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An Afro-Brazilian Landscape: African Oil Palms and Socioecological Change in Bahia, Brazil

Case Watkins
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AN AFRO-BRAZILIAN LANDSCAPE:
AFRICAN OIL PALMS AND SOCIOECOLOGICAL
CHANGE IN BAHIA, BRAZIL

A Dissertation

Submitted to the Graduate Faculty of the
Louisiana State University and
Agricultural and Mechanical College
in partial fulfillment of the
requirements for the degree of
Doctor of Philosophy

in

The Department of Geography & Anthropology

by

Case Watkins
B.G.S., Louisiana State University, 2002
M.S., Texas State University, 2008
December 2015
For KNW, Benta, and Gaudencia.
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ABSTRACT

Palm oil extracted from the African oil palm (*Elaeis guineensis* Jacq.) is the world’s most produced vegetable oil, commanding a roughly 50 billion dollar global industry. In contrast to the agroindustrial firms and monocultures that dominate global production, a biodiverse cultural landscape of African oil palms in the northeastern Brazilian state of Bahia has for centuries supplied local alimentary and spiritual demands for palm oil—an essential resource in Afro-Brazilian cultures. Drawing on fieldwork, ethnography, archives, GIScience, quantitative analysis, and travelers’, rare, and secondary accounts, this dissertation provides the first comprehensive study of Bahia’s palm oil landscapes, cultures, and economies. Analyzing seven centuries of social and ecological change, the study contributes to environmental histories of colonialism and the African diaspora, and advances theories and practices of agricultural development, environmental governance, and the politics of knowledge.

Native to West Africa, African oil palms have supported cultures and economies on that continent for millennia. During colonial overseas expansion, *Elaeis guineensis* and its products traversed the Atlantic as early African contributions to the Columbian Exchange of beings, biota, and ideas. The palm’s subsequent diffusion in Bahia combined African traditions of palm oil production and consumption with European and Indigenous knowledges in the Americas to found and sustain diasporic Afro-Brazilian cultures and economies. This study examines the early and ongoing development of Bahia’s African oil palm cultures and landscapes, connecting transatlantic cultural, ecological, and economic circulations to reconstruct the emergence of an Afro-Brazilian landscape. Building on its historical analyses, the study culminates with an ethnography
of Bahia’s contemporary palm oil economy. Integrating theories of resistance, development, and complexity, the final chapter maps the constituents of, and flows of power through, Bahia’s palm oil economy to scrutinize the modern policies and interventions that seek to redirect and control the network.

The dissertation concludes by juxtaposing Bahia’s Afro-Brazilian landscape with the epistemological constraints of modern development. It argues that diasporic knowledges, such as those underpinning Bahia’s palm oil economy, represent potent but generally untapped fonts of place-based development practice with potential to transform global palm oil production and enact more viable and abundant forms of development.
RESUMO

O azeite-de-dendê (ou óleo de palma) extraído do dendezeiro (*Elaeis guineensis* Jacq.) é o óleo vegetal mais produzido no mundo, em torno do qual se estrutura uma indústria global que movimenta cerca de 50 bilhões de dólares. Ao contrário do que ocorre na maioria dos empreendimentos agroindustriais baseados na monocultura, que dominam a produção global, a paisagem cultural de dendezeiros localizados no estado da Bahia, na região Nordeste do Brasil, é marcada pela biodiversidade. Por séculos dendezeiros na Bahia têm suprido a demanda por este óleo, tanto para uso alimentar, como também religiosos e cultural. Tais demandas evidenciam também o papel do azeite-de-dendê como um recurso fundante de tradições culturais afro-brasileiras. Pesquisas de campo diversas, estudos etnográficos, pesquisas em arquivos, análise georreferenciada, estudos quantitativos, registros históricos e antropológicos dos primeiros exploradores, documentos raros e diversas outras fontes secundárias foram insumos para esta pesquisa, a qual resulta em um estudo abrangente das paisagens culturais e economias do azeite-de-dendê no estado da Bahia.

A análise de sete séculos de mudanças sociais e ecológicas, auxilia este estudo no estabelecimento de conexões entre histórias coloniais, ambientais e a diaspóricas com políticas contemporâneas de desenvolvimento agrícola, produção de biocombustíveis e governança ambiental. O intuito de tal esforço é ampliar e diversificar o conhecimento sobre a história e economia do dendê na Bahia e detalhar sua ligação empírica com iniciativas de promoção do desenvolvimento em sentido mais amplo.

Nativo da África Ocidental, o dendezeiro tem apoiado o desenvolvimento cultural e econômico do continente africano por milênios. Durante a expansão colonial
ultramarina, o dendezeiro e seus produtos derivados atravessaram o Atlântico, no intercâmbio colombiano de seres, biota e idéias. A difusão subsequente da palma pela Bahia acabou por promover a combinação de tradições africanas de produção e consumo do azeite-de-dendê, com conhecimentos europeus e indígenas, que serviram para ajudar a fundar e sustentar culturas e economias afro-brasileiras em diáspora. Este estudo examina o desenvolvimento inicial e contínuo de paisagens de dendezeiros da Bahia, conectando circulações transatlânticas culturais, ecológicas e econômicas para reconstruir analiticamente o processo de desenvolvimento de uma paisagem afro-brasileira. Com base em suas análises históricas, o estudo culmina com uma etnografia da economia contemporânea do dendê na Bahia. Integrando teorias de resistência, complexidade e desenvolvimento, este estudo mapeia os fatores fundantes e fluxos de poder que orientam a economia de dendê na Bahia para assim examinar criticamente a produção do azeite-de-dendê como uma iniciativa moderna de desenvolvimento.

Esta tese justapõe a paisagem afro-brasileira da Bahia com as limitações epistemológicas típicas de processos modernos de desenvolvimento. Assim sendo, conhecimentos diaspóricos, como os que se materializaram na economia do dendê na Bahia, representam potenciais oportunidades de desenvolvimento de base local, geralmente inexploradas, que poderiam transformar a produção global de óleo de palma e ao mesmo tempo disseminar formas mais justas e efetivas de desenvolvimento socioecológico.
INTRODUCTION: AN AFRO-BRAZILIAN LANDSCAPE IN GLOBAL CONTEXT

It is as if one had taken a cutting of Africa and rooted it in Brazilian soil, where it bloomed again.


Palm oil is the lifeblood of Afro-Brazilian culture (Lody 1992, 2009). Extracted from the fruit of African oil palm (*Elaeis guineensis* Jacq.), native to West Africa, palm oil helps constitute and symbolize Afro-Brazilian culinary and religious expressions (Figure 1). In the northeastern state of Bahia, a complex, centuries-old, and biodiverse landscape of African oil palms supplies the region, as well as much of Brazil, with palm oil for cooking and ritual needs. Developed as an expression of, and base of support for, Afro-Brazilian cultures, Bahia’s Afro-Brazilian landscape is a national cultural and ecological monument as well as a livelihood for thousands (Watkins 2015). Yet despite its fundamental relationship with Afro-Brazilian cultures and regional economic importance, the historical development and contemporary operation of Bahia’s palm oil economy and its complex cultural landscapes remain poorly understood. Thus a historical treatment of palm oil in Bahia stands to amplify our understanding of the ecological, cultural, and economic development of the Americas, one attuned to the insights and contributions of Africans and Afro-descendants,² while elucidating the composition and complexity of its contemporary landscapes and economies and their connections to international agricultural development.

² Africans and their descendants in diaspora; see Reiter and Simmons (2012).
Globally, palm oil became the most produced, traded, and consumed vegetable oil in the early twenty-first century, now more than doubling the production totals of its nearest rival, soybean oil (FAS 2015a). In 2014, agroindustrial monocultures in Southeast Asia produced 89% of the world’s palm oil, along with alarming levels of deforestation, habitat destruction, greenhouse gas release, and land grabbing (Nellemann et al. 2007; Fitzherbert et al. 2008; UNEP 2011; Pye and Bhattacharya 2013; Rival and Levang 2014; FAS 2015b). While scholars, environmentalists, and executives struggle to mitigate the destruction caused by global palm oil development, particularly in Southeast Asia,

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officials in Brazil work to reduce Bahia’s complex landscapes to oil palm monocultures. Yet Bahia’s traditional Afro-Brazilian landscapes suggest agricultural production and development is possible without sacrificing biodiversity or forest cover (Figure 2). This study reconstructs the historical development of Bahia’s Afro-Brazilian landscapes, from the sixteenth century to the present, and connects that history with the contemporary palm

Figure 2: An African oil palm (*Elaeis guineensis*) towers above banana plants in Camamú, Bahia (2012).
oil economy in Bahia and beyond. It marshals knowledge produced in the African diaspora to reimagine modern agricultural development.

