Amazonia in the Anthropocene

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Introduction

When most people think of the Amazon, this is the type of image that comes to mind (SLIDE). Amazonia is often seen as a land dominated by Nature; a land ruled by biology. A land that erupts in an overwhelming array of flora and fauna, the diversity of which borders on the incomprehensible. Or, to paraphrase Werner Herzog, a land of overwhelming fornication and the fight for survival.

Early anthropological research in Amazonia largely upheld this view, depicting the region as a hostile environment to which Amerindians passively adapted, leaving little more than their footprints in the forest before the arrival of Europeans. However, more recent research has challenged this vision (SLIDE), arguing that Pre-Columbian Amerindians transformed large swathes of the region as evidenced in newly discovered geoglyphs, raised agricultural fields, "anthropogenic" forests, and enriched soils. Rather than simply adapting, it seems that human populations have shaped the Amazonian landscape in myriad ways for hundreds and even thousands of years. (SLIDE)

In recognition of humanity's increased capacity to alter the bio-physical environment, the Nobel prize-winning atmospheric chemist Paul Crutzen has declared that we now live in a new geological epoch: the Anthropocene, an age dominated by humanity. Observed changes in global biodiversity, climatic patterns, and even geological processes have led many to support this claim in the hope that it may draw greater attention to the human impact on Earth. However, this new geological epoch also introduces a number of paradoxes and contradictions. As humans have become implicated in global climatic, geological, and biological processes, the distinctions

between natural and cultural phenomena have grown increasingly problematic. And while humans are seen as independent drivers of global environmental change, hurricanes in New Orleans and New York, or tsunamis in Java and Japan, clearly demonstrate that humanity is not in control of the planet's forces, much less the only force on the planet.

Today, I want to point out some of the problems I see with the conceptual foundations of the Anthropocene and the way that it frames human history and human relationships to the environment. Using examples from my own ethnographic research in the municipality of Borba in the Central Brazilian Amazon (SLIDE), I will also discuss some of the ways that rural Amazonians conceive of human-environmental relations, which I believe offer valuable counterpoints to the views that undergird the current conception of the Anthropocene. Finally, drawing from the writings of Andrew Pickering, among others, I'll argue that rather than cling to the anthropocentrism embedded within the concept of the Anthropocene, we must shift toward a de-centered perspective that situates human activities and lives within broader networks of relations with other beings and things. (SLIDE)

People

While the origins of the Anthropocene are widely debated, many researchers in both the sciences and humanities have tied it to the rise of modern industrial capitalism and the burning of fossil fuels that has led to drastic alternation of the planet's climate and bio-physical environment. One fundamental problem with this framing of the Anthropocene is that it is plagued by a pronounced Eurocentrism. (SLIDE) As many scholars have anchored this new geological epoch in Europe's Industrial Revolution, the people of northern industrialized nations stand on center stage while legions of others in

non-industrialized societies are largely ignored or portrayed as hapless victims, even while they arguably have just as much bearing on the Earth and its future. (SLIDE) To put things very bluntly, the current conceptual framework of the Anthropocene insinuates that there are two types of people in the world: those who have the power to ruin the planet and those who are powerless to stop its ruin.

This problematic framing of humanity and human-environmental relationships can be found in most depictions of Amazonia's inhabitants too. (SLIDE) The two most common caricatures of Amazonians are those who destroy the forest and those who serve as its venerable yet vulnerable custodians. The former are usually miners, ranchers, illegal loggers, and agro-industrialists while the latter are typically indigenous peoples living in isolated reaches of the region. The vast majority of people in Amazonia, however, do not easily align with either of these depictions nor can their livelihoods be placed into simple categories of those that "wreak ecological havoc" and those that "promote environmental conservation."

Although Amazonia is often viewed as peripheral to the rise of global industrial capitalism, many of the communities where I conduct research trace their roots back to the "rubber boom," a period in which Amazonians directly fueled modern industrialization by supplying Europe and North America with high-quality natural rubber (SLIDE).

When the price of rubber skyrocketed in the late 1800s with the expansion of the North American and European tire and automobile industries, migrants from Northeastern Brazil flooded Amazonia in hopes of making it big. The boom sparked a major repopulation of the region following the demographic collapse of the contact

period and the devastation of indigenous populations (Hecht 2013: 396-397). The search for rubber also led to a penetration of the most isolated areas of the Amazon basin, resulting in conflicts with surviving indigenous groups, and in some cases leading to forced indigenous labor. Horror stories abound in Northwestern Amazonia where the torture of indigenous workers in the rubber trade took on dimensions of the surreal in what Michael Taussing (1984) has described as a "culture of terror."

