On Cattle and Ships: Culture, History and Sustainable Development in Panama

GUILLERMO CASTRO HERRERA

Apdo. 89-9786
Panamá, Republic of Panamá

ABSTRACT

During the 20th century, two different ways of relating with nature interacted in Panama. In the Canal Zone, under control of the United States from 1903 to 1977, great emphasis was given to the conservation of water for the operation of the waterway, and forests for its military protection. In the South-west of the country, extensive cattle raising, present since the 16th century, expanded rapidly, partly as a result of demand from the Canal Zone and its surroundings. The future interactions between the two areas, now under one nation-state, is an issue of key importance for sustainable development in Panama.

KEY WORDS

Panama, development, culture, enclave, dependency, watershed.

INTRODUCTION

There are many ways to define sustainable development. This articles focuses on two definitions, one held in the South and the other in the North of the world, and on their interactions in the case of Panama, a country which contains two areas that have been developed in very different but articulated ways since 1904. The Panama Canal Zone, under exclusive control of the United States of America from 1903 to1977, was developed in a so-called modern, northern way. This included the conservation and optimal use of two specific resources: water for the operation of the Canal, and forests for its protection against possible military attack. Since the 16th century, the south-west of the country has been an area of extensive cattle raising. This has expanded rapidly in the 20th century, partly as a result of demand from the Canal Zone and its surroundings, and the region has followed the path traditional for the South of the world. The relationship between the two regions has much in common with the relationship between the heavy

Environment and History **7** (2001): 201–217

industrialised North and the less developed South, which historically served primarily to provide raw materials, food and fuel to the North. In fact, throughout the 20th century every increase in the economic articulation between the modern, 'northern' enclave in the Canal Zone, and the rest of the country resulted in an intensification of the demand for the products of key activities in backward sectors, such as cattle raising in the South-west. In this article the interdependent relationship of the two regions is investigated and questions are raised about how the two kinds of sustainability compare and whether sustainability, as conceived in the North, can or should be duplicated in the South.

LANGUAGE AND HISTORY

Sustainable development has been defined in many ways. Every one of those ways leaves us with the same question: is sustainable development possible in a context of underdevelopment, characterised by economic heterogeneity, social inequality, and low levels of education and organisation in large sectors of the population? The answer to such a question, of course, depends as much on what is understood by development, underdevelopment and sustainability, as on the history of the forms of relationship between the social and the natural worlds that have taken take place in the territory where the problem has to be solved.

As far as language is concerned, in Panama, as well as in the whole of Latin America, the topic of development – its terms, spokespersons, and times – unfolds and is organised around a peculiar ambiguity, which derives from the different manner in which it is understood in our culture as compared to that of the North Atlantic societies, specially the United States. In those societies, 'development' mainly designates the use of a specific resource for a specific purpose, so the problem of sustainability becomes essentially technological and bureaucratic. So, as early as 1910, Gifford Pinchot could affirm that the 'first principle' of conservation was 'development, the use of the natural resources now existing in this continent for the benefit of the people who live here now'.[1] On the other hand, in Latin America – particularly following the theoretical contributions by Raúl Prebisch and his disciples in the 1950s and 1960s – 'development' designates a virtuous circle in which economic growth is translated into an increase of social welfare and increasing political participation for the whole society. The major consequence of all this would be a modification of the way in which our societies participate in an international system organised on the basis of the exchange of technological complex goods and investment capital for raw materials and cheap labour, between a 'developed' centre and an 'underdeveloped' periphery.

Historically, however, Panama constitutes a case with unique characteristics in Latin America. Here, undoubtedly – as happens in all the region – there is great

diversity in the use of natural resources, from monocultivation of bananas to the shifting agriculture and gathering activities of peasants and indigenous people in the countryside and residual rainforest tracts. But here, also, a lingering coexistence has been created – contradictory and complementary at the same time – between forms of sustainable use and destructive abuse of important natural resources.

Such is the case of the reorganisation of the Chagres River basin with the purpose of creating the water reserves required for the operation of the Panama Canal, as contrasted to the use of soil for extensive cattle raising in the rest of the south-western region of the country. For almost a century, the immediate natural environment of the Canal has served the purpose for which the basin was modified, without suffering significant deterioration. At a first glance, this might seem to demonstrate that it is possible to make a sustainable use of a given resource in a context of unsustainability, or even to suggest that it would suffice to transfer the experience of the Canal area to the rest of the country in order to transform that context into an opposite situation.

That conclusion, however, may prove to be hasty. Since the 1970s at least, other circumstances have increasingly brought the Canal area into close contact with the social and environmental consequences of non-sustainable forms of exploitation of the natural resources of the country, including those of the Panama Canal Watershed itself.[2] Some geographical and historical facts should be remembered in order to understand this, the most important one being the difference between the former American Canal Zone, and the Panama Canal Watershed.

