

# THE HUASTECA RAIN FOREST

## An Environmental History

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*Abstract: Northern Veracruz has experienced dramatic transformations in its landscape over the longue durée. Geological forces shaped it into the northernmost tropical rain forest in the Americas. Paleolithic humans appeared as early as 7600 BCE and tinkered with it, exploiting it for their own survival for thousands of years. Their ecological footprint was light enough until the communities grew and adopted agriculture. At that point, around 2500 BCE, the landscape of the Huasteca Veracruzana became more humanized, but the survival of the rain forest was not at risk, even when the first towns formed in the first centuries of the Common Era. Urbanization and civilization were highly localized, collapsing for reasons not well understood. The rain forest thus endured to confront Spanish colonialism in the 1500s. Changes in the land were uneven under the Spanish, however, and the rain forest outlasted colonial rule as well as the turmoil of nineteenth-century national politics. Transformation came in the twentieth century, as a result of oil extraction. Under the oil barons, the Huasteca experienced the full impact of capitalism and industrialization. Between 1900 and 1940, the oil industry eliminated the rain forest, leaving the Huasteca open to further environmental change. In the aftermath of oil, the landscape shifted to grasslands and monocrop agriculture. Oil remained present but largely in disguise: as petrochemical inputs to force poor soils to sustain citrus production and cattle ranching.*

Landscapes have history. Environmental historians have taught us that much (Worster 1971; Cronon 1983; Dean 1995). For most of time, the changes that occurred in landscapes have been inaccessible to us: humans were not around to execute or record them. The piece of Mexican geography called today the Huasteca Veracruzana is no different. Geology tells a tale of natural forces working their magic for millennia. Wind, rain, fire, earthquakes, and other elements of nature molded landscapes and ecologies over time, burying living creatures that, millions of years later, would become the fossils humans would discover and recover as fuel in the twentieth century. Without a human presence, the dynamic earth moved landmasses and overturned landscapes until it formed a variety of ecosystems at the midpoint of the Mexican Gulf (Hirschfeld 1999). Here one of the most important river systems of Mexico, the Pánuco and the Tamesí, met and carved out a series of lakes and lagoons before draining into the Gulf. Periodic flooding created rich marshes, bogs, and swamps along the rivers (Jordan 1993). To the north, an ecological transition took place as the marshes dried up and the

I want to express my deepest thanks to cartographer Kaitlin Jaffee for the design and production of the map of the Huasteca (figure 1).

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landscape became scrubby. To the south, the opposite was true: the trees grew tightly and tall, the northernmost tropical rain forest of the Americas. It spread down the lowlands between the coastline and the Sierra Madre Oriental, feeding on incessant rain, mist, and hurricanes. The coastline hosted more lagoons and swamps, interspersed with white sand dunes and dark mangrove forests. All manner of creatures large and small inhabited this land and evolved with it through the ages.

No one knows when exactly those ecological arrangements emerged. What we know is that they were already in place when humans walked onto the land. When they did, they joined the forces that acted on the landscape. They would change it forever, but not for a long while. Population growth, urbanization, political turmoil, migration, and other changes in the human polity had more of an impact on the fortunes of various peoples over time than on the rain forest itself. The forest weathered human affairs remarkably well. But just as human communities reached some seven thousand years of occupation, something happened, something akin to all hell breaking loose. Humans changed. They became a geological force themselves and remade the landscape seemingly overnight. How and why did that happen? The answer is historical: an intimately human affair, a tale of power, ideology, and technology.

The transformation of the rain forest in the Huasteca Veracruzana was a lengthy and hard-fought affair. The pace and rate of change is difficult to assess; the process was neither smooth nor predictable. The evidence is tentative for thousands of years, literally. Academic boundaries, moreover, mean that observers focus on specific topics from discrete disciplines, thus paying less attention to the great span of time and ecology (Hunter 2009). Yet the temerity of taking a *longue durée* view within environmental history has advantages. The approaches are complementary. They both question periodization based on economic or political processes alone and disrupt historical narratives that focus solely on relationships among humans to the exclusion of the natural world.

As scholars of “big history” and environmental historians argue, humans are part of nature (Christian 2004). Nature is more than the live stage on which all human interaction takes place; it is itself an actor in human affairs and beyond, quite independent of human cares and desires. The *longue durée* thus illuminates large trends and patterns of transformation in the relationships between human societies and their environments that do not depend on political chronologies. Combined, the long-term and environmental gaze shows instead that, despite the enormous diversity in cultural, political, or economic arrangements that have characterized the human experience over time, there are general patterns in the human-environment relationship that are remarkably similar. Paleolithic humans interacted with their environments to cause significant but often geographically constricted ecological change (Krech 1999; Harken 2007). Their numbers were small and their technologies tended to be low impact, at least in comparison with the more intensive environmental effects that agriculture wrought.

Thus, early Neolithic agrarian communities produced “limited” ecological impacts until societies developed into full-fledged civilizations. Large urban centers with their rigid social hierarchies and demographic explosions meant that

small elites gained unprecedented power over people and nature alike (Christian 2004). The use and abuse of both over the centuries contributed to the undoing of many, including places as far flung as Mesopotamia, Harappa, ancient Egypt, Mohenjo-daro, Crete, Rome, Uxmal, and Chichén Itzá, all sites of magnificent ruins in transformed landscapes today. Although the details of the sociopolitical and economic turmoil that engulfed such societies may not be perfectly clear to us, environmental historians make a strong case for taking into account ecological causes (Hughes 1994; Chew 1999). The Huasteca Veracruzana may not appear in the register of “lost” civilizations, but the litter exists, as the rain forest does not.

The long history of the rain forest of the Huasteca has yet to be written, as is the case for the landscape of Mexico as a whole, but an outline can be discerned from the archaeological and historical evidence available. What the record reveals is that the traditional periods of pre-Hispanic, colonial, and independent Mexico scholars use to evaluate change do not apply so neatly. At the same time, patterns akin to processes elsewhere in the world emerge. That continuity places the history of humans in the Huasteca in sync with the history of humanity and the planet in general, thus making the story unexceptional even though it has its own rhythms, particularities, and peculiarities. The long view of the Huasteca rain forest offered here, therefore, is a fruitful exercise in the understanding of long-term local and global environmental history, however preliminary it still is.