**Placing Afro-Brazil**

This study deploys a geographical concept of landscape to analyze cultures, environments, and economies and their many and messy interactions. Landscapes are indeed cultural and ecological expressions derived from dynamic collaborations of flora, fauna, humans, and physical features within historical processes of continuity and change (Mitchell 1996; Sluyter 2002; Whatmore 2002b; Wylie 2007; Kirsch 2015). Forwarding the concept of an Afro-Brazilian landscape, this study draws on scholarly and popular conceptions of Afro-Brazilian cultures and places them in a context of human-environmental or cultural-ecological cooperation (Voeks 1997; Kraay 1998a; Carney 2001; Whatmore 2002b; Carney and Voeks 2003; Afolabi 2009; Carney and Rosomoff 2009; Sluyter 2012; Sterling 2012; Ickes 2013).

Forged in the African diaspora, Afro-Brazilian cultures emerge as African philosophies and ways of life passing through prisms of Indigenous American and European values and practices, among others. They derive from (post)colonial power configurations and lived experiences in the transatlantic slavery economy and the construction and reproduction of Brazilian society. Afro-Brazilian cultures are complex products of resistance developed through oppression, cooperation, integration, negotiation, defiance, ingenuity, and survival (Reis and da Silva 1989; Gilroy 1993; dos Santos 2004; Lopes 2004; Fraga Filho and Albuquerque 2009).

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4 The contributions of Africans and their descendants to New World cultures and landscapes has long been a contentious theme of academic endeavor. See Chapter 1, especially its section on “postcolonial and Atlantic studies” for a detailed discussion.
The northeastern state of Bahia is the nucleus of Afro-Brazil (Carneiro [1948] 1977; Kraay 1998b; Sansone 2003; Amado [1944] 2012; Dawson 2014; Eisentraut 2015). Popular sobriquets extolling Bahia’s connection to Africa such as the “Black Rome [Roma Negra]” of the Americas” (Sansone 2003, p. 70) and “Mecca of Brazilian Blackness” (Pinho 2010, p. 43) reach beyond national identity politics to place Bahia as a key nexus in the Black Atlantic (Gilroy 1993; Sansone 2003). Just as Africa and Africans are fundamental in the creation of Bahia and Brazil, Bahia remains crucial in the formation and ongoing reproduction of the African diaspora (Verger 1976; Mann and Bay 2001; Pinho 2010).

Among the more salient materials and symbols of Bahia’s Afro-Brazilian cultures and heritage is palm oil—known in Bahia and throughout Brazil as dendê, or more precisely azeite-de-dendê, derived by combining the Central African Kimbundu term for the fruit with the Arabo-Iberian term for olive oil. In Brazil palm oil remains fundamental in culinary and religious traditions, and has become a popular symbol of both Afro-Brazilian culture in general and the state of Bahia specifically. To say something is “of” or “in dendê” is to qualify it as both Afro-descendent and Bahian. In many parts of Bahia, “azeite” now refers only to palm oil, while azeite doce (sweet oil), óleo (oil), or óleo de gallo can connote olive oil (Figure 3). Brazilians celebrate

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5 “Roma Negra” is now a popular term for describing the deep connections between Bahia and Africa, but according to Bahian anthropologist Vivaldo da Costa Lima, the original expression, as coined by Candomblé priestess and cultural leader Mãe Aninha in the 1940s, was “Roma Africana” (Pinho 2010).

6 For more on the etymology of dendê, see Chapter 3.

7 Gallo refers to the iconic image of a Portuguese rooster, a national symbol commonly emblazoned on a popular brand of olive oil (Figure 3).
traditional foods cooked in dendê simply as Bahian food, i.e. *comida baiana*. Bahians specifically often refer to their creole gastronomy as *comida de azeite*, invoking palm oil as the fundamental component. Popular Afro-Brazilian dishes like *carurú*, *vatapá*, *farofa de dendê*, *xinxim de galinha*, and especially the various seafood and fish *moquecas* are unimaginable without palm oil (Querino [1928] 1957; Amado 1966, 1967; Costa 1994; Lody 1979, 2002, 2009; Fajans 2008; Câmara Cascudo [1967] 2011).

Figure 3: (a.) Olive oil, commonly known in Bahia as *azeite doce* or *óleo de gallo*; (b.) palm oil, or *azeite-de-dendê*, for sale in Itaparica, Bahia (2012); (c) Bahian palm oil for sale simply as “azeite” in the Cajaiba district of Valença, Bahia (2012).

Easily the most prominent consumers of palm oil in Bahia are the *Baianas de acarajé* spread throughout the streets of Salvador, elsewhere in Bahia, and many other states—notably Rio de Janeiro, São Paulo, and Pernambuco (Figure 4). Those traditional, mostly women vendors of *acarajé* and other delicacies prepare and sell their wares from

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Carurú is a spicy stew of greens, okra, and palm oil; vatapá is a paste made with manioc flour, peppers, palm oil, and either fish, shrimp, or animal fat; farofa de dendê is manioc flour seasoned in palm oil; xinxim de galinha is a chicken fricassee seasoned with palm oil; perhaps the signature Bahian dish, moquecas are stews of fish or seafood seasoned in palm oil, olive oil, coconut milk, and peppers (see references cited in text).
mobile stands placed strategically about town, and in Salvador the palm oil frying in their pans wafts through practically every bus stop, gathering place, square, and crossing to dominate the urban smellscape (Porteous 1985; Lody 2008, 2009). Their signature dish *acarajé* is a dumpling made from peeled and mashed black-eyed peas deep fried in palm oil and garnished with dried shrimp, *carurú*, *vatapá*, and pepper sauce (Costa Lima 2010) (Figure 5). Gastronomic roots of *acarajé* lie with *akará*, the original Yoruba version of the fritter still popular across West and Central Africa, and elsewhere in the diaspora (Figure 6). The Bahian name for the fritter comes from a Portuguese portmanteau of the Yoruba phrase “*akará je,*” meaning “*akará* to eat” (Harris 2001). In Bahia *acarajé* became a material and symbolic anchor of Afro-Brazil, and Brazil’s Ministry of Culture
declared *Baianas de acarajé* and their crafts among the country’s “intangible cultural heritage” in 2004 (Lody 1979, 2009; Mendonça et al. 2007; Costa Lima 2010).

Yet *acarajé* is much more than just a traditional street food; it endures as a paragon of the fundamental links binding religious and food cultures within the Afro-Brazilian ethos that developed in Bahia. Afro-Brazilian spirituality is inextricably bound to botanical resources and culinary cultures, and palm oil remains imperative within Brazil’s African-inspired cosmologies (Lody 1979, 1992, 2009; Verger 1995; Voeks 1997; Pessoa de Barros and Napoleão 1999). Afro-descendants conceived *acarajé* and other foods cooked or seasoned in palm oil as consecrated components of Afro-Brazilian

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9 Frying *acarajé* in the Camurugí district of Taperoá, Bahia (2012); “complete” *acarajé* (inset) with dried shrimp, *carurú*, *vatapá*, and pepper sauce in the Rio Vermelho district of Salvador, Bahia (2015).
religions, especially *Candomblé,* Bahia’s central Afro-Brazilian faith. *Candomblé* devotees revere dendê as a vital symbolic and ritual element. Fronds cut from the palm (màriwò) adorn the entrances to places of worship (*terreiros*), and *azeite-de-dendê*

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11 Throughout, following Pares (2013), the capitalized “*Candomblé*” refers to the religion in general, while “*candomblé*” refers to a specific meeting or congregation of people engaged in worship. Following Matory (2001, p. 171), “*Candomblé* is an Afro-Brazilian religion of divination, sacrifice, healing, music, dance, and possession-trance. The only rival to its beauty is its complexity.”
remains an essential liturgical material, especially as an offering to the temperamental African deity Exú (Yoruba) or Legba (Fon) (Lody 1992; Voeks 1997, 2012b; Verger 1999). Palm oil distinguishes ritual foods prepared for many deities including *carurú* for Xangô, Iansã, Obá, and Iêji; *ipeté* (oiled yams) for Ogum; and *acarajé* for Xangô and Iansã (Vilhena [1802] 1969; Lody 1979, 1992, 2009; Yemonjá 1997). On a fundamental philosophical level, followers of Afro-Brazilian religions revere dendê as a materialization and proponent of *axé*—the vital force of existence, “the life giving nutrient of the material and spiritual realms” (Voeks 1997, p. 73; Lody 1979, 1992). Indeed, the term dendê has become a metonym representing Afro-Brazilian spirituality, its devotees known interchangeably as *povo do santo* (people of the saints) and *povo do dendê* (people of dendê) (Figure 7) (Lody 1992, p. 13; Matory 2005).

Reverence of the oils made from *Elaeis guineensis* is not, however, reserved for devotees of Afro-Brazilian religions. On the contrary, people of all faiths celebrate the oil as a mainstream symbol of Bahia and of Afro-Brazilian cultures throughout Brazil and beyond. *Capoeira*, the Afro-Brazilian martial art, venerates dendê in many of its *corridos*, the ritual choruses sung during matches (Assunção 2005), and the oil is the subject of many traditional *sambas* (Browning 1995).12 Supporting various culinary, religious, and musical expressions, azeite-de-dendê is fundamental to Afro-Brazilian culture (Figure 8).

