Nova Acta Leopoldina NF *114*, Nr. 390, 21–33 (2013)

Envisioning an Ecological Atlantic, 1500–1850

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With 3 Figures

Abstract

In his article about the ecology of the Atlantic world, John McNeill demonstrates that the epoch from Columbus's arrival in the New World to the mid-nineteenth century was characterised by climate change (Little Ice Age, drought), the plantation system, and the ecological exchange of flora and fauna. McNeill uses the term "Neo-Africa" for those regions with a high proportion of African slaves (particularly Brazil and the Caribbean). The concept of sustainability was entirely alien to the plantation economy of North and South America, where a parallel and extreme exploitation of people (African slaves) and land took place, motivated by economic interests.

Zusammenfassung

In seinem Aufsatz über die Ökologie der atlantischen Welt demonstriert John McNeill, dass die Epoche zwischen der Ankunft von Kolumbus in der Neuen Welt und der Mitte des 19. Jahrhunderts von Klimawandel (Kleine Eiszeit, Trockenheit), Plantagensystem und dem ökologischen Austausch von Flora und Fauna im Atlantikraum gekennzeichnet war. Für die Regionen mit einem hohen Anteil afrikanischer Sklaven (insbesondere Brasilien und die Karibik) verwendet McNeill den Begriff „Neoafrika". Der Plantagenwirtschaft in Nord- und Südamerika war der Gedanke der Nachhaltigkeit völlig fremd; angetrieben von ökonomischen Interessen kam es in Amerika zur simultanen und extremen Ausbeutung von Menschen (afrikanischen Sklaven) und Land (Böden).

1. Introduction

This volume is dedicated to the theme "from exploitation to sustainability," but this contribution addresses only exploitation. There was no transition to sustainability in the Atlantic world before 1850. Nor, indeed, has sustainability arrived as yet. This essay is concerned with an immense region — the whole of the Atlantic basin — and spans three and a half centuries. It begins with a short overview of the concept of Atlantic history, and then turns to the only real feature of environmental change that is pan-Atlantic: climate change. It proceeds to propose a revised and amplified version of the Columbian Exchange, a concept that will be familiar to many readers, and ends with an examination of the role of the plantation system and the slave trade, which together form both the heart of the matter and the most interesting aspect of the ecological Atlantic during the centuries from 1500 to 1850. Generating both immense misery and immense wealth, for a few centuries the slave plantation system featured a double exploitation: of people and of soils.

The past two decades have seen historians — both in Europe and North America — begin to change their frames of reference (or, rather, return to older frames of reference) and adopt the Atlantic basin as a unit of historical analysis. This is particularly the case for historians

working on the centuries between the voyages of Columbus and the abolition of the slave trade, which encompasses the years from 1492 to 1888. The reason for this shift in perspective is, in essence, the rise of a historiography connected to slavery and the plantation system, something that, as historians have quite rightly argued, needs to be understood in its transatlantic framework involving Atlantic Africa, Atlantic Europe, and Atlantic America. By bringing these coastal regions into a single analytical framework, we can examine the essence of Atlantic history, something which represents an increasingly popular approach among historians (Butel 1999, Bailyn 2005, Games 2006, Benjamin 2009, Greene and Morgan 2009).

2. The Little Ice Age in the Atlantic World

There is only one feature of environmental change that expressed itself throughout the Atlantic basin and across these centuries, and that is climate change. In the sixteenth and seventeenth centuries, the ocean was a good deal cooler than today, especially the shallow littoral waters, the estuaries, bays, and continental shelves. The temperatures of Chesapeake Bay water, for example, fell by two to four degrees Celsius from their levels of the previous few centuries during the Little Ice Age. Chesapeake waters were at their warmest around 900 CE and their coldest around 1700, with sharp fluctuations in between. This heightened instability played havoc with the Bay's abundant marine life, including oysters and crabs useful in human diets. Caribbean waters likewise were 2 to 3 °C cooler by the eighteenth century, to judge from evidence gathered off of Puerto Rico. In the deep sea, the effects of the Little Ice Age were more muted. On average, it seems, sea surface temperatures from Maine to Bermuda were about 1 to 1.5 °C cooler than during the so-called Medieval Climate Anomaly (c. 900–1300).

