



Isthmus in the World.

Elements for an Environmental History of Panama

Guillermo H. Castro

T

he environmental history of Panama

The Republic of Panama has entered the 21st century with serious environmental problems, such as the destruction of forest resources and the erosion of biodiversity; deterioration and erosion of lands destined for agriculture and livestock farming; pol-

lution of inland and coastal waters; and chaotic urban growth, mostly concentrated in the metropolitan area.¹ This situation, even when viewed within a wider context, appears to be linked to the disintegration of the structures that used to govern Panamanian society's relationship to its natural environment; structures that were shaped by the organization of interoceanic transit as an industrial activity by the United States between 1904 and 1977.

Today, the inner coordination of this group of landscapes is in crisis, due to the exhaustion of the links between production and the social structuring techniques that held it up until the last quarter of the 20th century.² A situation of such complexity requires an approach that looks at the area's history to shed new light on the relationship between human beings and the natural environment in Panama. This is precisely what environmental history is about: studying the interactions between human societies and the natural world, and the consequences of such interactions for both parties over time.³

¹ For more information on the subject: Autoridad Nacional del Ambiente, *Panamá. Informe Ambiental*, 1999, pp. 9-32.

² P. Gorou, *Introducción a la Geografía Humana*, Chapter I, Alianza Universidad, Madrid 1984. Social structuring techniques deal with components of symbolic, cultural, and religious production, and their corresponding infrastructures, in different contexts, ranging from the re-appropriation by successive cultural systems of a group of sites having religious value – a very long process – , to “modern” forms of organization such as school networks.

³ According to historian Donald Worster, environmental history is built on three fundamental premises: a) that the consequences of human interventions on nature over the last 100,000 years, at least, are an essential part of our planet's history; b) that our ideas about nature are themselves historical in nature, and that they overlap in many ways with interests, values, and conducts related to other levels of our existence, and play an important role in our relations with the natural world; c) that our environmental problems today have their origin in human interventions on yesterday's ecosystems. Environmental history applies these premises in three connected areas: a) the biogeophysical natural environment in which human activity takes place; b) relations between the technologies that support these activities, on the one hand, and the consequences of the reorganization of nature on forms of human social organization – from massive migrations to the emergence or disappearance of entire social groups – on the other; c) the *culture of nature*, that is, the historical experience accumulated into values, norms, manifestations, and conducts that express the underlying

The environmental-historical perspective is characterized by complexities that require special attention. Germán Palacio, for instance, warns that environmental history links the times of human action with those of natural history, looking back into the past – which in our species’ case spans some four million years –, as well as glimpsing into the future, at scales that far exceed the “long-term” horizons usually envisaged by social sciences.⁴ However, although the object of environmental history, in its broadest sense, is defined by the expansion of our species over the planet, the discipline tends to focus on the economic, social, and political global system constructed over the last 500 years, within which the environment has become a global phenomenon. In the case of the American continent, for instance, there are major differences between two great historical phases, one preceding, the other following this region’s incorporation into the European global economy in the 16th century. The transition between these two stages highlights the complexity of the contradiction between human will, on the one hand, and, on the other, the natural and socio-cultural factors that determine the exercising of this will, and generate a variety of interrelations between the previous order and the new objectives. These interrelations translate into transformations in demographic dynamics and in the population’s cultural, social, and political ways of

contradictions in each society’s dominating forms of relation with the natural world. For more information on the subject, see D. Worster, “The two cultures revisited. Environmental history and the environmental sciences” (1996), and “Transformations of the Earth” (1990), in id., *Transformaciones de la Tierra*, Universidad de Panamá, Ciudad del Saber, IICA, Panamá 2001. Regarding the culture of nature, it is worth observing that our view of the tropic and its inhabitants has changed remarkably from the time of the enormous success of the novel *La Vorágine*, by José Eustacio Rivera, to contemporary concern for the protection of biodiversity and indigenous peoples’ cultural legacy. For more information on the subject: D. Arnold, *La Naturaleza como Problema Histórico. El medio, la cultura y la expansión de Europa*, Fondo de Cultura Económica, Mexico 2000 (1996); and, referring especially to Panama, S. Frenkel, “Jungle Stories: North American Representations of Tropical Panama”, in *The Geographical Review*, 86, 3, 1996; id., “Geography, Empire, and Environmental Determinism”, in *The Geographical Review*, 82, 2, 1992.

⁴ G. Palacios, “Historia tropical: a reconsiderar las nociones de espacio, tiempo y ciencia”, in G. Palacio, A. Ulloa (eds), *Repensando la naturaleza. Encuentros y des-*

life, reflecting changes in the distribution of costs and surpluses resulting from the introduction of new means of production and forms of exploitation of natural resources.

Even though, in the case of Panama, so far no researcher has taken a systemic approach to these issues, a first step in this direction has been taken thanks to some pioneering works of great value, such as *La Población del Istmo de Panamá* (*Population of the Isthmus of Panama*), by geographer Omar Jaén Suárez⁵; *The Origins of Agriculture in the Lowland Neotropics*, by Dolores Piperno and Deborah Pearsall⁶; and Richard Cooke's studies on the country's prehistory.⁷ Furthermore, there is a growing interest for environmental matters among historians such as Alfredo Castillero Calvo, who approaches questions about the organization of the Spanish Empire in America on the basis of his conviction that the Empire was "conditioned more by the ecological demands of the physical world than by rationalizations developed in Madrid or Sevilla".⁸ All this creates a wealth of opportunities for an environmentally-oriented reading of a wide variety of chronicles, testimonies, and studies on the geography and nature of the Isthmus; a literature that has been accumulating from

encuentros disciplinarios en torno a lo ambiental, Universidad Nacional de Colombia - Sede Leticia, Instituto Amazónico de Investigaciones, Instituto Colombiano de Antropología e Historia, Colciencias, Colombia 2002, p. 68.

⁵ O. Jaén Suárez, *La Población del Istmo de Panamá. Desde el siglo XVI hasta el siglo XX. Estudio de Geohistoria*, Agencia Española de Cooperación Internacional, Madrid 1998, p. 44.

⁶ D. Piperno, D. Pearsall, *The Origins of Agriculture in the Lowland Neotropics*, Academic Press, Burlington, MA 1998.

⁷ R. Cooke, "La pesca en estuarios panameños: una visión histórica y cultural desde la Bahía de Parita", in S. Heckadon-Moreno (ed.), *Panamá: Puente Biológico*, Instituto Smithsonian de Investigaciones Tropicales, Panama 2001; Id., "Cuidando a los ancestros: rasgos mortuorios precolombinos en cerro Juan Díaz, Los Santos", in *Ibid*; Id., "The native peoples of Central America during Pre-Columbian and Colonial times", in A.G. Coates (ed.), *Central America. A natural and cultural history*. Yale University Press, NY 1997.

⁸ A. Castillero, "La carrera, el monopolio y las ferias del trópico", in *Historia General de América Latina*, Vol. III: Consolidación del Orden Colonial, Tomo 1, A. Castillero Calvo (Volume Director) and A. Kuethe (Co-Director), Ediciones UNESCO/ Editorial Trotta, 2001, p. 359.

the 16th century onward, and witnessed a special flowering after the mid 19th century, at the time of the French and North American initiatives for the construction of an interoceanic Canal in Panama. At the same time, this is an abstract starting point, which must first be set in the context of the concrete biogeophysical environment where the historical process that we seek to comprehend occurred.

The biogeophysical environment of Panama⁹

Environmental history's basic unit of analysis is the ecosystem, a notion that can have an unsuspectedly broad scope. Anthony Coates, for instance, when describing the process of the formation of the Isthmus of Panama's over 15 million years, points out that, from the moment that the North and South American land masses were joined together four million years ago, processes of contact and migration began of animal and vegetable species that had so far evolved in complete isolation. Furthermore, Coates explains, the pattern of ocean currents in the Atlantic was altered: warm waters, which had previously flowed into the Pacific, were directed northwards, supplying greater atmospheric moisture to the glaciers that formed during the ice ages over the last two million years, and thus modifying the climate and environment, and, eventually, human history in Africa and Europe.¹⁰

For the purposes of this essay, however, what is especially significant is that the ecosystems that sustain life on Panamanian territory are part of a larger system that links the Mesoamerican-Caribbean space and the correspondingly large Amazonian-Pacific-Darién ecosystem.¹¹

⁹ Except when indicated otherwise, this section adheres to what is proposed in L. Herrera, "Panamá: panorama geográfico-ecológico", in *El País que Somos. 30 años de geografía humana en Panamá*, Universidad de Panamá, Instituto de Estudios Nacionales, Panama 2003 (1970).

¹⁰ A. Coates, "En la historia geológica, Panamá ha cambiado al mundo", in S. Heckadon Moreno (ed.), *Panamá: Puente Biológico*, Instituto Smithsonian de Investigaciones Tropicales, Panama 2001, pp. 23-24.

¹¹ R. Burkart, B. Marchetti, J. Morillo, "Grandes ecosistemas de México y Centroamérica", in G.C. Gallopin (ed.), in *El Futuro Ecológico de un Continente. Una visión prospectiva de la América Latina*, Editorial de la Universidad de las

Figure 1. Isthmus area



This link operates across a narrow isthmus, located between 7 and 10 degrees North, with climatic characteristics typical of the tropics: high temperatures with little maximum and minimum variation during the year, a high percentage of moisture in air masses, and abundant rainfall. Furthermore, since the Isthmus area is characterized by high tem-

Naciones Unidas, *El Trimestre Económico / Fondo de Cultura Económica*, Tomo I, México 1995, pp. 42-43, 104. For Jorge Morello, additionally, the vast Amazon-Pacific-Darién ecosystem links “the super-humid tropical ecosystems of the Amazon watershed with those of the Colombian-Ecuadorian Pacific coast, from the gulf of Darién to the mouth of the Guayas river in the Pacific. This is an ever-humid tropical rain forest on plains or hilly plains with low relief energy”. Authors identify eight ecosystems in the Mesoamerican-Caribbean space, which are classified according to the “very popular in the American tropic” categories of warm, mild, and cold lands. Of these categories, only the third one – mangroves and *popales* – is regarded as “clearly extending throughout the Panamanian Isthmus”.

peratures, and hence low atmospheric pressure, it draws winds coming in from high pressure areas north and south of the tropics.

Despite having an area of barely 76,082 square kilometers, the Isthmus has more than 2,000 kilometers of coastline and more than 1,600 islands located within a broad continental platform covered by shallow waters. A mountain range formed of rough hills divides the country into two basins: the Caribbean and the Pacific. Even though this mountain system covers more than half the territory, the area above 1,000 meters in altitude is only a small fraction of the total area. The mountain system, on the other hand, is much closer to the Caribbean coast than to the Pacific coast, so that the rivers on the former versant are generally shorter and faster-flowing.

In the western region of the country, near the Costa Rican border, the mountains form a large block of highlands, in front of which, on the Pacific side, stands the Barú volcano. As the mountain range progresses eastwards, it starts to decrease in altitude, until it is reduced to a group of low hills by the time it reaches the central part of the Isthmus, which is also its narrowest part. From here further eastward, the range runs closer to the Caribbean coastline and starts to gain height once again, reaching its highest altitudes in the region along the Colombian border.