12 Popular *corridos* sung in Bahia and elsewhere include “Capoeira tem Dendê,” “Vou tirar Dendê,” “Côco Mironga que tem Dendê,” “Dendê Maré,” “Dendê o Dendê,” “Um pouquinho de Dendê,” “Lá na Bahia Côco de Dendê,” and “Bahia que tem Dendê.” Traditional samba de roda groups such as *Samba Chula de São Braz, Rua da Palha, Suspiro do Iguape, Aparecida*, and *Barlavento* all sing about dendê (Assunção 2005; fieldwork 2009-2014).
Figure 7: A Candomblé leader (or Mãe de Santo) leads a “samba de dendê” at a small-scale palm oil processing facility in the Cajaíba district of Valença, Bahia (2013).\(^\text{13}\)

Figure 8: African oil palms planted as powerful cultural-environmental symbols in front of the Brazilian Ministries of Environment and Culture in Brasília (2014).

\(^{13}\) Photo credit: Heráclito Barbosa Táta Luangomina, 2013. Note the crate of *azeite-de-dendê* produced on site, and the fresh dendê fruit scattered on the ground.
Situating an Afro-Brazilian landscape

In Bahia, Afro-Brazilian cultural expressions transformed the African oil palm into the *dendezeiro*, a creole version of its former self emerging from a confluence of African, Amerindian, and European cultures in the Americas. To supply Afro-Brazilian cultures with the essential element of dendê, Afro-descendants and others collaborated with and in their environments to construct an Afro-Brazilian landscape featuring dendezeiros on the Bahian coast south of its capital city (Watkins 2015).

There, interrelated palm cultures and landscapes developed in conversation over the past five centuries, creating a vibrant, complex dendê economy linked at once to the African diaspora, Luso-Brazilian colonialism, and modern agroindustrial development. Bahia’s Afro-Brazilian landscape includes vast tracts of biodiverse, semi-wild—or what botanists refer to as “subspontaneous”—groves, mostly uncultivated by humans and

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14 In what follows, I refer to the “dendezeiro” and “dendê” to signify the African oil palm and its fruit and oils as established and produced in Bahia. “African oil palm” and “palm oil” refer to the tree and the oil more generally, including their conceptions in Bahia, other Brazilian states, Africa, and the rest of the world. Though there exists no genetic difference between the *Elaeis guineensis* Jacq. species in Africa and those in Bahia, the nominal distinction employed here attends to the intertwined social and ecological histories that define the species in Bahia as an explicitly Afro-Brazilian creation rooted in the Bahian coast, the African diaspora, and the Atlantic World. Thus following the first mention, I do not italicize the terms “dendê” or “dendezeiro” which would implicate them as mere translations of “palm oil” and “oil palm.” Terming Bahian palm oil as “dendê” and the oil palm as “dendezeiro” underscores the singularity of the terms as Afro-Brazilian constructs created in Bahia. Brazilian government agencies imply a similar distinction. Brazilians refer to palm oil used in cooking unconditionally as “dendê,” or “azeite-de-dendê,” yet the Brazilian government’s recent palm oil development project refers to the more internationally recognized term in its title: “*Programa de Produção Sustentável de Óleo de Palma* [Program for Sustainable Production of Palm Oil].” See http://www.agricultura.gov.br/arq_editor/file/camaras_setorias/Palma_de_oleo/1_reuniao/Programa.pdf (last accessed 4 July 2015). Hereafter, the scientific binomen *Elaeis guineensis* is used without the identifier “Jacq.,” abbreviated for Jacquin (1780), the Dutch botanist that coined the Latin name of species.
analogous to the palm’s native landscapes in West and Central Africa (Figure 9). Neither “pristine” nor “human-built,” that landscape is a cultural creation and a lived environment. Humans cooperate with and influence the landscape, at once an ecological, social, and economic construction in a constant flux of reproduction and political struggle.

Figure 9: A subspontaneous grove of dendezeiros on Bahia’s Dendê Coast, in the Sarapuí district of Valença, Bahia (2012).

In 1993, Bahia’s state government created seven tourism zones encompassing the major destinations throughout the state. That initiative designated eight municipalities on Bahia’s Southern Coast (Baixo Sul), as the Costa do Dendê, or Dendê Coast (Bahia 1993). Indeed the Afro-Brazilian landscape of dendezeiros had come to symbolize the region. The municipalities included, listed from north to south, Valença, Cairu, Taperoá,
Nilo Peçanha, Ituberá, Igapíunua, Camamú, and Maraú.\textsuperscript{15} Those places comprise the core study area, especially for ethnographic methods, but proximate areas, including the capital city Salvador and the traditional export agriculture landscapes ringing the Bay of All Saints known as the Recôncavo, are fundamentally interconnected with the Dendê Coast and contribute heavily to the study (Figure 10).\textsuperscript{16}

Bahian palm oil production concentrates on its Dendê Coast, but other places also produce dendê, albeit in much smaller amounts. Figure 11 depicts Bahia’s palm oil production by municipality in 2013, according to statistics published by the Brazilian Institute of Geography and Statistics (IBGE 2014). Sporadic domestic palm oil production continues throughout the state, including some unlikely places. More than 350 kilometers from the Atlantic Coast, communities in Central Bahia’s Chapada Diamantina region combine cultural traditions with isolated wetlands and a humid microclimate to produce azeite-de-dendê for sale in nearby Lençóis, a gateway city to the region’s national park.\textsuperscript{17} A few Bahian collaborators relayed family histories of planting and watering one or more dendedeiros for household consumption, sometimes deep in Bahia’s semi-arid interior, or sertão. While Bahia and dendê maintain an extraordinary

\textsuperscript{15} Various public and private agencies categorize much of that region as Bahia’s Baixo Sul, which roughly translates to Southern Lowlands. In its delimitation of the Baixo Sul micro-region, Brazil’s Ministry of Agrarian Development includes all but one of the eight municipalities of the Dendê Coast (Maraú) and an additional seven municípios: Aratuipe, Gandu, Jaguaripe, Piraí do Norte, Presidente Tancredo Neves, Teolândia, and Wenceslau Guimarães. See http://sit.mda.gov.br/download/caderno/caderno_territorial_021_Baixo%20Sul%20-%20BA.pdf (last accessed 15 July 2015). As such, following others (Schwartz 1985; Barickman 1998; Graham 2010) I refer to the “Southern Coast” to designate that area before the 1990s, and as the Dendê Coast to refer to the contemporary region.

\textsuperscript{16} See Chapter 2 for a detailed presentation of site and methods.

\textsuperscript{17} See Figure 27 for locations.
This and all other maps developed for this project use a Robinson projection.
relationship, a diverse palm oil economy extends across much of Brazil. Historical evidence points to cottage palm oil industries in several other Brazilian states, notably Rio de Janeiro, Espírito Santo, Pernambuco, Alagoas, and Ceará, but those places now rely mostly on Bahian production to supply their needs. More recently, federally

\[^{19}\text{Source: IBGE (2014).}\]
subsidized agroindustries began constructing oil palm monocultures in the northern Amazonian states of Pará and Amazonas that now dominate national production.

Amazonian oil palm landscapes contrast sharply with Bahia’s Afro-Brazilian landscapes. Agroindustries developed oil palm fields in the Amazon as sterile, enclosed monocultures based on the Southeast Asian model. While palm oil development began in western Africa20 more than 6,000 years ago, European colonists transplanted their monocultures and industrial production regimes to colonies in Malaysia and Indonesia in the early twentieth century (Corley and Tinker 2003). Subsidized agroindustries in those nations now dominate global production, accounting for more than 85 percent of world totals (FAS 2015b). As production grew in the early twenty-first century, scholars, environmentalists, and NGOs began documenting high rates of deforestation, greenhouse gas emission, habitat destruction, and smallholder land dispossession related to the expansion of oil palm monocultures, and in recent years groups have increased pressure on agroindustrial palm oil firms to improve practices (Carrere 2001; Greenpeace International 2007; Nellemann et al. 2007; Oslander 2007; Fitzherbert et al. 2008; Friends of the Earth 2008; WWF 2008, 2015; UNEP 2011; Koh and Wilcove 2008; Wilcove and Koh 2010; Pye and Bhattacharya 2013; Rival and Levang 2014).