The Republic of Panama occupies an isthmus of 72,000 square kilometres (Figure 1). At the narrowest part of the Isthmus is the Chagres river, rising in the Sierra Llorona, to the East. It first runs South and then makes a sharp turn to the North and finally flows into the Atlantic Ocean (Figure 2). The Canal was created within the Chagres watershed, which has an area of some 3,300 square kilometres. In order to build, operate and protect the Canal, the US Government demanded and obtained in 1903, from the then newly independent Republic of Panama absolute control over some 1,760 square kilometres, extending 80 kilometres from the Atlantic to the Pacific, with the Canal as its axis (Figure 3). Land, water, forests and other resources within this Canal Zone were thus excluded from the logic and practices that determined the use of their equivalents in other parts of the country. In other words, the Zone became an enclave that was to be slowly – and some times painfully – modified through negotiations between the Republic of Panama and the government of the United States, until dissolved between 1979 and 1999, by the implementation of the 1977 Torrijos-Carter Treaties.[3]

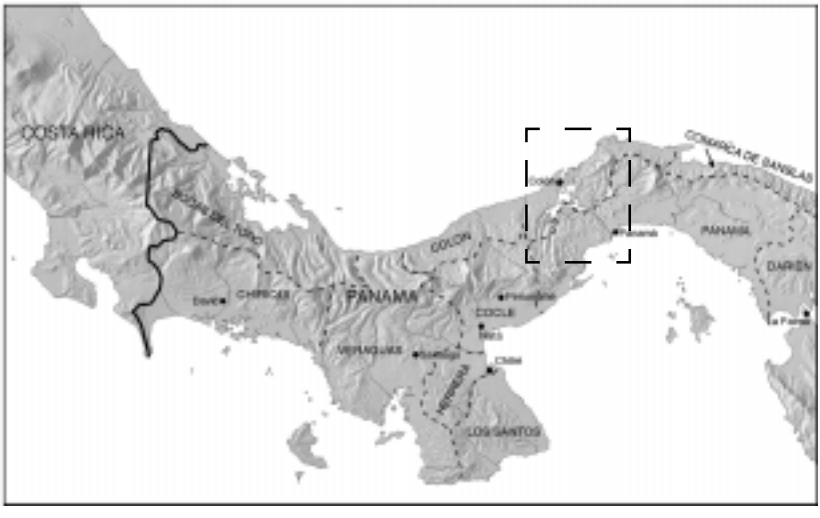

FIGURE 1. The Republic of Panama

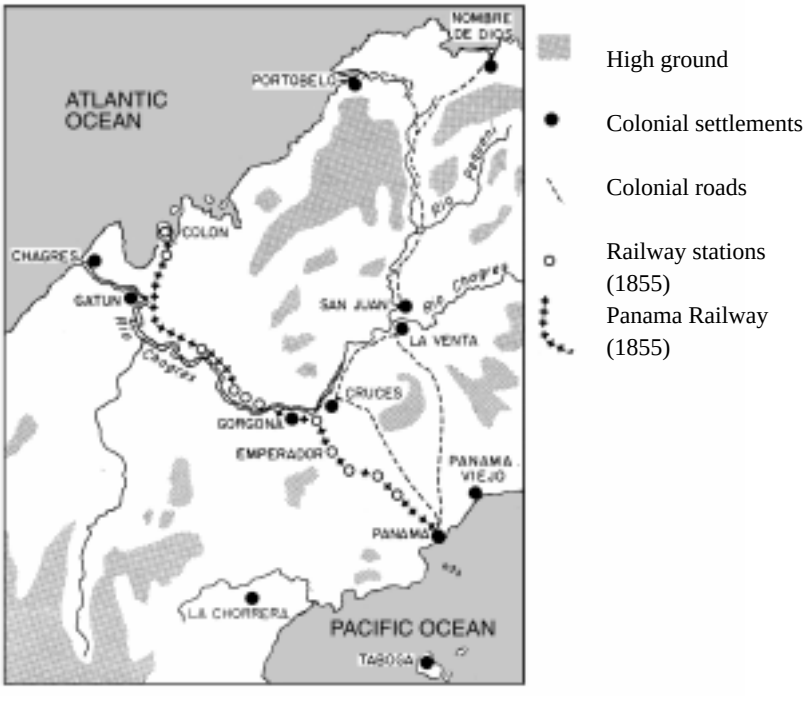

FIGURE 2. The region of transisthmian transit in the 18th and 19th centuries (After Omar Jaén Suárez, *La Población del Istmo de Panamá* (Madrid: Agencia Española de Cooperación Internacional, 1998), 287.