Besides the main mountain system just described, there are lesser ones located in different areas of the country, especially in the south, where they form two small isolated groups: that of the Chimán and Congo River mountains, and that of the Macizos and Southern Volcanic Ranges southeast of the Isthmus, in the Azuero Peninsula and in a strip extending north towards the Central Range along the west side of the Montijo Gulf.

On both sides of the main mountain system, between the range and the sea, is a strip of lowlands, consisting of flat or slightly undulated plains dotted with groups of small hills. On the southern coast, the plains reach their widest point in Chiriquí and practically disappear near Veraguas. They then begin to expand again in this province, and continue spreading westward, alternating with low hills, all the way to the Central Isthmus. In the Azuero Peninsula, the plains border the hills.

In the southeast interior of the country is another plain, comprehended between the San Blas and Darién ranges and the hills of the Western Arch. This broad space in the interior is constituted of the watersheds of the Chepo and Chucunaque rivers, which have their sources very near one another and are separated by very low hills. These two rivers, with their numerous tributaries, flow placidly in opposite directions across this wide and flat or slightly sloping terrain, carrying an impressive water flow.

This general organization of the territory makes for a varied climatic situation. Different conditions of altitude and exposure to the moisture-laden northeast winds generate three main climatic strips:

- The *hot lowlands* strip, located between sea level and 600 meters a.s.l. on the Caribbean basin, and 700 meters a.s.l. on the Pacific coast, taking up over 76% of Panama's surface; its terrain is mostly undulated and sometimes dissected.
- The *temperate land* strip – also referred to as “subtropical” –, which occurs between 600 and 700 meters, depending on which basin it lies in, and 1,500 meters in altitude, and occupies about 18% of the country's surface.
- The *cold land* strip above 1,500 meters in altitude, occupying a little over 5% of the country's surface.

Due to the influence of the above-described factors on the natural environment, vegetable formations in Panama make up a well differentiated panorama. Vegetable associations in the lowlands range from savannahs and dry tropical forests, located within specific areas of the Pacific basin, to tropical rainforests, which are mainly found in the Caribbean basin, although they also appear in specific areas on the Pacific side that are exposed to the southwest winds. Also, there is a varied transitional spectrum. On the highlands, one finds vegetation ranging from subtropical rainforests, at altitudes between 600-700 to 1,500 meters, to very humid mountain rainforests, with gradations between one and the other depending mainly on humidity, which in its turn depends on rainfall.

To these vegetable formations we must add those present on al-

luvial soils subject to tides or periodic flooding, located along low coasts and river estuaries. The main formations here are the mangrove forests, frequently found on both coasts, especially in the coastal sectors of the Bocas del Toro, Chiriquí, Veraguas, the Gulf of Parita, and in the Panama and Darién provinces.

The drier areas, such as the Gulf of Parita in the southwestern region, are characterized by a mild climate, a mostly even topography, and less dense vegetation. Since they are easier to farm, and insects and microorganisms that make life difficult and threaten human health occur in lesser variety here, they received human settlements early on. It is hence in and from these areas that the interactions between humans and the natural environment in Panama mainly evolved, until the end of the 19th century.

The European and African incursion into the Isthmus' ecosystems (1510-1600 A.D.)

The available information indicates that, at the time of the European's arrival, the Isthmus was undergoing "a sort of demographic boom, just as the rest of the American continent", and had an indigenous population of about 250,000 to 500,000,¹² which the conquest's impact reduced to about 15,000 by the end of the 16th century.¹³ Three factors seem evident in this disaster.

¹² O. Jaén Suárez, *Hombres y Ecología en Panamá*, Editorial Universitaria, Smithsonian Tropical Research Institute, Panama 1981, p. 29. These numbers are obviously susceptible of being debated, as the author himself does in his later classic work, *La Población del Istmo de Panamá. Estudio de Geohistoria*, where, after discussing several proposals, he concludes that "Steward, under the approval of zoogeographer Bennett, claims that around 225,000 natives populated the Isthmus around 1500", and indicates that this estimate, "although debatable", seems more reasonable than others. Id., *La Población del Istmo de Panamá* cit., p. 44. Bennett, on his part, believed that "this population was enough to cause the alterations in the natural environment that many of the period's chroniclers spoke about". C. Bennett, *Influencias Humanas en la Zoogeografía de Panamá*, Editorial Universitaria, Panamá 1976 (University of California Press, 1968).

¹³ Jaén Suárez, *La Población del Istmo de Panamá* cit., p. 45.

The first one, of course, was the violence exerted by the Europeans. This violence attained especially dramatic proportions in Panama, where, between 1520 and 1540, the conquest took the form of looting expeditions and enslavement of the inhabitants in the southwestern Pacific region, the richest and most populated in the country. To this we can add the disruption of social structures, the breakdown of cultural patterns, and the dislocation of the regional trading systems on which food production and social reproduction systems depended.¹⁴ This combination of circumstances led to a health crisis that served as “a factor on a higher scale, which by itself could have explained a demographic collapse such as the one witnessed in the continent”.

In Panama, especially in the central Pacific basin, all this immediately translated into a shortage of “exploitable” labor. Accordingly, the importing of slaves from other regions in America, as well as from Africa, defined from early on a tendency, which was to endure throughout most of the new historic cycle, towards turning the Isthmus into a “land of immigrants”. The areas affected by this process included the zones under Spanish control, Darién, and most of the Atlantic basin.¹⁵

This immigration also led to the introduction of various species into the Isthmus’ ecosystems (a still ongoing process). Several of these species have subsequently become typical of Panama’s landscapes. Some, such as cattle and pigs, fowl, rice, citrus fruits, and sugar cane, were brought in by the Europeans, while others, such

¹⁴ Alfredo Castillero points out that the conquest dramatically altered “two fundamental aspects in the organization of the natives’ lives”: on the one hand, polygamy; on the other, the natives’ “logic of space”. Thus, it “forever interrupted the natives’ traditional trade patterns, or slowed down, and in many cases canceled once and for all, the very possibility of the existence of their culture by impeding war, seasonal movements, hunting or fishing, and the acquisition of goods through trade with neighboring villages”. A. Castillero, *Conquista, Evangelización y Resistencia. ¿Triunfo o fracaso de la política indigenista?*, Instituto Nacional de Cultura, Panama 1994, p. 29.

¹⁵ Jaén Suárez, *Hombres y Ecología en Panamá* cit., p. 47. Suárez adds that only “in the Panamanian west, towards the mountains in Veraguas and Chiriquí–Bocas del Toro, it would seem that the immigration of natives after the conquest had no impact on the rest of the country, even though what are clearly migratory movements from the Costa Rican Talamanca into Panamanian territory were recorded throughout colonial times”.

as yam, banana, coconut, and coffee, have African origins. To these, species from Asia, like mango, would later be added. Undesirable species were also introduced, such as the microorganisms that caused the first large epidemics, and others that would appear later, like the malaria *falciparum* parasite and its vector, and the yellow fever virus, which came to the New World via the African slave trade.

After the initial bloodshed and chaos, the Isthmus area underwent dramatic reorganization. The main population axis moved to the Panama-Portobelo complex, endpoints of a new interoceanic corridor running through the Chagres Valley. Starting from here – especially after the inclusion of Peru into the new worldwide trade network that gradually developed from the mid 16th century onward – the evolution of the whole area was determined, whether by inclusion or exclusion, by the transit economy, which has remained, to this day, the most powerful factor in the long process of organization of the Panamanian space.

This reorientation towards the outside world had considerable influence on the internal organization of the country. Most evidently, the Spaniards centered their presence on the Transisthmian corridor and along a strip going from Chepo to Natá, respectively east and west of Panama City, which subsequently extended to include first Veraguas, and then the Alanje region in Chiriquí. Darién and the entire Atlantic basin went on to become a hostile periphery hemming in the new colonial core to the east and north. Two innovations that the Conquest had brought into the picture played a decisive role in this process: cattle and horses, on the one hand, and an economic and social regime structured around the massive import of African slaves, on the other.

Extensive cattle breeding, in particular, went on to become the core of the food production system, displacing agriculture to a complementary role and relegating exploitation of marine-coastal resources to a marginal situation. This was largely possible because cattle found an exceptionally favorable niche in the savannahs that the aboriginal population had created over the previous 2,000 years, mainly in the central and western plains of the Pacific basin of the Isthmus. The multiplication of cattle in these savannahs, in its turn, helped to prevent a new expansion of the tropical forest – as happened, instead, in

the Tuira, Chucunaque, and Bayano valleys, to the east – and gave rise to phenomena such as overgrazing, compacting, and erosion that were to affect these ecosystems during the centuries to come.

The beginning of this process of cattle expansion dates at least as far back as 1521, when the Spanish crown granted Pedrarias Dávila, founder of Panama City and Isthmian conqueror, permission to import 50 heads of cattle from its estates in Jamaica. This first herd became the initial core from which others that later populated the fields in Nicaragua and Peru came. By the end of that decade, cattle was already abundant in the savannahs near the cities of Panama and Natá, in the west, where cattle farming had found a market for its products in the mining settlements of the northwestern Atlantic, and production was able to fulfill the needs of the small colony. From the mid 1530's onward, the discovery and conquest of Peru generated a demand that exceeded Panama's possibilities, leading to the first cattle crisis in the country's history. This crisis was overcome, however, during the next decade. After that, rather than stabilizing, production entered a period of remarkable growth. Cattle became so abundant that, even with all the exports to Peru, meat became a staple food for the entire population. Both leather – which at the time played a very similar role in the economy to the one plastic plays nowadays – and fat went for low prices and found a good market in Peru. Around 1590, since offer far exceeded demand, cattle owners opted for slaughtering their cattle in mass to take the leather and the fat, leaving the meat to waste. This originated a crisis of such proportions that, twenty years later, the number of cattle heads in Natá was down to half of what it had been in 1590. Even so, by the mid 17th century extensive cattle farming was flourishing again in Panama's central and southeastern savannahs.¹⁶

From its early days, cattle farming was an organized economic activity run by landlords of great wealth and influence, such as Diego de Almagro and Alonso de Luque, among others. This tendency was to persist. Between 1690 and 1710, for instance, Rodrigo de Betancour, Royal Commissioner and prominent figure in Isthmian society, came to own about 30,000 hectares of pastureland in areas located in the

¹⁶ Castillero, *Conquista, Evangelización y Resistencia* cit., p. 257.

present day Panama and Coclé Provinces, while Antonio de Echevers y Subiza, probably the richest and most influential man in colonial Panama, was also the most important of the cattle-owners of the Isthmus. Thus, by the early 18th century extensive cattle farming was already well developed in different parts of the country's southern basin.

The degree and forms of this development, its role in the creation of new food production systems, and its consequences on the Isthmus' human environment, are matters of great interest for an environmental history of Panama. For example, Juan Franco's *Notes on Agriculture and Cattle Farming*, written around 1790, describe a food production system that, using extremely low technology, was dependant on the use and abuse of finite ecological advantages. Cattle farming, for instance, was carried out in wide open spaces, with minimum use of even the simplest pens, and employing methods as barbaric as forcing calf weaning by sticking "a [one third of a meter] stick of wild cane with sharp ends" through the nose of the calf, which "hurts the mother's abdomen every time it tries to come in closer to feed".¹⁷

Franco describes the accumulated impact of extensive cattle farming on the savannah as follows:

Its entire surface, especially on the plains, in little time reaches a state of aridity and dryness, particularly around the months of February and March. The grass disappears almost completely, and one can only see deep continuous cracks that render horse transit difficult without the risk of breaking the horses' legs. Of streams and gullies, only the traces left by their currents remain, leaving only the large ones and the main rivers, which are usually inaccessible to the cattle, which is a bit far away.