Prompted by WWF and other concerned organizations, the palm oil industry created the Roundtable on Sustainable Palm Oil (RSPO) in 2004 to certify and standardize what they consider “sustainability” practices within the sector. While the RSPO has developed standards and recently signed a series of agreements that it

20 Here “western Africa” designates a combination of West Africa and West Central Africa, including all the Sub-Saharan culture regions and contemporary countries from the Senegambia south through Angola.
maintains will lead to ecologically and socially sound production, studies show the voluntary pacts to be only minimally effective in improving conditions (Ruysschaert and Salles 2014; Brandi et al. 2015; Meijer 2015). In some cases RSPO leveraged empty assumptions of “green governance” to cover for land dispossession and enclosure, or “green grabs” (Johnson 2014; Wittman, Powell, and Corbera 2015). Rather than a sober re-thinking of the industry’s destructive development practices, the self-imposed regulations of the RSPO have yielded only vague and unenforceable commitments to “sustainability” that effectively entrench agroindustrial monocultures as the standard for palm oil development projects (Boons and Mendoza 2010; Ruysschaert and Salles 2014). The stubborn environmental and social problems associated with palm oil development are not, however, inherent to the botanical species Elaeis guineensis, rather the palm oil industry desperately needs a new model for development (Segalla 1999; Bhagwat and Willis 2008; Rival and Levang 2014). Can Bahia’s complex dendê economy provide alternatives to modern monocultures? This study shares insights from Bahia’s Afro-Brazilian landscape to illuminate new paths for development in the tropics.

Before promoting alternative futures, we must first appreciate the historical and cultural development of Bahia’s dendê economy—the full synergy of its cultures, landscapes, and transactions. This study draws on a range of diverse methods, including ethnography, archival research, GIScience, and quantitative analysis to connect an

21 Ruysschaert and Salles (2014) found five shortcomings severely limiting the effectiveness of RSPO agreements: financial compensation for participants remains too small; imprecision in the RSPO’s guidance document leaves too much room for interpretation; the RSPO routinely postpones decisions on contentious issues; the RSPO has failed to integrate within the socio-politico-legal contexts of Indonesia or other leading palm oil producers; RSPO lacks an effective external control system.
environmental history of the African diaspora with the contentious politics of contemporary agricultural development. It uncovers a long-obscured colonial landscape transformation, one that enhances our understanding of the role of Afro-descendants in the early and ongoing social, cultural, ecological, and economic development of American societies. After reconstructing five centuries of development in Bahia’s Afro-Brazilian landscape, this study places its contemporary dendê economy in global context to analyze its social, ecological, and economic structures, and reimagine modern palm oil development in Bahia and elsewhere. As such, this study uses one extraordinary cultural landscape to reinterpret social, environmental, and economic histories of colonialism, locate and promote cultural-environmental wisdom developed in the African diaspora, and revise the politics and practices of development.

The dissertation proceeds with a statement of its theoretical and intellectual connections and implications in Chapter 1. That chapter compiles and connects a history of ecological research in US geography as well as the inter- and multi-disciplinary sub-field of political ecology. It combines contemporary political ecologies and postcolonial and Atlantic Studies with network thinking and complexity theory to situate and present the research questions addressed in the study.

Chapter 2 presents and analyzes both the research site and the methodology used. It develops a hybrid approach to “field-work” that combines discussions of the site, i.e. field, with the work, i.e. methods. While divulging, describing, and deploying the study’s particular hybrid research design, the chapter discusses the validity and value of flexible, inclusive, and interactive approaches to social science research.
Chapter 3 begins the analysis and interpretation of data collected in Bahia and elsewhere with an environmental history of the African oil palm in the Atlantic World. It combines literatures on hybrid geographies with those of interdisciplinary Atlantic Studies to analyze the colonial introduction of the African oil palm to Bahia and elsewhere in the New World. The chapter examines the historical record to detail the migration of one African species and reinterpret the Columbian Exchange. Each subsequent chapter builds on the previous to elaborate the development of Bahia’s Dendê Coast.

Once in Bahia, the African oil palm propagated within local agroecologies. Chapter 4 uses a historical political ecology approach to reconstruct the development of Bahia’s Afro-Brazilian landscape. The chapter marshals evidence from archives, travelers’ accounts, ethnography, landscape observations, and satellite imagery to comprehend the emergence of Bahia’s Dendê Coast. The chapter advances a theoretical model based on a nuanced reading of cultural and individual resistance that contributed to collective landscapes of resistance in the African diaspora, such as Bahia’s Afro-Brazilian landscape.

The development of Afro-Brazilian cultures and landscapes depended on a transatlantic exchange between Bahia and several West and Central African societies. Chapter 5 details and analyzes the historical trade in African palm oil in the South Atlantic and the development of an urban market for the oil in and around Salvador.

Oceanographers consider the equator as a rigid boundary dividing the North and South Atlantics, but scholars studying the African diaspora, colonialism, and the Atlantic World often class circulations between Brazil and West Africa, including parts of the continent north of the equator, as the South Atlantic; while Europe, the British Isles, and their
Bahia’s capital city. Situating the Atlantic trade of African palm oil within discussions of “legitimate” and “clandestine” trades, the chapter demonstrates how transatlantic commerce helped construct a cultural economy for palm oil in Bahia, how Afro-Brazilians leveraged that trade to achieve social and economic mobility, and finally, how those exchanges contributed to the social and ecological development of domestic palm oil production in and around Salvador and on the Dendê Coast.

Following the colonial landscape transformations that set the social and ecological foundation for Bahia’s Dendê Coast, a program of modernization in the twentieth century sought to control and direct development there. Chapter 6 details and analyzes the modernization efforts imposed on the Dendê Coast beginning in the twentieth century. The chapter combines archives, ethnography, and landscape observations and other fieldwork to demonstrate how attempts at modernization only amplified the complexity of Bahia’s Afro-Brazilian landscape and dendê economy, rather than reduce it to monocultures as intended.

With the previous chapters charting the historical development of Bahia’s Afro-Brazilian landscape, Chapter 7 provides an ethnography of the people, palms, and places that comprise Bahia’s contemporary dendê economy. The chapter scrutinizes current development efforts and their discontents, analyzes and maps the multiscalar social, ecological, and economic networks rooted in Bahia’s Afro-Brazilian landscape, and suggests strategies for enacting a more socially and ecologically just palm oil economy in Bahia and elsewhere.

Finally, the study concludes by combining the insights generated in each chapter to argue how more inclusive histories can lead to more equitable and viable futures.
CHAPTER 1:
GEOGRAPHIES OF ECOLOGICAL (RE)TURNS:
CULTURE, POLITICS, NETWORKS, COMPLEXITY

As every being considered apart is impressed with a particular type, so, in like manner, we find the same distinctive impression in the arrangement of brute matter organized in rocks, and also in the distribution and mutual relations of plants and animals. The great problem of the physical description of the globe, is the determination of the form of these types, the laws of their relations with each other, and the eternal ties which link the phenomena of life, and those of inanimate nature.

—Alexander von Humboldt Personal narrative of travels to the equinoctial regions of America, during the years 1799-1804 ([1807] 1889, vol. I, pp. xi)

This chapter reviews academic literatures to address four interrelated objectives. First I sketch the development of academic geography from the nineteenth century, focusing especially on human-environmental, or what is now known as ecological research in the U.S. I then connect that chronology to the emergence of political ecology, an interdisciplinary and varied approach applied in this study, and two prominent themes within geography especially relevant to this project—critiques of modern agriculture and interrelated postcolonial and Atlantic studies. Next I highlight a range of contemporary philosophical and theoretical threads which are invigorating epistemological, ontological, and methodological orientations in geography and political ecology. Finally the chapter culminates by connecting those three treatments with the research questions addressed in

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23 I use “ecological” here and throughout as a broad reference to relations among organisms and environments (Zimmerer 2015).

24 Space allows for only a brief treatment of that history. I emphasize that this is a highly personal account. For detailed treatments of the history of geographic thought and the discipline of geography, see Martin (2005) and Cresswell (2013). For a thorough rendering of the emergence of political ecology, including its philosophical and academic antecedents in geography and beyond, see Robbins (2012) and Perreault, Bridge, and McCarthy (2015).
this study. Thus the ultimate aim of this chapter is to situate this project within a broader history of academic geography in the U.S., the more recent emergence of political ecology as a distinct but variegated approach, and topical developments in critical theory.

**Geography in the U.S. and some antecedents**

Contemporary histories of geography, both as a category of ideas and as an academic discipline, often begin with discussions of Greek thinkers such as Homer, Herodotus, and Eratosthenes (James 1972; Martin 2005; Cresswell 2013). The contributions of Classical philosophers in the formation of Western geographic thought are profound and undeniable, but locating the origins of geographical knowledge within the Greek tradition risks dismissing the geographical epistemes and traditions of pre-classical, non-Western, and Indigenous peoples and societies (Wright 1925; Said 1978; Blaut 1993; Short 2000). Diverse and distinct geographical ideas—what J.K. Wright called *geosophies*—provide the basis of how groups of humans (and other animals) comprehend Earth’s differentiation and operate within the world (Wright 1947; 1966). Recognizing and maintaining that diversity of geographic knowledge thus allows us to imagine, access, and construct “all possible” and “other worlds” (James 1972; Martin 2005; Gibson-Graham 2008; Roelvink, St. Martin, and Gibson-Graham 2015).