Sea surface temperatures, not a popular concern among historians, had historical consequences. Chillier temperatures lured schools of codfish to more southerly waters off of New England in the seventeenth and eighteenth centuries, bringing fishermen in their wake, quickening the settlement and enhancing the prosperity of lands from Newfoundland to Massachusetts. Changes in Atlantic sea surface temperatures probably also affected the risks of navigation. During the Little Ice Age, icebergs were longer-lived and floated further afield than in the warmer centuries before (c. 900–1300) or since (post 1800). Sea ice added to the dangers of ship voyages, especially in waters often shrouded in mist. It may even be — this is uncertain, but what climate science would expect — that cooler Little Ice Age sea surface temperatures in tropical latitudes meant that hurricanes were fewer and weaker in the sixteenth to eighteenth centuries than before or after. It is a reasonable conclusion that Little Ice Age conditions in the Atlantic raised the hazards of navigation in northern waters but lowered them somewhat in tropical latitudes (Keigwin 1996, Grove 2001, Watanabe et al. 2001, Cronin et al. 2004, 2010, Graham 2010).

European historians have long been keenly aware of the Little Ice Age and its consequences on land in the sixteenth and seventeenth centuries. Its coldest decades came in 1590–1610, the 1640s, 1690s, and 1780s. The Little Ice Age in Europe saw glaciers grind their way downhill in the Alps, occasionally scraping away pastures and villages as they went. Shorter growing seasons spelled more frequent crop failure and famine in the northern lands of Scotland and Scandinavia. The onset of the Little Ice Age may have brought down the curtain on the era of Norse settlement in southern Greenland in the fifteenth century (Patterson et al. 2010,

Conkling et al. 2011). The Thames froze over fairly often, allowing for so-called frost fairs, and even the Ebro in Spain froze from time to time. The Little Ice Age in Atlantic Europe was, in general, significant mainly for the hardship brought on by its colder temperatures and shorter growing seasons.[1]

In other parts of the Atlantic world, the climatic phenomenon of the Little Ice Age might perhaps be better called the Big Drought Age. Evidence suggests that in West Africa, for example, the dry frontier of the Saharan fringe, known as the *Sahel*, pushed southward in the sixteenth and seventeenth centuries, causing a greater frequency of droughts in West Africa. Drier conditions in West Africa restricted the range of the tsetse fly, the vector for trypanosomiasis, or sleeping sickness. Trypanosomiasis is a dangerous human disease, but even more so for horses; the retreat of the tsetse fly allowed successful horse breeding in the Sahel, which had previously been unsustainable due to extreme equine mortality. These ecological changes, in turn, encouraged the emergence of cavalry and new styles of warfare, which underwrote the creation of larger and larger political units, including some of the great empires of West African history such as Mali and Songhai. Both these empires owed some of their strength to equestrian forces and some of their prosperity to slave raiding against peoples lacking cavalry forces. At the same time, more broadly in Atlantic Africa — from Senegambia to Angola – greater frequency of drought probably increased the supply of captives for the transatlantic slave trade, both through the creation of circumstances in which some had horses and cavalry while others did not, and through the tragic sequence of crop failure, destitution, and the desperate sale of children and other dependents to slavers. Drought narrowed the range of subsistence strategies available, making the capture of slaves and selling of anyone who could be sold more attractive alternatives (Law 1981, Miller 1988).