Given these circumstances, cattle farmers made the most of the fact that "Providence has planted the great trees that populate these mountains, and do not wholly shed their green due to their thickness". The cattle was moved to the foothills for it to feed on the tip of branches until the rains returned.

¹⁷ J. Franco, "Notas sobre agricultura y ganadería", 1792, in O. Jaén Suárez, *Geografía de Panamá*, (Estudio Introductoria Antología), Universidad de Panamá, Biblioteca de la Cultura Panameña, Panama 1981.

Franco's description of agricultural activities is quite similar. "Plantain, corn, and rice," he states, "are the fruits that generally provide sustenance to all the populations in this Kingdom". All these crops, he adds, "are grown easily and in great abundance, because, since the farmers are the owners of almost all the land they can see, they choose the land that seem most suitable for their crops". Corn, once again, figures here as a main crop, since its harvest "ensures the daily meal, and because with it they can support other domestic animals that they later consume".

Free access to the land also stimulated the continued application of the old indigenous technology of slash agriculture, now intensified through the use of metallic tools. The undergrowth was cut in January using the machete, not touching the "stout trees found in those usually virgin woods". These were cut down in February using axes and machetes. One then waited for all of the undergrowth to be completely dry before setting fire, in March, "to all the trees that had been cut down".

Their price would be, without question, much higher if the value of the cedar, mahogany, and other precious woods were considered; being left at the mercy of the flames, only their ashes are used, which works very well as manure for the soil. Around this time, the heat is felt a lot more throughout the Kingdom, and the atmosphere can be seen constantly loaded with smoke.

Sowing followed the indigenous method, which involved using "a wooden pole about [1.5 meters] long, with a piece of iron much like a two-and-a-half-inch cross-cut chisel embedded in one end," to punch holes in the ground, deposit three or four grains inside each one, and close the hole again in a single motion, "making sure that a distance of at least [1.05 meters] of clear soil was left between each one, because, if the plants were closer, the sun would burn them due to lack of air circulating around them after they had grown".¹⁸

This process of environmental transformation only makes complete sense when we link technological change with changes in so-

¹⁸ Ibid., pp. 154-156.

cial relations, most notably the emergence of slavery as the dominant form of work organization in the Isthmus area from the 16th to the 18th century. As early as 1575, Alonso Criado de Castilla noted that “people of work and service were all black, because among the white people there were none who served, or were put to work, and this is why the number of blacks in this kingdom is so great”. And many there were indeed: 8,639, 5,839 of whom slaves – the rest having either gained their freedom or become fugitives – vs. 3,748 Spaniards and 950 Indians. Menial work in Panama City was all done by blacks, including work in the fields, the driving of “the mule trains that travel the Cruces and Nombre de Dios roads”, herding the cows, pearl fishing, work in the quarries and on “the mountains and sawmills where wood is obtained”, manning the “twenty-five boats that carry clothes to the river of Chagre”, work in the mines, and, in Villa Nueva de Los Santos, “where corn is picked”, the slashing work in the forest.¹⁹ Three hundred were freed slaves, and it is hardly surprising that fugitive slaves were more than “two-thousand five-hundred”.

The Isthmus in the World System (1600-1850)

After the unrest of the 16th century and the territorial reordering of the 17th, by the first third of the 18th century the Isthmus was neatly divided into three large areas. With Darién reduced to a distant military frontier, and the trade links that had existed between the Pacific and Atlantic basins prior to the Conquest broken, except along the Portobelo-Panama axis, three fourths of the Isthmus’ territory had been left outside of colonial and private control, and had been hence cut off from the stimuli that, until the beginning of the 16th century, had been provided by constant contact with the center of cultural development in the central Pacific.

On the southern basin, instead, there was already a long strip of land whose population, amounting to about 32,000, was “deeply Hispanicized”. This strip began “at the eastern coasts of the Azuero

¹⁹ A. Criado de Castilla, “Sumaria descripción del Reyno de Tierra Firme”, 1575, in Jaén Suárez *Geografía de Panamá* cit., p. 25.

peninsula, between Las Tablas and even lower, and [went] up the coast towards Panama, passing through Los Santos, Parita, Santa María, Natá, Antón, Penonomé, Chame, Capira, Arraiján, and, after reaching the capital, [went] on to Chepo,” and also included “the Transisthmian route to Portobelo”. At the opposite end, between Santiago, provincial capital of the Veraguas province, and Alanje, “district capital and a true colonial *finis terrae*, Hispanicization was fragmentary and virtually limited to the few Spanish settlements that had managed to survive the Conquest”. Outside this strip, one entered an “inhospitable and virtually unknown” world.²⁰

Along the strip, “no settlements with port or fishing activities are established...; none of the towns and villages of the savannah can be found at less than two kilometers from the sea, and most often they are located at more than ten kilometers inland”.²¹ Thus, the settlements of Spanish settlers and their slaves, freedmen, and Indians stood “in the transition zone between the shepherding activities of the rainy season and those of the dry season; in other words, along the technical and geographic meeting line of the cattle’s biannual spatial rotation between the two main parts of the settled lands,” which offered “optimal conditions for growing corn”.²² These settlers already formed a stable and

²⁰ Castellero, *Conquista, Evangelización y Resistencia* cit., pp. 311-315. Even in the interoceanic corridor, on the way to Portobelo by land, “there were some... *tambos* or shelters, such as Venta Chagres, San Juan, Pequení, and Boquerón, which served as a refuge for those who traveled along the Transisthmian route... On the stretch of the journey that runs through the Chagres river, between Cruces and the Fort of San Lorenzo, in the Caribbean, there were also some riverside settlements, similar to those along the route to Portobelo; in other words, mere stopovers”.

²¹ Furthermore, until the early 20th century this strip was further interrupted by “thick gallery forests several hundred meters deep” along the numerous water courses that crossed it, as well as by “tropical forests in the area of Arraiján, Chorera, and Chame, ... and by the thick tropophilous vegetation around the hills and small mountains that make up the spine of the Las Palmas peninsula, which separates central Veraguas from the Chiriquí province”. Jaén Suárez *La Población del Istmo de Panamá* cit., p. 140.

²² *Ibid.*, p. 62. This, he adds (p. 168), led to the creation, within the original strip, and depending on specific local conditions, of “four regions with a certain degree of internal autonomy. Alanje and then David organized the most important rural region west of Chiriquí; Santiago, too, although with less vigor, linked

expanding group. From the second half of the 18th century onward, the Bourbon monarchy established a frontier policy in the Isthmus based on three well-differentiated operating models: “the Darienite, essentially military, colonizing through European immigrants and local settlers; the Veraguan, oriented towards withstanding mosquitoes, and hence populating and assimilating territories through local *mestizo* settlers, along with a small group of settlers of African origin; and finally, the *chiricano*, eminently missionary, but contemplating the dynamic participation of settlers, who established themselves in the recently created indigenous reserves, triggering crossbreeding and accelerating the Indians’ integration and the homogenization of the area”.²³

Isolation, however, does not imply here a lack of population, but of State control. Thus, in the mid-western Atlantic area and Darién there persisted forms of occupation and spatial organization ranging from indigenous settlements to those of black fugitive slaves, who managed to mount a tenacious resistance against the colonial authorities’ attempts to control them. In his *News about the Isthmus of Panama*, published in 1812, Juan Domingo Iturralde stated that

The General Command in Panama... borders to the west with the Presidency of Guatemala, to the east with the barbaric *cuna* or Darienite Indians, and to the north and south with the seas bearing these two names, and comprehends the governments of Panama, Portobelo, Darién, and Santiago de Veraguas, and the Mayor’s Office in Natá.²⁴

Finally, towards the new central core, south of the Portobelo-Panthe Veraguan plains with the valleys in the Las Palmas peninsula and in the highlands of the central range of that part of the country; Los Santos and then Chitré had the responsibility of organizing spaces in the Azuero peninsula; Natá and then Penonomé linked together the savannahs in Coclé”.

²³ Castellero, *Conquista, Evangelización y Resistencia* cit., p. 324.

²⁴ J. D. de Iturralde, “Noticias relativas al Istmo de Panamá (1812)”, in Jaén Suárez, *Geografía de Panamá* cit., p. 159. Six decades later, the inner structuring of this space west of the capital was still the same as it had been throughout the 17th century: the savannahs, according to Armand Reclus, “mainly along the south side of the line drawn by the summit [sic], make up quite a broad strip between the forests on the coast and those that cover the slopes of the Great Mountain Range. This open land, which contrasts remarkably with the intricate labyrinth formed by the virgin forest, produces some vegetation in the rainy season, although very

ama axis, other changes in the landscape had occurred. Along with wood clearings and cattle pastures opened up along the mid course of the Chagres to satisfy the demand for graze land for the beasts of burden carrying goods, there was, from early on, a broad ring of deforestation around Panama City, originated by an insatiable demand for wood to build houses and ships, and for fuel, and by the need to create pastureland for the cattle. Thus, as early as 1631 – long before the destruction of Panama La Vieja and the moving of the capital to the foot of Ancon hill in 1673 –, Diego Ruiz de Campos could refer to that elevation as “a hill clean and clear of trees”.²⁵

As stated by Omar Jaén Suárez, on the eve of the 19th century, more than 90% of the Isthmus was still covered with forests, and the population was about 87,000 – considerably lower than the population at the time of the Conquest, which would not equaled again until the 1880's. Of this, about 20,000 resided along the Transisthmian axis, and the rest in the strip that goes from Panama to Chiriqui; a ratio that would only be reversed in the second half of the 20th century.²⁶ The production techniques described above bear

sparse and low”. A. Reclus, “El Istmo de Panamá (1876-1878)”, in Jaén Suárez, *Geografía de Panamá* cit., p. 245.

²⁵ About Cabra hill, to the west, he says that “from it has been drawn plenty of good wood, oak and *guachapalí*, used to build many good mid-sized frigates, ships, and *chinchos*, and today they have much wood, although it is a little difficult to obtain because there is no river or estuary near it to load it and carry it, but even so, when it is necessary they obtain it”. D. Ruiz de Campos, “Relación sobre la costa panameña en el mar del Sur” (1631), in Jaén Suárez, *Geografía de Panamá* cit., pp. 51-86. As to the eastern side, Armando Reclus observes that in 1875 the right banks of the Bayano and Mamoní were formed of “extensive deserted savannahs, with an exasperating monotony... which extended to Panama itself, where one could see large herds, some of which have three or four thousand heads, which have a primary use not for meat, which has hardly any value at all, given the scarce population, but for leather, which is one of the main sources of wealth, since it is the article that sustains trade the most, and in exchange for it many other essential products are imported”. Beyond, “the virgin forest, with its dense and abundant vegetation,” covered plains and mountains. A. Reclus, *Exploraciones a los Istmos de Panamá y Darién en 1876, 1877 y 1878*, published by Revista Lotería, No. 1, Panama 1958, p. 200.