While the Greek traditions account for only a small fraction of the universe of geosophies, they benefited from geographic knowledge borrowed and appropriated from many much older societies, including Egypt, Sumeria, Babylonia, Assyria, and Phoenicia, and therefore represent a synthesis of early geographic thought (Blaut 1993; Martin 2005). Building on those Classical traditions, and their intersections with multiple epistemologies, notably Middle Eastern, South and East Asian traditions and innovations,
early modern European empires used and abused geographic knowledge to expand into the Americas, Asia, and Africa, seizing ever more geographic knowledge as they constructed overseas colonies (Sluyter 2002). Those colonial territories in turn became fieldwork sites for waves of soldiers, explorers, and naturalists, finally culminating with the nineteenth century travels and analyses of Alexander von Humboldt, “arguably the grandfather of modern geography” (Robbins 2012, p. 29; Martin 2005; Mathewson 2006a). Writings by Humboldt (1845-1862) and subsequent scientific travelers, notably Élisée Reclus (1871) and Peter Kropotkin (1888), integrated analyses of cultural, political, and ecological systems and stand as early models for human-environmental or critical ecological research by geographers (Sachs 2003; Robbins 2012). In his “new scientific geography,” Carl Ritter (1822-1859) synthesized the rapidly expanding canon of empirical findings to advance his geographical theory of Erdkunde, a sort of “unity in [the Earth’s] diversity,” helping to usher in the nascence of geography as a distinct discipline (Martin 2005, p.122).

In the U.S., academic geography began to emerge in the 1870s against the backdrop of field surveys of the American West conducted by Lewis and Clark, John Wesley Powell, and others. Those surveys emphasized physical geographies and observation-based induction over theoretical deduction, grounding the early discipline in a devotion to empiricism (Martin 2005). Nonetheless, prominent studies by geographers lacking formal training, such as George Perkins Marsh’s Man and Nature (1864), underscored the influence of Humboldt and Ritter in the practice of geography as the “meeting point between the sciences of Nature and the sciences of [hu]man[s]” (Bryce 1886 [in Castree 2001, p. 1]). During its formative decades, the study of geography in the
U.S. quickly expanded to include a range of subject matter. The first President of the Association of American Geographers (AAG)—William Morris Davis (1906), himself a geologist, reflected on the discipline’s diversity in his first address to the association. By then a framework known as *anthropogeography*, developed by German geographer Friedrich Ratzel (1882-1891), had laid the foundations for a human-centered geography in complement to the more physically-oriented approaches.

As geography continued to develop as a formal academic discipline in the twentieth century, research by many of its most prominent practitioners focused sharply on the human-environment nexus, especially Carl Sauer and his Berkeley School. Expounding on the concept of *Kulturlandschaft* developed by German geographer Otto Schlüter (1920; Martin 2005), Sauer organized his work around the concept of the *cultural landscape*, wherein cultural, biological, and physical forces coalesced to form landscapes and environments (Sauer 1925). Though he professed a general disdain for social and natural theories, his work exerted a strong and lasting theoretical and epistemological influence on the discipline. Centered in a hermeneutic empiricism, his methodologies typically relied on observational and archival fieldwork (Entriken 1984; Rowntree 1987). While the Berkeley School grounded in Earth sciences, its practitioners largely eschewed purely positivist approaches to the study of culture and its role in environmental production, preferring instead multidisciplinary analyses combining insights from the humanities with the social, natural, and physical sciences (Sauer 1941; Speth 1987; Mathewson 1987; Turner 1997). Sauer’s contempt for theory was likely related to his distrust and criticism of environmental determinism, the prevailing theoretical framework in American geography during his education and early career.
(Sauer 1927; Turner 2002; and e.g. Semple 1911, Huntington 1915). Nevertheless, his epistemes, methods, and conceptual orientations amounted to endorsements of theoretical positions (Entrikin 1984)—positions that both shaped and drew criticism from the discipline (Mathewson 2009).

If Sauer’s characteristic research program—i.e. human impacts on and interactions with the environment—seems common enough today, in the mid-20th century, that was not the case (Williams 1987). Along with zoologist Marston Bates and historian / philosopher Lewis Mumford and with support from the Wenner-Gren and National Science Foundations, Sauer helped organize an international interdisciplinary symposium in 1955 discussing “Man’s [sic] role in changing the face of the Earth” (Thomas 1956). The symposium was the first to offer a holistic take on studies of cultural-environmental relationships and amplified a growing interest in environmental issues in the Anglophone world (Williams 1987). A collection of essays detailing the various talks presented at the conference was published the next year (Thomas 1956) and the volume stands as a testament to Sauer’s work and influence on the academy and broader society (Sauer 1956a, 1956b; Williams 1987).

**Human and cultural ecologies**

Coinciding with the Berkeley school’s rise to prominence in North American geography and beyond, another influential school of human-environmental research emerged at the University of Chicago. From there Harlan Barrows issued his call for “geography as human ecology” in 1923, and along with his student Gilbert F. White laid the foundations for what is now known as hazards geography (White 1945; Cutter, Mitchell, and Scott 2000; Watkins and Hagelman 2011). Though both the Chicago and
Berkeley Schools shared considerable overlap in their emphases on human-environment interfaces, they developed largely as isolated camps with little interaction (Leighly 1987; Turner 1997). The Berkeley School was preoccupied with rural and agrarian topics (Kniffen 1936; Parsons 1955; West 1956, 1998) and the Chicago School more so with generalized urban patterns of risk / hazard (White et al. 1958; Kates 1962; Burton, Kates, and White 1978). Yet the schools shared a dismay for, and programmatic reactions against, environmentally determinist theories and each placed humans at the center of their ecological analyses (Zimmerer 2010b).

Multidisciplinary influences transformed the Berkeley School in the mid-twentieth century. Self-described cultural ecology arose from American anthropological thought beginning in the 1950s. Early practitioners oriented themselves around the work of Julian Steward (1955) who sought to engage the relationships between people and their environments. His influence spawned seminal works in anthropology for decades (Netting 1968, 1977; Rappaport 1968; Bennett 1969). Subsequent scholars revised the approach with a strict application of the ecosystems model to humans and their cultures (Vayda and Rappaport 1967). They typically viewed human culture as a means to maintain ecological balance among many interactive species and geophysical entities (Rappaport 1968; Netting 1977).

With the ecosystem model in place researchers began conducting studies of cultural adaptation within closed ecological systems, and cultural ecology increasingly gained favor among geographers, especially those associated with the Berkeley school (Blaut 1967; Mikesell 1967; Knight 1971; Parsons 1972; Nietschmann 1973; Butzer 1976; Grossman 1977; Doolittle 1984; Mathewson 1984). Due to personal connections
and a continued focus on rural, non-Western societies, especially in Latin America, geographers came to see geographical cultural ecology as a continuation of Sauer’s impact (Turner 1997; Mathewson 1999; Sluyter 2005; Zimmerer 2010b), albeit one that had absorbed influences from biological ecology (Odum 1953) and ecological anthropology (Steward 1955; Netting 1968; see Butzer 1989).

**Critical turns**

In the 1970s and 80s, critical assessments of cultural ecology (and the practices and perspectives of cultural geography that it had come to represent) arose from two distinct camps—one from inside the cultural geography subdiscipline and the other from broader geography, anthropology, and elsewhere in the social sciences. For their part, some cultural geographers began to interrogate the concept of culture underpinning the theories and practices of the Berkeley School. A movement within the subdiscipline drew from a broader epistemological critique of positivist objectivity (Tuan 1976), to frame Sauer’s use of culture as “superorganic”—i.e. static and deterministic (Duncan 1980). Subsequent probing of the Berkeley School combined with other intellectual movements to reimagine what a specifically “cultural” geography could be.

Gaining momentum by the late-1970s, those challenges to culture coincided with some geographers moving away from Earth science to focus more explicitly on humans within geographies (Tuan 1974, 1976; Buttimer 1976). The humanistic geographers rejected positivism and turned instead to the Vidalian school of French geography (Ley and Samuels 1978), phenomenology (Samuels 1978), and the arts (Meinig 1983) to place

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25 See Brookfield (1964) for a much earlier inquiry into the Berkeley’s School’s use of “culture” and Mathewson (1998) for a sober rebuttal of Duncan’s critique.
the individual human subject at the center of geographical research. While early humanists generally espoused strict anthropocentric constructivist subjectivities, humanistic approaches became noticeably diverse as the orientation developed (Adams, Hoelscher, and Till 2001). That diversity however stemmed fundamentally from sustained critiques of the idealism and human subjectivity that came to be associated with humanist geographies (Cosgrove 1985).