#### THE FIRST FIVE THOUSAND YEARS

Humans have a long history in the Huasteca. Their arrival in the area is difficult to determine with certainty, however. There are no written records and the archaeological evidence is elusive. Scholars estimate that the first human communities established themselves around 7600 BCE along the coast, where fish and mollusks were plentiful for the small family groupings that settled there. Archaeologists have uncovered a couple of sites south of what is considered the Huasteca Veracruzana today, on the basin of the Tecolutla River, at La Conchita and Santa Luisa (see figure 1). These scholars suspect that more sites exist, but they are under water as the coastline of the Mexican Gulf has sunk over time in response to natural forces (Ochoa and Riverón 2005). Given the dearth of material evidence, it should not be surprising that nothing is known about the language or ethnicity of the groups that coevolved in the tropical rain forest. However, if coastal settlements were the rule among the first human inhabitants of the Huasteca, it is quite imaginable that their ecological knowledge and practice allowed them to occupy the shores successfully for hundreds of years, as Paleolithic communities did along the California coast. It could well be, nevertheless, that evidence of inland habitation has simply not been located yet.

Mexican scholars note that the Huasteca has been a “marginal” and neglected area of archaeological research because it lacks the “monumental” architecture that has attracted investment elsewhere in the country (*El Universal* 2006). That lack of monumentality itself confirms the absence of urbanization in the area (see below, “Neolithic and Urban Communities, 2500 BCE–1500 CE”), but recent findings about large scale environmental engineering for fish ponds and even



urbanization found in Amazonia cautions the scholar about hasty generalizations about ecology and human activity among rain forest peoples (Wilford 2000; Maugh 2003). What we do know is that humans' adoption of agriculture meant ecological change.

#### NEOLITHIC AND URBAN COMMUNITIES, 2500 BCE–1500 CE

Agriculture in the Huasteca dates to approximately 3400–2500 BCE (Meade 1970; Melgarejo Vivanco 1980; Ochoa 1990b; Ruvalcaba Mercado and Pérez Zevallos 1996; Hudson 2004). As elsewhere in the world, farming generated myriad transformations in human culture and local environments. In the Huasteca, the record shows people migrating to and occupying the grassy marshes and bogs of the Pánuco and Tamesí Rivers, as well as the banks of the coastal lagoons like Chairel, Pueblo Viejo, and Tamiahua. As the communities grew, the swamps became a site of cultural encounter and exchange between the nomadic peoples of the north, the Gran Chichimeca, and the Teenek, or Huastecos, as they came to be known by the Spaniards (Tesch 1993). The Teenek belonged to the Maya language family and migrated to the Pánuco area, but when and how is a matter of debate. Some scholars believe they arrived from the Yucatán Peninsula traveling by boat along the Gulf; others propose that they walked north; and yet others suggest that the migration happened from north to south, with the Teenek peopling the peninsula instead (Ochoa 1990a; Gutiérrez Mendoza 2003). In any case, archaeology demonstrates that the Teenek Neolithic communities used agriculture and fishing complementarily and with great success for their reproduction.

By the time another group, the Otomí, migrated to the Sierra Madre Oriental from central Mexico in the early years of our era, the Teenek had entered what archaeologists call their formative period. After two thousand years of small-scale agriculture, the Teenek grew. They formed "ceremonial centers" with *cues* (small mounds, possibly pyramids) by the hundreds between 200 and 500 CE. These clustered along the Pánuco River and the Chairel Lagoon and moved west to the sierra, turning south to Chicontepec and Ixhuatlán de Madero (Melgarejo Vivanco 1980; Hudson 2004). On this arc of settlement, a large city emerged before 1000 BCE: Tamtok, in modern day San Luis Potosí (the Huasteca Potosina). Located on the banks of the Tamuín River, Tamtok covered approximately 200 hectares (480 acres) and housed five to six thousand inhabitants at its peak, around 300 CE. It was built on marshland, using hydraulic technologies that included drainage, aqueducts, canals, and an artificial lake. Tamtok was the most important urban center in the area until its demise between 900 and 1300 (Dávila Cabrera and Zaragoza Ocaña 2002; Vargas 2006). A city that size lasting two thousand years means intensive and extensive use of local and regional flora, fauna, soil, and water, but specific details are not yet available. Archeological work is in progress, with much to be learned about the city and its effects on the surrounding environment. Some evidence suggests that its demise involved mudslides, fire, and internal conflict, but there can be no doubt that, like all cities, Tamtok cast an important ecological shadow on the landscape (Chew 1999).

What the larger archaeological record suggests is that the period of expansion was followed by a contraction of occupied territory around 500 to 700 CE. The shift took place shortly before the rulers of Tula from the Valley of Mexico extended their reach to the coast as far as Tuxpan. Scholars have speculated that high tributary obligations, drought, or flooding might account for the contraction (Tesch 1993; MacDonald 2000; Hudson 2004). The shrinkage in population centers notwithstanding, the rain forest of the lowlands appears to have suffered less stress, as scholars argue that “evidence of agricultural intensification has not been found” in the Huasteca Veracruzana (Ochoa and Riverón 2005, 42). Tula rule nevertheless brought another kind of change: immigration to the sierra. Nahuatl filtered in from the Valley of Mexico and, like the Otomí, became a permanent presence on the steppe of the Sierra Madre. The Huasteca Veracruzana writ large thus became a multicultural, multiethnic, and multilingual space, even if its population seemingly avoided the forested lowland (Gutiérrez Mendoza 2003).

