



ARTICLE

Amazonia by steam Vicissitudes of a geometric revolution

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In the 1890s, at the height of the rubber boom, steamboats dominate the rivers of Bolivian Amazonia. The technophile discourse of the period presents the steamer as a revolution that changes everything: it allows social progress and economic development, it frees transport from the constraints of the geography, it reinforces national sovereignty and, at the same time, it overcomes inter-ethnic conflict. Nevertheless, a careful reading of the historical sources allows us to question whether it is reasonable to reduce the rubber-transporting steamer to an icon of progress and the nationalist agenda. A historical anthropology of the steamer helps to understand what happens with the vessel itself beyond political economy, nation-building processes, and the Amazonian landscape, while also aiming to reconstruct the biographies, histories, and imaginaries of the steamer itself and its people, and in turn an integral fluvial experience that embodies novel perceptions of alterity of the river and the Bolivian jungle.

Keywords: Bolivian Amazonia, historical anthropology, steamboats, mechanization, rubber, extractivism

Towards a historical anthropology of the rubber-transporting vessel

Between 1870 and 1920, nearly all the Amazonian countries exploited rubber (*Hevea brasiliensis*) (Weinstein 1983; Barham and Coomes 1994). In Bolivia, the rubber industry spread rapidly along the widest jungle rivers such as the Madeira, Orthon, Beni, or Madre de Dios, and vast fortunes were made almost overnight. The heyday of rubber did not simply bring the eastern portion of the country into the republican imaginary and the international market, but it also drove the foundation of cities, the sanction of laws on the concession of land, and on the exploration, demarcation and incorporation of territories which had until that time been peripheral to the republican orbit. Hitherto viewed as a green, inhospitable, and marginal desert, Amazonia was gradually connected with the rest of the world, and legions of workers from the country's highlands, and even from several European countries, flocked to the jungle (García Jordán 2001; Vallvé 2010; Córdoba 2012, 2015, 2019; Van Valen 2013).

Against this effervescent backdrop, during the 1890s a naval race began between the leading rubber firms as they competed to buy the most modern steam vessels in Europe. A little later than in neighboring Brazil (Souza

Paião 2016), various shipyards such as Cochrane & Co. (Birkenhead, England), Holtz & Co. (Hamburg, Germany), or Chapadare et Frères (Argenteuil, France) received orders to build an ever greater number of steamers of low tonnage and draft, specially adapted to jungle hydrography, and driven either by propeller or paddle (Alberdi 1909; Hollweg 1995). The vessels were dismantled, transported by sea to South America with the great oceanic shipping lines, and then assembled locally by specially hired European mechanics, either at Brazilian river ports like Manaus (Posnansky 1904: 20–27), or in the precarious shipyards belonging to the rubber companies themselves located at the edge of the jungle (Mathews 1879: 119–20; Craig 1907: 55).

The literature on the rubber boom usually presents the steamboat as the model for a new political economy: a unique symbol of nationalist sovereignty, an instrument of industry, an icon of progress and civilization. The problem is that this interpretation speaks of nationalist ideology or of capitalism rather than of the steamers and of the men who sail in them: a revolutionary factor, certainly, but it really is immaterial if it is a boat, a railway, a lorry, or any other form of mechanical transport—in short, it is a means to an end. Mention is made of the steamer only to be dismissed, or, at any event, to be





understood as representing something else: extractive capital, nationalism, or military power (see, e.g., Lips 1937: 72; Gordillo 2011). Nevertheless, in this context it seems reasonable to ask what happens to the steamboat itself. Besides the biographies, the histories, the circumstances and even the experiences of the crews, a certain beauty and a certain emotional memory exists of the boat as a technical object and, in turn, as a symbolic, aesthetic, or even nostalgic device; a tangle of meanings, in other words, which allows us to understand the steamer as a “technophany” in the Simondonian sense. Clearly we are not interested here in the technical characteristics of the steamer as naval history, i.e., the definition of what a compound motor, tonnage, or beam are—or, conserving Simondon’s terminology (2017: 392), in its mechanics. Nor is it a question of empathetically linking a phenomenology of the steamboat to the particular perception of the odd crews, or even to the representations individually or collectively associated with each vessel. Nor, as many historians do, is it a case of dismantling it in the apologetic discourse of civilization and progress (such as in the general literature on the rubber boom), or rather of nationalist sovereignty (as in the literature on the Acre War) (Sanabria Fernández [1958] 2009; Monje Roca 1977; Hollweg 1995; Roca 2001). At the same time, an exclusively economy-focused reading turns the steamboat into a mere representation of something else by filtering it through a mesh of determinations that dilute its meaning as a technical object. Just as unproductive is a transcendental reading, which intuitively relies on analytical tools like “mechanization,” “nation,” or “bourgeoisie”: attractive concepts because of their immediate power of evocation, no doubt, but in turn so abstract that they finally say little (see, e.g., Barthes 2001: 56–58; Foucault 2010: 32). If we are allowed a poor simile, these exegetical keys let the experience of the steamboat slip through our hands like water.

To fully understand the regional influence of the steamer of the rubber period, the project of analyzing its material, social, and ideological conditionings seems more reasonable—and certainly more attractive. Only then can we seek to sketch an anthropological reading of the steamboat, its people and its context which might help us to grasp the complex network of relations in which it exists (Mumford 1967: 4; Pfaffenberger 1992). This alternative view will perhaps allow us to understand too the modeling of a river landscape with precise characteristics and, in a broader sense, to gain a certain perception of the actual Amazon jungle with its own rhythms, relational hierarchies, and structures of alter-

ity. As far as possible, it is then a matter of reconstructing the experience of the Amazon steamer, but simultaneously reading the history of the rubber period from the river’s perspective or, rather, from reality as perceived from the deck of the steamboat.

Argonauts of the eastern river

Historical sources present the introduction of the steamer in Bolivia as a true Copernican revolution. It will thus come as no surprise that the Spanish writer *Ciro Bayo* (1911: 329–30) states that the difference between a boat that is rowed and a steamer is the same as “between arithmetical and geometric progression.” In fact, during the last quarter of the nineteenth century, the rationale of modernity explicitly considered the steamer to be a paradigm of technical efficiency, while the Amazonian rivers—until then conceived of as a dangerous, savage, and unpredictable environment—were viewed as a resource and, even, as the most efficient and safest transport route. It is simply logical, in such a context, to undertake explorations designed to guarantee the navigability of the great waterways of the Amazonian north, or that countless (invariably failed) technophile projects should emerge to implement a modern communication network with steamers, canals, and railways to overcome geographical constraints, boost trade, and manage to connect the “country of latex” to the world (Figure 1).¹

We could even think that in Bolivian Amazonia the steamboat is the protagonist of a sort of rationalization of the river landscape (Weber [1922] 1996). As motor of civilization and progress, fluvial mechanization does not just embody the Promethean hope of dominating geographical constraints but also the unparalleled possibility of achieving something until then seen as utopian—in the words of another observer, “the reduction of savagery to social life” (Becerra Casanovas 1984: 44). Therefore, it is worth investigating the discursive construction of such barbarism, seeing that, in fact, the “geometric revolution” more or less explicitly supposes overcoming the

1. Palacios 1852: 3–22; Salinas 1871: 5, 15, 30–31; Herndon and Gibbon 1875; Keller and Keller 1875: 58–70; Mathews 1879: 119–120; Knox 1886: 314; Cabrera 1889: 1–2, 33–36; Craig 1907: 31–55; Ballivián and Pinilla 1912: 68. Beyond Bolivia, the diagnosis seems to be almost global: see, e.g., Sarmiento (1850) 2007; Marx (1894) 2009: 84–85; Mas Godayol 1983, 1: 14; Headrick 1989; Souza Paião 2016.