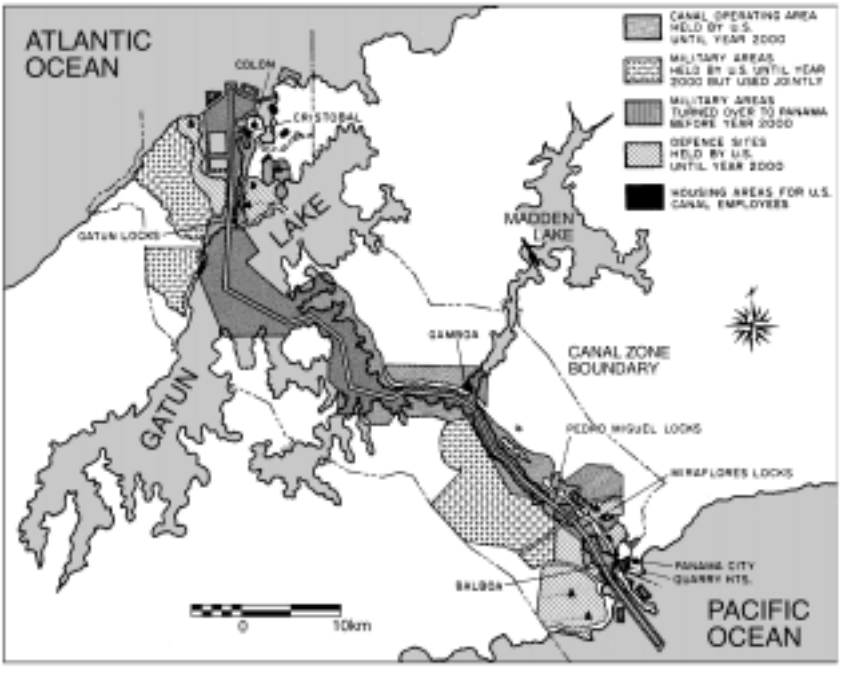

FIGURE 3. The Canal Zone at the end of the 20th century
(Source: 'El Canal de Panama', la Oficina de informacíon del Canal de Panamá, 1992)

NATURE AND CULTURE(S)

The activity of human groups with cultures as different as those that have come to converge in the contemporary history of Panama makes the creation of spaces and landscapes in a certain territory an especially complex process. From a historical perspective, the resulting socially constructed landscapes express the environmental consequences of the exploitation of the same territory from different cultural perceptions of nature, as well as distinct economic and political interests.

Extensive cattle raising, for instance, is an activity going back to 1521, when the Spanish crown acceded to the request of Pedrarias de Avila, founder of the City of Panama and conqueror of the Isthmus, to bring 50 cows to Panama, from the *haciendas* it had in Jamaica.[4] Towards the ends of the 1520s, cattle were already abundant in the savannahs around the cities of Panama and Natá, to the West, and production was enough for the needs of the small colony. The discovery and conquest of Peru created a demand beyond the possibilities existing in Panama, so generating the first livestock crisis in the history of the

country, which was only overcome in the 1540s. At that time, production not only stabilised, but started a notorious period of growth.[5] Cattle raising was from the beginning an economic activity of men of wealth and influence, such as de Avila, Diego de Almagro and Alonso de Luque, among others, all of them great landowners. This trend was to continue. Between 1690 and 1710, for instance, Rodrigo de Betancour, *Comisario Real* and a great personage of the Isthmian society, had a estate of some 30,000 hectares in areas belonging today to the provinces of Panamá and Coclé. By that same time, Antonio de Echevers y Subiza was considered the most conspicuous landowner, and probably the richest, most influential and powerful man in colonial Panama. By the beginning of the 18th century, cattle raising 'was already quite developed in several parts of the southern slope of the country, constituting one of the most important economic goals of the Hispanic colonisers'.[6]

It is important to note that cattle-raising began with the exploitation of anthropic savannahs, created by the aboriginals, mostly through the use of fire, for agricultural production and the conservation of the white-tail deer and other animals important as sources of protein, and remained fundamentally restricted to those areas for almost four centuries.[7] As long as the aforementioned colonial conditions persisted, it implied a rather gradual process of alteration of an environment already simplified by the early 16th century. However, an increase in the demand for the products of extensive cattle raising in the 20th century led to a greater demand for land to raise cattle, and vast and severe deterioration of the natural and social environment in which it was developed, through deforestation, deterioration and erosion of the soil, contamination and siltation of rivers and shorelines, greater concentration of land property and wealth, massive impoverishment of rural people, and constantly renewed pressures against the country's forests covering.[8]

The construction of the Canal, on the other hand, involved a relatively brief process of intensive environmental alterations in a very limited portion of the national territory, which led to a prolonged stability in the new environment so reorganised.[9] In just fourteen years, 50,000 workers imported from dozens of countries (mostly from the British Antilles), under the direction of American engineers and technicians, dammed the Chagres rivers at Gatún, near its mouth in the Atlantic, and cut a channel across the hills separating the river's basin from the Pacific Ocean. This allowed the creation of the Gatún Lake, at that time the biggest of its kind in the world, covering 423 square kilometres, which provides the water for the locks that move the ships across the Isthmus, and transformed the Chagres into a river that empties in two seas. The works were enormous. As John Lindsay Poland says,