The Rubber Boom also led to unparalleled concentrations of wealth in the city of Manaus, rivaling some of the European and North American centers of commerce at the time (SLIDE). Manaus was the first Brazilian city to install electric lights and a trolley system, which was boasted as one of the most advanced streetcar networks in the world. It is said that men lit cigars in the city's streets with large denomination bills and took baths in champagne while families had their laundry sent to Europe to avoid washing their linens in the region's muddy waters. Opera stars from Europe also traveled across the Atlantic and up the Amazon River to perform at the famed *Teatro Amazonas* as depicted in the opening scene of Werner Herzog's film *Fitzcarraldo*. The theatre house served as one of several examples that inspired the anthropologically-trained novelist Amitav Ghosh (2000) to write: "On the banks of every river you'll find a monument to excess" (p.20).

If we accept modern industrial capitalism to be the engine of the Anthropocene, then contemporary Amazonia is populated by the descendants of people who were responsible for stoking that engine – or perhaps more precisely, supplying some of its most critical parts.

But even while Amazonia has long been integrated into the global capitalist system, rural Amazonians maintain distinctive forms of ecological knowledge honed by direct engagement with their environment through the practice of daily subsistence activities (SLIDE). By fishing, hunting, collecting, and farming, rural Amazonians are attuned to the movement of fish, the seasonality of forest fruits, and the ebb and flow of the region's rivers.

In no way do I want to romanticize the lives of rural Amazonians, but I do believe that their subsistence practices, and the associated ecological knowledge derived from them, shape a vision of human-environmental relations that differs fundamentally from the worldview that undergirds the Anthropocene. Rather than viewing humanity as the ruler of the earth or standing at its center, rural Amazonians typically acknowledge the agency of a wide number of non-human others that challenge human intentions and desires.

In the discussion that follows, I want to explore Amazonian human-environmental interactions in further detail, examining specifically human relationships to the region's soils, plants, and forests. As I shift focus increasingly toward the life worlds surrounding Amazonian peoples, I show that while humans have long shaped the environment, it is wrong to assume that humanity can exert absolute control over it. Instead, I argue, we are embroiled in an endless process of negotiation. (SLIDE)

Soils

As early as 2,500 years ago and perhaps even much earlier, large indigenous settlements formed along the Amazon River and its major tributaries. Through everyday subsistence and food production, the inhabitants of these settlements deposited massive

amounts of organic materials that became incorporated back into the soil. Manioc peels, cacao pods, palm fronds, half-burnt logs and sticks, animal dung and fish bones, and human excrement too, all piled up over years and years of village living. With time, this had a distinctive impact on the landscape, slowly transforming the very ground upon which people walked. (SLIDE)

Such former indigenous settlements can still be identified by their dark, fertile soils known in Brazilian Portuguese as *terra preta do índio*, or what is often described in English as Amazonian Dark Earth. In contradiction of the prevailing notion that Amazonian upland soils inhibited the development of complex societies, *terra preta* is prime evidence that past human populations altered regional soils in ways that actually expanded their agricultural potential. (DISCUSS ARCH. HISTORY?)

These soils, which can be found in patches from 1 hectare to several hundred hectares in area, are still valued today for agricultural production due to their high concentrations of soil organic matter, plant available phosphorus, and other key macro- and micronutrients. (SLIDE) Since they are typically less acidic than the more dominant soil orders in the region (Oxisols and Ultisols), they allow for the production of many pH-sensitive cash crops. Large quantities of vegetative charcoal, or "biochar," are also characteristic of the soil, making it an effective carbon sink. For these reasons, *terra preta* has been vaunted as a potential model of "sustainable agriculture" in Amazonia and beyond. (MENTION BIOCHAR)

But while the soils have received considerable attention in the past decade or two, they have been known to North American scientists for over a hundred years. The recent fascination with *terra preta* as a model of sustainable agriculture highlights humanity's

ongoing commitment to the modernist fantasy that if we harness the "right" technical knowledge, we can reengineer the planet's ecological systems and work them to our full advantage. I contend that while *terra preta* represents prime evidence of prehistoric human alteration of the Amazonian environment, contemporary farmers' engagement with the soil and the life that it sustains also reveals the many ways in which the environment continually defies human control. (SLIDE)

When the American Civil War ended in 1865, an estimated 20,000 Southerners chose to move to Brazil rather than be re-unionized (Harter 1985: 12). Most of the Confederates, known in Portuguese as *Os Confederados*, settled in the south of the Brazil, particularly in the state of São Paulo. However, one contingent of Confederates led by Major Lansford Hastings ventured north to the Brazilian Amazon. After surveying areas along the Lower Amazon River, Hastings was provisionally granted a tract of land to the south of the city of Santarém (Griggs 1987: 18).