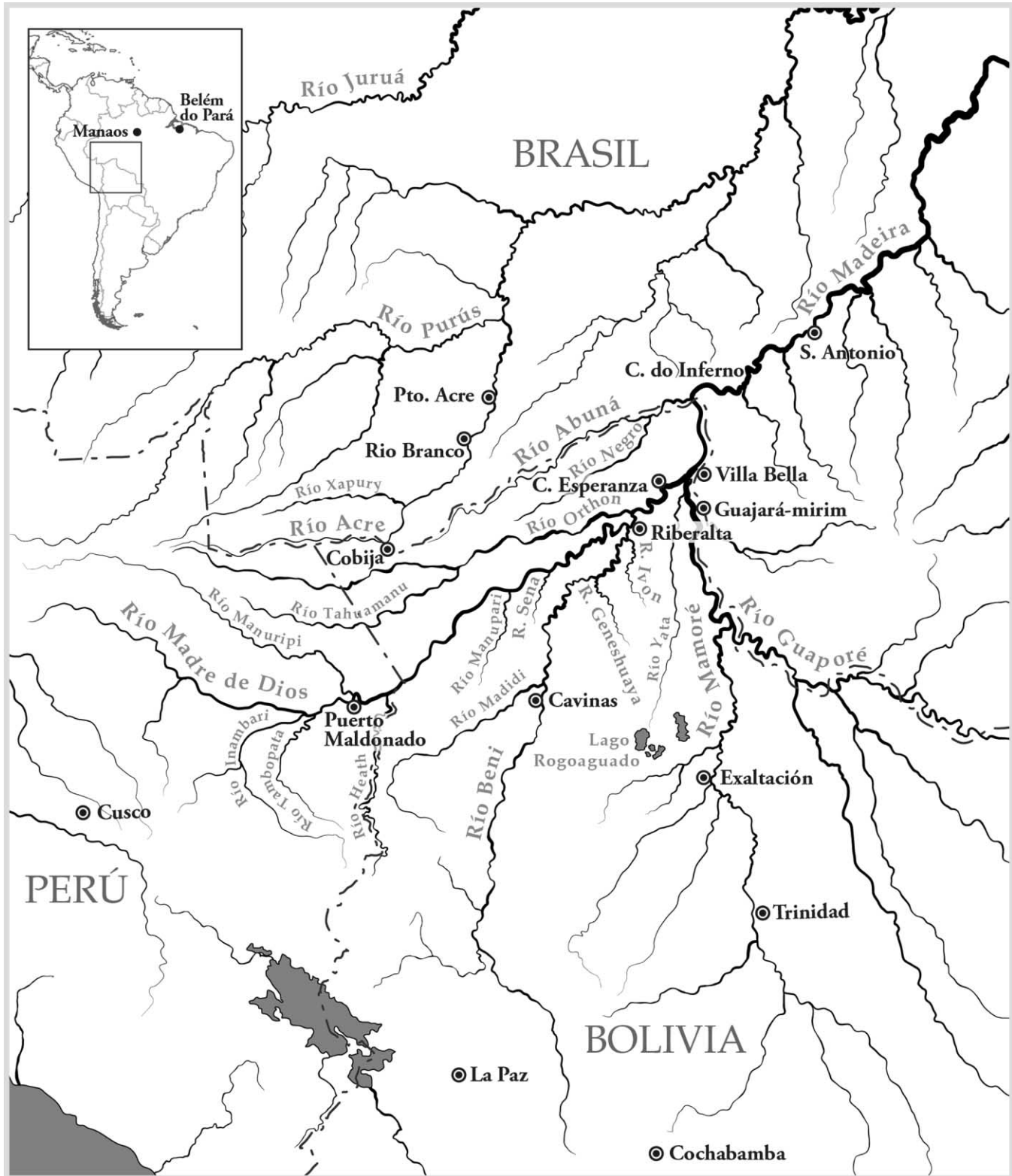


Figure 1: Bolivian Amazonia and its rivers during the Rubber Boom (© Diego Villar, *Bolivia a vapor*, Santa Cruz de la Sierra: El País/CIHA 2020, p. 23)



Mestizo and, particularly, Indigenous backwardness that chroniclers associate with rowing. On the one hand, the sources of the period reveal that traveling in different rowing vessels (canoes, *batelones*, *gariteas*) involves long journeys that take tens and even hundreds of long days. There are countless complaints about the hard work of rowing and the fragility of the vessels. There are complaints about the capricious, markedly seasonal, river landscape, with excess water in the rainy season and scarcity in the dry, riddled with floating or submerged tree trunks, unexpected sandbanks, currents of stagnant slime and, above all, waterfalls or rapids (*cachuelas*), along with swarms of insects and the arrows of natives raining down on the vessels—not to mention the greatest danger of them all: the epidemics that spectacularly decimate crews.² So it comes as no surprise that an experienced expert in the region should qualify the Mamoré River as “a vast cemetery” (Armentia 1885: 2). In fact, tales from the river abound with canoes that capsize, are dashed against the rocks, or disappear in sudden whirlpools while their terrified crew falls overboard. The crews tread the riverbed with water up to their necks or are forced to carry the boats, rubber, and provisions on their shoulders overland, to bypass dangerous rapids. The rowers of the rubber period suffer accidents, drown, and are murdered by the “savages” or, more often, die en masse from malaria, dysentery, or beri-beri: “They generally die early,” Lewis Herndon and Lardner Gibbon report laconically (1875: 165). In fact the human losses were terrifying and it has been calculated that epidemics, accidents, and episodes of violence accounted for between a quarter and a half of all the rowers who died (Limpias Saucedo [1942] 2005: 174; Fifer 1970: 71).³ According to a first-hand witness, “the death rate among the men on the canoes coming and going from and to San Antonio, reached 50% a year, a terrible figure to which I was already becoming accustomed. It was the tribute that Bolivian rubber paid at the

time, and it is no exaggeration to say that every tonne embarked cost a human life” (Fawcett 1954: 142–45).