²⁶ Jaén Suárez, *La Población del Istmo de Panamá* cit., Part 1, Chapter 1; Part 2, Chapter 3.

witness to the country's rural nature at the time, as do its deep social divisions, both between the center and the interior, and between the dominators and the dominated. It was to take another fifty years for that society to abolish slavery, although this institution's importance had been declining during the 18th century; still, by the end of the 18th century Panamanian society had already acquired the classist and racist dimension that was to mark its future development.

Around this time, inner tensions regarding the local culture of nature are already evident. While the indigenous remnants and the poor peasants viewed the natural environment as a way of life – and from that vision they created an animist folklore of increasing richness and complexity –, the landlords and merchants perceived it from the standpoint of interest and profit. One of the most notable of the many manifestations of the indigenous legacy, for instance, was the permanent inclination and the ability of the poor inhabitants of the interior to establish themselves on the mountains in search of a life free from tributes, hierarchies, and taxes. The rural population's tendency towards dispersion was a constant nightmare for landlords and other civil and ecclesiastical authorities, since a family equipped with metal tools could survive in an agricultural and gathering regime just as well as its predecessors in the Neolithic and, under such conditions, the authorities could not effectively control either the lands or the natural resources within the Isthmus' vast marginal spaces.

This culture of nature also included knowledge about the flora and fauna, the product of prolonged interaction with the tropical forest. For instance – although comments from foreigners passing through the country often emphasized what they perceived as the hostile character of nature in the tropics –, John Lloyd, in his *Notes on the Isthmus of Panama*, written between 1827 and 1829, gathered from local peasants the names, general characteristics, and uses of 97 trees, from the Amarillo and fruit Amarillo to the Mountain Ubero and Yalla armadillo, just in the Chagres valley.²⁷

²⁷ J. Lloyd, "Notas referentes al Istmo de Panamá", 1827-1829, in Jaén Suárez, *Geografía de Panamá* cit., pp. 178-187.

This high degree of control over marginal spaces reflected an underlying territorial organization that did not correspond to the state's power structures. Thus, besides the official interoceanic transit monopoly operating along the Chagres route, other Transisthmian trade routes, which had been used since before the Conquest, never ceased to function, and are still being used today. A study by Marcela Camargo on the oral history of the *coclesano* [from Coclé] peasant world in the first half of the 20th century offers abundant testimonies about trade – commercial, but also social and cultural – with the Atlantic basin along well-defined routes, which were traveled on foot, using horses as beasts of burden, or on *cayucos* (small indigenous boats, much like canoes) along the rivers. These routes linked small settlements whose names often have a clearly indigenous resonance – such as Tambo, Toabré, Sagrejá, Tulú, and Tucué –, and connected Penonomé to distant localities such as Coclé del Norte and Río Indio. The journeys could take from several hours to several days. There are several testimonies, the author points out, of the existence of roads that provided a connection to lands and coasts in the North,

as Don Ramón de Carvajal assures in his Report on his 1784 visit to several cities of the Pacific basin, among them Penonomé. Additionally, Felipe Pérez, in his *Geography of Panama*, explains that from the Coclé del Norte River one could reach the Sea of Colón in 10 hours. Don Héctor Conte Bermúdez, in his article “The Province of Coclé”, mentions a bridle path that connected Penonomé to the Atlantic Coast in sixty hours, and an inhabitant of Las Cuestas de Marica told me that from that community one could reach the coast. These comments are not surprising; I believe, for several reasons, that there was not just one, but many paths leading to the north coast. One of the reasons is that what today is known as Costa Abajo de Colón was under the jurisdiction of Natá during colonial times, and until 1880 it was part of the territory belonging to the Department of Coclé. Thus, places such as Paguá, Calabazo, Potrellano, Picacho, Piedras Gordas, Cascajal, La Encantada, Río de Indios, Miguel de la Borda, and Coclé del Norte were inhabited by natives. Furthermore, it was through these lands that the route of contraband with the English passed in the 18th century. Likewise, there are others who have provided me with information on routes that were taken especially to go to obtain temporary work at some settlements around Lake Gatún, such as Cirí and Ciricito de los Sotos, during the years between 1930 and 1950... What I want to indicate with this is that transit to and from the lands beyond the

mountains was common, whether to visit relatives, to grow and obtain food, to find temporary work, or to conduct trade.²⁸

All this suggests that, in this initial balance, the natural world's ability to force humans to adapt to the limitations it imposed proved greater than their ability to submit nature to their will. This situation was to persist in most of the Isthmus area until well into the 20th century, when the up to then marginal spaces in Darién and along the western Atlantic were finally opened to agro-cattle colonization. The impulse towards this new transformation came, once again, from the transit sector, now driven by a technology, a culture, and a form of relationship with the natural world that had no precedents in the history of the Isthmus.

Pro mundi beneficio

*Behold, your Majesty, what a marvelous thing...
that into this Chagre river, born two leagues from the south sea,
comes the North sea. This river runs strong,
and is very broad and powerful and deep, and is so right for the above-mentioned
purpose,
that one could not ... imagine nor wish for a similar thing
so suited to the purpose of what I have said.*

Gonzalo Fernández de Oviedo, 1526²⁹

Fernández de Oviedo's description could not have been more precise, nor his foresight more accurate. The valley of the great river

²⁸ The list of products that went into Penonomé along these routes might seem surprisingly long: it included, according to Camargo, both products from nearby areas – grains, fruits, vegetables, construction wood, hats, *bellota*, pouches, *jabas*, ropes, and household medicines such as “*chirri-chirri*” – and “rice, coffee, rubber, *pixbae*, *caraña hedionda*, *chutrá*, monkey lard, hats, and pigs”, transported from distant areas by individuals who only went into Penonomé “occasionally, on religious holidays such as Easter Friday in March or April, Habeas Christi in May or June, the Holy Rose on August 30, and the Immaculate Conception on December 15”. M. Camargo, *Producción y Comercio en la Sociedad Rural de Penonomé Durante los Primeros Cincuenta Años de la República*, Colección del Centenario, Universidad de Panamá, Panama 2002.

²⁹ Jaén Suárez, *Geografía de Panamá* cit., p.12.

was indeed used from the 16th to the 19th century as a route for people and goods, with all the inconveniences of a rough terrain covered by a dense tropical rainforest. This route comprised

a stretch of land from Panama to Cruces, which used to be traveled on a mule's back in eight hours; another one, the longest and more time-consuming, was traveled by river, until one reached the sea by the mouth of the Chagres, and traveled on by sea for the remainder of the journey to Portobelo, all of which took about 14 to 16 hours. Thus, it was a river, sea, and land route. Different technologies were employed for each stretch, and separate freight, packing, storage, and tax costs applied. The duration of the journey varied considerably according to the season, and on whether one was traveling with or against the current, on a bongo or on a raft, with freight or without it.³⁰

The route had benefited very little from infrastructure investments, and the transportation technologies employed on it were hence extremely simple.³¹ In 1827, the most visible evidence of human impact on the Chagres valley mentioned by John Lloyd were the “savannahs [that] stretched to the river bank itself, covered by a very fine grass”, alternating with a gallery forest.

Lloyd himself, however, prefigured the great novelty that the 19th century would bring to the route, viz., the application of technologies created by the industrial revolution in Western Europe and North America to the organization of transit across the Isthmus. He proves far-sighted when he points out the need for “a new line, different from all others” going from “a beautiful bay called Limón or Navy Bay, five leagues from the Chagres, to Panama, the capital, where the main center of commerce lies,” using the railway as a means of transportation.³² Indeed, *Panama's modern environmental*

³⁰ A. Castellero, “Los transportes y las vías de comunicación en Hispanoamérica”, in *Historia General de América Latina* cit., pp. 352-353.

³¹ Thus, the roads from Panama to Cruces and Portobelo had “only some paved segments, and not a single bridge could be found... , except the one built by engineer Nicolás Rodríguez, perhaps a single arch, over Hondo River, on the road from Cruces to the outskirts of New Panama”. Castellero, “Los transportes y las vías de comunicación” cit., pp. 352-353.

³² Lloyd, “Notas referentes al Istmo de Panamá” cit., pp. 190, 193.

history began with the shift from adapting interoceanic transport to the restrictions imposed by the natural environment to the adapting of the environment to the needs of interoceanic transport.

This new period, which had long-lasting consequences that are still visible today, began in 1850 with the cutting-down of the mangroves and the filling of the marshes on Manzanillo island in order to create the Atlantic railway terminal, and the further clearing, flattening, and compacting of land to make way for the railway line. The cutting of the mountainous terrain and the construction of embankments, bridges, docks, stations, ports, and industrial and urban facilities, modified the environment faster and much more permanently than any other works carried out up to then.³³ These transformations of the physical world went hand in hand with parallel transformations in society. The boat pilots, animal drivers, and peasants of the old transit system disappeared, and the human settlements that had been sustained by the land route to Portobelo for three centuries dwindled and died out. At the same time, the organization of a wage-earning work force began, although it still took advantage of many of the worst legacies of slavery.³⁴

The impact of the intensification in land use to transport passengers and goods began to make itself felt. A report from those days indicated that

³³ Even after the crossing of the first train from coast to coast on January 28, 1855, the railway “was far from being complete”. During the next four years, “the embankments were reinforced, the wooden bridges were replaced by iron ones, the ballast was made thicker, the damaged sleepers were replaced, the grade crossings were reduced, curves were straightened, intermediate stations were established, and a telegraphic line was installed across the Isthmus. An iron dock replaced the wooden one in Panama, and in the Atlantic terminal, a new 60-foot iron lighthouse replaced the old wooden tower”. G. Mack, *La Tierra Dividida. Historia del Canal de Panamá y otros proyectos del canal istmico*, Editorial Universitaria, Panama 1978, pp. 145-146 .

³⁴ In a way that is typical for that period, for instance, the company that constructed the railway “did not keep statistics on mortality for its dark-skinned workers” – which amounted to almost 7000 –, but its registries do indicate that “293 white workers died of different causes during the five years of construction”. Mack, *La Tierra Dividida* cit., p. 147.

Not infrequently, 1,500 passengers have been transported, the ... mail and freight from three steamers... in just half a day... Arrangements for the loading and unloading of goods are exceptionally good... and... frequently, less than two hours go by between the *arrival of the larger ships*, loaded with two or three tons of goods, plus the luggage of four to eight hundred passengers, and the *departure of trains to Panama*.³⁵

Thus, the railway became not only a permanent scar on the face of the Isthmus, but also an act of cultural disconnection, which gave rise to new perceptions of the tropic in Panama. These perceptions had already been emerging in the North Atlantic world. They were centered on the contrast between images of an almost paradise-like natural landscape, on the one hand, and “a constant feeling of danger, alienation, and repugnance”, on the other.³⁶

Panama, in particular, played an important role in the rise of the conception of “tropical” as a category in North American culture. According to geographer Stephen Frenkel, this occurred between the late

³⁵ F.N. Otis, *History of the Panama Railroad*, Harper & Row Brothers, New York 1867, p. 54, in Mack, *La Tierra Dividida*, cit., p. 148. By contrast, the old Chagres route, whose transportation technology was limited, in its best days, to 1500 to 2000 mules, and from 25 to 40 rafts and bongos, had a maximum carrying capacity of 500 to 1200 tons, and the journey from Panama to Portobelo could take as long as the one from Guayaquil to Panama. A. Castellero, “La carreta, el monopolio y las ferias del trópico”, in *Historia General de América Latina* cit., pp. 84, 110.