> The canal enterprise "was the largest human alteration of the tropical environment to date. Men operating U.S.-built machines removed 96 million cubic yards of soil from Culebra cut [to link the Chagres basin with the Pacific Ocean] and

FIGURE 4. The Gaillard (formerly Culebra) Cut, from which 115 million cubic yards were excavated during construction

deposited the soil in dumps in the canal watershed between one and 23 miles away, including the creation of a 676-acre landfill that became the town of Balboa… It is doubtful the canal would ever had been constructed under the requirements of U.S. environmental laws today.[10]

But above all, as Omar Jaén Suárez indicates, 'the planning and construction of the Canal-related works as well as their operation' were carried out, 'to a great extent', without regard to 'the political, economic, human and environmental reality that had existed in the transit zone and in the rest of the national territory'. Consequently, the construction and operation of the interoceanic route implied on the one hand 'an extraordinary modernisation of the structures and the technology of transisthmian transport', while on the other 'they also contributed to tear apart the geographical space, to alter a certain ecological equilibrium and to delay the emergence of a stronger national personality, that was forced to manifest itself more as a defence mechanism than as an accumulation of shared creative experiences'.[11]

Actually, for the culture that conceived the Canal and organised its construction, the most important natural feature was the coincidence of several physical circumstances: geographical location, topography, climate, hydrography. These circumstances made possible a technological solution capable of converting into an advantage what so far had been one of the big obstacles to the development of large scale works of infrastructure for the interoceanic traffic in Panama: the rainfall regimen and the difficult topography of the Chagres River basin. So, the reorganisation of nature carried out by the Government of the United States in Panama made possible the service of the interoceanic traffic on the basis of the same geographical conditions that had hindered it before. As a result, it made permanent and large scale an activity that until then had been seasonal and limited by the load capacity of the small transisthmian railroad built by North American private capital in the mid-19th century. Around this technical solution a culture and a society were created of the kind that, according to Donald Worster, are 'built on, and absolutely depend on, a sharply alienating, intensely managerial relationship with nature', in which the flow of the Chagres River and its tributaries came to mean 'simplified, abstracted Water', firmly directed to contribute to a limited series of economic objectives.[12] Likewise, the Panama Canal constitutes an example of the way in which the works of domination over nature in hydraulic societies lead to rigidly bureaucratic and intensely alienating forms of socio-cultural and economic dominance between humans.

This type of socio-cultural impact becomes even more complex when the form of relationship with nature that sustains it is part of a wider one that connects the fates of two societies and their respective national states. In the case in point, the Panamanian national state occupies a position of economic, political and cultural dependence relative to the North American one. Specifically, the Canal, now under Panamanian administration, implies the presence in Panama of one of those 'immense centralised institutions, with complicated hierarchies', characteristic of developed capitalism which, according to Worster, 'tend to impose their outlook and their demands on nature as they do on the individual and the small community, and […] do so with great destructiveness'.[13] Those institutions - such as the Panama Canal Authority and the Authority of the Interoceanic

Region – turn out to be 'too insulated from the results of their actions to learn, to adjust, to harmonise'. Consequently, they deprive the communities around them of all possibility of real control over their relations with their environment and over their destiny, depriving them of the self-determination required for liberating themselves from 'the distant, impersonal structures of power that have made democracy little more than a ritual of ratifying choices already made by others – of acquiescing in what has been done to us'.[14]

In Panama, the problem turns to be even more complex, because the enclave of Pinchot-style sustainability stimulates the unsustainability of the kind of development dominant in the rest of the country, the whole being organised around a model for economic growth with a characteristic 'high pattern of dependency, structural heterogeneity, a lack of articulation within the internal productive organisations, and an intense tendency to the concentration of income and wealth. The basic articulation of the model happens between generation and production of export-oriented goods and services, and the importation of luxurious consumption goods, destined to satisfy the non-essential needs of the high-income sectors'.[15] This situation is rooted in a model of economic growth organised around a services economy, which generates more than 70% of the Gross Domestic Product of the country from trade, transport and financial activities, negatively affecting agricultural and industrial activities, and the population that depends on those.[16]

In this way, the Panamanian society has become organised around the conflict between a 'transit zone', where an economy of financial, commercial and transportation services sustains half the population of the country on less than 5% of its territory, and a diversity of 'interior' regions organised around much more traditional economic activities. Panama has so become an anomaly in Central America: a country whose gross internal revenue comes not from agriculture, but 75% from the services sector, while industry provides 10% and the primary sector the remaining 15%. An estimated 37% of the population lives in poverty. In the countryside, this percentage reaches 64%, while in the cities it is 16%. The upper-income 20% of the population concentrates more than 60% of the nation's wealth, which puts Panama on a league of worst income distribution cases with countries such as Brazil, Guatemala and Mexico. Everything suggests that the prosperity of the transit zone, which relies on the efficient operation of the Canal enclave, has generated a situation in which the most dynamic sector of the economy does not stimulate the development of the most backward. On the contrary, it tends to exclude them and to accentuate their backwardness, for the benefit of the interests of those who are closely associated with the operation of the Canal, as becomes evident in the permanent conflict between the rural and the services sector of the economy, which deeply permeates daily politics as well as economic planning.