Such epistemological critiques of humanism combined with criticism of the Berkeley School’s concepts of culture to open the “critical turn” to a “new” cultural geography (NCG) (Duncan 1980; Cosgrove and Jackson 1987). Though NCG was never an organized movement, geographers in the 1980s coalesced around challenges to traditional cultural geography in efforts to expand the methodological and topical purview of the subdiscipline, which they regarded as stagnant (Cosgrove and Jackson 1987). NCG generally takes Duncan’s (1980) critique of culture as a point of departure. Duncan drew from anthropologists Keesing (1974) and Geertz (1970) to argue against a “superorganic” view of culture that binds humans in a subservient relationship with a rigid cultural force akin to earlier determinants such as God and climate. The counter argument saw such a reading of Sauerian culture as narrow and simplistic (Price and Lewis 1993). Thus a series of debates on the direction of cultural geography ensued in the 1980s and 90s (Duncan and Duncan 1988; Daniels 1989; Price and Lewis 1993; Cosgrove et al. 1993; Mitchell 1995; Cosgrove 1996; Mathewson 1999).

Later geographers employed Raymond Williams’ (1981) ideas on culture and a new, culturally-engaged social Marxism (particularly with respect to Gramsci’s (1971) concept of hegemony) to disentangle a “textual” landscape that layers mundane
environments with functions of power (Cosgrove and Jackson 1987). Such treatments generally rejected the materiality of the landscape, envisioning instead forms of meaning (Duncan and Duncan 1988; P. Jackson 1994). By shifting the focus to the everyday within the Western world, NCG eschewed not just the Berkeley’s school’s theoretical view of culture, but also its predominantly antiquarian, rural, and non-Western empirical foci (Wylie 2007).

As the twentieth century waned and the newness of NCG faded, its representational approach to landscapes as symbols came under critique by a new generation of geographers (Neumann 2011). So-called non-representational theory (NRT) melded diverse theoretical engagements to upset the static relationships between human culture and natural landscapes (Thrift 1996, 2008; Lorimer 2005; Anderson and Harrison 2010). Instead of static human representations of landscape and culture, NRT focuses on practice, performance, and movement. In many ways, NRT is a continuation of advances made over time by a variety of disciplines and approaches. NRT seeks not to supplant representation, on its face an impossible task, but rather to imagine ways of engaging the “more-than-representational” (Lorimer 2005; Dewsbury 2010). Thus many contemporary cultural geographers are complicating formerly dichotomous and human-centered analyses through network thinking and analysis, topics that will be explored in depth later in this chapter.

In retrospect some geographers now frame the turn away from the Berkeley School view of culture less as a censure of Sauer, but more as a call to problematize and complicate cultural processes (Kobayashi 2010). Nonetheless, debates of the 1980s and 90s left cultural geography more varied and eclectic than it was in years prior. While
some tensions remain, most cultural geographers now embrace the diversity (Anderson et al. 2002; Wylie 2007; Crang 2009; Kobayashi 2010), and many suggest that focusing on disciplinary ruptures and conceptual divides of any kind is unproductive or inhibitive (Gober 2000; Kwan 2004; Merriman et al. 2008; Baerwald 2010; Neumann 2011; Sui and DeLyser 2012; DeLyser and Sui 2014). Diverse theoretical, empirical, and methodological approaches to cultural and other geographies can only amplify understandings of landscapes and ecologies and therefore lead to greater and more complex awareness. Thus the criticisms of cultural ecology are best seen not as indictments, but rather as intellectual opportunities. Such was indeed the case with the development of political ecology.

**Enter political ecology**

The “origin myth” of political ecology situates its emergence from a series of criticisms directed at human-ecological research (Bridge, McCarthy, and Perreault 2015).26 As anthropologists (Wolf 1972, 1982) and geographers (Nietschmann 1973; Blaut 1980; Watts 1983; Hecht 1985; Blaikie and Brookfield 1987) collided with the perceived limits of cultural ecology, they amplified their analyses from isolated ethnographies of small-scale societies to include broader economic, political, and social processes, that is the vital roles of a “broadly defined political economy” and power / knowledge, in helping shape human-environmental interactions at multiple scales (Robbins 2012). Internal debates, criticisms, and inclusions were indeed crucial in the

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26 Those critiques were leveled at “human ecology” research writ large and thus would include heirs of the Chicago School researchers studying risk/hazard (e.g. Hewitt 1983; Emel and Peet 1989) along with cultural ecology (Turner 2002).
early development of political ecology, yet external social contexts also played crucial, if
less recognized, roles in its ascension (Bridge, McCarthy, and Perreault 2015).

Early proponents of what became political ecology reacted not only to the limits
of cultural ecology, but more broadly to the apolitical and draconian strands of
environmentalist scholar-activism that had come to dominate the Western imagination by
the late-1960s. By the following decade, popular discussions of human-environmental
relationships had come to the fore in a series of highly publicized academic-cum-public
debates. Led by prominent biologists, arguments for increased environmental stewardship
focused on the specter of (over)population and resource depletion, especially in the
Global South (Hardin 1968; Ehrlich 1968; Sabin 2013). Geographers, anthropologists,
and others reacted to that alarmist rhetoric with deconstructions of the relationships of
societies and environments. They included historical and political structures, social and
economic marginalization, and the lingering effects of colonialism within modern
epistemes and power structures in their social / ecological analyses. Seeking to
contextualize the politics inherent in human-environmental interactions, a suite of novel
approaches began to collect under an umbrella dubbed political ecology (Wolf 1972; Peet
and Watts 1996; Robbins 2012; Bridge, McCarthy, and Perreault 2015).27

27 Botanist and science journalist Frank Thone appears to have coined the term “political
ecology” in his column in Science News Letter in 1935, however decades passed before
the contemporary approach would emerge. In 1951 the sitting governor of the Alaska
Territory, Ernest Gruening, delivered a speech on the “Political Ecology of Alaska” at a
meeting of the American Association for the Advancement of Science convened in
Anchorage. Though trained in medicine and journalism, Gruening nonetheless
anticipated contemporary political ecology, relating “human organisms […] to their
institutions, public and private, and to their physical surroundings” (p. 376). French
economist and philosopher Bertrand de Jouvenel penned a visionary work in 1957. His
essay “From Political Economy to Political Ecology” linked international economic
development with access to natural resources while decrying myths of Western
That umbrella synergized developments in common property theory (Ciriacy-Wantrup and Bishop 1975), environmental history (Crosby 1972; Braudel 1982), neo-Marxist peasant studies (Frank 1967; Scott 1976, 1985), critical environmentalism (Enzensberger 1974; Harvey 1974), poststructuralist philosophy (Derrida 1972, 1976; Foucault 1972, 1977), and postcolonial theory (Said 1978; Robbins 2012). Attentive to the influences of esoteric and obvious global processes, discourses, and power dynamics on the cultural-environmental practices of local communities and groups, political ecologies incorporate international political economy into the environmental preconceptions of cultural and human ecology (Blaut 1980, 1993; Blaikie and Brookfield 1987; Hecht and Cockburn 1989; Bryant and Bailey 1997).

Political ecologists often locate and analyze imbalances of power to comprehend cultural and environmental practices at multiple scales, from household to global. At each level, political struggles related to class, race, gender, ethnicity, culture, nationality, and ideology co-produce and rhetorically frame environmental degradation and resource conflicts. Political ecologists therefore view environmental and socio-political challenges as interrelated and inseparable (Watts 1983; Blaikie 1985; Hecht 1985; Fairlead and

intellectual hegemony and anthropocentrism. From the late 1940s through the 1960s, political geographers, political scientists, sociologists, and cultural anthropologists deployed the term in analyses of geopolitics, voting patterns, international relations, and communal land tenure, respectively (Pearcy 1948; Heberle 1951; Howard 1957; Broom and Selznick 1958; Diederich 1965; Weissleder 1965; McColl 1966; Russett 1967). Enzensberger (1974) applied the term in his scathing critique of environmentalism in the 1960s and 70s. As discussed above, the distinct approach to socio-environmental problems that became contemporary political ecology drew from various other sources and began to gel in the early 1970s (Bryant and Bailey 1997; Robbins 2012). Many political ecologists continue to view Anthropologist Eric Wolf’s (1972) “Ownership and political ecology” as a watershed moment in the approach’s emergence.

In analyzing the social dimensions of environmental conflict, political ecologists often expose uneven distributions of wealth and power that underlie socio-environmental degradation. Such holistic, nuanced views of socio-environmental questions have placed political ecologies at odds with modernity\textsuperscript{28} and its impositions as (economic) development, producing a litany of critiques and proposals (Sheppard et al. 2009). Those commitments to environmentally / socially sound solutions and alternatives to modern development interventions highlight the emancipatory sensibility reinforcing political ecology since its inception (Blaikie and Brookfield 1987; Escobar 1995, 2008; Sluyter 2002; Peet and Watts 1996, 2004; Sheppard et al. 2009; Peet, Robbins, and Watts 2011; Leff 2013).

