biblioteca Nacional. (BNDigital, Hemeroteca).

On June 4, 1911, *Correio da Manhã* newspaper published about the end of the yellow fever campaign in Pará:

“Yellow fever is finished in Pará

On November 12, the commission against yellow fever in the state of Pará presented a graphic report to the government. The report analyzes the campaign’s development since its inception, whose results were a complet success, the terrible *morbus* (disease) is extinguished. [...] Such splendid results are due to the joined efforts of the governor and scientist Osvaldo Cruz, an outstanding achievement for the state’s reputation and crédit, which will also benefit the country. This result is very gratifying, specially at this moment when there is a great need of capital and laborers to cast the terrible (finacial) crisis that weighs Pará.

Dr.Osvaldo Cruz will soon arrive here, and an adequated reception will be prepared for him, as he is the hero of the campaign that ensured the success in due term.”

Correio da Manhã, June 4, 1911, Rio de Janeiro, p.4. National Library Archives. (BNDigital, Hemeroteca).

“A febre amarela está extinta no Pará

A comissão da profilaxia contra a febre amarela apresentou ao governo do Estado um trabalho gráfico dos seus serviços desde o início da campanha, em 12 de novembro do ano passado, e cujo resultado foi o mais brilhante, estando extinto o terrível morbus.

[...]Aos esforços conjuntados do governador e do cientista dr. Osvaldo Cruz se deve tão esplêndido resultado, de pleno êxito para o renome e o crédito do Estado, os quais subirão muito, repercutindo em todo o Brasil. Esse resultado é tão mais satisfatório, porquanto no momento atual há grande necessidade da vinda de capitais e braços estrangeiros para conjurar a crise horrível que pesa sobre o Pará.

Brevemente, chegará a esta capital o dr. Osvaldo Cruz, a quem será preparada condigna recepção, sendo como é, o herói da campanha de que garantiu o êxito no prazo fatal.”

Correio da Manhã, 4 de junho de 1911, Rio de Janeiro, p.4. Arquivo da Biblioteca Nacional. (BNDigital, Hemeroteca).

From these press articles, it is possible to note that after these successful sanitation campaigns in Rio de Janeiro and Belém, Osvaldo Cruz’s name was definitively associated with the sanitation progress that the country needed. The arrival of “capital and laborers” mentioned by the newspaper leaves no doubt: after sanitation, the country’s development was just a matter o time. However, the last sanitation campaign conducted by Osvaldo Cruz would reveal it would be more challenging than expected.

The sanitation of the Amazon Basin

In 1910, the Asian rubber from British colonies entered in the international market, ending the Amazonian rubber boom. A few years earlier, in 1876, the British explorer Henry Wickham was responsible for taking 70,000 seeds from the rubber tree, the *Hevea-brasiliensis*, and bringing them to the *Royal Botanic Gardens* in London where they were selected to be more resistant against diseases and pests (Gradin, p.307). In its natural habitat in the Amazon, there are few rubber trees per hectare, which keeps insects and pests at a distance. But when the trees are planted too close one to another, it increases the number of pests afflicting

them. In Asia and Africa these predators do not exist, so the plantations were successful. In comparison, rubber farms in Malaysia and Sumatra were producing 8,500 tons of rubber a year, against 38,000 from the Amazon region in 1912. Only two years later, Asia and Africa combined exported 71,000 tons and three years later 370,000 tons (Gradin, 2009, p.40-46), approximately ten times more than the Amazonian production.

In 1912, the Brazilian government tried to revert the market loss of the rubber trade in the region by creating the *Superintendence of Rubber Defense*. The superintendence commissioned Osvaldo Cruz to organize the sanitation efforts in the Amazon. The area covered by the commission was the state of Amazonas and the territories of Acre and Roraima (now states).

This commission was composed of the physicians Carlos Chagas, João Pedroso de Albuquerque, and Pacheco Leão. They travelled to Amazonas between October 1912 and March 1913. On September 11, 1913, Osvaldo Cruz presented a report about the sanitary conditions in Amazonas to the Minister of Agriculture, Industry and Commerce Pedro de Toledo, entitled “Sanitation conditions of the Amazon Valley”. Although he had not traveled to Amazonas at this time, Osvaldo Cruz coordinated the work of the medical team from a distance and signed the first and the fourth parts of the report.