It is a commonplace for some sectors of Panamanian society that the country would not be viable without the Canal, while the Canal could be so considered

without the country. This has led some people to think that the dependence originating from the backwardness, poverty, and inequality that plagues the majority of the Panamanians is the inevitable cost of a privilege. However, this apparent split between the interior and the Canal enclave, actually derives from a deeply articulated relationship: over the past hundred years, every expansion of the modern sector of the economy has produced an intensification of key activities in backward sectors. Extensive cattle raising, one of the most traditional of these activities as we have seen, is a case in point, especially in view of its impact on deforestation and land degradation in the 20th century.

According to Omar Jaén Suárez, the population of cattle and horses in Panama evolved from 110,000 in 1609 to 203, 086 in 1896. By 1914, after the disastrous effects of a civil war fought in the Isthmus between 1899 and 1902, that population was 187, 292. By 1950, it was 727,794, and by 1970, 1,403,614. The greatest increases occurred in Chiriqi, Veraguas and Herrera-Los Santos Provinces, where modern livestock production is concentrated. Human popula-

	People *	**Cattle and horses****	**Forested Land*****	**Treaties negotiated with the US**
1609	12,000	110,000		
1800			93	
1896	311, 054	203, 086		Hay – Buneau Varilla
1903				
1914	427, 176 (1911)	187, 292		
1936				Arias - Roosevelt
1947			70	
1950	857, 585	727,794		
1955				Remón - Eisenhower
1970	1,472, 280	1,403,614	38/43	
				Torrijos- Carter
1980	2, 239, 329	1,500,000****		

TABLE 1. Growth of human and cattle/horse populations, 17th–20th centuries

* Omar Jaén Suárez, 'La Población…', op. cit., 487.

** Ibid., 513.

*** Ligia Herrera, 'El impacto sobre el medio ambiente…', op.cit., 26.

**** Ibid., 28, estimated.

tion in the early 16th century was 12,000, rising to 311, 054 in 1896, and 1,472, 280 in 1970. Some relations between this and the use of land are explored by Ligia Herrera. As she said, 'it is considered that, by the year 1800, nearly 93 percent of the country was covered by forests'. For 1947, it was calculated that 'the forest cover had decreased to 70 percent of the country, and around 1980 it was further reduced to between 38 and 45 percent of the surface with an estimated annual loss of some 50,000 hectares', fundamentally due to the expansion of the country's agricultural frontier.[17]

The growth of the most primitive form of cattle raising appears to coincide with the construction period of the Canal. From 1936 on, growth in cattle population and in deforested land can be associated with some significant changes in the relations between Panama's economy and that of the Canal Zone. In that year, as well as in 1955, the governments of the United States and of the Republic of Panama signed treaties that modified the original one of 1903, increasing access for Panama's production and commerce to the market of the affluent Canal enclave. The 1936 Treaty, in particular, came to be known as the 'Meat and Beer Treaty', because it opened the market of the enclave – until then limited to American products – to Panama's agricultural and industrial production. The 1955 Treaty prohibited Panamanian employees of the US Armed Forces and the Panama Canal Company to buy in the US Government subsidised stores of the enclave, thus obliging them to spend their salaries on Panama's commerce and services (being then federal employees, their salaries were higher than their equivalents in Panama's economy).

It seems to be evident, then, that cattle raising has expanded in close dependence with the increasing degree of articulation between the Canal enclave and the rest of the Panamanian economy. Therefore, it can be argued that the presence of the enclave contributed to stimulate the tendency toward an unsustainable use of resources such as land and forests dominant in the rest of the Panamanian territory. Seen from another perspective, it can be said that sustainable use of resources such as water and forests within the enclave was made possible only through massive subsidies from both the federal Government of the U.S., and from unsustainable exploitation of some of Panama's key natural resources.

That relationship came to a turning point with the Torrijos -Carter treaties of 1977, which cancelled the 1903 Treaty, dissolved the enclave and restored Panama's sovereign control over the whole of its territory between 1979 and December 1999. The former Panama Canal Company is now the Panama Canal Authority, a public facility of the Government of Panama, and the 14 military bases that existed in the Canal Zone by 1970 are being converted to civilian uses. The long term economic and social structures, as well as the cultural and political mentalities created by almost a century of coexistence between the Republic and the enclave, however, are still alive and well in many ways.

The enclave as such, then, has ceased to exist, and the Canal has to find a new way to be part of the Republic. By law, for instance, the Canal Authority is now responsible for the management not just of the former Canal Zone, but of the whole Canal watershed. And it has to face this responsibility when the old ways of coexistence with the rest of the country have reached a limit, due to processes that range from the social and environmental impoverishment of the 'interior', to the accumulation of problems resulting from a disordered urban growth in the transit zone. In some way, the Canal area has come to be under virtual siege by the rest of the country, and the management of the watershed has become more than a technical problem, a political one, for which neither the country nor the Canal Authority has a preceding experience that can serve as a guide.