Shortly after having established themselves, the Confederates began cultivating sugar cane, corn, cotton, and tabacco (SLIDE). Several families situated their plantations on *Amazonian Dark Earth* since the coffee-colored soils were especially valuable for the cultivation of sugar cane and corn. An abundance of potsherds could be found strewn about the surface of the soil, concealing an even greater wealth of indigenous artifacts hidden deeper below.

One Confederate, Romulus J. Rhome, operated a large sugar cane plantation on such a site and took interest in the abundance of artifacts that he encountered buried in the dark soils. Over time, he amassed a significant collection of indigenous cultural

material, and unknowingly began what would become a tradition of North American archaeology in the Lower Amazon. (SLIDE)

The association of *Amazonian Dark Earth* with indigenous artifacts led geologists and early archaeologists who surveyed the region to the logical conclusion that such dark earth sites had been former indigenous settlements. However, the relationship between the soil's fertility and indigenous habitation was not entirely understood. Charles Hartt reasoned that indigenous groups had been attracted to what he considered naturally-occurring pockets of fertile soil (Hartt 1885: 12). Hartt's student Herbert Smith had an alternative explanation, contending that they were the product of generations of kitchen middens and accumulated organic refuse. Although some later scholars attempted to refute this theory, Smith's insights would be largely upheld by the scientific community more than one hundred years after his initial observations (Lehmann et al. 2003; Glaser and Woods 2004). (SLIDE)

In 2007, I began investigating contemporary use and management of Amazonian Dark Earth in the muncipality of Borba. I was especially interested in how such soils may represent a model of so-called "sustainable agriculture." When I first arrived, I befriended agricultural extension agents that operated in the municipality, and I accompanied their work assisting rural smallholders. On my first visit to an Amazonian Dark Earth site, I learned that a municipal lawmaker had leased the land and contracted a man to plant eight hectares of watermelon. In other words, the rich soils of old Amerindian villages were being exploited for the seasonal cultivation of valuable market crops destined for urban consumers in the region's capital. This unexpected articulation of Amazonian indigenous history with modern capitalist production initially surprised me, but as I spent

more time in rural Amazonia, I found this case was far from unique. In fact, much of the contemporary Amazonian landscape and its "natural resources" are linked to long histories of human activity and management that are opportunistically seized by modern entrepreneurs. (PRESENTISM of the Anthropocene?) (SLIDE)

In a study I published in 2011, looking at several dozen Amazonian upland farms, I found that the average market orientation of *dark earth* farms (61.0%) was significantly higher than those on other upland soils (47.3%). Dark Earth farmers were also much more likely to produce for the regional capital of Manaus. This was due in part to the fact that many farmers who produce for large markets seek out *dark earth* soils to exploit their fertility. Several farmers I interviewed even leased out their Dark Earth lands to others for production of markets crops like watermelon and papayas. What was also surprising was that half of the *dark earth* farmers I interviewed used chemical fertilizers while only a little more than 15% of other upland farmers made use of them, even though *dark earths* were generally considered to be more fertile. Most of the *dark earth* farmers explained that they typically used chemical fertilizers to maximize production of valuable market crops. In areas that had been under intensive cultivation for many years, they also frequently commented how the soils had grown tired, and demanded additional fertilization. Not to mention, farmers pointed out that weedy species proliferated in the dark earths, requiring extra attention and management. One farmer asked me to help him procure a weedwhacker to better contend with the unruly invasives. (SLIDE)

Despite the many benefits of *Amazonian Dark Earth*s, I concluded they were no more likely to yield truly sustainable agricultural systems than surrounding upland soils of the region without the use of inputs, crop rotation strategies, or labor intensive

management for weeding. As Charles Clement reminds, soils are not factories but rather dynamic living systems (2011, 832). And the thing about living systems is that they change and evolve and, inevitably, defy our control.

Although many outsiders far-removed from the reality of Amazonia are concerned with the destructive force that agriculture represents, many smallholder farmers in the region see themselves as fighting a losing battle against the relentless attack of pests, fungi, weeds, and disease. Even as extension agents and farmers gain access to agro-chemicals and other modern scientific methods for contending with these threats, such reinforcements typically only help to win minor battles. For the smallholder farmers that I came to meet, the image of the "fragile forest" was a wildly foreign concept. Instead, what they experienced was an environment of robust, defiant vitality. (SLIDE)

Plants

When I grew tired of thinking about Amazonian soils, I turned my attention to plants. It's no secret that Amazonia is a region of stunning botanical diversity, with tens of thousands of endemic species. At least 138 of these were under active cultivation or management by indigenous populations prior to European arrival (Clement 1999), and today Amazonia continues to harbor a great deal of cultivated biodiversity in its agricultural landscapes.