The Teenek enjoyed a second cultural renaissance after 700 CE. Their territory extended farther north to the last great marshes and bogs of the Soto de la Marina River (in modern-day Tamaulipas) and south past the Tuxpan River to the Cazonas, where the Totonacos settled between 800 to 1200 and where they remain to this day (Ochoa 1990b; Gutiérrez Mendoza 2003). In this period, the Huastecos organized small independent states, *señoríos* or *cacicazgos*. Most were concentrated along the sierra proper: the town of El Tamuín (San Luis Potosí), the new señoríos of Yahualica and Huejutla (Hidalgo), and the older settlements of Chicotepec and Ixhuatlán (Veracruz). New *cacicazgos* grew along the coastal Tamiahua Lagoon from modern day Tampico to Tuxpan, including the site known as Las Flores, which flourished on the banks of the Pánuco River.

Between 1100 and 1300 CE, the Huastecos established another, much larger city contiguous to the declining Tamtok in San Luis Potosí, Tamohi. Tamohi occupied about 1,600 hectares (3,840 acres) and included a ceremonial center, a large housing area, and agricultural fields. An impressive mural depicting a religious procession reveals the existence of a highly specialized and stratified society, but excavation is in its early stages and reveals little about its ecological impact locally or regionally (Stresser-Peán 1990; Ochoa 1993; Solís Olguín 2006).

It appears that the great forested lowland was also urbanized in this period. Neolithic villages and a ceremonial center show up in the archaeological record. From north to south, new settlements arose in Ozuluama, Tantoyuca, Tepetzintla, Temapache, and the “modest provincial sanctuary” of Castillo del Teayo, which bordered on Totonac territory (Seler 1993, 213). Precious little is known about Castillo del Teayo, however, save that its single small, forty-foot-tall pyramid follows Mexica construction patterns. That Aztec influence demonstrates that, by the 1300s, the Huasteca was closely connected to the cultures and political structures of the Valley of Mexico, well within the ecological shadow that Tenochtitlán projected onto the lands it taxed. In fact, this was when the Aztec named the area Cuextlan, after the name of a local authority, a word the Spaniard later Hispanized as Huasteca (Solís Olguín 2006).

The population growth the Huasteca witnessed beginning in the eighth cen-

tury meant, once again, intensifying ecological exploitation, including the rain forest. Clearing land for swidden agriculture was the norm, with chinampa technology used along the Tamiahua Lagoon, although scholars disagree on the use of terracing or canals (Whitmore and Turner 2001; Ochoa 2003). The trinity of corn, beans, and squash was the center of the diet, spiced with chilies and salt. The Teenek also grew cotton to weave into textiles for their own needs and, in the 1400s, to pay tribute. Hunters aimed their bows and arrows at turkeys, ducks, peccaries, deer, and iguanas, whereas fishermen caught a wide variety of fish, turtles, shrimp, mollusks, and shellfish from rivers and lagoons. Men also captured birds for their bright plumage (Piña Chan 1990; Ruvalcaba Mercado and Pérez Zevallos 1996). In addition to using stone for sculpture, the Teenek also used gold and bronze to craft ornamental objects. Such activities suggest excavation or quarries that would have altered the landscape in specific sites, but such locales have not been identified in the published archaeological record thus far.

Another Teenek economic activity included the collection of a great variety of forest plants and trees for medicine. Their success was such that they acquired a reputation for sorcery among other ethnic groups. Despite the intensification in the use of the rain forest, or perhaps because of it, the Teenek gods, including Quetzalcóatl, Xipe, Tláloc, Tlazoltéotl, and Ehécatl, reveal an ideology that located humans as part of and at the mercy of nature: rain gods, wind gods, fertility gods. All had to be appeased through sacrifice, lest humans suffer the consequences in drought, hurricanes, or other natural events considered disasters by local inhabitants (Ochoa 1990b).

The wealth the Teenek created from the rain forest through their labor caught the attention of the Aztec-led Triple Alianza, which sought to subjugate them in 1458. They succeeded in controlling the señoríos of Castillo de Teayo, Metlatoyuca, Xolotlan, and Huauchinango (Puebla), but failed to expand north and east, where the bulk of the Teenek population lived (Rodríguez 1945; Piña Chan 1990; Seler 1993; Ruvalcaba Mercado and Pérez Zevallos 1996). The Aztec demanded bodies for the sacrificial altar as well as tribute in the form of chilies, tropical birds (parrots and macaws), fish, shrimp, honey, turkeys, fruit, textiles, tree bark for paper, pigments, and animal skins. Payment meant additional labor duties and ecological exploitation. Environmental degradation thus occurred in locations surrounding the tribute-paying pueblos. An informant who spoke to Fray Bernardino de Sahagún in the sixteenth century about his native Huasteca complained about the changes. When his grandparents had been alive, he told the priest, there were neither weedy reeds nor spiny brush, only “big and beautiful trees” (Melgarejo Vivanco 1980, 88; Toussaint 1990). In 1459 the Teenek rebelled against the Aztecs but lost. They continued rebelling through the end of the century, weakening the hold the Triple Alianza had on the Huasteca. By 1500, however, an infinitely more powerful and destructive enemy was at the door: the European and his “portmanteau biota,” the package of plants, animals, and germs that traversed the ocean alongside him (Crosby 1989, 89). If all the peoples of the Huasteca had gnawed at the rain forest to take care of their needs or to fulfill the obligations imposed by native elites or more powerful outsider states, the attack

of the Spaniards and their descendants on the people and the rain forest would be frontal and brutal.

#### ASSAULT, RESISTANCE, AND SURVIVAL, 1500–1900

The European landing marked a juncture of severe and profound ecological disturbance, as indigenous populations experienced very early the full blow of Spanish civilization: war, epidemic disease, displacement, and slavery. The changes in the landscape, however, were highly localized, uneven, “patchy,” as one scholar described them (Pérez Zevallos 2005, 89). Thus, the ecological revolution that Merchant (1989) identified in colonial New England, for instance, and Melville (1994) demonstrated in the Mezquital in central Mexico, stalled in northern Veracruz, much in the same pattern that geographers have identified elsewhere in Mexico (Butzer and Butzer 1993; Sluyter 1998; Endfield and O’Hara 1999). Despite Spanish efforts to bring about an ecological revolution, that is, to change the land, its inhabitants, and the ideologies that determined their interaction, both the land and the people remained—the rain forest in much better shape than the people.