The Zone, as we said, existed within the watershed. What would have been the course of the history of that watershed, or for that matter that of the whole country, if the use of an ecological and not merely a geopolitical criterion had been used by the United States to convert it entirely in a Canal Zone in 1903? But that never happened, and the area under political control of the Panama Canal Company never fully coincided with the area of ecological dependence of the Canal. Therefore, a substantial part of the watershed was beyond any policy, and when it began to be integrated into the economic life of Panama due to peasant migrations during World War II and urban development in the 1960s and 1970s, it turned out to be subjected to the non-policy so characteristic of underdevelopment's laissez-faire.

The Panamanian government began to create and implement policies for the sustainable use of the Canal Watershed by the mid 1980s, in preparation for the full responsibility for the Canal that it finally assumed in December 1999.[18] And the fact emerged since the first moment of that process, that not even an enclave of the magnitude, influence and complexity of the Panama Canal could be operated in a sustainable way within a context of underdevelopment, always tending to the unsustainable. Left to its fate, that situation would most probably have ended up by menacing the viability of the Canal in Panama. Everything thus indicates that the country and the Canal will be sustainable only if the former becomes the object of an integral development effort, such as the one applied in the 'useful' immediate periphery of the interoceanic route by the US authorities, for the purposes the route was destined to serve in the years of the Zone.[19]

PAST AND FUTURE

From the perspective outlined above, the transfer of the Panama Canal to the sphere of responsibility of the Panamanian nation-state, as well as the need of that State to promote forms of sustainable development in the entire national territory, pose an obvious problem. Will the Pinchotian style of natural resources administration formerly practised within the enclave by the US Government

'radiate' to the rest of the country, or will the non-policy of underdevelopment absorb that enclave too? It may be that the very possibility of 'radiation' will prove a chimera.

The sustainable use, in a North Atlantic cultural sense, of the Canal watershed for the operation of the Canal, can hardly be a model for the sustainable development of the watershed as a whole. It must be considered, for instance, that the population of the watershed has increased from 21,000 in 1950, to some 153,000 in 2000, and is expected to be around 407,000 by 2020.[20] Most of these people are rural migrant slum dwellers, living in poverty and great need. So it seems that, as Panamanian social scientists and environmentalists of prestige, such as Carmen Miró, pointed out in the early 1990s, it is indispensable 'to exploit the natural resources of the Basin with the purpose of obtaining more goods or more profits, without exhausting and destroying the natural base of production'.[21] On the contrary, the use for which the watershed was originally reorganised can only be preserved if it were hypothetically possible to isolate it from the rest of the country. This explains why, in general, the plans and projects formulated in the last 14 years 'in connection with the conservation, preservation and development of the Basin' do not clearly define either 'the type of development they propose', nor the role to be played in that development by 'the social actors involved in the Basin: government, private enterprises, nongovernmental agencies, the church, and the residents of the Basin and their community organisations'. But, above all, it makes evident the tendency of these plans to sanctify the Basin 'into an area that must be kept in reserve; an area in which it becomes practically impossible to rationally organise the activities that are performed there; therefore, what should be done is to "control", "impede", "watch over", "restrict", etc'.[22]

While on the one hand it is impossible to 'reproduce' nation-wide the logic that has guided the use of the Basin for the Canal, neither is it possible to think of subjecting the Canal and its Basin to the logic of underdevelopment. That would simply end up leading to the destruction of resources that are indispensable for facing the serious social, environmental and economic problems that the country has to face today. The recognition of this fact led to the creation by the Panama Canal Authority, in 1999, of a general plan for the use of the lands of the watershed, which was approved as law. The problem now is to make it operative as an agenda for the relations between the country and the Canal.[23]

Everything indicates that we face a political problem in its most pure expression: that of creating a dilemma capable of guiding our choices. In this sense, the opening question of this essay can lead us to others of a different kind. In the first analysis: could the Republic of Panama by itself exercise a policy of environmental management like the one practised by the United States Government within the lands and waters under their control in the Isthmus? And if that were possible, would it also be adequate for the sustainable development of the entire country? Historical experience suggest that we respond with a 'no' to the

two questions, but also qualify that answer. If the environmental policy practised in the enclave could only be conceived and exercised by a nation-state like the one which constructed the Canal, with all its economic, technological, military, political and cultural resources, the problem can be dismissed in advance, since Panama will never be a nation-state like that. But the answer might be different if that policy had resulted as a technocratic answer to democratic demands arising from multiple sectors of the North American society in the second half of the 19th century, endowed with the vigour that led politicians like Theodore Roosevelt to see conservation as 'part of a national revival crusade for rectitude, patriotism, efficiency, and strenuous living', a 'nonpolitical cause that could unite the nation, both the rich and the poor, in a common moral purpose'.[24]

Nothing prevents us from hoping that Panamanian society will make itself a nation-state capable of representing its interests so efficiently as to make politically sustainable the future development of the country. Above all, sustainability poses a political problem – that is, one of a culture in action – which has to be resolved by technical means, and not vice versa. In this way, ships and cattle converge to demonstrate that, although the sustainable use of a specific resource in Panama is indeed possible, that use cannot possibly be transformed into development within the frame of a general context of unsustainability. The conclusion should be obvious: in a country like Panama, the development we desire will only be sustainable when it becomes part of that virtuous circle in which economic growth can support the conditions of social welfare, political participation, and national self-determination, without which it is impossible to maintain a responsible relationship with the natural world.