When I first began collecting data on the diversity of botanical species managed in rural Amazonian communities, I had no intention of studying magic plants. (SLIDE) Rather I intended to document the broad array of plant species cultivated by rural Amazonian households, and in the process, I hoped to identify social and cultural factors

that explained why some households maintained a greater diversity of species than others (Kawa 2011).

But shortly after starting my research, I began hearing stories that drew me away from my typical routine of household surveys and species-tallying. I learned, for example, about pôraque, or the "electric eel plant," which I was told could be tucked into my belt while playing soccer to protect me from the aggressive body checks of the opposing team's defenders. I also heard about castanha da índia, which produced a fruit that farmers tied to their belt with a piece of string to shield them from venomous snakes as they weeded their manioc fields. During surveys of home gardens, I encountered several plants that had the power to ward off the evil eye (*mau olhado*) or deter unwelcomed guests from entering a family's home. Others served as active ingredients in healing baths (*banhos*) (SLIDE) that mothers often used to treat children afflicted by folk illnesses or hunters who had been hexed. Some plants were even said to have the power to attract money and good luck, and even good looks. As I spent more time in rural communities in Borba, I began to appreciate how such plants' symbolic and magical properties had important consequences whether they were "real" or "imagined." Not only did these plants have power as social agents imbued with meaning but many of them were weedy species that actively colonized areas disturbed by humans. More than just passive recipients of human action or signification, I found that many plants were active respondents to the human presence in the landscape. (SLIDE)

The conceptual foundations of the Anthropocene and the modern industrial era encourage the view that humans alone have the capacity for "agency." In most scholarly circles, "agency" refers to action with intention (see Pickering 1995, 17–19). However, if

this definition is modified to regard agency as simply "purposive behavior," it becomes obvious that humans are not the only ones with agency in the world. Purposive behavior is exhibited by lots of things that are not human and, as Dorion Sagan remarks, such behavior does not even require brains, since "an amoeba swims toward nutrients" and "sunflowers follow the sun" (2013, 129). By placing human agency on a pedestal, we ignore the fact that other organisms also act in the world, and sometimes they can directly challenge the actions of humans and even foil the best of human intentions. (SLIDE)

Between visits to the rural countryside, I spent time in the town of Borba catching up on laundry, checking my email, and appreciating the simple pleasures of city life that I had previously taken for granted. But after a day or two in town, I would get restless, and begin to wander, hoping to stumble upon new insights that could be relevant to my research. On one such day, I started to casually survey the different species of ornamental plants found on the street where I lived. I noticed one species appeared consistently in the front yards of houses on the block, including my own. The plant had deeply-lobed leaves that were maroon and green in color. (SLIDE) When I picked a leaf, a milky-white latex dripped down from the freshly broken stem. I asked my host Diana the name of the plant and she told me it was known as "pião roxo" (*Jatropha gossypifolia*). She said that the plant had started growing in the yard voluntarily and she had left it because she liked the way it looked (Figure 4.1). Since then several *filhos*, literally "children" or offshootings, had appeared as well. When I inquired about the uses of pião roxo, Diana explained that some people applied its white latex to heal wounds or scars. But later, another friend informed that other people used it to protect the household from the evil eye. From that day on, I began to notice pião roxo in front of residences both in the city and rural

communities where I conducted my botanical surveys. It seemed to crop up everywhere.

When I began to search for scholarly references on pião roxo, I found it commonly cited in studies of medicinal and healing plants of the Americas. It was also referenced in relation to the Afro-Brazilian religion Candomblé (SLIDE). The plant was considered to belong to the deity Omolu, a survivor of small pox known for his bellicose disposition. Since Omolu was believed to watch over the plant, followers of Candomblé frequently kept it in their front yards to scare off the evil eye just as I had seen in Borba (Voeks 1997: 106). It was one of a whole host of Neotropical plants that had been adopted by Africans and incorporated into their religious and healing practices. In the process of adapting their religions to a new environmental context in Brazil, Africans also introduced new sets of practices and beliefs, many of which would find their way into the Amazon region. (SLIDE)

When Diana claimed that pião roxo had simply appeared in her yard, I thought she may have used this as a convenient explanation because she was embarrassed to acknowledge the plant's association with the evil eye and what some considered macumba, or black magic. But then I heard others describe its unexpected appearance in their yards in the same manner. Gisele, a newcomer in the agricultural settlement outside of the town, told me that she also had pião roxo in her yard and she knew quite well of its ability to ward off the evil eye. But she hadn't planted it there. It had simply appeared, she insisted. (SLIDE)

If a plant is completely unwanted in a yard, a weed in the truest sense, then it is almost always removed. Most rural Amazonians keep the area surrounding the house, known as the *terreiro*, cleared to prevent snakes or pests from having a place to hide.