The ethnic composition of the crews was heterogeneous, and a substantial majority came from the Moxo, Canichana, Movima, Guarayo, Trinitario, and Cayubaba peoples.⁴ The common denominator was to have come from the old Jesuit and Franciscan missions of Moxos and Apolobamba: Santa Ana, Exaltación, Tumupasa, Ixiamas, and so on (Leutenegger [1940] 2015: 314; Ritz [1934] 2015: 108). Or, in other words, they were “civilized” natives who had passed through the filter of the missions and were therefore more adaptable to the demands of the market and the nation (Córdoba 2015: 195). Almost all the chroniclers stress their nautical virtues: “They’re like rowing machines,” observes Marius del Castillo (1929: 164, 168) about his Guayocho rowers, while the famous Cayubabas seem even better, “unequaled rowers” who make up a “special caste for the heavy work of rowing.” Colonel Church estimated the rhythm of his own crew at fifty-five rowing strokes per minute, and dedicates nostalgic lines to his experienced helmsman: “Accompanying the expedition was an old mulatto named Fortunato. He was a highly skilled pilot who knew every island and every shore of the Madeira: one of those strange characters found on the great rivers of the western continent, with instincts as exact and as reliable as a compass that located each point in the darkest night: and in some cases, he himself would have wanted to trust them more” (Church 1874: 503–505).⁵

Regardless of their professional skill, the less positive characterizations of the Amazonian crews stem from their occasional disloyalty: the tendency to steal, desert, mutiny, and even fake accidents to get rid of some boss or annoying passenger (Herndon and Gibbon 1875: 146; see also Keller and Keller 1875: 8; Mathews 1879: 34–39; Armentia 1887: 89; 1890: 35–36; Fawcett 1954: 119, 283, 521). Nevertheless, it would be unfair to attribute the violence unilaterally to the native crews. Actually, reports of abuse are not unusual: seen as the property of the bosses, we know members of the crew are frequently mistreated, whipped or forced to row at gunpoint even

2. See, e.g., Herndon and Gibbon 1875; Keller and Keller 1875; Armentia 1883, 1885, 1887, 1890; Macchetti 1886; Cabrera 1889; Mathews 1879; Craig 1907; Pearson 1911; Fawcett 1954.

3. As if that were not enough, the native rowers were recruited through a network of local councils, entrepreneurs, missionaries, military agents, and government officials who administered the labor force by means of relations that ranged from patronage to paid labor and from copatronage to a violent attachment (Guiteras 2011).

4. Keller and Keller 1875: 6; Palacios 1852: 7; Armentia 1883: 13, 108; 1890; Macchetti 1886: 5; Church 1874: 505; Fawcett 1954: 98; Bayo 1911: 189, 245; Mathews 1879: 62, 70, 120.

5. See also Herndon and Gibbon 1875: 141–44; Knox 1886: 260; Pando 1897: 215; Craig 1907: 316; Ballivián and Pinilla 1912: 71.



when they are children—and, occasionally, even sold or used as stakes in cards.⁶ Percy Fawcett himself reports both the custom of corporal punishment and the existence of a sort of semislavery concealed behind obscure legal formalities. However, at the same time, the renowned military man and explorer sensed the reason for which, unlike the contemporary scandals in the Peruvian Putumayo, the demand for labor in the Bolivian Amazon seems relatively benevolent: “It is said that the market value of an Indigenous person was 80 pounds sterling or 1000 bolivianos. The high value and relative scarcity of labor makes the hasty control of human life antieconomical” (Fawcett, cited in Fifer 1970: 139).⁷ Erland Nordenskiöld confirms that the urgent need to integrate the native population was perhaps the best clue in understanding this more humanitarian treatment of the crew by the local rubber industry: “On all the Bolivian rivers the same difficulty exists in finding rowers. Due to the transfer of natives to the rubber tree forests, and to the fact that they are enslaved by debt, it is ever more difficult to find them. There are no free natives who can be hired for a short period, as buying slaves is made very difficult because of their debts: they tend to be very expensive, and at the end of the journey if one is a decent person one can’t simply sell them, and thus has to free them . . . That is why it is important to use Indigenous labor without subjecting them to abusive exploitation. Indigenous peoples are dying out, but I am pleased to be able to say that the whites will miss them, since they desperately need them” (Nordenskiöld [1922] 2003: 33). In fact, the historical record documents the growing demand for rowers beginning in the 1860s, and as a result of epidemics, migration, community disintegration, and even competition from the agricultural or forestry industries, the river labor force comes to be seen as a scarce resource (Keller and Keller 1875: 82; Mathews 1879: 123–35; Arnous de Rivière 1900: 436; Ballivián and Pinilla 1912: 66–70). The rubber boom exponentially increases the need for crews and, therefore, it is easy to understand both the discursive exaltation of the Indigenous rower as an icon of national development—“Bolivia is a country of rowers,” writes Gabriel René Moreno

([1888] 1973: 21)—and also the first with institutional initiatives to regularize their hiring (Limpías Saucedo [1942] 2005: 44–45, 66, 147–48; Van Valen 2013: 84–88; Guiteras 2011: 516–28) (Figure 2).

The geometric revolution

With the introduction of the steamboat, in the 1890s, a certain improvement can be observed in the working conditions on the Bolivian rivers (Figure 3). “Certain” should be stressed because, on the one hand, regional prosperity persisted but, at the same time, the mass arrival in the Amazon jungle of immigrants from Santa Cruz, the Andes, and even Europe brought the consolidation of a wave of captains, technicians, engineers, and mechanics that embodied a new paradigm of professionalism and gradually relegated the former rowers—not the Cayubaba or Canichana from this or that mission but now a generic native—to a secondary role as helmsman, river pilot, or lowly crewmember.⁸

However, the technical aptitude of the native crews continued to be a critical factor. During the 1930s, Bolivia was still the South American country with the lowest number of updated geographical charts. On top of that, the majority of them are of the Andean portion of the country, and the scarce river charts of the lowlands and of Amazonia in particular—such as those of Alcide d’Orbigny, Francis de Castelnau, Edwin Heath, or José Manuel Pando—had not been updated and contained glaring inaccuracies (American Geographical Society of New York 1933: 198–246). Since there was no way of foreseeing the distances involved or the variable course of the rivers (Craig 1907: 124–25), in the latex-producing Amazonia there was no objective encoding of the art of navigating. There was only a practical experience of each stretch of the river with its fords, rapids, moving sandbanks, and seasonal whims; in other words, a secretive, intuitive, cryptic knowledge to be learned on the spot, based on occupation and a firsthand familiarity with the particular geography that was more traditional than technical, and distinguished the initiated from the uninitiated (Marx 1956: 131). So it comes as no surprise that the historiography traces a selective and even

6. E.g., Heath 1882: 128; Macchetti 1886: 17; Armentia 1887: 40–41; Cabrera 1889: 5; Bayo 1911: 190; Coímbra and Pinto (1946–1983) 2016: 149; Fawcett 1954: 160; Guiteras 2011: 523–24; Van Valen 2013: 72–89.