Estimates of the size of the population of the Huasteca before the Spanish landing on the beach they named Vera Cruz vary widely. One scholar mentions “bands of one hundred people maximum” before the spur of the eighth century (Tesch 1993). Three others speculate on a total number for 1500, encompassing territory northeast of Pánuco, past Ciudad Valles in the Huasteca Potosina, down to the Cazonces River and the Otomí, Nahua, Tepehua, and Teenek towns of the sierra: perhaps 1 million people. That is indeed a great number, considering that the Huasteca had 2 million inhabitants in 1996 (Gerhard 1993; Ruvalcaba Mercado and Pérez Zevallos 1996). The Spanish conquerors Francisco de Garay and Alonso Alvarez de Pineda did count forty towns on both sides of the Pánuco River when they navigated it in 1521. Nuño de Guzmán confirmed the number when he gave away forty-six towns in encomiendas on his appointment as governor of Pánuco in 1526 (Pérez Zevallos 2001). Another source asserts, moreover, that Pánuco had eighty-three different señoríos on the eve of the European landing, and Spanish priests reported that Hernán Cortés apprehended and executed sixty rebellious caciques in the same area (Muñoz Mendoza 1993). Spanish sources from 1532 to 1533 listed 128,160 to 152,056 persons in their tribute rolls. The same sources cite a census of the houses in forty-six towns in the Pánuco and the sierra. They counted 7,429 homes (an average of 161.5 per town), with the largest concentration at Nспан, 606, and the smallest at Tancolul, with 13 (Pérez Zevallos 2001). The population would drop precipitously thereafter, as the Spaniards tied the fates of people and forest in truly unprecedented ways.

Although the Spaniards were few in number, they had a major impact on the people of northern Veracruz. The Columbian exchange in the Huasteca was exemplified by the actions of Cortés’s governor in Pánuco, Nuño de Guzmán (Crosby 1972). After a series of quick and bloody battles that destroyed scores of Teenek men, the governor realized that the area lacked gold, silver, cattle, or horses, the



goods he deemed important enough to itemize. The population, moreover, was of low quality, "indios de poco provecho por ser de costa e tierra caliente," not apt for labor, a notion reinforced by the existence of forest more than grasses (Pérez Zevallos 2001, 27). Nuño de Guzmán made the decision to remediate the situation by transforming the ecology. The marshes and forests would become a New World version of southern Spain: a pastoral landscape dedicated to grazers. Thus, de Guzmán captured as many Teenek as he could and shipped them as slaves to the Antilles in return for cattle, horses, and mares. He was proud of the fact that he negotiated a great deal: fifteen people for one horse or one mare. Cortés himself, according to de Guzmán, had done much worse: he had traded one hundred people or more for one horse. The governor was so successful at his business that by 1528 Fray Juan de Zumárraga was denouncing him. He wrote that de Guzmán was leaving Pánuco "destroyed and desolate," having sent twenty-one ships full of enslaved Teenek to the Caribbean already. The priest estimated the total number of humans traded for cattle and horses at fifteen thousand (Pérez Zevallos 2001).

The result was predictable: Teenek uprisings; Spanish retaliatory action; further enslavement; and somewhere in that sequence, the pox (*sarampión*). If war and slavery targeted the male population first and foremost, the pox destroyed everyone. When Ramiro Nuñez Guzmán y Gómez Nieto visited Pánuco in 1533, he found ghost towns: all the inhabitants had fallen sick and died. He visited other villages where the population was weak and starving. He heard that yet other locales had emptied out, as the people fled to escape the Spanish (Pérez Zevallos 2001). The informants did not specify where the survivors migrated to, but it is safe to say that some must have fled into the forest rather than risking capture or disease. In their place remained the cattle and the horses, but not in a bucolic, Iberianized landscape. Feeding on the marshy grasses of the Pánuco and the Tamesí Rivers and lacking natural predators, the cattle and the horses grew fat and reproduced with reckless abandon, reputedly doubling their numbers in fifteen months. They went feral in a few generations, migrating north through modern-day Tamaulipas and not stopping until they reached Texas and beyond (Doolittle 1987; Jordan 1993). By the 1590s, the Spaniards who settled on the westernmost corner of the Huasteca, in Valles, considered a herd of twenty thousand cattle poor. Some claimed to have 150,000 head, the numbers impossible to ascertain because the animals were loose and captured only for sale or rodeos. But parts of San Luis Potosí did become the epitome of colonial latifundia, with one hacienda encompassing 450,000 hectares (Aguilar-Robledo 1993).

In northern Veracruz the Spaniards tried to follow the same pattern but failed. Despite their knowledge of and experience with pastoral practice and landscapes, they did not re-create their home environment. They did give away the Huasteca Veracruzana and its inhabitants to Spanish men. Between 1536 and 1620, the Spaniards granted 123 encomiendas and more than 650 *mercedes* (land grants) in northern Veracruz (Simpson 1952; Jordan 1993; Pérez Zevallos 2001; Valle Esquivel 2003). Yet instituting new property and labor regimes did not automatically translate into changes in the land. The Spaniards could enslave and despoil survivors

of epidemics, but they could not fell the rain forest. They could introduce biological substitutions of plants and animals, and the latter, in turn, could trample and eat native crops and plants, compact the soil, introduce weeds, and even degrade the lands they roamed, but they could not turn the trees into grass. To replace the rain forest with *potreros*, the Spaniards needed labor. And that was a problem. The Spaniards themselves had decimated the population, and in so doing, they had eliminated the labor force they required to chop down the rain forest.