Despite its differentiation from earlier approaches, some scholars now see the turn to political ecology less as a replacement and more as a broadening or offshoot of traditional cultural ecology (Turner 2002; Mathewson 2006b), with one prominent interpretation linking approaches elsewhere dubbed “historical ecology” and “political ecology” under a broad umbrella of cultural ecology (Butzer 1989). Others distinguish a school of historical ecology focused on anthropogenic landscape change (Crumley 1994; Balée 1998, 2006), and still others argue that the political ecology approach has eclipsed\textsuperscript{28}.

\textsuperscript{28} A Eurocentric myth derived of and enabled by colonialism and built on two “great divides.” Following Latour (1993), modern thought constructs false dichotomies separating “nature” and “society,” and “the West” and “the Rests [primitive others]” (see also Sluyter 2002; Mignolo 2005, 2007; Maldonado-Torres 2007; Sundberg 2014; discussed in greater detail later in this chapter). In what follows, all references to “modern” implicate modernity as an episteme and an ideological project inextricably linked to the “colonial power matrix” or “coloniality” (Da Costa 2014).
its cultural predecessor(s) (Walker 2005). Whether viewed on a continuum or as a distinct approach, political ecology advances cultural-environmental analysis by situating ecological change within political and historical struggles and collaborations. Political ecology contextualizes local actions within multiscalar structures and institutions extending from individual households in small villages to powerful multinational organizations in teeming national capitals, all connected within particular histories and geographies. Political ecology, like historical ecology, asserts that “landscapes have history, and that natural things in given environments are historiographic indices of those environments” (Balée 2006, p. 77). And like NCG, political ecology recognizes landscapes not merely as outcomes of or stages for action, but also as actors in historical, cultural, and political processes (Sluyter 2002). Thus diachronic treatments of cultural and ecological research in geography, such as this chapter, are perhaps most valuable for their engagements with diverse and changing approaches rather than a teleological or evolutionary view of intellectual conquest and replacement.

Expounding on that broad framework, political ecologists continue to expand the approach’s analytical toolkit and topical breadth (Peet and Watts 2004; Walker 2005; Robbins 2012). While some bemoan a perceived lack of precision (Blaikie 1999) others see amplification as healthy and productive (Zimmerer and Bassett 2003; Robbins 2012). Following Neumann (2011, p. 6), “political ecology’s strength lies in its interdisciplinarity and propensity to poach without inhibition across the boundaries of other disciplines. The same might be said about geography more generally.” The result is a perpetual expansion of political ecology’s foci from discrete localities onto international and multiscalar geographies (Wainwright 2005), from rural villages (Blaikie
and Brookfield 1987) into urban megacities (Heynen, Kaika, and Swyngedouw 2006), and from the “developing” Global South (Bryant 1992) to the “developed” Global North (Forsyth 2003; Robbins 2007, 2012). The political ecologies that continue to emerge are based less on a discrete approach to research than a “community of practice” that combines critical analyses of social and ecological systems with “hard won insights distilled from field work” (Robbins 2012, p. 5; Rocheleau 2008, p. 716).

Regardless of their statuses as distinct, integrated, or successive approaches, scholars steeped in cultural or political ecology traditions continue to share affinities as evidenced in recent reviews that continue to link the approaches in various ways (Bassett and Zimmerer 2003; Zimmerer 2006, 2007, 2010b; Bridge, McCarthy, and Perreault 2015; Watts 2015); and their joint AAG specialty group. And even though most scholars distinguish historical ecology from cultural and political ecologies, some have combined the approaches to ground the politics of cultural-environmental interactions within historical processes and trajectories (Fairhead and Leach 1996; WinklerPrins and Barrios 2007; Carney and Rosomoff 2009; Sluyter 2002, 2012; Fraser, Leach, and Fairhead 2014). One recurring focus that binds all three traditions is research on agriculture (Butzer 1989), and when Western agro-industrial models began to proliferate as part of the Green Revolution(s), cultural and political ecologists played important roles in offering understanding and critique.

**Critiques of modern agricultural development**

Motivated by soaring populations in the Global South and anti-communist philanthropy from the Global North, the first Green Revolution transformed and reorganized global agriculture beginning in the 1940s, introducing economies of scale
and generalized industrial techniques and labor to agricultural production (Bayliss-Smith and Wanmali 1984; Leaf 1984; Grigg 1989; Perkins 1990; Bebbington 2004; Watts 2009; Patel 2013). From the revolution’s inception, Western scientists were quick to laud the potential of high-yielding varieties, agrochemicals, and large-scale irrigation for increasing surplus production and alleviating hunger in developing countries (Stakman, Bradfield, and Mangelsdorf 1967). Yet more than half a century later, hunger and stagnant production remain sobering challenges in many places, and critiques of the revolution’s uneven effects have now come to the fore (Falcon 1970; Paddock 1970; Bayliss-Smith and Wanmali 1984; Grigg 1989; Lipton and Longhurst 1989; Shiva 1991, 1993; Bebbington and Thiele 1993; Yapa 1993; Altieri 1995; FAO 1996, 2010; Lal, Hansen, and Uphoff 2002; Sluyter 2002; Rosset 2006; Gibson-Graham 2006, 2008).

Carl Sauer (1956a, 1956b) was among the initial critics of the Green Revolution, foreseeing the stark “ecological unbalances” and subsequent loss of biodiversity and cultural knowledge that would accompany generalized, aspatial forms of agricultural development (Hewitt de Alcántara 1976; Jennings 1988; Sheppard et al. 2009; Patel 2013). “We present and recommend to the world a blueprint for what works well with us at the moment,” he warned “heedless that we may be destroying wise and durable native ways of living with the land” (Carl Sauer 1956b, 68).

As a consultant to the Rockefeller Foundation’s Mexican Agricultural Program (MAP), Sauer warned against top-down interventions in Mexico’s agricultural economy, and advocated instead a bottom-up approach that would empower local communities and facilitate increased yields through Indigenous agricultural knowledge and techniques.
(Jennings 1988). In a 1952 letter to the foundation’s director of social sciences, economist Joseph H. Willits, Sauer denounced the imposition of U.S.-style agroindustry in Mexico on ecological and social grounds:

American know-how has less to offer to the Mexicans than the planners think. [...] I have lived too long with village people to look down on them. What they grow and how they grow it makes good sense. They aren't lost in ignorance and superstition. Except where too many of them have lived too long on too little land and erosion is taking the ground out from under them, they come close to living in ecologic balance. [...] Mechanized large fields, reduction in diversity of things grown, pumps that lower the water table, dependence on commercial fertilizers, increased requirements of nitrates and phosphorus by heavy planting of hybrid corn and soy beans, ecologic upsets by weed killers and insecticides applied on a large scale, it is out of such operations that agricultural crises are being built up. [...] The wisdom of the peasants is greater than ours. [...] Why should any one want to change them and harness them to a machine of accelerating “production” which is bound to destroy their ecologic balance and their ways? I'm back to this original question: Why have we this mania to remake other folks? Why this assumption of superior wisdom, this horrible hope that science and social science will organize all humankind into a crawling anthill? The goal seems to me indecent. Fortunately I believe it to be unattainable, because what we call increased production is increased extraction, the fertility potential is limited, we shall continue to depend on the higher plants and over the long run we've got to return to the soils most of what we take out of them. The wisdom of the peasants is greater than that of the scientific Daedaluses.

Written in pencil at the top of the letter reads, “This must never be shown to anyone or go to the general file. [signed,] JHW.” Rather than heed Sauer’s warning, Willits and the Rockefeller Foundation instead concealed it, electing to follow through with their heavy-handed development interventions.

Based on short-term increases in yields, Western authorities regarded the MAP a success, at least in the beginning, and expanded similar programs into Asia and Africa in

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what became the Green Revolution (Jennings 1988; Cotter 2003). A sweeping collusion of agronomic science, biotechnology, capital investment, and modernist development institutions transformed rich, biodiverse cultural landscapes into homogenous agroindustrial monocultures (Hewitt de Alcántara 1976; Shiva 1991, 1993; FAO 1996, 2010). While agroindustrial techniques did lead to increases in yield in many developed and developing nations, those increases came at the expense of agrobiodiversity or social and ecological heterogeneity. Yields have now stagnated in most areas due to erosion and exhaustion of soils, reliance on costly and detrimental inputs, and other factors (Shiva 1991, 1993; Altieri 1995; Evenson and Gollin 2003; Graddy 2013, 2014; Patel 2013; Khoury et al. 2014). As for the birthplace of the Green Revolution, by the end of the twentieth century, one-third of Mexicans lived in poverty, and the country imported up to one-fourth of the maize it consumed (McGlade 1997; Sluyter 2002). “The Green Revolution promised so much,” geographer Andrew Sluyter (2002, p. 202) recounted,

but its mania for high labor productivity and commodification causes hyper-urbanization and associated poverty. Its pesticides and herbicides cause pollution. And its intolerance for heterogeneity destroys forests, streams, and biodiversity.