It is important to emphasise, for anyone not already well-versed in the numbers involved in the slave trade, the sheer volume of people trafficked across the ocean in the years from 1500 to 1850: it borders on eleven million. Slaves came from many parts of Africa between Senegal and Angola. They were shipped mainly to northeast Brazil and to the Caribbean. The numbers involved reached their highest levels in the 1780s and again in the 1840s. The slave trade will figure again in this essay, especially in its connections to the Columbian Exchange.

If the tree rings can be trusted, North Africa, or at the very least the Atlas Mountains of Morocco, showed a counter-trend during the Little Ice Age. The cedars of the Atlas record less frequent drought, 1450–1980, than either during the centuries before or the decades after (Esper et al. 2007). Conceivably, conditions during these wetter centuries helped make agriculture more rewarding, providing revenues for the establishment and territorial expansion of the Saadian dynasty (1554–1659) in Morocco. The Saadian state was one of the pioneers of the sugar-and-slave complex, using irrigation water from the Atlas peaks and slaves imported from the West African Sahel to grow plantation sugar.

On the American side of the ocean, evidence for an age of drought appears in tree rings and other forms of paleoclimatic evidence from the Caribbean to Canada. In Mexico, for example, tree rings show that the most searing droughts any time in the past 600 years occurred between 1545 and 1580, and may have led to disease outbreaks in 1545–1548 and 1576–1578. According to one interpretation, these outbreaks were rodent-spread diseases, hemorrhagic fevers termed *cocoliztli* in the Nahua language. These epidemics compounded the devastation experienced by local populations already reeling under the impact of newly acquired infections from

1 For a general study see Grove 1990 and Behringer 2009; and for a Nordic one, Ogilvie and Jonsson 2010.

Europe and Africa (Acuna-Soto et al. 2002). Recurrent droughts of lesser severity haunted Mexico — or New Spain, as it then was called — throughout the Little Ice Age, culminating in another deep and devastating one in 1785–1787, which brought starvation to the northern regions of the Spanish colony as far as Texas (Therell 2005, Endfield 2008).

Tree rings also provide powerful evidence of extraordinary droughts during the Little Ice Age in what would become the southeastern United States. These droughts brought serious consequences for the early colonisation of the Atlantic coasts of North Carolina and Virginia by Europeans. The famous story of the "lost colony," associated with Sir Walter Raleigh, dates from this period: Raleigh sponsored a group of colonists to settle on the shores of North Carolina in 1585, just before the region would suffer from the worst drought within a thousand years (Fig. 1). By 1590, no trace of these unfortunate colonists remained, and ever since, in the absence of evidence, hypotheses concerning their fate have abounded. But whatever other difficulties these colonists might have faced, the severity of the drought probably doomed them to fail in their endeavours (Stahle 1998).

Another drought victim was the settlement at Jamestown, along the James River in Virginia at the mouth of the Chesapeake Bay. It has iconic significance for Americans as the earliest establishment of the English colonial presence in North America. Settlers arrived in 1607. Unluckily for them, that was the second year of the most severe drought (1606–1612) at any time in the last 770 years in the Jamestown region. Roughly two-thirds of the colonists died in their first year. Additional colonists (some of them from Germany and Poland) arrived in 1608, but in 1609–1610, in what colonists called "the starving time," most of those remaining died. By the end of the drought in 1612, about 80 % of all those who disembarked at Jamestown over the previous six years were dead. Although they surely suffered somewhat from diseases, malnutrition was certainly a large part of the equation as far as the mortality rate was concerned, and the drought was thus probably a significant factor in the setbacks they suffered in the first five years. Moreover, some of their disease difficulties apparently stemmed from shortage of fresh water, a situation exacerbated by the record drought. Indeed, the colonists' troubled relations with the local Powhatan Indians were also affected by drought, since the English had hoped to trade for food and the Powhatan had too little food to spare. The colony there did survive, but only just (Stahle 1998, Blanton 2000).