7. For a comparative stance on the violence of the Peruvian case, see Chirif and Cornejo 2009.

8. In fact a significant character of the period is the mechanic of European origin: Smith, Aldam, Holtz, Heinrich, Keller, etc. (see Posnansky 1904: 27; Torres López 1930: 564–65; Ritz [1934] 2015: 75; Leutenegger [1940] 2015: 249–51; Fawcett 1954: 78–79, 145–46; Hollweg 1995: 165–76, 184–85; Roca 2001: 185).



Figure 2: A batelón crossing Cachuela Riverón (Emil Bauler, 1908–1911, © W. Wiggers Private Collection)

romantic apology of the civilizing epic of the rubber argonauts: halfway between folklore and legend, figures such as Arthur Posnansky (Austrian corsair who smuggled weapons for Bolivia in the Acre War) or Guillermo Best (“El gitano del Mamoré,” adventurer, cattle breeder, German consul in Trinidad, and jaguar hunter) personify a proactive destiny, and at the same time the edifying moral of successful migration.⁹ On the other hand, the preference for immigrant actors is not exclusively an academic bias, but something that reveals an objective fact. Captains were often appointed because they were trusted men of the rubber barons, or even simply because they were European; thus, many foreigners were surprisingly

placed in command of vessels, obliged to trust their luck to the practical expertise of native pilots (Ritz [1934] 2015: 101; Leutenegger [1940] 2015: 247).

Actually, Amazon river sociology continued to be as polychromatic and heterogeneous as in the times of rowing, and even more: besides the Cruceños (people from Santa Cruz), Mestizos, Germans, and Englishmen, the historical record reveals the sudden appearance of Andean, Syrian, or Armenian crewmembers (Leutenegger [1940] 2015: 355; Fawcett 1954: 104) (Figure 4). But no doubt what is most remarkable is the discursive invisibility of another fundamental actor. In the wild and unpredictable landscape of Amazonian rivers, the experience of the pilots and Indigenous helmsmen continued to be decisive: “There are no buoys or lighthouses the length of the Amazon and, nevertheless, the natives and the Mestizos guide the steamers, both by day and by night, through rain and fog, with the same man at the

9. See, e.g., Posnansky 1904; Chávez Saucedo (1926) 2009: 153; Sanabria Fernández (1958) 2009; Monje Roca 1977; Hollweg 1995: 179–85; Roca 2001: 181–85.



Figure 3: The *Sucre* refueling (Emil Bauler, 1908–1911, © W. Wiggers Private Collection)

helm for 2400 miles. Even so serious accidents are uncommon. It is one of the wonders of the Amazon, and even the locals eloquently praise the skill of the native pilot” (Kalb 1891: 28). In the middle of the Acre War, Colonel Fernández praised his pilot (“highly skilled like all Moxo natives”), while the rubber barons relied on the “eagle eye” of men like Jacinto Noé, Marcelino Masa, or Espíritu Semo (Fernández 1903: 71; Roca 2001: 183). The Casa Suárez comes up with Ernst Leutenegger as captain of the *Campa*, it is true, but only because he is accompanied by a competent crew: “Take the boat and travel tomorrow. You wrote the instructions: now carry them out. The machinist Aldam has done the journey dozens of times, the pilots Asencio and Mochua, too. They know the river like the back of their hands, and you can trust them. Near Chivé the first whirlpools appear. You’ll tame the rapids beyond Camacho, no problem” (Leutenegger [1940] 2015: 246). An exemplary testimony is that of the Polish traveler Marius del Castillo, for whom the Amazonian captains are mere decorative figures, and the true leader on board is the native pilot:

The *Manu* continues traveling upstream along the changing course, just like a lepidopteran in unstable flight, and navigation becomes difficult due to the great palisades

formed by age-old tree trunks that seem to have been set down by devilish hands with the aim of obstructing the riverbed. We are at the intermediate hour of dusk. The helmsman, a Tacana native of bronzed skin that is more wrinkled than an old parchment, recommends attention be given to the engines, the attention that he’ll pay to the rudder. Night falls. The *Manu* zigzags its way through the trunks set in the riverbed, some with roots upwards and others downwards, the former leaning with the threatening aspect of a ram on old frigates. The telegraph works nonstop, transmitting orders to the machinist: Careful! Half speed! Slow! The old “pilot” almost brushes against the trunks with the tack of the boat in the knowledge that he won’t hit them: he knows them more accurately than if they were on a graphic plane. (del Castillo 1929: 300–301)

The weather-beaten old man dedicates himself exclusively to avoiding the most demanding stretches of the river and, and at the simplest, chooses to rest in his hammock: “Old Snake Eyes, who was sleeping, was awoken to come and take control of the vessel: the *Manu* continued its journey zigzagging amidst the tree trunks in the course of the channel, and once this treacherous patch was left behind he said that even the blind could pilot the launch, and called his young grandson to replace him at the wheel.” Del Castillo believes it is reckless to



Figure 4: The *Rodolfo Arauz* (Emil Bauler, 1908–1911, © W. Wiggers Private Collection)

leave a child in control of the vessel at night, but the old man grunts for him not to worry—and, in fact, while the native lad pilots, the voyage passes without inconvenience (del Castillo 1929: 157–66, 296–300).

We find similar ambiguities in the tales of the passengers themselves. Normally, the voyage by steamer is presented as a reasoned discourse of speed, efficiency, and comfort: in the colossal *Mamoré*, writes Bayo, “one feels one is a guest in an enchanted palace” (Bayo 1911: 331; see also Morrison, Brown, and Rose 1987: 88–92, 96; Roca 2001: 184–85). Nevertheless, a detailed study of the sources of the period reveals that the general experience was far from idyllic: “I was disgruntled: everything irritated me. The passengers and the usual racket of conceited travelers, the heat given off by the boiler, the nauseating smells of the hydrocarbons, the clatter of the feed valves, the constant, monotonous noise of the expanding

steam escaping from the machine that provides electricity” (del Castillo 1929: 166). The travelogue accounts evoke a picturesque, at times surrealistic atmosphere seasoned with accidents, mechanical problems, and collisions with palisades, sandbanks, and even giant turtles that rest on the riverbed. Besides eating, resting, joking, conversing or contemplating the landscape, some passengers chose to collect insects, fish, or plants. There are no more arrow attacks, so they have the chance to admire the landscape or shoot wild animals to kill the time. The get-togethers, card games, champagne, gramophones, formal wear, and dinner with the captain coexist with the hammocks and chamber pots hanging up on deck; with the monkeys, turtles, parrots, hens and cows that share the space on board; with vessels that collide with each other or festivities celebrated with gunfire, or rather with the surprising drop in the water level which makes

vessels run aground or forces them to wait whole days until the tide or the rain allows them to continue their journey. In nearly all the testimonies, complaints abound of the heat, the insects, the humidity, malaria, or the monotonous diet of bread, rice, jerked meat, and river water.¹⁰

But not just that. In Bayo's "enchanted palace" a much clearer social stratification rules than in the rowing vessels, which places the crew and, very often, the passengers themselves, into a hierarchy. Actually there were first- and second-class tickets, and the respective rights and obligations were stipulated on the tickets and also in an "unwritten law": besides sharing space with the cargo and the animals, the second-class passengers helped the crew to hunt, fish, and collect firewood at each stop. In the larger steamers, there are even two decks: on the lower deck are the boiler, the cargo, the animals, the crew, and the second-class accommodation, and on the upper deck the officers and the first class with superior comfort, private cabins, ventilators, bathrooms, and even ice machines. The distinction naturally impacts on the comfort, hygiene, or the safety of the journey, and there are cases in which the passengers from the lower classes declare they do not go up to the upper deck for fear of being shot (Craig 1907: 117; Guise 1922: 112–13; Leutenegger [1940] 2015: 181, 208; Morrison, Brown, and Rose 1987: 96).