In this report, Osvaldo Cruz presents similar conclusions to the previous report of 1910, drawing attention to the need of fighting malaria. As sanitary measures, the Brazilian government would install quinine stations for rubber tappers. In order to promote compliance with taking the medication, the government would pay the laborers a stipend at the end of one year, for those who were not infected with the disease. Furthermore, there would be ambulance-boats along each river. At the end, the physician says:

“Following the sanitation plan mentioned above, I can assure you that the main obstacle to the rapid progress of the valley of the largest river in the world will disappear, and it will thus be brought to civilization one of the richest, if not the richest area in Brazil. This achievement is in the hands of the government.”

“Realizado o plano de campanha sanitária constante das linhas acima, posso afirmar com segurança que desaparecerá o obstáculo capital que retém o progresso vertiginoso a que está destinado o vale do maior rio do mundo e ficará assim entregue à civilização uma das mais ricas, se não a mais rica zona do Brasil.

Está nas mãos do governo realizar esse feito”.

Cruz, Chagas e Peixoto, 1972, p.155.

However, with the market growth of the rubber from British colonies, the *Rubber Defense Superintendence* was extinguished in less than two years.

The Amazon: where Science meets literature

In 1913 three important Brazilian writers had already put on paper their view about the Amazon they knew: José Veríssimo (1857-1916), Alberto Rangel (1871-1945) and Euclides da Cunha (1876-1909).

They had not invalidate the speech of previous foreign travelers, but they inevitably magnified small details or focused on other issues. This is the case of the Amazonian texts of José Veríssimo in the short-stories book *Scenes of Amazonian life* (*Cenas da vida amazônica*, 1889), of Alberto Rangel, with the short stories collection *Green Hell* (*Inferno Verde*, 1908) and of Euclides da Cunha, with a collection of essays about the region written when he travelled to the Amazon while working for the Brazilian government. The book *In the margin of History* (*À margem da história*, 1909) was published after his death.

Despite strong differences these texts have a similar perspective: an adherence to the integrity of the country. A common aspect in them is the urgency to incorporate this region and its inhabitants to the national project of the country, either through literature, politics or economy. Thus Osvaldo Cruz reports would contribute in this discussion yet on another bias.

In fact, scientific discourse had tremendous relevance at the time. In an article where he analyses the hybrid text between literature and scientific essay of *Os Sertões* from Euclides da Cunha, Leopoldo Bernucci observes that the author purposely “*insisted upon blurring the line between science and art and on erasing the borders defined by positivist influence, thus preferring to enrich the concept after manipulating it and returning it to us in all its complexity, strength and operational uniqueness*” (Bernucci, 2008, p.24). The same can be applied to the Amazonian essays of Euclides. That is, the author’s strategy was to make use of the scientific prerogatives to stand at another level that would be neither pure art nor simple scientific essay. Or, in the words of Leopoldo Bernucci, “*in this intermediary area in the borders as a place that favors both empirical and quantitative models and the idealizations motivated by the flames of controlled imagination*” (Bernucci, *Ibidem*, p.23).

With regard to the “empirical and quantitative” models, Osvaldo Cruz report brought to light the terrible health conditions to which the Amazon workers were submitted, as well as the fact that the wealth, modernity and progress generated by the rubber economy were based on the misery of thousands of Brazilians who “*workerd to be enslaved*”, in the words of Euclides da Cunha (Cunha, 1995, p.278).

Comparing Osvald Cruz correspondence with his reports it is possible to note that the bacteriologist purposely excluded half-tones to describe the facts he saw. In the 1910 report, when he was working for Madeira-Mamoré Railway Company, Osvaldo Cruz wrote about Santo Antônio do Madeira village, the place where the company’s workers were settled. The village is now the city of Porto Velho, capital of Rondônia state and it was founded by the railroad building company.

“The village has no sewage, no running water system, nor lighting of any kind. Garbage and all vegetative life products are thrown onto the streets, in those narrow, undulating alleys that cross this unfortunate village deserve the name. There are hills of trash against the walls of the houses. Large holes in the center of the village receive rainwater and water from the flood and become dangerous

swamps from which clouds of anophelines⁶ arise, spreading death throughout the village. There is no slaughterhouse. Cattle is slaughtered in the middle of the street, by gunshot, and the undesired parts, like the head, viscera, leather, shells, etc, are abandoned at the same spot of the sacrifice, lying in a lake of blood. Everything is rotting near the houses and the fetid smell it has is indescribable. On the organisms living in such an environment the malaria executes the greatest devastation. There is no child population and the few children that can be seen have a very short life. There are no native people known among the inhabitants of Santo Antônio: they all die.”