The Little Ice Age expressed itself differently in different landscapes around the Atlantic. In some places it took the form of colder climate and in other places of drought. In few places around the Atlantic, perhaps only in Morocco, did it manifest itself in the form of a wetter climate. Whatever the form it took, the Little Ice Age played some role everywhere in the economic and political fortunes of peasants and kings, slaves and settlers from Argentina to Iceland.

3. A Revised and Expanded Version of the Columbian Exchange

The era of colder and drier climate around the Atlantic was also the time of the Columbian Exchange, another fundamental feature of Atlantic history. Some forty years ago Alfred Crosby wrote a book, the title of which has colonised the vocabulary of historians in a way that very few book titles succeed in doing (Crosby 1972). In North America, at least, every historian uses the phrase "Columbian Exchange" to refer to the transatlantic transfers of pathogens, plants, and animals that followed the voyages of Columbus in 1492. Crosby drew attention to the tremendous importance of these transfers for the economic and social

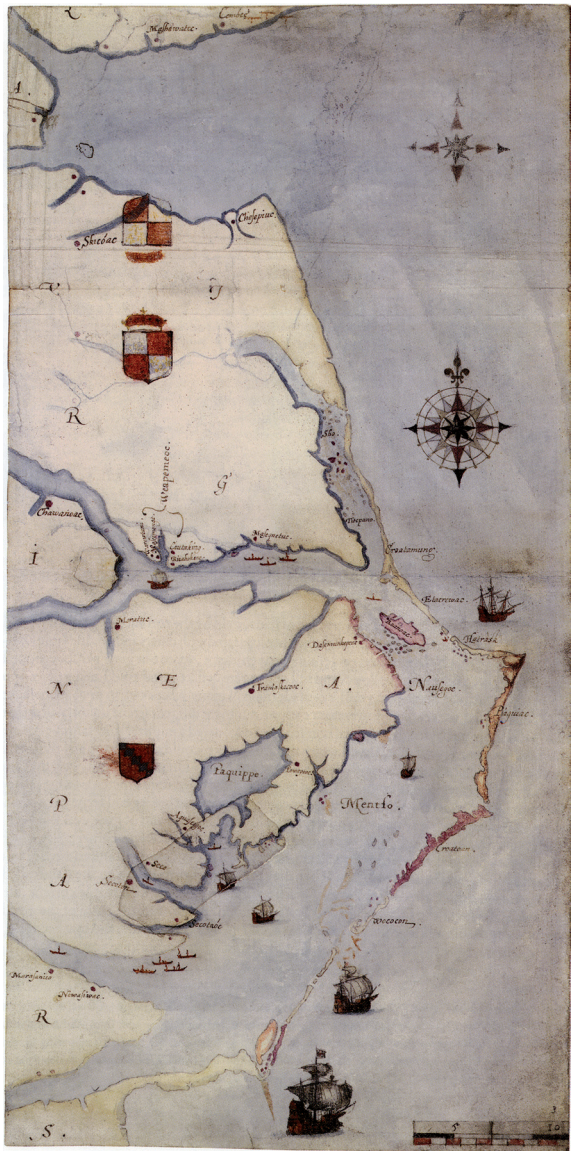

Fig. 1 Map of the Roanoke area drawn c. 1587 by John White

history of the Americas, of Europe, and to some extent also Africa. Crosby did not do full justice to the African components of the Columbian Exchange. The main reason for this is that African historiography was much less developed in the 1960s, when he was working on his book, than it has since become; the kind of information that he might have used was much harder to come by for Africa than it was for Europe or the Americas, perhaps even impossible in some instances.

Crosby's own presentation of the Columbian Exchange, and almost all subsequent ones, underplay African involvement in the process.

To take the example of food crops: sorghum, millet, bananas,[2] yams, and watermelons, to mention just a few, were all brought to the Americas from Africa. Some of these were significant in terms of the agricultural history of the Americas after 1492, although none of them are central to that history.