Through the green wall

If we seek to somewhat reconstruct the experience of the Amazonian river, however, it is worth paying attention too to the narrative rhetoric of the travelogues. Each passenger experiences the temporality of the river differently, but the sources indeed allow us to glimpse certain regularities or shared perceptions. Perhaps predictably, a more or less marked, but always latent opposition between identity and alterity emerges in the narratives. The "normality" that the steamer represents can imply a thousand problems, but in one way or another it manages to represent what the observer understands as the civilized order of things. Unlike the canoe, in which passengers and rowers share the same space and therefore

the same perils, the clear distinction in the steamer between travelers and crew, or even between the different classes of passengers, almost imperceptibly brings into play a more complex sociology that articulates the different orders of reality. The deck appears as a colorful but also stable and relatively safe space, regulated by rational values threatened by the hostility, obscurity, or even the mere uncertainty of savage alterity (Hasty and Peters 2012: 667–68; Stafford 2017: 74–81). Swiss rubber tapper Ernst Leutenegger explicitly stresses the gradual passage from civilization to barbarism:

Since our departure from Pará, little by little we were dragged away from civilization, and step by step the return to nature became more perceptible. First we deleted from our dictionary clear, clean, fresh drinking water. There was simply nothing like it. Our water was a dirty, hot coffee-colored water that tasted of earth, fish and rotten plants. The two or three glasses of hot, but still more or less clear, drinking water produced by each of the filters we bought in Pará had already run down our thirsty throats in the morning; that is to say, before the onset of the worst thirst. And the boat's great mud filter was always empty. Judging by its color, the bottles of water on the table seemed to hold white coffee and, nevertheless, were always empty. If one left a glass of drinking water to rest, there settled on the bottom a layer of mud a finger thick in which countless small, black, moving, living beings palpitated. The palpitations of these little creatures did not help to quench our thirst, but led us to end up envying the cattle that in our country gather around the fresh water of a spring. Rich people drank wine at ten francs the bottle or warm beer at five francs. We could not afford such luxuries. Nothing would have been easier than watering our throats every day with a month's salary. In the same way, we spurned a bottle of mineral water believing its price to be scandalous, so we had no alternative but to do what poor people did to quench their thirst: that is, drink the dirty water of the Amazon. (Leutenegger [1940] 2015: 188)

Giving in to the annoyance, the drowsiness or the boredom of the journey alternated with delightful descriptions of exotic adventures, unusual novelties, and extraordinary events. However, once and again we find several variations on the term "monotony" to describe the sensations of the river. Ernst Leutenegger writes: "Life on board passed monotonously between sleeping and eating." And in other passages he evokes "the green monotony of the two riverbanks," describing in detail a Conradian, almost ominous nature: "To the left, right, in front and behind us always that impenetrable obstacle

10. See, e.g., Knox 1886: 317–18; Pando 1897: 164; Craig 1907: 104–122; Bayo 1911: 276, 331–33; Guise 1922: 112–13; del Castillo 1929; Ritz (1934) 2015: 52–68; Leutenegger (1940) 2015: 181–96, 208–11; Torres López 1930; Fawcett 1954: 128.



of the forest, that monotonous green wall like a prison wall, which without any consideration limited the view into the distance” (Leutenegger [1940] 2015: 175, 195, 200). At certain moments, the soporific lethargy of the jungle and the endless sequence of trees makes the narrator fail to see anything but the river itself (Watt 2004: 4). This is, evidently, a subjective perception: just as the narrative focus is prioritized—since it constructs a jungle that cannot return the gaze—the landscape becomes “repetitive” or “boring” only because, in the eyes of the spectator, it does not change or offer the distractions or stimuli he was hoping to find (Pratt 2011: 392).

However, at any event, it is still tempting to analyze the tone and even the prosody of the river travelogue. Most of the descriptions tend to adopt a particular cadence, constructed on the basis of memorable scenes or stimulating anecdotes that mark out the mechanical passage of the vegetation: encounters with other steamers, exotic animals, strange Indigenous customs, episodes of violence (Leutenegger [1940] 2015: 175; Ritz [1934] 2015: 62). If we wonder how that perception of monotony is constructed discursively, we find two fundamental devices. The first one is the visual modeling of the landscape. The heat, the humidity, and the fragrances of the forest certainly offer an astonishing palette of sensorial perceptions, but it is clear that the records reflect a predominantly visual inflection: “The young men arranged the hammocks to enjoy the beautiful panorama that unfurled before their eyes as the steamer passed. Frank declared that studying the landscape while resting comfortably without moving a single muscle was perfection on the journey: even better than the indolence of a chair on the deck of a trans-Atlantic liner, or the seat in the Pullman car between San Francisco and New York” (Knox 1886: 316). In the same way, when a condescending observer reports a knife fight involving a woman at one of the stops, his story suggests that the steamer is a privileged observation point of savagery (Ritz [1934] 2015: 60–61). On classifying, analyzing, and explaining it, the voyager’s gaze tames the Amazonian geography in moral terms (Stafford 2017: 72–80).

There are, of course, arid, precise, and dry descriptions of the river governed by a naturalist zeal that punctiliously records the river’s morphology, flora and fauna, or even the barometric peculiarities (Armentia 1887; Pando 1897; Robinson Wright 1907; Bayo 1911; Ballivián and Pinilla 1912). Nevertheless, when describing the “fascinating panorama: an endless delight” reported by an author like Fawcett (1954: 69), rather plastic tropes like “chart,” “gallery,” “landscape,” “postcard,” or “im-

age” are the ones that prevail. Stylistically more attractive, this romantic, Humboldtian perception links the objective and subjective by appealing to the exuberance of the forces, to the dependencies, and to the unexpected connections (Cronon 1995). The wealth and diversity of the landscape are reflected in grandiose and superlative epithets, and in fact there is hardly a noun that does not appear qualified (Pratt 2011: 367). Nature appears aesthetized, as if it were a painting and, just as in the case of the young North American travelers that Knox relates, the optical ecstasy justifies in itself the experience of the journey:

The journey along the Amazon is one of the most beautiful things one can imagine. On the voyage we pass through a gallery of riverside landscapes which practically no other riverbank in the world can offer. Images of *One thousand and one nights* slip by like in a film in front of the astonished eyes of the spectator. At every moment the gaze recreates itself in this tropical splendor. The air is redolent with enchanting fragrances. Beetles and other strange insects buzz and pulsate. In no other place in the world does flora proliferate in such exuberant and unbridled voluptuousness as here. From the immense trees hangs a tangle of creeping vines, partly covered in leaves, partly densely covered in flowers, which form the most marvellous garlands. (Ritz [1934] 2015: 55–56)

Sleepily, the *Teffe* whispered and bubbled alongside the riverbank lying in the moonlight. Enormous nocturnal butterflies with heavy wings crashed against my ears or became entangled in the net of the captain’s hammock. Beetles that gave off a phosphorescent light lit up the enormous dimensions of the trees. Fireflies buzzed around us, mixing with the rain of sparks the *Teffe* was emitting from the chimney and then disappeared in a burst of sparks on the bubbling surface of the water. (Leutenegger [1940] 2015: 185)

Far from the instrumental reasoning of military agents such as José Manuel Pando or Manuel Ballivián, what emerges here is a peculiar characterization of a nature that is neither passive nor inert, and which resists becoming a mere accessible, measurable resource that is there for the taking. After praising so effusively the beauty of the Amazonian forest, Leutenegger himself breaks the Edenic spell: “Animals and plants maintain a merciless struggle with each other” (Leutenegger [1940] 2015: 196). The picturesque prose seeks to grasp what is at times an ambivalent, disconcerting, languid aesthetics,



but which at others seems ominous and even predatory (Marx 1956: 141; Watt 2004: 3; Wulf 2017: 88–125).

To the continuity of the landscape, a second rhetorical device can be added. This one is intermittent but at the same time more rhythmical, and certainly helps to model the perception of the fluvial regularity. With the lack of coal, the Amazon steamers are forced to stop each day at the rubber *barracas* to replenish their supplies of firewood and feed the voracity of the boilers: “Our steamer constantly needed firewood to make the machine work. Firewood had to be cut continually. Our sailors had to scan the riverbanks in search of the right trees. Then the steamer stopped and we would go down to the riverside to cut down trees for firewood” (Leutenegger [1940] 2015: 247).¹¹ So it is a technical reason that forced the steamer to stop periodically and, at least from this perspective, navigation on the Amazon seems to be a question of rhythm more than of speed (Anim-Addo 2014: 371) (Figure 5). Travelers appreciate these stops in a variety of ways: positively by those who use the opportunity to season their routine by strolling through the jungle, fishing, hunting, and introducing welcome variations to the diet, or negatively by those others who are exasperated at the delay. But, in all cases, these periodic stops become a sort of “punctuation” that regulates, separates, and organizes the journey by making the geography associated with rubber production an integral part of the tangible experience of the jungle.

The Amazon steamer as technophany

If we seek to reconstruct at least partially the experience of river navigation during the rubber boom, we cannot ignore the imaginary of the steamer itself. Regardless of its primary mechanical use, it is a question of grasping some of the meanings associated with the very same object: beauty, prestige, majesty, nostalgia, or rather, in the words of Simondon, its function as a technophany (Simondon 2017: 39–49). We can understand, therefore, the indignation of Marius del Castillo (1929: 168) when he discovers the rusty cylinder of the *Explorador*—the

first steamer on the Bolivian rivers—abandoned to the elements at the barraca Chocotalal: he claims it is a “historical relic” which should be preserved as a treasure. It is not easy to grasp with some sense of accuracy what the scene really means, as it is also complicated to glimpse the meaning the current settlers from Beni attribute to the steamers of the rubber period, some of which are preserved, at least partially—like the *Rodolfo Arauz* in Loma Suárez, the *Tahuamanu* in Riberalta, or the *Mojos* in Guayaramerín—while others are still sunk or abandoned on the riverbanks (Figures 6 and 7). As the nuances in regional historiography allow us to see, the social memories of the steamboat do not take the form of crystallized longing but are modeled according to contested and even contradictory agendas: the very same technical object that for the descendants of the Beni pioneers embodies the nostalgia of an extravagant prosperity, when cigars were lit with dollar banknotes and horses were given champagne to drink, for the Indigenous peoples can well evoke the painful memory of the violent loss of their family members, their work, and their lands (Gordillo 2011: 142–47, 157; Córdoba 2019: 695–702). The mechanical fossils could denote in turn the contingency or fragility of the capitalist project or rather, at a more abstract level, the actual decadence of inert matter, gradually reappropriated by nature (Simmel [1911] 1958: 379–80).

At any event, it does not seem reasonable to dismiss the multiple resonances and echoes of a technical object that at first sight appears as a mere artifact but which, nevertheless, is unusually productive when it comes to literary, mythical, or folkloric reflection—let us think, for instance, of the steamers as protagonists in the literary stories of Coímbra and Pinto Parada ([1946–1983] 2016) or Villanueva Rada (1989). In the folklore of the Orthon River, there are also rumors of ghostly steamers that recycle ancient legends of ghost vessels (Sanabria Fernández [1958] 2009: 138–39). In neighboring Peruvian Amazonia there are as well disturbing reports of the *waporo*, which in turn feed into the old images of the rubber steamers and likewise into the images of Western technology recycled by shamanic logic (Gow 2001: 193–215; Déléage 2017: 173). There is also talk of submersible steamers that are like giant anacondas, or the *Acurón*, or the *Madre del Agua*, or even the *lancha Supay* of the Andeanized groups: steered by Amazon river dolphins or by the Yacuruna themselves (a mythical people who live underwater), those ghostly vessels make lights, music, and a great deal of noise with their magical motors, swallow up tree trunks and likewise devour other

11. The cost of firewood is twenty bolivianos for each thousand “axes” or “splinters,” of which the steamer needs some two thousand every day (Bayo 1911: 334; see also Craig 1907: 118–19; del Castillo 1929: 302–305; Leutenegger [1940] 2015: 187–200).