³⁶ On the subject, historian David Arnold states that, from the mid 18th century, the tropics as a cultural category came to designate, “according to a western paradigm, compared to Europe (and especially northern Europe and other parts of the temperate zone), something culturally alien and environmentally different. The tropics existed only in mental juxtaposition to something else – the normality perceived in temperate lands. *Tropicality was an experience of northern whites coming into an alien world – alien as regards climate, vegetation, people, and diseases*”. In this experience an important role was played by the historical background of the plantation economy, maintained, until the early 19th century, by a massive import of African slaves. So, “dependence on non-white labor was also an important part of the way the western world perceived, and reacted to, the tropics... With such a bountiful nature, only a surplus of people, who were ‘lazy by nature’ and capable of satisfying their needs with minimum effort through some sort of coercion, could be generated”. Arnold, *La Naturaleza como Problema Histórico* cit., pp. 131-146.

19th and the early 20th century, when “North American statesmen, businessmen, missionaries, and bureaucrats” started to transform the Central-American Isthmus for their own purposes: “they built railways, conducted military invasions, established banana and coffee plantations and, eventually, dug a Canal through Panama,” all of which coincided with the spreading of stories about and artistic representations of the region, which, supported by “other more generalized, archetypical ideas, that were presented through art, history, literature, and photography about the tropics all over the world,” ended up giving shape to a discourse where two opposing narratives converged – “some positive, about Eden-like paradises, fertile grounds, and exotic beauty; and others negative, about moral laxity, dangerous landscapes, sickness, and the threatening abundance of the jungle”.³⁷

In Panama, the North American experience met with unprecedented success in realizing one of the central ideals of 19th-century liberal culture: the triumph of progress through man’s control over nature. By the early 20th century, Panama “became the example of the Central-American tropics for the North American public”, due to four factors:

first, in light of its location... Panama was, by definition, the quintessence of what was tropical. Thus, it was an adequate model for the appearance a tropical place should have. Second, Panama [...] continually intersected with the United States’ development. The United States intervened militarily, signed treaties, built railways, and dug the canal. Additionally, North American private investors became involved in schemes that ranged from railways to plantations. These common historical episodes caused the Isthmus to be mentioned regularly in North American newspapers. Third, Panama [...] was the route taken by North American travelers on their journeys to California, the Pacific Northwest, and even South America. [...] Fourth, neighboring countries, especially those located to the North, were comparatively eclipsed – Panama’s strong image overcame them.³⁸

However, it was mainly through the organization of the Canal Zone that the North American experience in the Isthmus became a model for administrators of imperial possessions, whether public or

³⁷ Frenkel, “Jungle stories” cit., p. 317.

³⁸ Ibid., p. 321.

private, everywhere in the tropical world.³⁹ The industrialization of transit helped create a culture of nature in which, according to Paul Sutter, the tropics were seen “as places that resisted the expansion of civilization”, and tropicity was constructed as “a problem to be solved”.⁴⁰ That culture was absorbed by the Creole elites, who were aware of the opportunities offered by the global market and had answered Domingo Faustino Sarmiento’s call to join civilization’s struggle against savagery. Sarmiento made this appeal in his work *Facundo*, a great manifest of Latin-American liberalism published in 1845, just five years before construction of the railway began.⁴¹

All in all, the railway was to have a relatively limited environmental impact. It essentially followed the old Chagres route and,

³⁹ It is remarkable how clearly the theme of tropicity is formulated early on in works like *El Istmo de Panamá y lo que vi en él* (The Isthmus of Panama, and what I saw there), published in 1852 by the North American doctor C.D. Griswold after spending a few months in the country as an employee by the railway company. Griswold speaks of “the profound and solemn beauty” of the Isthmus’ jungles, but immediately adds that “Until very recently... nature, in all its greatness, untouched and undisturbed by the hands of man, reigned as sovereign in all its area. But thanks to North American progress, which is destined not to leave any part of this continent without its steel footprint, the feller’s axe has already thundered through its wild savannahs and deep valleys, held by the strong arm of permanent enterprise; and it is to be expected that its sound will not cease until the sunlight falls on the land, for so long under the shade provided by these dense forests, and the light of intelligence and civilization break the moral darkness that has so far prevailed over its population, keeping it under profound ignorance and superstition”. C.D. Griswold, *El Istmo de Panamá y lo que vi en él*, Editorial Universitaria, Panama 1974 (1852), p. 37.

⁴⁰ P. Sutter, “Arrancarle los dientes al trópico: ambiente, enfermedad, y el Programa Sanitario de los Estados Unidos en Panamá, 1904-1914”, in *Papeles de Población*, Nueva Época, Año 6, No. 24, April-June, Centro de Investigación y Estudios Avanzados de la Población, Universidad Autónoma del Estado de México, Mexico 1997, pp. 24-25.

⁴¹ And this problem had, additionally, a clearly utilitarian nature: North American investors who supported imperial expansion “viewed the ‘unexplored’ natural landscape as something equivalent to profit”. Thus, even after a clear awareness had been developed of the limits of the fertility of tropical soils, “the land kept being portrayed as an extraordinary resource, if only temporary. The profits made by the plantations would ‘greatly justify using up the land’”. Frenkel, “Jungle Stories” cit., p. 324.

although the terrain was adapted to the needs of its infrastructure, it did not create an entirely new landscape. On the other hand, even though its construction required up to 7,000 wage-earning workers, who came from Europe, the West Indies, and China, its operation only required a fraction of that personnel. Matters were to be different, however, for the interoceanic Canal, whose construction was conceived, from the start, with the intention of transforming the great river from an unruly ally into a docile creature at the service of interoceanic transit.

The French's failure in their attempt to build a sea-level canal has been investigated in detail. It depended on serious shortcomings in the organization and financing of the project, as well as an underestimation of the difficulties presented by the Isthmus' climate and topography. Less often mentioned, however, is the impact of the French project, as early as 1880, on the natural environment; the clearing of trees and undergrowth along "a strip of land that ran along the canal line, from ocean to ocean, varying in width from 30 to 60 feet"; the filling of swamps and the construction of the infrastructure needed to create the port of Cristobal, on the Atlantic; the massive and frequent use of explosives; the dredging of rivers and wetlands; the construction and operation of new railways; the removal of more than 55 million cubic meters of soil and rock from the Galliard Cut – where the North Americans would later extract 250 million additional cubic meters – , and the unsystematic disposal of the excavated material.⁴² To these were added the grave health consequences of the massive import of workers and technicians into an environment that was severely disturbed by construction works, and lacked basic sanitary conditions, such as a supply of drinking water and adequate facilities for waste disposal.⁴³

⁴² Mack, *La Tierra Dividida* cit., pp. 306-308.

⁴³ Northerners assumed that these consequences were something inherent to tropicality; hence the fallacy that Panama was a "white man's grave", actually based on the fact that much more accurate records were kept on the number of deaths, and the causes thereof, among the French than among colored workers. Thus, the perception of the so-called "tropical diseases" – particularly malaria and yellow fever – as a fundamental health problem in the Isthmus was reinforced, although – just

These and other problems were to be dealt with in a radically different manner by the North American initiative of 1904-1914. In order to build, operate, and defend the new interoceanic route, in 1903 the United States government demanded and obtained from the young Republic of Panama the granting of control over a 16 kilometer wide by 80 kilometer long zone extending on either side of the canal. The lands, forests, and further resources comprehended within this “Canal Zone” were thus excluded from – and, from a cultural standpoint, set in opposition with – the dominant forms of relationship with the natural environment prevailing in the rest of the country. On the socio-cultural and political plane, the Zone allowed the establishment of “a modern industrial community inside an equatorial jungle that was three thousand kilometers away from its supply base”.⁴⁴ This community, formed of North American colony officials, managers, technicians, and military personnel, was set to the task of creating the necessary conditions to make the most of a particular resource – water – with a particular purpose: the transit of ships across the Isthmus. This led to an unprecedented and unparalleled event in the history of Latin America: the creation and operation, for almost an entire century, of a monopolistic capital enclave belonging to the United States government outside that country’s territory.

Land transformations: impact and conflict

Before the arrival of the North Americans’, the area that was to become the Canal Zone had already been affected by prolonged human activity. In the jungles that covered the most uneven terrain in the area, for instance, many of the hardwood trees had been “practically exterminated”,⁴⁵ while to the northeast of Panama City there was “a

as had happened during the construction of the railway, and as was to happen during the construction of the canal –, respiratory illnesses were still the main cause of death among native workers. Sutter, “Arrancarle los dientes al trópico” cit., p. 71.

⁴⁴ D. McCullough, *El Cruce entre los Mares. La creación del Canal de Panamá (1870-1914)*, Lasser Press Mexicana, S.A, Mexico 1979, p. 515.

⁴⁵ H.H. Bennett, “Reconnaissance soil survey”, in *The Agricultural Possibilities of the Canal Zone*, US Department of Agriculture, Office of the Secretary (Bureau

considerable mass of land without gently undulating trees, known as “savannahs”, “where shepherding was still conducted”. There were also lands dedicated to the production of bananas for export “near Bohío and Gamboa”; a sugar plantation near Gorgona; small plantations of cocoa, coffee, and rubber “near Emperador”,⁴⁶ and horticultural activities carried out by Chinese immigrants, which supplied the settlements located along the construction path of the Canal.⁴⁷

To this was added peasant polyculture agro-forestry carried out on scattered plots only reachable by “narrow winding paths, totally impassable for vehicles, and almost impassable for horses”.⁴⁸ The methods and tools employed were very similar to those described by Juan Franco toward the end of the 18th century. The tools were limited to the machete and the hoe. The soil was prepared by slashing, which only spared “some of the hardest palms, due to the considerable work and the strong tools needed to bring them down”, while the

of Soils and Bureau of Plant Industry, cooperating), Report No. 95, Government Printing Office, Washington 1912, p. 20. Among the trees mentioned there are “2 varieties of Ceiba, about 15 species of palm trees, and, by their local names, anona, bocare, algarroba, mamecillo (sic), Santa María, hucar, acacia, almendro, roble”. William Taylor, a colleague of Bennett’s and co-author on the report on the Zone’s agricultural potential, stated on his part that “man’s footprint in the country, except in the immediate vicinity of the Panama Railway... and of the canal’s route... becomes quite clear, mainly due to the destruction of virtually every tree that could provide valuable wood in the original forest”. W. Taylor, “The outlook for agriculture”, in *The Agricultural Possibilities* cit., p. 39.

⁴⁶ Bennett, “Reconnaissance soil survey” cit., pp. 30-31; Taylor, “The outlook for agriculture” cit., p. 39.

⁴⁷ These horticulturists employed very efficient cultural methods, and sold their products “in considerable quantities on the markets in all the important towns within the Canal Zone”, although the North Americans were opposed to what they viewed as “unhealthy methods of fertilization and handling” – such as the use of human feces as fertilizer –, and rarely ate those vegetables. Bennett, “Reconnaissance soil survey” cit., pp. 12-19.