The geographer Judith Carney insists that, together with all these food crops, specialised agronomic knowledge about how to make them prosper was imported, particularly as regards African rice (Carney 2003, Carney and Rosomoff 2009). Her remarks are in some respects controversial (Eltis et al. 2007), and there is as yet no single convincing viewpoint. But at a minimum, she demonstrates that it is not just the movements of crops and animals which matter, but also the transfers of agricultural techniques, technologies, and understanding. Crops do not normally grow of their own accord.

The Columbian Exchange also included one important transfer of animals that escaped Crosby's notice — not surprisingly, perhaps, since the creatures in question were tiny and, moreover, their importance remained unknown until the twentieth century. In the context of the slave trade, a species of African mosquito managed to migrate to the Americas. *Aedes aegypti*, the vector for yellow fever and dengue fever, is among the world's most deadly animals. The viruses it carried killed thousands upon thousands in the warm latitudes of the Americas, shaping the settlement, warfare, and politics of the region (McNeill 2010). The mosquitoes and their viruses proved more lethal to adults without prior experience of yellow fever or dengue than to those who had grown up with, and survived, these diseases as children. Yellow fever, in particular, is much less serious in children than in adults, and survival of a single bout with the disease confers lifetime immunity. In practice, this meant that upon moving to the West Indies or the American tropics generally, adults from Europe stood a greater risk of illness and early death than did people from West Africa, so once yellow fever was firmly established in the Americas, by the 1640s, African slavery made more economic sense than did the indentured servitude of Europeans (Kiple 1984). When Crosby was writing in the late 1960s, many people thought yellow fever was American in origin and that *A. aegypti* might also be an American species, which is not the case. But since there is no decisive written evidence whatsoever on this subject, it has taken genomic evidence, available only in the last ten years or so, to clear up the controversy.

There are some further respects in which Crosby could not fully take the measure of the effect of the Columbian Exchange. When he wrote about American food crops on the eastern side of the Atlantic, he had a great deal to say about potatoes, especially in Europe, and about maize in Europe and in Africa. He even mentioned the eventual importance of maize in other places, such as China, and noted that maize became a staple in broad regions of southern Africa. But there are some interesting historical developments which have only been brought to light by subsequent scholarship. Here are two hypotheses which have been advanced by Africanist historians: one concerns the political significance of maize, especially on the West African coasts; the other that of cassava, or manioc, as it is otherwise known.

2 Strictly speaking, bananas are not originally an African crop, but come from Southeast Asia. We can, however, be pretty sure that they were introduced to the Americas *via* Africa, the evidence in this case being genetic rather than textual, a source which was not available to Crosby at the time he wrote his book.

The first record of maize in Africa dates from 1548, although it might have arrived decades earlier. While the older African food crops — millet, sorghum, yams — were productive, and eminently suited to the climates and landscapes in which they grew, they did not store nearly as well as maize. Dried maize kernels keep for months, meaning that maize was much more suitable as a portable food supply — certainly compared to yams, the staple food in much of West and Central Africa, but also to the native grains such as millet and sorghum. Military forces could be sustained on prolonged campaigns with dried maize, something which had previously been next to impossible in the history of Atlantic Africa. This constraint on military activity also hindered the development of large-scale polities, which, after all, depend on the exertion of military force. The arrival of maize seems to correlate with the extension of state building beyond its earlier origins into larger and more militarised states. Moreover, because of its portability, dried maize served as a suitable food for slave ships and slave caravans. Farmers turned to it along long-distance trade routes and around slave embarkation ports. The arrival of maize in Africa improved the economics of slavery, making lengthy voyages more practical than ever before (McCann 2005).