“A vila não tem esgotos, nem água canalizada, nem iluminação de qualquer natureza. O lixo e todos os produtos da vida vegetativa são atirados às ruas, se merecem este nome vielas esburacadas que cortam a infeliz povoação. Encontram-se colinas de lixo apoiadas às paredes de habitações. Grandes buracos no centro do povoado recebem as águas das chuvas e da cheia do rio e transformam-se em pântanos perigosos, donde se levantam aluviões de anofelinas que espalham a morte por todo o povoado. Não há matadouro. O gado é abatido em plena rua, à carabina, e as porções não aproveitadas: cabeça, vísceras, couro, cascos etc., são abandonados no próprio local em que foi a rês sacrificada, jazendo num lago de sangue. Tudo apodrece junto às habitações e o fétido que se desprende é indescritível. Sobre os organismos que vivem em tal meio o impaludismo faz as maiores destruições que se conhecem. A população infantil não existe e as poucas crianças que se vêem têm vida por tempo muito curto. Não se conhecem entre os habitantes de Santo Antônio pessoas nascidas no local: essas morrem todas.”

Cruz, Chagas & Peixoto, 1972, p.10.

In a letter dated July 11, 1910, he wrote about the same village to Emilia da Fonseca Cruz:

We visited yesterday the city of Santo Antônio. You cannot imagine what it is. Any description, even the worst one, would be very far from reality. Suffice it to tell you that there is not even one native inhabitant in this place. All children born here infallibly die and the few alive that are born here will inevitably die very soon. The foulness is immense. Just to give you a pale idea of what that means, I will tell you that they slaughter the cattle in the streets, leaving the viscera, head, etc rotting in the middle of the street. The smell is so bad that one can be suffocated. I am horrified with all this filth!

“Visitamos ontem a cidade de Santo Antônio. Não podes imaginar o que seja. Qualquer descrição, por mais pessimista, ficaria aquém da realidade. Basta que te diga que, na cidade, não há um só habitante filho do lugar. Todas as crianças que ali nascem, morrem infalivelmente e as poucas ali nascidas estão de tal modo doentes que fatalmente morrerão (em) breve. A imundície é incrível. Para dar uma ideia pálida do que é ela, basta que te diga que matam os bois nas ruas e aí abandonam as vísceras, cabeça etc., que deixam apodrecer em plena rua. O mau cheiro é de tal ordem que pode-se ficar sufocado. Estou horrorizado com tanta porcaria!”

Trecho de carta de Osvaldo Cruz para sua esposa, Emilia da Fonseca Cruz, Arquivo Fiocruz.

What is noteworthy in these two texts is the similarity between the report’s remarks and those in his letter to his wife, which he wrote just one day after visiting the village of Santo Antônio. He was so marked by what he saw that he wrote in the same bruising way in the report, weeks later. However, he spared Emilia

⁶ Malaria mosquitos.

some of the place's morbid details, like these observations he included in the report about the "cruelty" of nature in the Amazon. In this case, the terrible ants:

"The ants voraciously attack corpses, which I had the occasion to verify, and their action is really intense, as it can be noticed through this observation made by Dr. Walcott⁷, the company's physician. An engineer was coming back from the working area with a dead worker in a hammock and he couldn't cross the water stream, which was suddenly filled after a rain.

He set his hammock at the stream bank to spend the night and left the corpse in another hammock. In the morning, he found the body almost reduced to a skeleton, covered by thousands of ants."

Cruz, Chagas & Peixoto, 1972, p.14.

"As formigas atacam vorazmente os cadáveres, o que tive ocasião de verificar e a ação delas é tão intensa como se pode avaliar pela seguinte observação feita pelo Dr. Walcott, médico da empresa: tendo um engenheiro voltado da zona em exploração com cadáver dum trabalhador numa rede não logrou atravessar um igarapé, que encheu bruscamente após grande chuva.

Armou a rede à margem do córrego e aí passou a noite, tendo deixado no chão o cadáver envolvido em outra rede. Pela manhã encontrou o corpo quase reduzido a esqueleto e coberto por milhares de formigas."

Cruz, Chagas & Peixoto, 1972, p.14.

Or about crocodiles, piranhas, and dangerous Indians:

"In the Madeira River, the alligator represents a danger to those who fall in the river; but much more fearful are certain fish: [...] the *piranhas*, which attack people and animals in huge shoals, and when there is blood, devours them with unspeakable greed.

Cruz, Chagas & Peixoto, Ibidem, p.12.