Shifting ecological realities, moreover, caught the attention of the Teenek's northern neighbors. In the 1570s, when the Huasteca began supplying meat and cargo animals for the northern silver mines, the Chichimecas started raiding the region in earnest. Perhaps the abundant new food sources and potential means of transport roaming freely attracted them. Perhaps they figured that the vulnerability of the Teenek and the tiny number of Spanish presented opportunities too good to ignore. Whatever their logic was, over the following decade the Chichimecas made incursions into Valles and sierra communities such as Tamasopo, Tanlacú, and Tancoyol, pressing east into Tamós and even Pánuco. When the Englishman John Chilton visited the Huasteca Potosina at Valles in 1572, he encountered a fortified adobe wall built on the orders of the Spaniards to keep the Chichimecas at bay (Meade 1970; Stresser-Peán 1990; Aguilar-Robledo 2003). Nevertheless, the cattle, pigs, horses, and crops remained fair game for the nomads into the 1750s.

Thus, the history of colonial northern Veracruz and indeed the entire nineteenth century became a chronicle of the long struggle over the rain forest. Scholars such as Escobar Ohmstede, Pérez Zevallos, Ruvalcaba Mercado, Aguilar-Robledo, and Ducey have documented the battles over land rights as indigenous communities fought against the Spanish and their descendants upon recovery from the demographic collapse of the sixteenth century (Escobar Ohmstede 1998a, 1998b; Ducey 2004). Although the Huasteca did become an important economic actor during the colony, the economic activities that the Spaniards engaged in spared the forest as a whole and thus offered hope of land recovery for indigenous people as their numbers began to grow again.

A look at the colonial economy of the Huasteca shows how the rain forest held out into the nineteenth century. In a pattern reminiscent of Aztec-Teenek relations, the Spaniards assigned the role of supplier to the Huasteca, exploiting it for export. The Huasteca became a source of cattle and pack mules for the mines of central Mexico, the "periphery" whose ecology was in the service of the "core," as the environmental historian Chew (1999, 7–8) argues for the ancient Mediterranean. Yet in terms of the survival of the rain forest, the location of the herds is telling. The sources note that they pastured in the "natural grasslands," that is, along the marshes, riverbanks, and flats of the coastal lagoons, not necessarily in the depths of the lowland forest (Guerrero Guerrero 1990, 23). It could have also been the case that abandoned indigenous plots turned to grass, since the initial labor of clearing the forest had been done already and ungulates sometimes carried their own future food supply as grass seed in their hooves. One or both seem to have happened in Tamaox, Ozuluama, Tantoyuca, and Amatlán, where *potreros*

were a reality by the mid-1700s (Aguilar-Robledo, 1993; Reyes Costilla 2003). That period witnessed further growth in towns of the forested lowlands: five were listed for the Tuxpan *alcaldía*, with a total of 1,486 tributaries (Ducey 1992).

The Huasteca also became a supplier of piloncillo from sugarcane, a crop that is another grass that grows well with minimum labor, save at *zafra* time. Here again, fields opened by indigenous communities now depopulated could have been turned over to sugarcane without much effort. The tropical rains took care of the sweet grass, and whenever the landlord wanted to make piloncillo, he could order his surviving *encomendados*—or in the case of Tuxpan, enslaved Africans—to chop down the cane, process it in the simple wooden *trapiche*, load it onto donkeys and mules, and send it to the mines. The road used for this purpose circumvented the forest, running along the coast from Tamihua to Tampico and then turning west toward Pánuco and beyond. Colonial officials in the sierra town of Huejutla writing in 1791 remarked, in fact, that the lack of roads hampered the expansion of agriculture in the region (Ducey 1992). Cattle ranches in the sierra, likewise, found “ways to function with ecological stability” (Aguilar-Robledo 2003, 103). Undoubtedly, the forest also recolonized areas left vacant by Spanish depredation and disease and regenerated. That was the case with Castillo del Teayo. The town was abandoned early in the colony, swallowed by the forest until the twentieth century (Seler 1993). There is also information that the Spanish introduced new plants into the forest: fruit trees, such as oranges, lemons, pomegranates, apricots, and peaches (Ruvalcaba Mercado and Pérez Zevallos 1996). These did not require labor or destruction of the rain forest to grow and reproduce. The uses the Spaniards made of the land, therefore, ended up being shaped by the existing ecology and the population drop they precipitated: the colonial economy of the Huasteca was utterly not labor intensive. The crops and animals introduced to the Huasteca required little labor and relatively modest and highly localized deforestation. However unwittingly and unwillingly, the Spaniards ended up accommodating to the local ecology rather than transforming it into a neo-Spanish landscape, albeit at an extremely high cost to indigenous people.

Regaining control over land and ecology became the objective of the indigenous populations of the Huasteca as soon as they were able to outlive the pathogens the Spaniards brought from Europe, in fact. Historians record that some started gaining ground on the Spanish as early as the late 1560s. In Chicontepic, for instance, the survivors thwarted Spanish efforts to concentrate them in a *congregación* (for easy access to their labor) and managed to recover access to land from authorities in 1567. They acquired more land again in 1687 and 1695. By the late 1690s, similar demands were taking place in other sierra communities (Valle Esquivel 2003). A half century later, conflicts had escalated. By 1750, for example, the sierra community of Ilamatlán was up in arms over land. At the same time, Ozuluama ranchers in the lowlands saw their properties “invaded” by native agriculturalists seeking to rid the plain of cattle. Over the following fifty years, rebellions spread. Indigenous communities were growing and demanding control over the landscape, seeking, in effect, the restoration of the rain forest ecology, albeit without using such language. Sierra communities followed historical patterns and grew faster than the coast or the forested lowland. Yahualica,

for example, had 1,588 families in 1743 and Huejutla had 996, whereas the much larger territory of both Pánuco and Tampico only had 1,443 (Escobar Ohmstede 1998a). By 1794 it was not unusual for sierra villages to have more than 2,000 inhabitants, and coastal areas continued losing indigenes. Tamiahua, for instance, had 2,582 inhabitants in 1791: all mulattoes and mestizos, 993 of them children (Meade 1970; Reyes Costilla 2003).