The second hypothesis concerns cassava, which originated in Brazil, probably in Amazonia. Cassava is a root crop that requires a tremendous amount of labour before it can be turned into edible food. In its raw form it contains poisonous compounds, forms of cyanide, of which forty milligrams can kill large mammals. So-called bitter manioc, the preferred variety, contains much more of the poisons than the less often cultivated "sweet" manioc. To remove the toxins, people soak cassava root, roast it, pound it into flour, and sometimes do other things to it as well. Cassava is rich in carbohydrates, but poor in protein and most useful nutrients. Despite its labour requirements and modest nutritional payload, cassava has become one of Africa's staple foods. One of the reasons for that is that it does well in drought and in thin soils; another is that it suits farmers' needs in politically unstable landscapes, especially those where the threat of violence is never far off — such as those areas where slave raiding thrived.

The spread of cassava can be connected to the geography of enslavement. Just as in Northern Europe, where potatoes recommended themselves to peasants and landlords in times when armies were sweeping across the landscape requisitioning grain, cassava met a particular need in the population. Potatoes have the advantage that they can remain in the ground for a while, rather than needing to be harvested at a particular time and stored, and thereby becoming more vulnerable to roving armies and quartermasters. The same is true of cassava — it does not need to be harvested at a fixed moment, but can remain underground until needed. Whereas dried maize stores well once harvested, cassava stores well before being harvested. So for those whose lives were often imperilled by slave raiders — Africans who might at a moment's notice need to drop everything and run into the bush to hide for weeks at a time — cassava was ideal. The evidence uncovered by Jan Vansina (1997), among others, suggests that cassava became the most common crop in areas where slave raiding was frequent.

These two hypotheses concerning maize and cassava are examples of the ways in which the Columbian Exchange affected the social and political landscapes of Atlantic Africa. With the respective impacts of maize and cassava upon the political and economic possibilities in Atlantic Africa, it might make sense for historians to speak of pre-Columbian Africa — at least on the Atlantic side of the continent — as they routinely do of pre-Columbian America.

4. The Ecology of the Atlantic American Plantation Economy

The final part of this essay concerns the plantation system (Fig. 2), which was the destination of the majority of enslaved Africans who crossed the Atlantic Ocean. It extended from northeastern Brazil in the south to the hinterlands of Chesapeake Bay in the north, and represented a huge zone of Atlantic America in which the slave plantation was the primary, if not the only, mode of production. The ecological significance of the plantation system has several aspects. The first point is the simplest one, one historians and geographers have been making for twenty or thirty years now, which is that every plantation, whether of tobacco, cotton, rice, sugar, or coffee, typically required the clearing of forests to make room for planting crops.

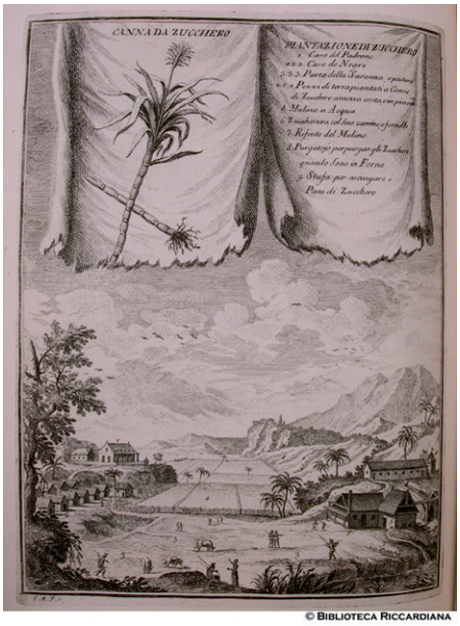

Fig. 2 A plantation on Martinique, c. 1770

So, beginning in the smaller islands of the eastern Caribbean and the coastlands of northeastern Brazil, a sweep of deforestation was launched, motivated by the desire to clear more space for plantation crops. This deforestation sweep characterised the West Indies in the sixteenth, seventeenth, and eighteenth centuries and climaxed in Cuba in the nineteenth century (Watts 1987, Funes 2008). The same process was underway on a very considerable scale in the American South, where tobacco and cotton plantations likewise required the clearing of forests. One interesting and entirely inadvertent consequence of this process in the Caribbean was that it improved the breeding and survival conditions for two kinds of mosquitoes, the vectors of malaria and yellow fever. With respect to Anopheles mosquitoes, the vectors of malaria, deforestation in the Caribbean islands with mountains and hills changed the hydrological situation by increasing runoff, floods, siltation, and deposition in the lowlands,