"On land, except the Parintintins Indians that live on the right bank of Madeira River, close to Machado River, who are indomitable and attack all white people that are near them and are considered cannibals, there is nothing to fear regarding dangerous animals. In the region of waterfalls the red jaguar (*Felis concolor*) can be easily found, but he flees humans and represents almost no danger."

Cruz, Chagas & Peixoto, Ibidem, p.14.

"No rio Madeira, o jacaré constitui um perigo àqueles que caem no rio; muito mais temerosos porém são certos peixes: [...] as piranhas, que em cardumes colossais atacam as pessoas e animais na água e, desde que aparece sangue, com voracidade indescritível devoram-nos."

Cruz, Chagas & Peixoto, Ibidem, p.12.

⁷ Member of the Railway Company medical team.

“Em terra, não falando dos índios Parintintins que vivem na região da margem direita do Madeira, para baixo do rio Machado e que, indomáveis, atacam todos os brancos que lhes passam ao alcance e que na região são considerados como antropófagos, não há nada a temer de animais que ataquem o homem. Na região das cachoeiras, encontra-se comumente a onça vermelha (*Felis concolor*), que foge do homem e, praticamente, não constitui perigo.”

Cruz, Chagas & Peixoto, *Ibidem*, p.14.

Cruel nature, devouring living and dead people, this excerpt of the report approaches the short stories of *Green Hell* from Alberto Rangel. As we can see in this excerpt: “*Catolé* concept”, in which the main character João Catolé has the daughter kidnapped and found dead in the forest a week later.

“After one week half hundred crows abandoning themselves over a certain point of the forest aroused a morbid assumption. Some locals took the way where the omnious and butcher horde hung in the air. There they found indeed the bodies of Pedro and Malvina laying side by side, the skeletons falling off the nauseating pope. A rifle on the ground, in the midst of these filthy remains”.

“Ao fim de uma semana, meio cento de corvos, abandonando-se por cima de certo ponto da floresta, despertou uma fúnebre suposição. Alguns colonos tomaram um rumo em que o bando sinistro e carniceiro pairava nos ares. Lá deram, efetivamente, com os cadáveres de Pedro e de Malvina deitados lado a lado, os esqueletos desprendendo-se na papa nauseabunda. Um rifle no chão, em meio a esses restos imundos”.

Rangel, 2008, p.56.

To Emilia, he makes bucolic comments about the natural environment, as in this letter dated June 28, 1910, the day of her birthday, when he wrote from Pará:

“Here in the Amazon valley there is a little bird called ‘uirapuru’ by the Indians, which means ‘enchanted bird.’ This little animal, small as a cambaxirra⁸, is very rare. It sings hidden on the top of chestnut and *louro-rosa*⁹ trees. It sings so beautifully that all birds in the surrounding area accompany him, as well as the beasts, that stay in rapture, listening to the melodious song of the blessed bird, all united to help him avoid the attack of vultures and other enemies.

It is the king of the Amazon singers and the carrier of eternal happiness. According to the beliefs of shamanism, a person who has an uirapuru’s feather shall enjoy eternal happiness and will always live with health, virtue, love and well-being. All look to own the charm of eternal happiness, but few succeed, because the divine bird is very rare. I know people that have looked in vain for a feather of this holy bird their entire lives. Luckily, I became acquainted with a young man, a medical student, whose mother in the midst of farewell tears, entrusted her beloved son with a family relic, an embalmed uirapuru in *carajuru*¹⁰, kept in a *purçanga*¹¹.

⁸ Small bird from Brazil and Bolivia.

⁹ Brazilian tree, scientific name: *Nectandra-rubra*.

¹⁰ Brazilian plant used for embalming.

¹¹ small leather bag

This boy gave me the uirapuru feathers that I send you enclosed here and that are the messengers of the most fervent wishes that God will transform in reality the pagan's superstition."

"Há aqui no vale do Amazonas um pequeno pássaro que os índios denominam "uirapuru", que significa "pássaro encantado". Este animalzinho, pequeno como uma cabaxirra, é raríssimo. Vive cantando escondido nos frondes das castanheiras e de louro-rosa. O cantar desse passarinho é tão melodioso que todas as aves das circunvizinhanças acompanham-no, assim como as feras da região, que ficam todos em êxtase, ouvindo o mavioso canto da ave da fortuna e todos unidos porfiam em evitar-lhes o ataque dos abutres e outros inimigos.