Indigenous men recognized that Spanish demands and practices affected soil fertility. In 1715, for instance, farmers from the sierra village of Chila were arguing that it was “imperative to wait for the trees to grow again, because the land needs it” (Valle Esquivel 2003, 64–66, 69). By 1795 it was obvious that feral cattle and horses had inflicted “major environmental damage” north of the Pánuco-Tamesí River complex, where the marshes were losing ground to “forests” of weeds and fast spreading “spiny and harmful bushes” (Jordan 1993, 137–138). The struggle for the forest ecology was intensifying.

The nineteenth century opened with weather fluctuations and even greater political upheaval. The sky dried up over central Mexico in 1808, 1809, and 1810. Droughts caused crop failure. Cattle died by the hundreds (Escobar Ohmstede 1998a). The bad weather coupled with oppressive working conditions led to social unrest (Swan 1982). The miners of Hidalgo sparked the war for independence from Spain. In the Huasteca, the rebellions were met with repressive measures reminiscent of the early days of the conquest. The Spaniards herded the population into *cantones de armas*, or “strategic hamlets,” and they destroyed anything that might aid rebel bands. That policy crushed the local insurgency by 1817, but it also adversely affected Spanish landowners. Not only did they invest energy and wealth into military endeavors rather than cattle or environmental engineering, but also some of their towns, like Tamazunchale in the Huasteca Potosina, ended up in flames (Meade 1970; Escobar Ohmstede 1998a). When independence was achieved in 1820, a whole decade of war had meant economic stagnation and a serious setback in the efforts to transform the rain forest into grassy ranchland.

The transfer of political power to the native-born scions of Spanish society, the criollo elite, moreover, resulted in episodes of political and military infighting over the redrawing of provincial boundaries. Local landowners twice sought to create a separate Huasteca state, in 1823 and again in 1855, in addition to wresting the province of Tuxpan from the state of Puebla in 1853 (Rangel Silva and Salazar Mendoza 2002; Gómez Cruz 2002). One of the proponents of the state of the Huasteca, the landowner Manuel Fernando Soto, explained his rationale for such division in a tract written in October 1855. He highlighted the sorry state of the hacienda, using language familiar to anyone who has followed the debate of the Amazonian rain forest since the 1980s (Slater 1995). Soto (1856, 15, 18, 53, 55–56) erased the indigenous presence on the land altogether, writing that the hacendados’ “possessions [are] still virgin.” Local production, he argued, was “abandoned,” land prices “precariously” low, products “stagnant and without the value they ought to have due to lack of consumers.” The landowners, he asserted, had “very fertile and unoccupied” plots, waiting only for “the hand of man acting upon nature.”

According to Mexican scientific sources, the population of the Huasteca in 1852 remained low. The area was divided into four *municipios*, in itself a sign of slow

growth, each with the following populations: Tuxpan, 4,968; Tamiahua, 3,412; Temapache, 5,482; and Amatlán, 4,839—for a total of 17,801 (Sociedad Mexicana de Geografía y Estadística 1852). A separate source put the population of Tampico in 1873 at 5,847. The total number of haciendas and *rancherías* counted were forty-eight. Cattle meandered freely in all of them, but the municipality with the most was Temapache. The source noted that there were 2,640 head of cattle in the municipality, with perhaps 1,720 donkeys (Prieto 1873).

The attempts to replace the tropical rain forest with a pastoral landscape were proceeding exceedingly slowly, clearly despite political independence. One of the reasons was continuing military conflict. The major armed clashes included the 1845–1848 war against the United States, the 1857–1861 War of the Reform, and the French Occupation of 1862–1867, all of which involved Huasteca elites and their retainers fighting one another. Interspersed and blending into those upheavals were movements of armed resistance and episodic violence on the part of dispossessed Teenek communities: six between 1832 and 1874. These types of rebellions varied in length: 1832–1839; 1847–1848; 1857–1867 sporadically; 1868–1869; and one last, brief uprising in 1872. The immediate causes for each episode differed, but they shared motivations and objectives. They decried legislation—1826, 1856, and 1883—that threatened to despoil indigenes with access to collectively owned land in favor of individual private property. They also sought to protect the rain forest ecology from the cattle ranchers. The rebels destroyed *rancherías*, stole cattle, ate it, and generally retarded “progress.” The elites responded with exponential violence. They razed rebel communities to the ground until they finally resigned themselves to the reality that it was simply impossible to dispossess every last indigenous landholder without killing them all. Rebellious men thus forced a compromise on the Huasteca cattlemen: they would keep the land they still held and acquire more at the ranchers’ expense whenever possible. By that time it was already 1874 (Santiago 2006).

The rain forest thus endured the social, political, epidemiological, cultural, and economic turbulence of human affairs between 1500 and 1900. As one disappointed engineer wrote in 1876, “most of the land . . . is covered in impenetrable forests where trees, bushes, and plants intertwine their tightly woven branches, and do not let the light in; that makes it so grasses are scarce in many places, making it inappropriate to raise cattle” (Cabrera 2002, 41). Within two decades the local elite would finally, and eagerly, reach the same conclusion: that the rain forest was not appropriate for grazing. The reason was not because they finally agreed with the native population who had occupied the Huasteca for millennia. It was for a geological reason: their free-range cattle would wander into the forest and get mired in the black, oozing *chapopote* pools that dotted the Huasteca (Santiago 2006). That story became music to the ears of a whole new beast never before encountered in the tropical rain forest: the twentieth-century oilman.

#### LANDSCAPE OF CONQUEST: THE TWENTIETH CENTURY

The oilmen who landed in the Huasteca at the dawn of the twentieth century were truly amazing. They managed to do in forty years what aspiring cattlemen

had failed to do in four hundred. They conquered the ecology at long last. Not only that, they created a brave new world from northern Veracruz, a novel energy regime of global proportions, the oil-fueled twentieth-century world economy. They did so, ironically enough, by going back in "big history," to the layers of fossilized life buried in the earth for millions of years. Like emergency rescuers, the oilmen performed the Heimlich maneuver on the Huasteca rain forest until it expelled its geological history. It rained oil on the Huasteca lowland for four decades, and when the drenching was over, the forest was no more. The experience was so overwhelming that the oil boom locally overshadowed even the greatest political and military upheaval in modern Mexican history, the Mexican Revolution, which raged from 1910 to 1920.