which in turn created more marshland, swamps, and wetlands around the coasts of the islands. Montserrat and Martinique, just to give two examples, became the perfect breeding grounds for Anopheles mosquitoes, which thrive in swampy terrain (McNeill 2010).

Deforestation also reduced levels of predation upon mosquitoes, by reducing or eliminating bird populations. There is textual evidence for this, especially in the case of Barbados. Visitors to the island in the 1630s and 1640s remarked on the abundance of bird life; those who arrived in the 1650s or later noted the paucity of birds (Ligon 1657, von Utcheritz quoted in Gragg 2003, pp. 22–23).

The *Aedes aegypti* mosquito, the above-mentioned vector for yellow fever, provides a more complex and perhaps therefore more interesting example. It is particularly connected to the sugar plantation, rather than to plantations in general. *A. aegypti* is a most peculiar mosquito, unique among its (very numerous) kind; it has a strong preference for breeding in artificial water containers, e.g. buckets, pots, barrels, cisterns, and wells. It is therefore effectively a domesticated mosquito, which thrives on its association with human beings — it almost never lays its eggs in puddles, ponds, or ditches, as most mosquitoes do. This is the reason for its link to sugar plantations, because every sugar plantation had a great number of pots that were used during the initial sugar refining phase. A large plantation might have had ten thousand or more pots, in use for a few months of the year after the sugar harvest. For the rest of the time the pots stood empty, or broken, collecting rainwater, thereby providing ideal conditions for this particular kind of mosquito to lay its eggs. On top of that, all mosquitoes like sweet liquids, which provide them with much of their energy, and female mosquitoes also require blood meals in order to reproduce. Individual mosquitoes can survive on cane juice, but a population of mosquitoes requires blood meals if it is to last more than a few weeks. So a sugar plantation was a veritable smorgasbord for *A. aegypti* — all of the sweet liquid they could possibly want was easily accessible, as were the blood meals needed for their reproduction, due to the proximity of the human and livestock populations. The conditions for the survival and expansion of *A. aegypti* mosquito populations were rapidly improved by the installation of plantations, specifically sugar cane plantations, in the Caribbean (McNeill 2010).

The plantation system also had far-reaching consequences as far as soils were concerned. In the wake of the Columbian Exchange, the indigenous populations of the Americas — not just Atlantic America, but across the continent — entered into severe decline for reasons associated with infectious disease, with brutal exploitation, and with loss of land and livelihood. Population declined by 50 to 95 % in most areas, and in others, mainly coastal lowlands, indigenous populations gradually became extinct. This human calamity provided an opportunity for forest growth and regrowth. In almost all cases, the indigenous populations of the Americas had been dependent on using forests and forest soils, and their use included widespread forest burning, either for agricultural purposes, or else to favour the proliferation of the grazing animals which they hunted. Following the population decline, between 1500 and 1650, forests in Atlantic America grew bigger and taller than they had been for a very long time.

There is written evidence for this, but also ecological evidence in the form of tree rings and palynological data. It is no longer a disputed notion. These gigantic forests were often mistaken by visitors to the Atlantic American coastal regions for ancient, primeval forests, but in fact they were usually only a century or two old, even when they included gargantuan specimens such as the American chestnut (*Castanea dentata*, Fig. 3). The tissues of these trees contained gigantic quantities of potential soil nutrients. In effect, for one or two hundred

years the trees had been drawing up nutrients from the soil and sub-soil from depths which crops simply could not reach. They were the functional equivalent of the water towers which are such a familiar sight in North America, pumping up ground water from the depths and storing it for later distribution.