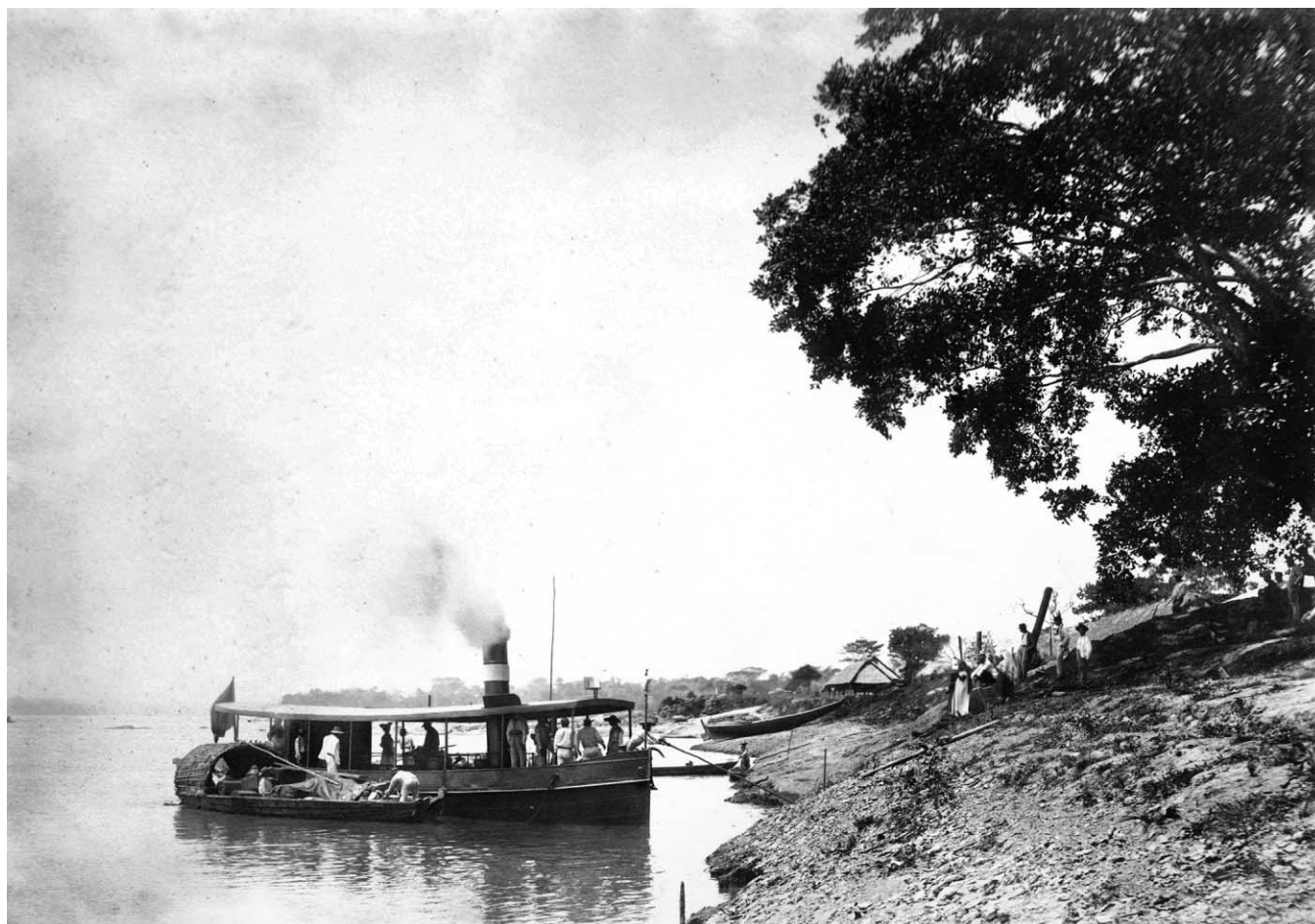


Figure 5: The *Esperanza* (Emil Bauler, 1908–1911, © W. Wiggers Private Collection)

vessels, and can even turn all those unfortunates who catch sight of them seriously ill (Regan 2010: 156–57).¹²

It may sound strange to us to hear of ghostly beasts, ghost ships, or hybrid animal-machines: exotic atrocities, myths of mixed-race peoples, native stuff. But only to a certain extent. Gilbert Simondon observes the indignation of French sailors when a shipping company dismantles an old ship to sell it to a film studio, considered an unworthy fate by its old crew: the crewmen organize protests and collections to buy the vessel and try to give it a second honorable existence as a floating museum or even a training ship. Finally reality prevails, and they have to unchristen the ship and pay their last respects

12. Not to speak of the rich range of metaphors, analogies and symbolic associations surrounding such simple vessels as canoes themselves: so, for example, it has been suggested that the Piro canoe evokes, in concave fashion, the continent/content relationship, female sexuality or even matrimonial affinity (Gow 2012: 46–58).

to it. But in a way that would certainly have pleased Marius del Castillo; the anecdote suggests that utilitarianism does not exhaust the sense of technicity. “In Ancient Greece it was forbidden to cut down an olive tree. Perhaps one day, in certain cultures, it will be forbidden to destroy a technical object just as it was forbidden to let a slave die: it would be the birth of a new legal category, parallel to that which protects animals and which today is developing” (Simondon 2017: 57–58).

At any event, what seems to be clear is that, if for external eyes the steamboat is initially a mere artifact, there is also information that invites us to think about certain subjectivation processes of the vessel which, at least in some cases, seem to go beyond the figurative quality of language (Simondon 2017: 31; Stafford 2017: 73). In fact, in a scenario in which destinies of men and machines mutually reverberate, the functional unity between them enables us to understand the mechanisms of animation, personification, or ritualization (Figure 8). The range of interpretive possibilities is materialized in



Figure 6: The *11 de octubre*, today (© Diego Villar, Riberalta, 2013)

records like onomastics (in the choice of certain geographical or historical names linked to canonic history—but never Indigenous names), personalization (mechanical adaptations of the vessels, affectionate evocation in military chronicles of the musical whistle of the *Iris*, or of the sacred symbolism of the siren of the *Tahuamanu*), or the most predictable poetic or metaphorical resources. Here we could once again evoke del Castillo himself, who remarkably anthropomorphizes the *Rodolfo Arauz* by calling it “dolphin,” “greedy gourmet,” or “sick man suffering from dyspepsia,” who “spends the night sleeping,” is “absolutely worn out,” and must replenish firewood to “satisfy his voracious appetite” (see, respectively, Aguirre Acha 1902: 200, 207; Villanueva Rada 1989; del Castillo 1929: 165–68).

Modernizing discourse on the speed and efficiency of the steamer implies another equally important topic, which is the safety and predictability of river transport. Although natural obstacles, fever, or accidents persist, it is an objective fact that with the steamboat the rubber industry begins to lose less cargo and, particularly, fewer people. It is not a question, nevertheless, of falling victim to naive humanism. Claiming that the rubber barons are betting on mechanical technology for the safety of their

crews could sound like an argument vindicating the industry, but at any event it makes sense in terms of a rational economy. Beyond the occasional moral qualities of the rubber entrepreneurs, historical sources do reveal a pragmatic argument in favor of the steamer. In Bolivian Amazonia at the end of the nineteenth century, skilled labor for navigation is a resource as critical as it is scarce. Either because of the protection offered by the boat’s metal structure, or because launches are obliged to sail along the wider rivers, the fact is that steamers are involved in fewer accidents than rowing vessels, while Indigenous attacks completely disappear from the record. In fact there is no notice of brutal attacks on steamers, and the war chronicles from the Acre War reveal that occasional attacks only occurred when the vessels are vulnerable, i.e., when touching land to stock up on firewood (Aguirre Acha 1902: 207–208; Fernández 1903: 143–44; Posnansky 1904: 6–7).