É o rei dos cantores das florestas amazônicas e o portador da eterna felicidade. Segundo os assertos da pajelança, quem possuir uma pena do uirapuru gozará da eterna felicidade e será sempre acompanhado da saúde, da virtude, do amor e do bem-estar. Todos porfiam em possuir o amuleto portador da felicidade eterna, mas raros conseguem, porque o passarinho divino é raríssimo. Conheço pessoas aqui que passaram em vão a vida à procura duma pena da avezinha sagrada. Quis a sorte que travasse eu relações com um rapaz, estudante de Medicina, a quem a Mãe, no meio das lágrimas de despedida, confiara ao filho querido, como relíquia de família, um uirapuru embalsamado em carajuru e conservado numa purçanga (pequena bolsa de couro).

Este rapaz deu-me as penas do uirapuru, que junto te envio e que são as mensageiras dos mais ardentes votos que faça para que Deus transforme em realidade a credence do gentio."

Trecho de carta de Osvaldo Cruz para sua esposa, Emilia da Fonseca Cruz, Arquivo Fiocruz.

In the letters to Emilia there are also observations that he didn't include in his official reports, such as these remarks written on July 2 about the kind of people he met on his trips:

"You can't imagine the terrible company we have on the (boat) trip: (rubber) tappers and adventurers of all kinds, without any civil manners, and a wave of mulatto women from Ceará¹² of easy virtue, that keep formidably rattling aboard."

« Não imaginas que péssimas companhias de viagem temos : seringueiros e aventureiros de toda a espécie, sem a mínima educação e uma leva de mulatas cearenses de vida aerada e que levam fazendo uma formidável algazarra à bordo."

Trecho de carta de Osvaldo Cruz para sua esposa, Emilia da Fonseca Cruz, Arquivo Fiocruz.

In another letter from Pará dated June 28, 1910 he wrote about the repercussion of his engagement by the governor of Pará:

"I have been retained here longer than I wanted, because there was a strike on the ship that will take me to Manaus, from where I will leave on a special ship. Today the governor (of Pará) visited me. And tonight I was visited by the daughter of the hotel's owner, an accomplished pianist, graduated from the Conservatory of Leipzig, who came to play piano for me. She is a true artist. You can't imagine the

¹² State in Brazil.

‘pilgrimage’ of visits I have received. They have raised to the highest level my irritation. Especially now that they suspect that I will direct the yellow fever campaign, it is an unlimited flattering.”

«Tenho estado preso aqui mais tempo do que o desejava, porque houve uma greve à bordo do navio do Lloyd que me terá de levar a Manaus, donde partirei em navio especial. Hoje o governador me veio visitar. E agora à noite, fui visitado pela filha da dona do hotel, uma exímia pianista, formada no Conservatório de Leipzig e que veio tocar piano para eu ouvir. É uma verdadeira artista. Não imaginas a romaria de visitas que tenho recebido e que me tem elevado ao auge a minha irritação de nervos. Sobretudo agora que desconfiam que vou tomar a direção da companhia contra a febre amarela, o chaleirismo está incomensurável.»

Trecho de carta de Oswaldo Cruz para sua esposa, Emilia da Fonseca Cruz, Arquivo Fiocruz.

This is an example that can be found in other letters also, in which there is important information about the political system of the “Old Republic” (1889-1930) in Brazil, also valid in this remote region. In this case, the traditional habit of visiting someone who received a political nomination, in order to get some privilege or position. Oswaldo Cruz is clearly against this tradition and preferred to choose his assistants among qualified people.

After reading the letters Oswaldo Cruz wrote to his wife Emilia when he was travelling in the Amazon, it is possible to have a broader view about the motivations of his trips and about the places he visited. We can infer the real situation of the position of women, for instance, comparing the young pianist that studied in Leipzig and the “mulatto” ladies that were on his boat while he travelled. Despite their very different lives, the pianist and the women on the boat were there for men’s entertainment.

Oswaldo Cruz dedicated his life to his work and he involved his family in his mission: to prove that science could really make a better world. Finally, these letters together with the reports give us an opportunity to better understand his view and the impact he had when he first met two different realities. In one hand the elites of the two richest cities in the region, Manaus and Belém, who lived in huge opulence, in contrast to the degrading situation of those who were at the base of the rubber economy.

This research is still in progress, with several aspects to be developed. But it is possible to say that the content of the scientific reports of Oswaldo Cruz reinforces and amplifies the implications of the Amazonian texts from some Brazilian writers, such as José Veríssimo, Alberto Rangel and Euclides da Cunha, establishing thus a fertile dialogue to apprehend the problems of the Amazon.

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