⁴⁸ In fact, the only good roads existing in the area were those built by the Isthmian Canal Commission, “which connect most of the North American settlements along the canal route, stretching along several miles from Panama city, and the one that goes from Empire to the Las Cascadas plantation”. Bennett, “Reconnaissance soil survey” cit., p. 18.

hardwoods were generally turned into coal, “the main cooking fuel used in the country”; preparation of the soil was reduced to making holes for the seeds, after which the crops were “abandoned to their luck, except for some occasional clearing of the undergrowth”.⁴⁹

This agro-forestry practice supported a family self-subsistence economy based on small farms where the farmer and his family lived “inside a ranch with a roof made out of palms... usually amidst an orchard that would be wonderfully abundant with mixed fruit trees, vegetables and decorative plants”. The farmer in charge of these farms, states Bennett, was “an independent person not always willing to work, even for the best wages, because of the satisfaction he finds in his small slash practice amidst enough fruits and vegetables to cover his families feeding needs, with a small surplus to provide for the few additional needs. He works little and worries even less, because he knows there is little chance that food will be scarce”.⁵⁰

Today, after nearly a century, the landscapes created by the construction of the Canal appear deceptively natural, and this may lead one to underestimate the magnitude and difficulty of the transformations of the natural environment that shaped them. Regarding the cut through Culebra [Galliard] hill, for instance, engineer John Stevens, appointed by President Theodore Roosevelt in 1905 to organize and manage the constructions work, went as far as saying that “even with the support, will, and financing of the most powerful nation in the world, we are faced against the forces of nature”. Confronted with a

⁴⁹ Bennett, “Reconnaissance soil survey” cit., pp. 11-12. William Taylor, a soil specialist who was especially aware of the risks presented by erosion for agriculture as well as the Canal’s future operation, observed that such agriculture – by sparing the stumps and roots of permanent vegetation, and planting crops “without generally plowing, scratching, or removing the soil”, reduced the soil’s erosion “to a minimum that is compatible with the production of agricultural crops,” and adds: “it might turn out to be practical in the development of a method of soil management through the growing of similar plants, which would allow to continuously maintain fertility and productivity while cultivating many of the easily accessible lands that otherwise would seem incapable of sustaining permanent production with a reasonable expenditure of money and labor”. Taylor, “The outlook for agriculture” cit., pp. 42-43.

⁵⁰ Bennett, “Reconnaissance soil survey” cit., pp. 19-20.

challenge of such magnitude, he added, only “tenacious determination and constant, persistent, and intelligent work will get the job done,” since “when speaking of one hundred million cubic meters on a cut that is no more than fourteen kilometers long, we speak of the largest enterprise ever undertaken in the history of engineering worldwide”.⁵¹

Stevens is credited with realizing that the most difficult aspect of the excavation would be the disposal of the excavated material. To deal with this, he organized a railway system that could transport enormous amounts of earth and rock to sites designated for that purpose, which were transformed until every relationship to their original landscapes was canceled. Such was the case with the landfills in Tabernilla, 22 1/2 kilometers north of the Gaillard Cut; at the Gatún dike; at Miraflores; and at La Boca, the largest landfill, rechristened Balboa.⁵² Other types of waste, such as “the gigantic trees that grew on what was to become the main canal through lake Gatún”, had to be destroyed by arduous and dangerous work assigned to Afro-Antillean labor who, after cutting down the trees, went on to dynamite the trunks and then pile and burn the pieces of wood throughout the subsequent months.⁵³

Thus, in just a decade the land connection between Central and South America was interrupted for the first time in four million years.⁵⁴

⁵¹ McCullough, *El Cruce entre los Mares* cit., p. 515.

⁵² Some of these landfills “spanned thousands of acres, and in the rainy season they became great seas of mud in which the tracks would sink almost one meter. In Tabernilla, more than 16,000,000 cubic meters of gravel were dumped into the jungle. More than 22,000,000 cubic meters were deposited in Balboa, resulting in more than 676 acres of surface rescued from the sea, on which a new settlement was built”. McCullough, *El Cruce entre los Mares* cit., p. 525.

⁵³ *Ibid.*, p. 609.

⁵⁴ Even so, by the end of the 1960’s, Charles Bennett estimated that “the narrow part of the Canal, south of the Chagres’ entrance in Gamboa (Gaillard Cut), and the presence of a certain tree coverage on both sides of the Canal, probably results in little or no interference for the crossing of most birds, nor is it a particular barrier for mammals that can swim or fly, such as bats... The Canal, therefore, seems to be a partial barrier or an impediment for the dispersion of only certain mammals, but most likely it is not a completely effective barrier”. On the other hand, he argued, it was likely that, within a decade, the Transisthmian corridor created by deforestation

The magnitude of the impact of this and other transformations was such that, according to John Lindsay Poland, “it is doubtful that the Canal would have been constructed under the current requirements of US environmental legislation”. Alterations included, for example, the transformation of the Chagres valley into an artificial lake, 268 kilometer square, “almost as big as the island of Barbados”; its creation submerged all of the settlements between Gatún and Matachín, most of the camps established by the North Americans to house the workers who built the Canal, and the original course of the Panama Railway, so that a “new railway [had to] be constructed on higher ground to go around the eastern shore of the lake”.⁵⁵

To this we must add the construction, between 1932 and 1935, of a new dam on the high course of the Chagres, “near the village of Alhajuela, almost 10 miles northeast of Gamboa,” built with the purpose of accumulating water during the rainy season and keeping lake Gatún “at a constant level all year long”.⁵⁶ The creation of this new reservoir was followed, between 1940 and 1942, by the construction of the first Transisthmian road in the history of the Isthmus, between the cities of Panama and Colón.⁵⁷ The absence of any control policy by the Panamanian State created, additionally, a front of agro-cattle colonization, first, and then an urban-industrial one, which contributed to the rapid deforestation of the mid-Chagres

along the Zone’s boundaries would probably end up separating, “quite effectively, the fauna in the Central-American lush groves from that in the South American ones”. C. Benett, *Influencias Humanas en la Zoogeografía de Panamá*, Editorial Universitaria, Panamá 1976, pp. 99-100.

⁵⁵ McCullough, *El Cruce entre los Mares* cit., p. 525.

⁵⁶ To this purpose, the United States government annexed to the Canal Zone a 25-square-mile area, which included the new lake and its outskirts.

⁵⁷ Mack, *La Tierra Dividida* cit., p. 548. For years the North American government had been opposed to the construction of the road, which it viewed as a danger factor in case war broke out. In July 1939, however, a special agreement between the two countries authorized the extension towards the Atlantic of the road that linked lake Alhajuela to the Canal Zone. As far as the usefulness of the Alhajuela reservoir goes, Mack points out that its construction had been “a little premature”, since the Canal’s demand for water had not increased “at the speed initially predicted”, although “without any doubt, the stored excess water would

watershed, a process that only met with some form of containment with the creation of the Chagres, Camino de Cruces, and Soberanía national parks in the 1980s.

Among the social and cultural alterations associated with the construction of the Canal, we must mention the disappearance of the landscapes that had played an important role in the forging of our historical identity (the reconstruction of this identity, from technical documents and literary works, is one of the great pending tasks of an environmental history of Panama). To the flooding of the great Chagres valley, with its jungles, settlements, pastures, and banana crops – described by Gil Blas Teixeira in his 1962 novel *Pueblos Perdidos*⁵⁸ –, was added the devastation of the Río Grande, at whose mouth the La Boca landfill was established. The river was dredged and used to direct the Chagres' water towards the Pacific. It had been described by Diego Ruiz de Campos in the following manner:

A quarter league from the said Ancon [hill], towards the west, there is an inlet that has beaches on both sides, and all of it is a third league wide. This inlet is all open to the south, and from its middle comes out the mouth of the Río Grande, and it spans all the distance, and at the entrance of this river there is a small flat island all filled with mangroves without a useful tree and this island floods easily, and causes the river to have two streams at its mouth, and on the right it is deeper and through it ships may enter and come in with the tide more than two leagues upriver to load lime, honey, corn, plantain, and other things that are upriver, all of which on both sides is covered by very tall mangrove trees that cannot be used for anything.⁵⁹

be used eventually”, as indeed it later was

⁵⁸ G.B. Teixeira, *Pueblos Perdidos*, Editorial Universitaria, Cuarta Edición, Panama 1995.

⁵⁹ D. Ruiz de Campos, “Relación sobre la costa panameña en el mar del Sur” (fragmento), 1631, in Jaén Suárez, *La Población del Istmo de Panamá* cit., pp. 52-53. This landscape also included estuaries and rivers with names such as Cárdenas, Caymito, Farfán, and Cocolí, which today designate urban areas within what used to be the Canal Zone. Thus, under the enormous landfills and the reservoirs created during the Canal's construction, lies the lost memory of “the farms, cane mills, and plantain grounds”, where people “... who are plenty in this part of the Grande river, plant seeds every year, and slash and pick corn for their sustenance, and to bring to Panama to sell more than six-hundred *fanegas* [1.58 bushels] altogether, and they

The conflict between the production and social structuring techniques that had shaped those landscapes, on the one hand, and the techniques employed for the industrialization of transit by the United States at the peak of its imperial expansion, on the other, became early on a typical issue of the environmental culture linked to the construction of the Canal. About this, McCullough states that, to the “average American”, Panama “was a land of dark, ignorant, and short people, who were obviously disgusting... It was said that the entire country had a ‘chronic case of resentment’”, and that “Panamanians were very ungrateful for everything that had been done for them”.⁶⁰

This hostility actually reflected a phenomenon of greater com-

also grow sweet cane which they turn into honey at two mills by this river, and they bring it to Panama to sell it. And likewise they grow large plantains, yucca, auyama, potatoes, and many other kinds of vegetables, and it all produces and provides fruit which sustains them all year long”. Ruiz de Campos’ text also echoes the old perception of mangroves as useless, if not dangerous, vegetation. This misconception has considerably encouraged the savage destruction, still going on today, of those ecosystems, which are actually critically important to the fishing wealth that traditional historiography boasts so much about, to the point that it traces the name Panama back to an indigenous word meaning “abundance of fish”.

⁶⁰ One hence hardly finds surprising the author’s anecdote about the only known attempt to handle relations between the Canal Zone’s native population and its rulers in different terms: “A North American who tried with great effort to do something [for the poor people who lived in the Zone] was quickly removed. Rufus Lane, a long-time sailor from Massachusetts, arrived looking for work during the Stevens regime. He did not possess technical skills, but had a letter of introduction from Henry Cabot Lodge, and spoke Spanish fluently, so he decided to put him in charge of ‘Canal Zone’s municipalities in the jungle’, a job that had no purpose at all, but that he undertook with total seriousness. The ‘jungle Panamanians’ – West Indians – started immediately to do what he told them to do. ‘They cleared the jungle around their huts’, informed diplomat William Sands. ‘They linked the houses through small paths... they learned to dispose of the garbage that caused diseases and learned how to establish simple first aid and health centers. They carried out meetings where the entire town participated, adhering to New England’s primitive plans... Lane’s work seemed to me as one of the best things North Americans were doing in Panama. But he and his workings were abolished by a visiting committee from the Congress; one of its members told Sands: ‘These people do not have greater use than mosquitoes or vultures; they have to be exterminated along with them’”. McCullough, *El Cruce entre los*

plexity and scope: the construction of ethnic groups as part of the process of organization and control of the workforce by the colonial power, “those anonymous men whose daily struggle was the true point of confrontation between society and Nature,” to quote Richard Tucker.⁶¹ The responsibilities assigned to this workforce were enormous. “Official visitors”, states McCullough,

could not help being surprised... when realizing that the entire system, and not only the construction, depended on the black workers. Not only were there thousands of Afro-Antilleans among the multitude that worked on the Tajo de La Culebra [sic], or in the places where the docks were being built, but there were also black waiters in the hotels, black loaders on the docks, colored employees in the train stations and wagons, indigenous employees in the hospitals, cooks, laundrymen, service women, doormen, messengers, drivers, icemen, garbage collectors, gardeners, mailmen, policemen, plumbers, building workers, and undertakers.