Sometimes weedy plants that appear voluntarily in the yard are left to grow, which is considered by scholars a form of "passive cultivation." But, the term "passive cultivation" could also be seen as an elaborate designation for acknowledging human inaction while ignoring a plant's active colonization of spaces inhabited by humans. Isn't the plant responding to the human presence in the landscape? Couldn't it be recognized as an actor in its own right?

While perusing an online forum dedicated to gardening in the United States, I came across a discussion of pião roxo, including the following invaluable post by a man living in Houston, Texas: "Beautiful plant, but a weed, nevertheless! It shoots its seeds all over the place. It kind of sounds like caps being struck and the next thing, it is a hurling seeds through the air. I have been pulling this plant for 4 years and I still get one occasionally peeking its head through the mulch."[i]

This post flirts with anthropomorphizing the plant as it peeks its "head" out from the oppressive mulch and flings its seeds. But upon further reflection I asked myself, doesn't the plant do precisely this? Is it too far-fetched to claim that humans aren't the only ones in on the action here? (SLIDE)

Rick Stepp and Dan Moermann (2001) have demonstrated from research among Highland Maya people in Chiapas, Mexico that weedy species are commonly used as healing plants and medicinals. They argue that short-lived weedy species are also more likely to have secondary bioactive compounds that inhibit the growth of other plants or guard against herbivory. Such compounds can have curative properties for humans, and as these authors explain quite logically, easy-to-find plants are much more useful to a household when someone falls ill. Although conservationists have made the argument

that primary forests need to be protected for their reserves of plants that may offer benefits to modern medicine, people in many parts of the world rely on plants that thrive in disturbed areas or environments where humans are active. This may also explain why Afro-Brazilians adopted pião roxo. It was not necessarily a plant that they sought out, but rather one that *came to them*.

Some magic plants found in Amazonian home gardens are actively cultivated by people and directly depend upon humans for their continued propagation. Others, like pião roxo, are opportunists that take advantage of people's company but also thrive independently of human management. In fact, pião roxo has become so successful at occupying territory and expanding its range outside of South America that it is now considered to be a "globally invasive plant." (SLIDE) It has traversed most of the American tropics and subtropics, crept through the Caribbean, and fanned out across Australia, southeast Asia, western Africa, and the Pacific Islands (Prentis et al. 2008; Prentis et al. 2009). According to Prentis and colleagues, it is currently considered "one of the world's worst tropical weeds," thanks to its ability to spread and poison livestock that eat its toxic seeds (2008, 150). While humans are changing the global landscape, pião roxo is following in hot pursuit. Its rebellious nature makes it a challenge for any who attempt to control its movement or suppress its expansion.

In some parts of the world, like Australia, people are working to eradicate pião roxo from the landscape because of its threat to livestock animals and their grazing lands. Trials have been undertaken to attempt to control it through the use of fire, albeit with limited success. In Central America and the Caribbean, researchers are now examining the prospect of using leaf-eating insects, fungi, and other predators to serve as "biological

controls" of its populations. Meanwhile, in Brazil and India, other researchers are exploring the possibilities of taking advantage of it as a source of biodiesel.

Whether social scientists agree that plants can have agency is of little concern to pião roxo. It doesn't appear particularly interested in philosophical debate. Instead it's busy building its numbers, expanding its range, and flinging its seeds across the landscape. (SLIDE)

Forests

Amazonia is known for its forests. In fact, it is *the* tropical rainforest— more than any other in the global imaginary. And for much of modern history it has been emblematic of "nature" in its rawest, most pristine, unadulterated state. (SLIDE)

Recently, however, anthropologists and archaeologists have begun to paint a more complicated picture of Amazonian forests. They have shown that far from being pristine, the region's forested landscapes have been shaped by human populations since hunter-gatherers first arrived to lowland South America. Pre-Columbian Amazonians encouraged the growth and expansion of Brazil nut trees and hosts of fruit-bearing palms in managed agroforestry systems. In some instances, indigenous management practices appear to have even increased botanical diversity and ecological heterogeneity in the region. And today, many contemporary rural Amazonians benefit from the useful species found in forests that are in part the product of past human management and subsistence activities.