The oilmen had similarities and differences with the Spanish and criollo elite before them. They were foreign—the two pioneers of the industry were the American Edward L. Doheny and the Englishman Weetman Pearson—and they shared an ideology of transformation and power over nature. They were, like the old conquistadores, men of action, religious (Doheny was a devout Catholic) but also scientific (Pearson was an engineer), and much more future oriented than historically rooted. They believed in progress above all, and part and parcel of that belief was the idea that man was not part of nature and had, in fact, the obligation to subjugate it for human benefit and profit. The oilmen thus personified Merchant's (1989) capitalist ecological revolution.

What set these new arrivals apart, however, was that they possessed what the Spanish and criollo elite before them lacked: capital and industrial technology. Armed with both, the oilmen flooded the Huasteca with manpower, workers recruited from all over Mexico, the United States, and Europe, to extract the liquefied fossils and turn them into fuel for export to a Western world embracing the internal combustion engine. They initiated the process of industrialization in the Huasteca, accelerating the pace of construction in the port of Tampico (the port had started laying a rail line to San Luis Potosí in the mid-1880s) and creating an infrastructure for northern Veracruz for the first time. Roads, telegraph lines, a single-gauge railroad, ship terminals, and port facilities were built from Tuxpan to Tampico. Other technologies came with and for the oil industry: the first tractors, the first planes, the first telephones, and even the first movies and jukeboxes. Worker camps, industrial workshops, pumping stations, miles of pipeline, small refineries and more than a dozen large ones were also built in northern Veracruz and Tampico. The geographical orientation of the construction projects followed a north-south axis, down the plain that became known as the Golden Lane because of its black gold. All that modernity meant deforestation on a scale without precedent in the history of human occupation of the Huasteca, as industrial landscapes replaced trees. Add to that the signature mark of the Huastecan oil industry, the exploding gusher well that blanketed foliage and waterways for miles, and the degradation spread fast, far, and wide. The coup de grace was fire: wells on fire, rivers on fire, lakes on fire, abandoned oil pools and spills on fire (Santiago 2006).

The destruction the oil industry wreaked on the landscape was so fast and thorough that even the local elite who had so welcomed the oilmen and bene-

fitted handsomely from rents complained bitterly about it. Doña Josefa Nuñez de Llorente, who traced her lineage back to the colonial period and rented her land in El Alamo to a foreign company, for example, wrote:

All the people who established themselves in the oil camps used and abused the natural products they could get their hands on, carrying out immoderate deforestation or precious woods . . . for such trivial uses as the construction of housing and the feeding of fires. . . . [They] used the most primitive and cruel methods of fishing in the rivers, streams, and lagoons, destroy[ing] . . . the species they hunted.

The letter was dated August 4, 1923 (Santiago 2006, 275). Other criollo families shared her sentiments, best expressed, perhaps, in the tangled way in which the local elite navigated the Mexican Revolution. They took up arms, for sure, but switched sides continuously, including posing as strongmen for the oil companies themselves vis-à-vis revolutionary factions, yet extracting as much cash and privilege from the oil moguls as they could, too. Save for the grave but brief 1914 episode of U.S. military incursion into Tampico (the outright invasion took place farther south at Veracruz), the revolution in the Huasteca was a rather sedate affair. All armies were interested in keeping the rivers of oil flowing, if for no other reason than to “tax” the companies as much as possible (Santiago 2006).

Still, no one cried for the oilmen when President Lázaro Cárdenas nationalized the companies on March 19, 1938. On the contrary, by then the whole of Mexico associated capitalist oil conglomerates with rampant pillage, with the hyperexploitation of both labor and “natural resources.” These were the very same practices that the companies had developed in the United States and places like the Caspian Sea in the second half of the nineteenth century and the very same practices that would engender much protest at the end of the twentieth century as the oil industry came to epitomize the powerful multinational corporation capable of making or breaking governments and environments (Yergin 1992; Kane 1995; Black 2000; Vitalis 2007). The oilmen left Mexico in disgrace, their shame turned into a national fiesta, an outpouring of sincere and deeply felt national pride and hope for the revolution and Mexico’s future (López Portillo y Weber 1976; Alafita Méndez, Benítez Juárez, and Olvera Rivera 1988). In the joy of celebration, few asked the environmental question: now that the rain forest was gone, what would be the fate of the landscape left behind?

In the second half of the twentieth century, the Huasteca witnessed a continuation of the battles over land that began in colonial times. Its indelible ecological print notwithstanding, oil extraction turned out to be an interlude, a destructive yet brief pause in the long history of opposing visions about land tenure and use. It is not that oil disappeared from the landscape after 1940. It did not. It simply migrated, south to Poza Rica in Papantla and the so-called extension of the Golden Lane, to southern Veracruz; to Tabasco; to Mexico City; and, beginning in 1970, offshore, to the Marine Golden Lane in the waters of the Gulf (Grayson 1980). In the Huasteca, Cerro Azul remained an important site of production, and Tampico continued to be a major refining center and shipping port. In 1978 the national petroleum company, *Petróleos Mexicanos* (PEMEX), resumed exploration work in the Huasteca. The location was Chicontepec. The 1981 official map on “land

use and vegetation" produced by the *Dirección General de Geografía del Territorio Nacional* identified the area as a patch of forest, a lonely twelve-mile stretch of trees pressed against the Sierra Madre Oriental (*Dirección General de Geografía del Territorio Nacional* 1981). Geological work took place there through 2001, to ascertain its potential. In 2003 PEMEX began exploratory drilling, and the cycle of social disruption and environmental degradation that accompanies oil extraction worldwide reached the sierra communities as well (Rojas 2003a, 2003b, 2003c).