Fig. 3 American chestnut trees. Photograph c. 1910

The success of plantation agriculture was, in some measure, dependent upon the nutrients in these mammoth and majestic trees. Felling and burning trees was the chief occupation of most slaves early in the career of every plantation. Char and ashes were full of nutrients, and thus ensured the prospering of tobacco, cotton, or sugar for several years afterwards. In particular, plantation prosperity depended on the quantities of nitrogen, phosphorus, and potassium that had been stored up in these arboreal nutrient towers. Soon, however, the nutrient bonus was gone, carried off in tobacco leaf or cotton thread. Planters had to move their operations at certain intervals — after twenty, then ten or even five years — as the key nutrients that limit plant growth became ever scarcer. Evidence of this enforced mobility can be found on a small scale, on individual plantations, in the way in which landowners deforested new areas of land within their holdings and planted them with tobacco, cotton, or sugar. It can also be seen on a large scale, in the migration of the centre of the plantation economy from the small islands of the eastern Caribbean to the bigger islands of the western Caribbean, including Jamaica and ultimately Cuba. The same pattern prevailed in the American South, where the cotton plantation regime migrated from the eastern seaboard of Georgia and the Carolinas into Alabama, Mississippi, Louisiana, and East Texas. Similarly, tobacco plantations moved from the Chesapeake area to the piedmont region of North Carolina, and even further west

into Kentucky and Tennessee. Plantations in the Americas were a form of shifting agriculture on a macro scale. In many environments, soils quickly became too poor to ensure profitability once the subsidy of nutrients in forest ash wore thin. Plantation agriculture, as practiced in the Atlantic Americas, was decidedly unsustainable due to its demands on soils.

5. Conclusion

In this quick overview of certain topics concerning the ecological Atlantic, we have noted the importance of the Little Ice Age, the Columbian Exchange — especially its underappreciated African components — and the centrality of the plantation system based on African labour. Four of every five persons who crossed the Atlantic to the Americas prior to 1820 were Africans. The connections between Atlantic Africa and Atlantic America were at least as strong as those between Atlantic Europe and Atlantic America. This is especially applicable to the connections at the latitude of Angola-Brazil, and at the latitude of West Africa and the Caribbean. These axes are the sites where most of the economic action and interaction took place. To express it in Neo-Crosybian terms, we might refer to a Neo-Africa in the Americas: in another book, entitled *Ecological Imperialism* (1986), Crosby coined the term "Neo-Europes" to describe Australia, New Zealand, Argentina, Uruguay, and the northern United States and Canada, all lands where European people, plants, animals, and pathogens became established and largely replaced the previous societies and ecologies. The northeastern part of Brazil, the Caribbean, and parts of the American South (in particular the lowlands of Georgia and South Carolina), we can describe as Neo-Africas. Not only were the populations of these lands substantially African in origin, but they lived amidst a new post-Columbian Creole ecology, with a mix of African, American, and European elements.

This essay has touched on the ecological and environmental implications of the slave trade in Africa itself and of the slave plantation economy in the Americas. Both are areas in need of more research. But provisionally, until that research is done, a plausible way to envision the Atlantic as an ecological space in the early modern centuries — the era of the transatlantic slave trade — is the one offered at the beginning of this essay: the ecological Atlantic as the story of exploitation, in particular, the very brutal dual exploitation of both soils and people. Indeed, the one exploitation encouraged the other: planters, especially in the West Indies, understood the fragility of their situation and tried to make their money as fast as possible. They knew that yellow fever and other diseases might end their lives at any time; they knew that their slaves had short life expectancies too; and they knew that their crops despoiled their soils and so their land was a wasting asset declining in value over the years. These circumstances and this knowledge conspired to motivate them to work their slaves hard and to exploit their soils with no thought for tomorrow. Neither the thought nor the practice of sustainability had a place in such a world.

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