In recognizing the long-term effects of human populations on forests, new research has provoked some hard-to-answer questions regarding the degree to which Amazonian nature is in fact "natural" (SLIDE). Although many anthropologists working

in Amazonia recognize the dialogical relationship between human populations and the environment, the increasingly customary distinction made between "anthropogenic" and "non-anthropogenic" forests represents one of many problematic efforts to classify and smooth over complex histories of interaction. In the attempt to dissolve the boundaries of nature and culture, a habit of dichotomizing nature has emerged instead, leading to such distinctions as "natural" and "cultural" forests, or essentially "natural nature" and "cultural nature."

Here I discuss the ways that Amazonian forests reflect human management at varying scales and intensities, while also directing attention to the manner in which forests are constituted through the work of other beings and things. Drawing from Amazonian mythology, I show how the massive snake known as Cobra Grande is an important metaphor for the force of the Amazonian environment. As Cobra Grande is often invoked to explain the appearance of creeks and waterways resulting from seasonal shifts in regional hydrology, it illustrates the emergent qualities of the Amazonian landscape while offering a much-needed counterpoint to the anthropocentrism that characterizes the Anthropocene. (SLIDE).

After borrowing a small canoe with a noisy 5 hp motor, Nilo took me out to look at the future manioc (*Manihot esculenta*) field he was clearing on the uplands across from the strip of floodplain where he resided. I had met Nilo a few weeks earlier while distributing agricultural implements and seeds with the extension agents from town. From the beginning, I could tell that Nilo was a curious type. After introducing myself as visiting American researcher, he quickly struck up a conversation, telling me that a group of evangelical Christians from the United States had paid him a visit a year or two prior.

They had donated reading glasses, medicines, toys, and clothing, including the shirt he was wearing that day. “Very kind and generous people. Real children of God,” he said. “For you Americans to come to the Amazon, it’s a real dream, isn’t it? To see all these forests and animals and the river. You don’t have anything like this, do you?”

I pondered this question again as we motored across the floodplain lake, before arriving at a stretch of land that was occupied by tall old growth forest. Climbing up a steep, gravely bank, we entered the dark forest. (SLIDE) Surrounding us were a number of towering rubber trees (*Hevea brasiliensis*) mixed in with old mangos (*Mangifera indica*) and a host of palms clumped together. Further in the background was a small clearing, where Nilo intended to plant manioc. The land we stood on had been owned by his grandfather, who had passed it down to his father and then on to him. He said he wanted to post a small sign in front that read “Sítio do Manoel” (Manoel’s farm) in honor of his grandfather, who had tapped rubber and planted many of the trees that we gazed up at that day.

Next to the future manioc plantation, Nilo pointed out the clumps of bacaba palms (*Oenocarpus bacaba*) that were found throughout the land. Alongside them, we found Brazil nut trees, bacuri (*Plato- nia insignis*), andiroba (*Carapa guianensis*), and hogplums (*Spondias mombin*) as well as caiauê (*Elaeis oleifera*) and urucuri palms (*Attalea phalerata*), all possible indications of past human presence. Impressed by the diversity of useful plants on Nilo’s land, I asked him which species, to his knowledge, had been planted by his father and grandfather. He explained that they had planted the andiroba and some of the rubber trees we had examined, which were scarred from years of tapping. Other trees may have also been planted by them, but he wasn’t entirely sure

which had been cultivated and which had not. In reference to the bacaba palms, he said that they were "native," or naturally occurring, but because of their dense concentration, I questioned whether they were potentially living relics of an old Indian site. He didn't seem to discount the idea, and together we briefly contemplated the possibility in silence. How was one to know for sure?

Considering what Nilo knew of the biography of that swath of particular forest, it was fair to say that many of the trees that he utilized and managed were a direct inheritance from his father and grandfather. Deeper into the history of the land, it was also likely that the area had once been occupied by early indigenous inhabitants of the region. The fact that several stretches of *terra preta* existed nearby, including a site known as Maloca (longhouse), made this possibility all the more likely.

Looking at the trees before me and thinking about their origins, I began to reconsider what it meant for a forest to be deemed "anthropogenic," as such a designation can create simplifications of intertwining and complex histories. Was Nilo's plot of land the result of human management from the past one hundred or one thousand years? Could we (or should we?) distinguish clumps of bacaba palms that were the result of indigenous management or subsistence activities from those that had resulted from the work of other animals or beings?