NOTES

[1] The second principle consisted in 'the prevention of waste', while the third one indicated that the natural resources 'must be developed and preserved for the benefit of the many, and not merely for the profit of a few'. 'The Fight for Conservation', in Donald Worster (ed.), *American Environmentalism: The Formative Period, 1860–1915* (New York: Wiley, 1973), 85–7. According to Worster, Pinchot (1865–1946) was one of the founders of the conservation movement in the United States, although his principal contributions 'were political and bureaucratic rather than theoretical: he established and directed the Forest Service and dramatised the problem of resource exhaustion to the public during the Administration of Theodore Roosevelt and after'.

[2] With reference to this process, see Carmen A. Miró, Jorge Castillo, Alvaro Uribe, Rubiel Cajar, Roberto Carrillo and Giulia de Sanctis, 'La Cuenca Hisdrográfica del Canal de Panamá: posibilidades para un desarrollo sustentable' (1993). This is a study carried out as part of a sub-regional research project on the political economy of sustainable development, sponsored by the Cooordinación Regional de Investigaciones Económicas y Sociales (CRIES).

[3] In the sociocultural, the creation of the Canal Zone signified 'the formation in the Isthmian territory of a parallel [to the Republic of Panama] structure and system, of American colonial bureaucrats, managers, technicians and military in the Panama Canal Zone, limited geographically and functionally to a well defined space, living in intense territorial and social segregation, in an authentic socialist – everything belonging to the US Government – and apartheid system without equivalent in Latin America in the 20th century', all of which virtually disappeared in the 1980s. Omar Jaén Suárez, *La Población del Istmo de Panamá. Desde el siglo XVI hasta el siglo XX. Estudio de Geohistoria* (Madrid: Agencia Española de Cooperación Internacional, 1998), 487. (This and following quotations from texts originally written in Spanish are free translations by the author.)
[4] As far as is known, this was the first herd of livestock introduced in the Southern slope of the Isthmus. It was from this nucleus that came the livestock that lately went to populate the fields of Nicaragua and Peru.
[5] Alfredo Castillero, *Conquista, Evangelización y Resistencia. ¿Triunfo o fracaso de la política indigenista?* (Panamá: Instituto Nacional de Cultura, 1994). Cattle became so abundant that, even with exports to Peru, the prices of meat went down to the point that it became a basic staple for the population as a whole. Hides and grease had better prices than meat, and a good market in Peru. By 1590, supply being so much greater than demand, cattle owners opted for the destruction of the herds through a massive cull of animals in order to make use of the hides and the grease, while leaving the meat to rot. This measure created a crisis of such proportions that twenty years later the herds in Natá were half the size of those of 1590. Anyhow, by the mid-17th Century the crisis was something of the past and cattle reigned again in the savannahs of the South and Southwest of Panama.
[6] Ligia 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).
[7] 'There are in this province many deer, and pigs different from those of Spain, traveling in great flocks: they have no tail, and do not grunt even when are killed; they have a kind of navel on their backs. The (aboriginal) lords had their hunting grounds, where they went to hunt deer in summer, and they set fire against the wind, and as the grass was tall, the fire became big, and the Indians were standing where the fire was going to; and the deer, as they were fleeing and blinded by the fire, this same fire pushed them to the place where the Indians where waiting with their flint throwers, and very few of those that came fleeing from the fire were able to escape'. Pascual de Andagoya, 'Relación del Darién, Provincias Centrales y Chiriquí (1514–1541)', in *Geografía de Panamá* (Universidad de Panamá: Biblioteca de la Cultura Panameña, 1981), 6.
[8] A classical description of the social, demographic and environmental consequences of that process can be found in Jaén Suárez, *La Población del Istmo de Panamá.* A recent report on the present stage of these environmental consequences of extensive cattle raising can be found in the 1999 report of Panama's National Environmental Authority: *Informe Ambiental 1999* (Autoridad Nacional del Ambiente de Panamá, Banco Interamericano de Desarrollo), 13–17. The United Nations Environmental Program's report *Perspectivas del Medio Ambiente. América Latina y el Caribe* (San José, Costa

Rica: 2000), 25, extensively quotes this same report when discussing land deterioration in Latin America.