We realize, at the same time, that the notion of technological determinism is to be relativized by the singular modality of the Amazonian landscape. The naval industry does not operate in similar fashion everywhere: it is only in theory that “the mechanical object” is defined once and for all in the proven expertise of the European



Figure 7: The ruins of the *Francica* (© Diego Villar, Riberalta, 2013)

Holtz or Yarrow shipyards, in the Astillero Nacional in Riberalta or, at any event, in the hands of European mechanics hired by the rubber firms. In the Beni forest, the discipline of naval mechanics blends with carpentry, bricolage, handicrafts and do-it-yourself work in total ingenuity and improvisation. Fawcett recalls the phlegmatic engineer Pearson, who proudly exhibited a “decrepit boat, whose parts were held together mainly by wires or string . . . the boiler in some places must have been as thin as paper and, although kept at a very low pressure, constantly meant the threat of death” (Fawcett 1954: 78–79; see also Ritz [1934] 2015: 75).¹³ So there

13. Amazonian ethnography still describes peculiar mechanical adaptations in jungle vessels: so, when recycling the outboard engines (*peque-peque*), “bold bricolage” is reported of pieces from lawnmowers, iron scaffolding, steel

is a whole series of local adjustments, prostheses, and cannibalizations of the steamer that have more to do with a “traditional” logic: a brutal, untamed, or hybrid translation of the steamer to the jungle environment, an almost biological, organic adaptation half way between reliable German mechanics and the occasional needs of a Tacana pilot (Figure 9).

The fluvial production of rubber space

The rubber-transporting steamer cannot be considered in isolation, like a technical artifact “in itself,” but as a significant link in a dense network of sociotechnical articulations (Pfaffenberger 1992). The technology of the

skeletons of reinforced concrete structures, aluminium propellers, and pieces of wood (Gow 2012: 45).



Figure 8: The *Tahuamanu* as national monument (© Diego Villar, Riberalta, 2017)

steamer needs to be restored to a river scenario with particular characteristics (the climate, seasonal morphology, the hydrography, the rapids), with a particular type of discourse (mechanics as an icon of order, sovereignty, civilization and progress), with the very structure of the rubber industry (the logic of credit, the continuous availability of barracas and storage sheds for restocking, the occasional businesses of captains and bosses, the lack of technical workshops), with regional politics (the virtual privatization of the rivers, the absence of state agents, frontier relations with Brazil), and also with a heterogeneous series of actors (Bolivian Andean settlers and others from the lowlands, European migrants, Mestizos, “assimilated” or “savage” natives, and even the very mosquitoes that transmit the malaria that decimates travelers and crews). The river, the jungle, the shipyard, the barraca, the firewood, the technical knowledge, and even

the vessel itself constitute an organic and complementary complex that becomes almost incomprehensible if we try to grasp it based on one single term (Simondon 2017: 88).

By analyzing travel narratives, we learn for instance that steam navigation organizes—but is also organized by—hydrography. It is perfectly clear that the steamer is conditioned by the environment, just as the latter operates in turn on nature, resulting in the particular topology of the rubber-production geography. On the one hand, it is evident that extractive machinery uses particular vessels and not others, with certain crews and not others, transporting particular cargoes and not others. Restricted, unlike the canoe that is basically more nomadic, to certain rivers with particular conditions of navigability, the steamer pays its tribute to geography; or, in perhaps more fashionable terms, the aquatic landscape



Figure 9: The *Tahuamanu* as handcraft in regional heritage (© Diego Villar, Riberalta, 2017)

of the different kinds of canoe seems to be “smoother” than the “striated” space of the steamer (Deleuze and Guattari 2002: 483–509). In this respect, extractive logic copies the hydrographic inflections of the river basin: streams and tributaries that flow into rivers which, in turn, flow into other broader courses in a unidirectional current that flows and drains the resources of the jungle towards the port, the vanishing point, from which they are dispatched across the ocean towards the world’s large capital cities. Unlike traditional navigation, which models a landscape that connects a series of geographical points sequentially, but more or less homogeneously, the space of the steamer is colonized in terms of a vertebral logic, visibly governed by hierarchy. There are principal rivers, along which the steamer sails and which are more significant from the point of view of the industry, the nation itself, and therefore the historical sources; and there

are other lesser rivers, tributaries or secondary courses, along which travel is laborious, as in the past, by canoe.

In fact, the historical record also allows us to track a lesser, subordinate, almost clandestine hydrography, which sabotages, subverts, or parasitizes the dominant model of the extractive basin (Richard 2013: 65–66). Along the marginal tributaries, where the steamer cannot pass, navigation by rowing boat allows the official prosody of landmarks like the military post, the village, the customs office, the mission, or barraca to be avoided, and rubber, business, and natives escape from the rubber barons to be exchanged, smuggled, or stolen, along with war deserters, rubber tappers fleeing from their debts, shopkeepers evading taxes or the asphyxiating monopoly of the large rubber companies. If the operation of the great regional actors reveals a clear trend to centralization, this minor hydrography involves a

centrifugal dynamic (Barham and Coomes 1994: 43–46, 57). The geographical dispersion of rubber plantations and the associated logistical difficulties mean that part of the product does not reach headquarters. Besides accidents, the rapids, Indigenous attacks, or quarrels with other workers, the tappers lose rubber in minor bartering and exchanges on credit with smaller houses, local intermediaries or itinerant traders that often sail in the very same vessels commissioned by the main extractive companies (see, e.g., Knox 1886: 317; Ritz [1934] 2015: 62–63; Leutenegger [1940] 2015: 190).

Therefore, in the Bolivian jungle the geometric revolution runs into the material limits imposed by the very scenario: rapids, malaria, precarious logistics, the scarcity of manpower. However, the steamboats that ply the Amazonian rivers model while doing so a new experience of the fluvial landscape that links in an unprecedented manner the perceptions of time and space (Stafford 2017: 69). Beyond setting the jungle in an opposition—only to be expected—between order on deck and a savage exteriority, the deck of the steamer becomes a privileged viewpoint from which to appreciate the exuberance of the landscape, the exoticism of the fauna, or the alterity of the local inhabitants (Ritz [1934] 2015: 55–56; Leutenegger [1940] 2015: 185–200; Fawcett 1954: 69). The panoramic inflection of the travelogue builds a singular cadence which imperceptibly models Leutenegger's "green wall" as a monotonous sequence, to which only the punctuation of memorable landmarks offers rhythm (Stafford 2017: 75–77). At the same time, the stops for daily restocking at the storage sheds periodize that experience regularly, continually and predictably, inscribing the geography of the rubber business in the subjectivity of the eventual observer. The jungle seems to be a spectacle of savagery, of course, but it is only possible to see it, to comprehend it, and to tame it thanks to the omnipresent machinery of the rubber industry: little by little, from the deck of the boat, without the spectator noticing while the multicolored sunsets, the caymans, the tapirs, and the anacondas pass by, "jungle" and "rubber"—but also jungle and industry, jungle and capitalism—become synonyms.

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