In examining the biography of nearly any tract of forest, it becomes incredibly difficult to excise the "natural" from the "cultural," as the processes by which the forest came into being are inextricable and entwined. For the study of contemporary biodiversity, it is important to demonstrate that individuals like Nilo have inherited a number of useful plants from the past and that such diversity can be passed over

generations like any form of inherited wealth. The degree to which we can usefully distinguish the accreted diversity resulting from human history and that of natural history is a much more difficult task, and should compel us to develop more precise questions about the particularities of a forest's past. Rather than attempt to distinguish cultural and natural forests, or "anthropogenic" and "non-anthropogenic" forests, perhaps it's better to discuss the information available about such forests, whether this be *archaeological* (known material evidence or archaeological soils), *ecological* (distinctive patterns of species richness and abundance), or *historical* (oral histories associated with the forest, and its use and management over time). These lines of investigation can reveal more about the dynamic histories of a forest's past, and can help to eliminate the tendency toward a dichotomous view of forests, other than perhaps "forests with histories" and forest without them.

Social theory tends to rely on dualisms and binaries. It is important, however, to recognize the simplifications that they impose, the perspectives that they privilege, and the biases that they perpetuate. The characterization of a forest as "anthropogenic" privileges the role of humans in the forest's formation, and ignores the roles of other organisms in the creation and existence of the ecological communities found therein. This denies the work of seed-dispersing birds and rodents, winged pollinators, soil microbes, and decaying bodies that contribute humic matter and release nutrients crucial to the forest's perpetuation. Although I had initially sought to understand the long-term effects of human management on the Amazonian environment, I also began to see the pitfalls of privileging "cultural" histories over "natural" ones. (SLIDE)

On a Saturday morning in late October, I accompanied my friend Candida and her

four brothers on a fishing trip to Lago Comprido, a seasonal lake found on an island in the middle of the Madeira River. When we arrived, we crossed swamps on fallen logs and then made a short canoe trip through a shallow flooded section of forest before arriving to a temporary camp. After starting a small fire, some of us went to search for a seasonal pond to net the prehistoric-looking armor-plated catfish known as bodó that we hoped to prepare for our afternoon meal. (SLIDE) As we set off, we entered a gnarled swamp forest, full of fallen palm fronds with needle-like spines that stuck in the feet of those of us who had foolishly made the trip without rubber boots. Soon we came upon a deep, dried creek bed that looked like a canal. We descended into it and followed its course. While walking, Candida's brother Sapo off-handedly mentioned that the canal we were passing through was a trail created by Cobra Grande, the mythical snake of Amazonian folklore. As I walked with palm spines deep in the soles of my feet, I pondered this revelation.

Within minutes of hearing this, Candida's oldest brother who followed from behind, called out to us. "Hey guys," he shouted, "you just stepped on a *sucuriju*!" He informed us in other words that we had just walked over an anaconda. I emitted a laugh, in partial disbelief, but turned around nonetheless. I began to walk back slowly, suspecting that Candida's brothers were playing a practical joke on me. Instead, her oldest brother stuck his hand down in the mud and unearthed a snake, about 6 feet long (SLIDE). It was, after all, a small *sucuriju*, or a young anaconda. Sapo grabbed the snake from his brother and held it up: "There you go," he exclaimed, "this is one of the little ones left behind by their mother, Cobra Grande" (SLIDE).

Cobra Grande is a massive snake, much larger than the largest anaconda, and in many Amazonian folk tales it is implicated in the region's ever-shifting topography and hydrology. Seasonal fluctuations in precipitation result in constant shifts in the size and form of regional waterways, and the accumulation of silt on an odd sandbar can lead to the formation of an island overnight. In other cases, a shallow spot on the edge of the floodplain may form an enclosed pond, trapping fish like the bodó that we sought out that afternoon. As Hugh Raffles documented in his book *In Amazonia*, a number of waterways are carved out by rural Amazonians, some being simply cleaned or widened while others are laboriously excavated by community work parties. However, when the origin of a channel is ambiguous, or no known history is associated with its formation, then oftentimes it is recognized as the work of Cobra Grande. (SLIDE)

Talking to one affable farmer about his youth in a floodplain community that I visited, he told me without prompting that the "old-timers" said that the channel that connected the floodplain lake to the Madeira River was created by a big snake. I had heard similar stories from others when discussing the origins of channels that simply "appeared" along the river overnight. One of most widely shared tales described Cobra Grande's appearance at the community of Cantagalo, upriver from the town of Borba. It was said that during a large party in honor of a saint, a reveler commits an offensive act that provokes the ire of Cobra Grande. With a whip of its tail it beats the earth causing a major crack to form across the front half of the community. The crack rapidly widens until a massive slab of land breaks off into the Madeira River, hurling unfortunate partygoers who were perched near the floodplain's edge, and who are subsequently swallowed up by the muddy river water below.