Thus, a situation was created where “the color line, which almost no one mentioned in print,” served as an important criterion in the organization of all aspects of ordinary life in every sector of the Isthmus, to the point that the North American employees themselves attributed “*those practices to the Panamanian high class, which was extremely racist*”.⁶² In fact, both parts shared slavery as a common past and were mutually comforted in their values, although there was a substantial difference between them: racism among the Panamanian creoles was a cultural practice, whereas for the Zone’s administrators it was a management criterion. This new role of racial segregation ended up giving a renewed aura of legitimacy to Creole racism, whose history extended way back in time and, partly thanks to this new input, has lived on down to the present day.

Land transformation in connection with the construction of the Canal reached its peak when the Zone was organized, beginning in 1912, as a permanent enclave for the operation and defense of the

Mares cit., pp. 615-617.

⁶¹ R. P. Tucker, *Insatiable Appetite. The United States and the ecological degradation of the tropical world*, University of California Press, Berkeley 2000, p.135.

⁶² McCullough, *El Cruce entre los Mares* cit., pp. 603-604.

interoceanic route. In this process, the categorization of the forests within the Zone as “jungle” played an important role. This notion, while it “might have a precise botanical meaning”, on the cultural plane came to synthesize all that was perceived as dangerous and hostile in the region, and which the North American residents “should fear and avoid”.⁶³ Having adopted this category, North American administrators opted to respond with four closely related measures – the marking of boundaries of sanitized areas, the domestication of the jungle, racial segregation, and the separation of the Zone from the Panamanians and their cities⁶⁴ –, each of which had a relevant impact on the natural environment and its inhabitants, and on the relations between the enclave and the rest of the Isthmus.

The sanitized areas that Frenkel refers to spanned some 12.6 square kilometers on the outskirts of the cities of Panama and Colón. The remaining 1,280 square kilometers of the Zone were depopulated in 1912, when all the inhabitants that were not connected to the Canal’s operation were expelled by force, mainly on health pretexts that were intimately linked to the culture of tropicality: being “naturally” resistant to tropical diseases, the natives were “reservoirs” of germs and parasites of every kind, and should hence be kept at bay to protect immigrants from mild climates from the risk of infection.⁶⁵

Thus, the domestication of the Canal Zone’s landscape worked on two levels: by keeping the jungle away from the residential areas – employing the most exotic of resources for this: the creation of a sort of English meadow on the edge of the forest, and the investment of an

⁶³ Frenkel, “Jungle Stories” cit., pp. 326-327.

⁶⁴ S. Frenkel, “Geography, empire, and environmental determinism”, in *Geographical Review*, 82, 2, 1992, p. 90.

⁶⁵ Thus, according to a health official in 1912, depopulation “removed an enormous number of infectious focal points from our environment – malaria, intestinal parasites, and other diseases – turning the health problem into something relative to the settlements where the population lived and worked”. Furthermore, the image “of a fortress that was under siege evoked a sense of danger and uncertainty that lasted for generations. [...] Segregation from the strange jungle landscape implied security and meant more than being safe from disease. It also meant being safe from unknown cultures, the weather, and harassment from the threatening forests”.

enormous amount of resources in its preservation –, and by recreating it, now purged of all its dangers, within those same areas.⁶⁶ Finally, this enclave of civilization was isolated from the cities of Panama and Colón by means of “roads, hills, forests, and railways” protected by wire fences and a policy of deliberate hostility toward native neighbors. Thus, the perception and organization of the Canal Zone reflected the duality – Eden-like and hideous – of the representation of the tropics in North American culture: it was seen as an enclave of civilization surrounded by a barbaric environment.

The military-industrial character of the Canal enclave also left its mark on other spaces and in other time periods. So, for example, we owe the fact that much of the former Canal Zone is now covered with woods to the decision of General George Goethals – Chief Engineer of the Canal’s construction from 1907 to 1914, and first North American governor of the enclave until 1916 – to allow the jungle to claim once again, “wherever possible, all the places that had been cleared”, making it “the safest defense against an attack by land”.⁶⁷ But above all, and at a much broader scale, Panama served as a deep rearguard for the United States’ global military activity, which, between 1914 and 1999, included two world wars, local wars in Korea and Vietnam, low-intensity conflicts and direct interventions in many places in Latin America, and some brief but high-intensity conflicts, such as the first Persian Gulf War.

The most conspicuous manifestations of the environmental leg-

⁶⁶ Thus, “as the North Americans eliminated the jungle near their houses, they imposed engineering-like control upon that same landscape that they rhetorically feared. Formal gardens, which included many native plants from the surrounding jungle, allowed the North Americans to create a safe and manicured landscape. The jungle became ‘civilized’ within the Canal Zone... Once ordered and set in a controlled fashion, the jungle’s plants were redefined as safe”. Frenkel, “Jungle Stories” cit., pp. 329-330. In this process, important functions were carried out by state institutions such as the Department of Agriculture, which in 1923 established on Summit a Garden for the Introduction of Plants into the Canal Zone, whereby “new and improved varieties of fruit, velvet beans, and other crops better adapted to the region’s soils, climate, and other conditions” were introduced. Bennett, “Reconnaissance soil survey” cit., p. 10.

⁶⁷ McCullough, *El Cruce entre los Mares* cit., p. 647.

acy left by those military activities can be found all over the nearly 8,000 hectares of land that were used for decades as shooting ranges and test bombing areas along the east bank of the Canal. Additionally, between 1941 and 1947 the North American armed forces used more than 134 sites throughout the country for war drills, such as the island of San José on the Las Perlas archipelago, used as a testing ground for chemical weapons, and Isla Iguana on the Bay of Parita, used for bombing practice.⁶⁸

The other enclave

Another new element was added to Panama's modern environmental structure in the 20th century, when the low wetlands bordering Costa Rica were incorporated into the banana-growing macro-enclave created by the United Fruit Company on the Caribbean Watershed between 1899 and the 1930's. As early as 1904, plantations had been established in Bocas del Toro, and by 1914 the Company controlled about 40,000 hectares – of which about 16,000 used for banana production –, employed nearly 7,000 workers, and had built 250 miles of railway “through the previously existing jungles”. The railways opened up the entire region to colonization and deforestation.⁶⁹

During the 1920's, the spread of diseases associated to the intensive monoculture of banana led the company to move its activities in Costa Rica and Panama to new lands on the Pacific basin. By 1938, when the move had been completed in Costa Rica, the Company bought about 7,000 hectares of jungle in the District of Barú, in the Chiriquí province, where it was also granted “thirty-year concessions on two large plots from the Panamanian government”, and a year later

abandoned its operations in Bocas del Toro and, acting through its subsidiary, the Chiriquí Land Company, moved to the small town of Puerto Armuelles

⁶⁸ John Lindsay Poland offers a broad description of the nature and consequences of North American military presence in Panama in *Emperors in the Jungle. The hidden history of the US in Panama*, Duke University Press, Durham, NC 2003.

⁶⁹ Tucker, *Insatiable Appetite* cit., pp. 133-134.

[...]. The Panamanian government paid for a thirty-four mile extension of its national railway towards the coast, passing through the Company's new region. United paid for the dock's new facilities, and this turned Puerto Armuelles into an operational deep-water port.⁷⁰

The activities of the banana-growing enclaves carried terrible environmental consequences to the entire region, as the jungle ecosystems, with their incredibly rich biodiversity, were transformed into "rational and orderly bio-factories" specializing in the production of one particular variety of the same vegetable species. In every country affected by this process, this also entailed the replacing of the peasant economies of small coastal and river towns with "a well-arranged industrial hierarchy with a semi-proletarian work force", which often had to be imported from distant regions, and the creation of camp systems, towns, and services structured according to the criteria of the culture of tropicality.⁷¹

This process went on for the entire century. After massive initial deforestation, beginning in the 1920's, plantations "started to revert to subsistence agriculture and secondary forests began to form". The 1950's, in their turn, "contributed an era of intensive and stable banana production, based on agrochemicals". Throughout the process,

corporate agro-capitalism was the driving force behind ecological change, as much on plantations as on adjacent lands from which corporations obtained working labor and resources. [...] Export crops grew at the expense of food production meant to satisfy local needs, which displaced peasants towards marginal lands, mostly hilly jungles, or towards the cities, destabilizing ecosys-

⁷⁰ Tucker adds: "the Company and an obliging government opened up a small Panamanian jungle region, until then "neglected", for overall development". Tucker, *Insatiable Appetite* cit., pp. 150-151. The Company resumed its operations once banana varieties resistant to Panama's condition were developed, and in the early 21st century finally opted to put an end to its operations in the Pacific. The Company's moving out of Panama marked the beginning of the country's present environmental crisis.

⁷¹ "In corporate banana operations, the entire workforce was controlled and managed as in a large factory. The companies built houses for the administrators and workers under a strictly hierarchical system. The companies also provided schools, hospitals, recreational facilities and shops that would sell only goods controlled by the company. These shops were virtually the only source of food for many of the plantation's workers, since the companies destined the fertile alluvial terraces exclusively for commercial crops or pastures". Tucker, *Insatiable Appetite* cit., pp. 130-131.

tems and societies. A sub-product of the corporate agro-system was colonization and deforestation all along the lowlands, a process that has since accelerated beyond the immediate reach of corporate economy.⁷²

Even so, there were important differences between the banana and the Canal enclaves. One regarded their respective natures: private, in the first case, state-owned, in the second. Another difference regarded their sizes: the banana enclave was part of a productive system that, towards 1930, covered some 150,000 square kilometers throughout the Caribbean, while the Canal Zone covered merely 1,280. And while the Canal enclave fulfilled a central function in the North American commercial and power-projecting system, the banana enclave in Panama only occupied a marginal position within the United Fruit Company's empire.

Nevertheless, some similarities do stand out. The first one, no doubt, is the clearly utilitarian slant given to the culture of nature that drove the organization and operation of these two enclaves. Indeed, both had been conceived and forged as a means to add value to a specific resource with a specific purpose: land, in the case of the Company, for the monoculture of banana; and water, in the case of the Zone, for the transit of ships across the Isthmus. In this sense, the typical landscapes of both enclaves manifest a link between production techniques and social structuring aimed at maximizing monopolistic control over the work force, as well as over the spaces and processes in which this work force was employed. Both enclaves also shared a common culture of nature on which their rationalizations of their different perceptions of the natural environment were based. The Canal enclave viewed the jungle as an environmental and military resource, the banana enclave as a rival to be destroyed; both notions, however, were grounded in the same utilitarian mentality.