[9] Omar Jaén Suárez remarks that the construction of the Canal transformed 'in a radical manner' the geographical milieu in the central isthmus of Panama, provoking 'disorders and profound alterations in the peopling, in the economy and in the organisation of the Panamanian space'. '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*, op. cit., 11.

[10] 'One can only speculate what an Environmental Impact Statement for the construction of the canal would have said, if the requirement had been in existence at the time.' Personal communication. A synthesis of the technological problems confronted by the construction of the Canal – including the fruitless battle of the French against the cloudbursts of the rainy season – can be found in David McCullough's already classic book, *The Path Between the Seas: The Creation of the Panama Canal (1870–1914*) (New York: Simon and Schuster, 1977).

[11] Ibid., 13. The disruptions included the forced displacement of thousands of people who lived in what became the bottom of the lake, and the disappearance of their houses and communities.

[12] Donald Worster, *Rivers of Empire: Water, Aridity and the Growth of the American West* (New York: Oxford University Press, 1992). The author refers here to the big irrigation and hydroelectric works that made large scale, commercial agriculture possible in his country's arid West.

[13] Ibid., 332.

[14] Ibid., 333. The presence of the Canal, so conceived, built and managed, would have converted the Republic of Panama into a victim of the constant struggle of the developed economies of the planet to 'evade the discipline of nature', by occupying 'new, virgin lands once we spoiled those in our possession, by drawing on distant sources of commodities when we exhausted local supplies, and by calling on a federal agency for help when we got into trouble'.

[15] Juan Jované, *El Canal de Panamá y la estrategia de desarrollo* (Instituto de Estudios Nacionales, Universidad de Panamá, 1989), inédito, 7.

[16] Few Latin American countries have been the subject of social and economic development so systematically organised around the exploitation of only one of their natural resources – in this case, geographical position – from the 16th century on. 'Transitism', as this type of development is called – in its double nature of service to the transit of goods, capitals and people across the Isthmus, and of use of the territory for the geopolitical control of its regional periphery – was born in Panama with Spanish colonialism, and serves essentially the same function at the dawn of the 21st century.

[17] Ligia Herrera, 'El impacto…', op. cit., 26.

[18] In 1985, the first national forum on the problems of the Canal watershed was convened by the Government of Panama, with support from USAID. That same year the National Institute for Natural Renewable Resources (INRENARE, in Spanish) was created. In 1994, a special legal statute for the Canal was introduced in the national Constitution, which assigned the management of the entire watershed to the Canal Authority, with the help of other ministries and agencies organised in an Interinstutional Commission for the Hydrographic Watershed (CICH, in Spanish), still under organisation with financial and technical support from the USAID. In 1997, the National Assembly approved a General

Law for the Environment, under which the INRENARE was transformed in the National Environment Authority in 1998, with financial and technical support provided by the Interamerican Development Bank. In this way, since the mid-1990s, the incorporation of the former enclave into the nation's structures has contributed to the creation of a national environmental policy and the institutions in charge of it, with the decisive support of foreign agencies. Financial and technical support for the development of the now national Panama Canal Authority capacity for the management of the watershed, for instance, has come to be the only significant reason for the presence of the USAID in Panama.

[19] A great part of the former Zone is covered by a tropical forest. As related by David McCullough, this situation is due to the decision of the Chief Engineer of the construction of the Canal between 1907 and 1914, and first Governor of the enclave until 1916, Coronel George Goethals, 'to let the jungle intact, and allow it to occupy again the places that had been cut down' during the construction. That was more a military than an aesthetic judgement on the part of Goethals. He had insisted before a Congressional Commission that the jungle was 'the surest defense against an attack by land'.

[20] *La Cuenca del Canal: deforestación, urbanización y contaminación* (Smithsonian Tropical Research Institute, USAID, Autoridad Nacional del Ambiente, Panamá, 1999), 88.

[21] *La Cuenca Hidrográfica del Canal de Panamá*, op. cit., 41.

[22] Ibid., 39.

[23] This problem was put to an extreme test even before the US finally transferred its remaining authority over the Canal to the Panamanian Government in December 1999. In October, the common citizens of the Republic learned that the Canal watershed had been 'enlarged' by law with the addition of the watersheds of three other rivers in the Northwest slope of the Isthmus – the Río Indio, the Caño Sucio and the Coclé del Norte – to the control of the Panama Canal Authority. The Authority planned to use that control for the creation of three new lakes – one of them bigger than the Gatún lake – as water reserves for the future expansion of the Canal, and for the production of electric energy. Protests by the peasants living in the watersheds, an area of extreme poverty, with the active support of the catholic Bishopric of the province of Colón, have stalled the project, and created a totally new circumstance for the Canal Authority: the impossibility to exercise its power at will, and the need to negotiate its interests with other sectors of the country. The result remains to be seen, but the days of Chief Engineer and Governor Goethals' full power over the Zone, its lands and inhabitants seem to be gone forever.

[24] Worster, *American Environmentalism*, op, cit., 84.