If our concern is to understand the Amazonian environment, and the relationships between all the things and beings that exist within it – ecology in the broadest sense of the term – then there's good reason to believe that mythologies that speak to the agency of non-human others within the shifting Amazonian landscape are important for understanding the regional environment, how its people relate to it, and how they see themselves positioned within it. Cobra Grande does not necessarily exist in the biological way that anacondas do, but it inhabits the Amazonian imaginary and continues to shape how many Amazonian peoples understand their surroundings. Jimison, a history student from the town of Borba, offered this insight while we were sharing stories during a long boat ride from Manaus.

In this way, the story of Cobra Grande can be seen as a central Amazonian metaphor that reminds that our surroundings are in constant flux, and that humans are not the only ones responsible for this on-going transformation. Considering the anthropocentrism that underlies the current conceptualization of the Anthropocene and much of modern thought, Cobra Grande offers a useful alternative perspective for thinking more broadly about ecology and the forces inherent to the environment at a time when this is very much needed. (SLIDE)

Conclusions

Far from pristine, the Amazon region has been shaped by human activity over millennia. Amazonian Dark Earths and the useful botanical resources found in association with them are just a few examples of how humanity has altered the environment in ways that renders it more congenial to human habitation, a process known as "landscape domestication."

But farmers don't perform agriculture in a vacuum. Rather they must constantly face resistance from other elements in the environment (SLIDE). In fact, the Amazonian farmers whom I've met over the years often refer to their daily work as "a batalha" or the battle. They often see themselves as engaged in a continuous struggle against pests and disease, unpredictable weather and weeds. However, at times, I also saw their work as a form of collaborative engagement. They would most definitely smirk at this suggestion, but agriculture always involves the co-laboring of many different beings. Humans are just one of these, and arguably a very consequential one, but there are always others. To ignore this fact is to give the false impression that humanity can do very well as it pleases without repercussion, without resistance. Instead, we must remind ourselves that humanity maintains deep, binding relationships with the environment, and such relationships require sensitivity to the actions and responses of other beings that animate the world. While some leading researchers, like Will Steffen, have claimed that humans have essentially overcome "the great forces of nature" (Steffen et al. 2007), I think it is plain to see that humanity's ability to alter the bio-physical environment reflects our embeddedness within ecological systems and should remind us of our continued dependence upon them (SLIDE).

The success or survival of many species and life forms on this planet has recently hinged on their ability to adapt to human needs and the human presence. But mounting evidence, from accelerated biodiversity loss to global climate change, suggests that humanity will face greater problems if it continues to neglect its relationship to others on this planet and resist the idea of ceding them room. As Andrew Pickering has argued, humans are engaged in a perpetual dance of agency with the material world, always

seeking novel ways to respond to its resistances. To assume that humanity can short-circuit this process of resistance and accommodation and find itself the upper-hand without facing any consequences at all is at best very naïve, and at worst extremely dangerous. (SLIDE)

The primacy and privilege of urban industrial (and post-industrial) populations over those of the rural countryside is a dominant trend that pervades thinking about the Anthropocene. Humans are seen as dominating the planet, but it is a very specific variety of human that is said to have done so – those who live in cities and suburbs that drive cars, work in industry or business offices, and eat processed foods. Meanwhile, people in rural areas who secure their own subsistence by farming and fishing while engaging in alternative economic networks are overlooked or considered irrelevant to humanity's future and the future of life more generally on the planet. Their present is seen as something of the past.

In uncertain times such as these, however, it is rural people's capacity to adapt to variable economic and environmental conditions that gives them certain forms of advantage. Rather than pitying them, it would seem that the urban industrial world could learn a great deal from them about contending with precarity. Perhaps due in part to their history of marginalization, they seem to both recognize and accept the simple truth that we as humans are not at the center of the universe.

If modern industrial capitalism is the source of the current ecological crisis, then perhaps it is best to look at people who are not completely reliant on the system for their survival to rethink humanity's place in the world and imagine other possible ways of living in it.

Ethnography, I hope, can serve a valuable role in this process as Peter Redfield articulates in his book *Space in the Tropics*: "…the practice of ethnography retains a vital allure, the promise that if well done, it will offer rich rewards: moments of experience, an echo of different voices, and the crucial reminder that things could be otherwise" (p.12). And perhaps this will be its greatest contribution to the future: the continued reminder of how things can and should be different.

Ironically, the greatest lesson of the Anthropocene is that rather than encourage anthropocentrism, it should urge deeper eco-centric thinking and a greater attunement to the lives of others on this Earth, those under our feet, growing up out of sidewalks, crawling into our homes.

Thank you.