Within the imperial context of the Canal Zone, these perceptions became a reality for North Americans and for some sectors of the Creole oligarchy who were in favor of US presence in the country. The latter helped to create, within Panamanian society, a self-image that was part and parcel of the colonial discourse, giving rise to a peculiar collective condition of diffuse hopelessness that has constantly

⁷² *Ibid.*, pp. 177-178.

conspired against the forging of a vigorous national identity. Thus, Panama's environmental structure was shaped by the convergence in the country, throughout the 20th century, of societies with opposite cultures and characters. While the United States was going through a process that would transform it, by the mid 20th century, into a world power, in Panama the North American industrial culture operated in the context of a society where, outside of the interoceanic region, a culture of nature, where relations with the water were defined by the succession of dry and rainy seasons, was predominant.

It is of great interest to compare the overall environmental impact of both forms of relationship with the natural world during the 20th century. As regards extensive cattle farming, the anthropized savannahs of the Southwestern Pacific were sufficient to ensure its permanence in the Isthmus, prolonging a gradual process of alteration of a natural environment that was already on its way to simplification during the early 16th century. Furthermore, between 1903 and 1970, increased demand for agricultural and animal products, connected to the construction and operation of the Canal enclave and the development of its urban surroundings, stimulated the demand for graze land and thus inflicted widespread and severe damage to the natural and social environment of the rural areas of the Isthmus, which were affected by deforestation, wear and erosion of the soil, pollution and sedimentation of rivers and seaboards, a growing concentration of land property and wealth, massive impoverishment of the rural population, and a constantly renewed pressure against the country's forest cover. The country's cattle heads had barely doubled their number between 1609 and 1896, going from 110,000 animals to 203,086. By 1914, due to the devastating effects of a civil war that took place in the Isthmus between 1899 and 1902, they had descended to 187,292. By 1950, however, they had reached 727,794, by 1970, 1,403,280.⁷³ Human population, in its turn, had risen from 12,000 in the early 16th century, to 311,054 in 1896, and to 1,472,280 in 1970. From 1936 on, particularly, this

⁷³ L. Herrera, "El impacto ambiental de las actividades ganaderas en Panamá", in *Medio Ambiente y Desarrollo en Panamá*, Instituto de Estudios Nacionales de la Universidad de Panamá, Cuadernos Nacionales, No. 4, May 1990, p. 26.

increase in the cattle population can be associated with some significant changes in the relationship between the Panamanian and Canal Zone economies. On that year, and then again in 1955, the governments of the United States and the Republic of Panama signed treaties that modified the Hay-Bunau Varilla treaty of 1903, granting easier access to Panamanian trade into the Canal Zone.⁷⁴ In the same period, as Ligia Herrera points out, forest coverage, estimated at almost 93% of the territory around 1800, descended to 70% in 1947, and by 1980 it was estimated at about 38 to 45%, with an annual loss of coverage estimated at 50,000 hectares, mainly attributed to the expansion of the agro-cattle frontier. This expansion was carried out by poor rural migrants coming both from long occupied areas and from areas where modern agro-businesses tended to concentrate property and reduce productive employment opportunities for the peasant class.⁷⁵

In contrast with the environmental impact of cattle farming, the Canal's construction involved a relatively brief process of enormous physical alterations within a small part of the national territory, which led to prolonged stability of the new reorganized environment. Even so, this reorganization gave rise to new long-lasting structures, since it helped to "disrupt the geographic space, alter a sort of ecologic balance, and hinder the emergence of a strong national identity, since [Panamanian identity] was forced to manifest itself more as a defense mechanism against all that was foreign than as an accumulation of shared creative experiences".⁷⁶

⁷⁴ The 1936 treaty, particularly, opened up the market within the canal enclave – until then limited to the consumption of North American products – to Panama's agro-cattle and industrial production. The 1955 treaty, in its turn, forbid Panamanian armed forces and Canal Company employees from shopping in the stores within the canal enclave that were subsidized by the US government, thus forcing them to spend their salaries on Panamanian commerce and services. Since the enclave was operated by the United States' government, all its workers were federal employees and received considerably higher wages than those paid in the Panamanian economy.

⁷⁵ Herrera, "El impacto ambiental" cit., p. 26.

⁷⁶ O. Jaén Suárez, "El Canal de Panamá: los efectos sobre el medio ambiente de su construcción y operación hasta el presente", in *Medio Ambiente y Desarrollo en Panamá*, Universidad de Panamá, Instituto de Estudios Nacionales, *Cuadernos Nacionales*, No. 4, May 1990, p. 13

Thus, throughout the 20th century, the culture of tropicality – further empowered by the hydraulic nature of the enclave – enhanced the complexity of the unresolved conflict between visions of the natural world perceiving it as a source of exchange value and those that perceived it as a source of use value, held, respectively, by the ruling classes and by indigenous peoples and peasants. On the one hand, the mercantile-pillage culture dominating Panamanian society and the culture of tropicality dominating the enclave shared a culture of utilitarianism, authoritarianism, and racism; on the other, their different views of the forest – as an economic resource, a military resource, or a reservoir of biodiversity – introduced an element of friction between them. Essentially, however, the “tropical” version of the culture of nature was that manifested in North American colonialism, and it eventually became one of the factors that contributed to the rise of opposition against the presence of a foreign State in our territory.

Cattle and galleons, past and future

The signing of the Torrijos-Carter Treaties in 1977 – which eliminated the territorial enclave, re-established the sovereignty of a Panamanian Panama over all its territory, led to the closing of the last 14 military bases operated by the United States in the country, and transferred the administration of the Canal to the Panamanian State – also marked the start of a crisis and the disintegration of the culture of nature organized around the values of tropicality in our country. The process found one of its clearest manifestations, for instance, in the conflicts that accompanied the incorporation of the Canal into the life and development of the country.

It was not until the mid 1990’s that the Panamanian State began to adopt a group of legislative measures aimed at providing a legal framework for the fulfillment of its new functions. In 1994, a Panama Canal Authority (ACP) was created through a Constitutional reform that also made it responsible for the management of the water resources of the Watershed, complemented in 1997 by the ACP’s Organic Law, and by another law that established a land-use plan for the Watershed, conceived to guarantee water availability by con-

trolling land use. Additionally, in 1999 Law 44 set the boundaries of the so-called Canal Hydrographic Watershed, including within it – besides the Chagres watershed – a substantial part of the Indio, Caño Sucio, and Coclé del Norte rivers, which flow independently towards the Atlantic, northwest of the Canal. These became the so-called “Western Region” of the Watershed.

This legal framework was established by procedures typical of the democratic despotism prevailing in Latin America during the 1990’s, which limited public consultation to the country’s socio-economic and political elite, and to merely formal parliamentary processes. So it is not surprising that the ACP was confronted, from very early on, with conflicts stemming from an institutional culture with a long technocratic tradition, and from the State’s – and Panamanian society’s – inability to develop a national project taking into consideration the Canal as a resource for the country’s integral development.

A first sign of these difficulties appeared in December 1999, when the Bishop of Colón, Monsignor Carlos María Ariz, sent a letter to the President of the Republic stating that, in the opinion of the peasants and missionaries of his Diocese, Law 44 of 1999 set the foundation for the expropriation of the lands of the Watershed’s Western Region’s inhabitants, and that the creation of new reservoirs would affect the land and its biodiversity and destroy the ways of life and traditions of the people in the area “in the name of the Canal”. In the light of this, the Bishop requested the President to guarantee the protection of the peasants against the threat of uncontrolled modernization and to ensure that future development would produce “deep satisfaction and permanent social well-being for everyone”.⁷⁷

Never before had a document like this been written in the history of relations between Panamanian society and its natural environment. From this point onward, it became evident that the problems relating to Panamanian society’s relations with its natural environment – and, particularly, the management of the Canal Watershed – could not go

⁷⁷ C. M. Ariz, “Carta abierta a la Excm. Señora Mireya Moscoso, Presidenta de la República, del Obispo de Colón y Kuna Yala”, in *Panorama Católico*, December 12, 1999, p. 3.

on being faced from an essentially technical-engineering perspective, but demanded an approach capable of taking into consideration their social and political dimensions. The country began to discover, in other terms, the sociality of its relations with the natural world.

In this new perspective, the incompatibility of the dominant Panamanian model for relations with nature with a sustainable operation of the Canal is already evident. This can be observed in the table 1, which synthesizes the expected percentage variation in land use along the Chagres Watershed according to the General Land Use Plan, which was adopted as a national law in 1997.

The current use of the land reflects the present situation, whereas the expected use would imply a situation where relations between Panamanian society and its natural environment were much more sustainable. And so we are faced with two contrasting models of relationship with land and water: pluviculture, which regards water as an element provided by rain; and hydraulic culture, which sees water as a resource that has to be produced and managed by techno-economic organizations of a similar complexity to that of the ecosystems that produce it. The conclusion should be evident: the Canal will only be sustainable in the same measure as Panamanian society's overall development.

From this perspective, the transference of the Canal to the Panamanian State, as well as the need for the Panamanian State to promote new ways of relating with the natural world nationwide, pose a new problem in the country's environmental history. While, on the one hand, it would be impossible to "reproduce" at a national scale the logic of hydraulic tropicality that guided the use of natural resources within the old Canal enclave, on the other it is not possible to leave the Canal and its Watershed in the hands of the old agrocattle mercantile culture, since that would lead to the destruction of resources that are essential to face the serious social, environmental, and economic problems that Panama carries into the 21st century. The culture of nature in Panama is faced with an unprecedented challenge: to demand the creation of a national State capable of representing the social majority's needs in a way that is compatible with a politically sustainable future development of our country.

In this perspective, the process of integration of the Canal enclave

Table 1. The expected percentage variation in land use along the Chagres Watershed

	Current Use (%)	Expected Use (%)
Cattle farming	39	2
Agriculture	0.5	8
Forestry and agro-forestry	0.5	23
Protected Areas	20	15
Urban Areas	6	12
Canal Operation	34	40
Total	100	100

into its social and environmental context can already teach us a lesson of particular importance. We are faced with a local problem that is closely related to processes on a global scale, since the integrated management of water resources – in Panama, as well as in any other place in the world – represents an important component of the much broader and long-term objective of creating the essential conditions for sustainable development on a global scale, and of generating synergic coordination capabilities between local, national, regional, and global scales.⁷⁸ This is why Panama requires a development based on a righteous cycle where economic growth sustains conditions of social well-being, political participation, and national self-determination, without which it is impossible to maintain a responsible relationship with the natural environment. And this is only possible within the framework of a renewed society that, overcoming the consequences of North American colonialism and oligarchic transitism, will allow us to finally grow with the world, in order to help it grow.

⁷⁸ Transnational maritime transport corporations making use of the Canal Watershed’s water resources, for instance, are to share the costs of preserving the ecosystems that provide these resources. The experience of the Watershed thus confirms the need to “think globally and act locally”, finding the means to form strategic alliances between such apparently unlikely partners as a small farming community on Lake Gatún, the Panama Canal Authority, and a London or Hong Kong based maritime transport corporation.