The literature points to contention between agriculture and cattle ranching as the primary source of social unrest in the Huasteca during the second half of the twentieth century, the period of spiked economic growth often called the Mexican "miracle." The conflict over land use involved three parties but only two different ideologies. One party consisted of indigenous peoples lodged in the sierra and desperately trying to hold on to remnants of forest and modes of production more in line with a coevolutionary approach to ecology. The second group aggregated the "progressive" capitalist elite, which shared an ideology of modernization at the expense of the environment but was divided into two camps. One camp included the cattlemen, who, as one scholar put it, "consider themselves the most traditional and authentic bourgeoisie" (Alvarez Fragoso 1993, 115). The other one brought together new entrepreneurs from outside the region who were partial to industrialized monocrop agriculture, specifically citrus. The cattlemen, descendants of Spanish colonial families, "see the rich citrus growers with a certain disdain, as 'nouveau rich' and kind of crass climbers." Nevertheless, the cattlemen were "willing to establish alliances when their interests require them" (Alvarez Fragoso 1993, 113). Some citrus growers, in turn, began to invest in cattle by 1990. The center of citrus production in the Huasteca is El Alamo, an important former oil field now colonized, ironically enough, by a Spanish import: the Valencia orange (Cervantes González 1955).

Both elite groups benefited from the legacy of oil. The companies had cleared the forest, laid out roads, and imported labor. Moreover, PEMEX picked up where the foreign oil companies left off. In addition to producing oil and gas, the company developed the petrochemical industry that produced, among other products, the fertilizers and pesticides required by the "Green Revolution," the model of modern agricultural production developed in the United States and tested in Mexico before being exported to the rest of the developing world (Wright 2009). One of the first petrochemical plants opened in Tampico in the 1960s, thus perpetuating and intensifying hydrocarbon pollution in the city and its environs, including the Gulf of Mexico itself (Grayson 1980). The large citrus growers were quick to adapt such technologies and make expansive use of petro-agriculture: former oil "fields" have been replaced by the landscape of the Green Revolution, neat rows of orange trees well bathed in pesticides. They produce oranges because the poor deforested soil is pumped with fertilizers (Alvarez Fragoso 1993). Cattlemen also reaped the benefits of oil beyond rents. The elimination of the forest helped them create the empire of grass their ancestors sought for centuries. They expanded the use of imported African grasses massively. They also founded the *Asociación Ganadera* in 1936 and immediately pulled a major political coup. In 1937, the association negotiated with President Cárdenas for certificates of exemp-



tion of cattle lands from agrarian reform. The certificates had a shelf life of thirty years, thus guaranteeing grassland for decades (Aguilar-Robledo 1993). And even though the revolution did grant *ejidos* (communal land holdings) to some communities in previous oil camps as a result of the land-reform legislation, these were too small to pose a threat to ranching or monocrops (Ruvalcaba Mercado and Pérez Zevallos 1996; Santiago 2006).

Having produced a pastoral and monocrop citrus landscape in the plain, the elites were eager to spread it to the last corners of the Huasteca, the sierra within the limits of the states of Hidalgo and San Luis Potosí proper. The oil industry had not touched the sierra, and it remained the stronghold of indigenous people, Nahuas, Otomí, Tepehua, and Teenek. To elite eyes, the tree groves still standing looked like “virgin forests” and “idle lands” stuck in time, just like its inhabitants, “far away from the civilized world” (Cervantes González 1955, 4, 85). Grasses and cattle invaded the sierra in the 1960s (Aguilar-Robledo 1993). So did tobacco and sugarcane. As the remaining trees fell, social unrest grew. By 1973 sierra communities started taking over ranches, inaugurating another cycle of activism and repression that continued well into the late 1980s. The takeovers halted the expansion of cattle but not its presence. As a result, many indigenous families opted out altogether, as their ancestors had done in the face of advancing Spaniards. They migrated, to the Pachuca mines, Tampico, or Mexico City (Macías, Díaz Torres, and Alvarez Fragoso 1987; Neri Contreras 2003; Gutiérrez Mejía, Vargas González, and Alvarez Mundo 1990).

The transformation of the landscape continued haltingly over the following two decades. By 1995, it was evident that cattle and oranges were winning ground, quite literally. The two Spanish imports stretched from the coastal lagoons and ports to the Sierra Madre Oriental. There was an industry associated with them, too, as Nestlé built a milk plant in Tamuín, San Luis Potosí, and the citrus growers opened up juice plants in Tuxpan (Meade 1970; Alvarez Fragoso 1993; *El Golfo* 2009a). Great optimism infected elite circles. The North American Free Trade Agreement (NAFTA) promised markets in the United States, and there was talk of expansion south into Central America. Yet by 2006 those dreams were turning sour. The NAFTA agreement was in fact hurting Huasteca ranchers. As a local promoter wrote, local cattlemen were “confronting a disloyal competition due to the importation of cheaper meat from the United States” (Hernández Ochoa 2006, 39). Citrus faced other challenges, including pests resistant to chemical poisons, a legacy of the Green Revolution not limited to Mexican monocrop agriculture (*El Golfo* 2009b). Furthermore, new developments emerged in the oil industry. In Altamira, north of Tampico, PEMEX in partnership with Shell Oil built a liquefied natural gas plant at the end of a huge industrial and petrochemical corridor. A major accident at the plant is unthinkable in its consequences for the people who live in its shadow, not to mention the Gulf Coast and its little-known maritime environment (Zalik 2007). The landscape that evolved for millennia, that was transformed so radically and profoundly in one short twentieth century, still faced the hellfire of a fossil fuel-based society.

Debates over the shapes and definitions of landscapes over time and space abound. The same is true of the relationships between humans and their environ-

ments. The dearth of written sources, the incompleteness of the archaeological record, and the evolution of ideas about ecology and humanity, among other factors, determine what observers see throughout time, including modern environmental historians. Despite gaps and blind spots, venturing into synthesis over a very long time scale is a worthwhile exercise. At the very least it reminds scholars that the political timelines we construct to make sense of history are artificial and may be inadequate to understand the totality of human experience, as beings who interact not only with one another but also with the rest of the natural world. Given that humanity as a species now has the awesome power to act on the earth as a whole, it behooves historians to trace that development to the best of our abilities, at least in small corners of the planet like northern Veracruz.

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