The widespread development of monocultures and agroindustries has only exacerbated poverty, inequality, food insecurity, and environmental degradation, and Sauer’s rebuke has now reemerged as prescient (Shiva 1991, 1993; Altieri 1995; Jennings 1988; Lal, Hansen, and Uphoff 2002; Cotter 2003; Patel 2013).

Overshadowed by modernist fervor during his time, Sauer’s positions foreground more recent treatments of agricultural development, researcher positionality, and relational politics of knowledge. Aside from its fundamental contributions to science, development, and the politics of knowledge production, Sauer’s critique of modern
agriculture attests to the enduring connections linking the Berkeley School of cultural geography, cultural ecology, and contemporary political ecologies. Successive generations of cultural / political ecologists continue to draw on Sauer to construct sophisticated critiques of modern agricultural development, often by revealing the efficacy of Indigenous agricultural knowledge (Denevan 1995, 2001; Sluyter 2002).

According to Butzer (1989, p. 202),

Cultural [and political] ecologists are firmly opposed to mindless modernization according to Western standards. They argue that traditional agriculture reflects much trial-and-error; minimizes risk; is more often than not based on intuitively good ecological decisions, if not sound evaluation; and that it is intimately interwoven with cultural values and perceptions. A common stance is that Westerners should first learn from Indigenous groups before prescribing change, and that any changes should incorporate and emphasize the best components of the traditional system.

Scholars from a range of disciplines continue to point out the economic, environmental, and cultural limitations and detriments of generalized agroindustry, and calls for a return to techniques rooted in place continue to mount (Geertz 1963; Schumacher 1973; Knight 1974; Pierce Colfer, Gill, and Agus 1988; W. Jackson 1994; Altieri 1995, 1999; Escobar 1995, 2008; Peet and Watts 1996; Sluyter 2002; Scott 1998; Moseley, Carney, and Becker 2010; Lin et al. 2011; Rocheleau 2011). As controversies surrounding the genetically modified organisms (GMO) and genetically engineered (GE) seeds of the second Green Revolution continue to unfold, geographers—particularly those deploying political ecological approaches—remain at the vanguard of the debates (Whatmore 2002a, 2002b, 2003a; Yapa 2002; Zimmerer and Bassett 2003; Peet and Watts 2004; Rocheleau 2008, 2011; Peet, Robbins, and Watts 2011; Watkins 2011; Graddy 2013, 2014; Baletti 2014; Zimmerer 2014; Zimmerer, Carney, and Vanek 2015).
The various critiques and alternatives advanced by cultural and political ecologists are similar to those of agroecologists, who argue for agriculture grounded in ecological principles (Altieri and Hecht 1990; Denevan 1995; Bebbington 2004; Lin et al 2011). Political ecological critiques of modernity nevertheless extend beyond agrarian production to examine commodity (and value) chains and other networks that bind the environments and economies of the North and South, both historically (Brannstrom 2004; Lorimer and Whatmore 2009; Carney 2001, 2003a, 2003b; Carney and Rosomoff 2009; Sluyter 2012) and currently (Bebbington and Batterbury 2001; Dicken et al. 2001; Whatmore 2002a; Crang, Dwyer, and Jackson 2003; Bryant and Goodman 2004).

Analyzing the economic and ecological relationships that simultaneously link and differentiate the Global North and South has forced political ecologists to confront the colonial processes that construct and reproduce global inequalities (Blaut 1993). By the late twentieth century, two distinct but interrelated conceptual frameworks emerged to refocus historical analyses within political and cultural ecologies.

Postcolonial and Atlantic Studies

assumptions that knowledge, skill, and development necessarily flow from Europe to the
rest of the world. Blaut showed how imperialist discourse shaped a range of hegemonic
rhetoric including modernization theories (1993) and the production of history (2000).

The Columbian Quincentenary provided an opportune moment for postcolonial
revision. A group of cultural / political ecologists marked the occasion with a special
issue of the *Annals of the AAG* detailing decades of fieldwork and research on New
World colonial transformations (Butzer 1992). Their research furthered postcolonial
critique by reconstructing the demographic (Denevan 1992; Lovell 1992) and agricultural
diversities (Doolittle 1992; Whitmore and Turner 1992) of the pre-Columbian Americas,
demonstrating how imperialist rhetoric, colonial brutality, and infectious contagions
colluded to obscure Indigenous presence, knowledge, agency, and ingenuity. A decade
later that agenda culminated with book length treatments of those arguments (Doolittle
2000; Denevan 2001; Whitmore and Turner 2001) and a robust application of
postcolonial theory to colonial landscape transformations (Sluyter 2002).\(^{30}\)

Meanwhile historians and other scholars of the colonial Americas and the African
Diaspora began to broaden their analyses beyond arbitrary national and continental
borders, orienting their efforts instead around an “Atlantic World” (Gilroy 1993;
Thornton 1998; Bailyn 2005; Cañizares-Esguerra and Seeman 2007; Boelhower 2008;
Bailyn and Denault 2009). That broad geographic recasting of colonial history combines
early transatlantic conceptions of African-American history (Woodson 1936; Du Bois

\(^{30}\) I do not assert that that research program is concluded, far from it; (see Nash 2002;
Sharp 2009; Harding 2011; and Denevan 2014) only that there is now a greater diversity
of postcolonial cultural/political ecology research, including explicitly “decolonial”
projects, on the Americas and beyond; see Zimmerer (2007, 2010b), Sundberg (2014),
(1915) 2001; (1939) 2007) with transnational interpretations of sociocultural and economic networks (Braudel 1972) to meld Atlantic Africa, the African diaspora, and parts of Europe into a single unit of analysis (Ogundiran and Falola 2007; Bailyn and Denault 2009). Transcending colonial and other administrative borders, ocean-region studies “reconceptualize the Atlantic from a dead space of separation into a living space of flows” (Sluyter 2012, p. 3).

The Atlantic framework offers a context particularly conducive for re-envisioning the roles of Africans and their descendants in the formations of the New World (Boelhower 2008), thus much of its scholarship has worked to de-center Eurocentric interpretations of the African diaspora (Verger 1976; Thornton 1998; Mann and Bay 2001; Walker 2001; Sweet 2003; Andrews 2004; Schwartz 2004; Falola and Childs 2005; Sansone, Soumonni, and Barry 2008; Alencastro 2012; Sluyter 2012; Cole 2013). Countering earlier treatments that typically cast Africans as passive victims of slavery and New World colonization (Elkins 1959; Genovese 1974), the Atlantic purview allows scholars to reimagine biological and cultural exchanges by rejecting or countervailing modern Western premises (Said 1979; Blaut 1993; Gilroy 1993; Latour 1993; Trouillot 1995; Carney and Rosomoff 2009; Sluyter 2012). Some Atlantic studies draw explicitly on network thinking to transcend the conceptual traps of cultural and environmental determinisms (Latour 2005; Sluyter 2012; Steinberg 2013). Theorizing the Atlantic as a dynamic web of actors and agencies underscores actions, processes, and relations rather than static “African survivals” (Herskovits [1941] 1958) or wholly independent “creole” innovations (Mintz and Price [1976] 1992; Latour 2005; Sluyter 2010, 2012).
For their part, geographers and cultural/political ecologists have advanced Atlantic studies by uncovering contributions of Africans to New World landscape transformations while dismantling the racist assumptions and Eurocentric historiographies that have long shrouded such African agency (Voeks 1997, 2012b; Carney 2001, 2010; Carney and Voeks 2003; Carney and Rosomoff 2009; Sluyter 2009, 2012; Duvall 2009; Watkins 2011, 2015; Voeks and Rashford 2012; Carney and Rangan 2015; Sluyter and Duvall 2015). That recent geographical literature treats enslaved people as dynamic, creative, and innovative agents of landscape and cultural change (Zimmerer 2001; Carney and Rosomoff 2009; Sluyter 2012). The ongoing project relies on methodological innovations that move beyond texts to uncover the integral but systematically obscured roles of African intellect in the development of (post)colonial landscapes and cultures in the Americas (Carney and Voeks 2003; Sluyter 2012; Voeks and Rashford 2012) and beyond (Rangan, Carney, and Denham 2012; Carney and Rangan 2015).

By restoring diversity to colonial and environmental histories, (post)colonial studies carry potential to reorganize contemporary power structures. Recognizing the powerful and pervasive entrenchments of colonial epistemologies within the practices of development, scholarship, and everyday life, geographers and other scholars work to expose and undo the violences of Eurocentric ways of knowing and being in a project of

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31 Publishing on the “Africanization of the New World tropical grasslands” in 1970 and 1972, geographer James Parsons was among the first to study the transatlantic exchange of African biota, however he neglected to consider Africans themselves as agents (Carney and Rosomoff 2009).
While decolonization can refer to historical and political moments when territories successfully upend colonial power, that term now implies more profound acts of unraveling colonial epistemologies and replacing them with other and more multiple ways of knowing and being in the world—a “decolonial and critical cosmopolitanism” (Maldonado-Torres 2007, p. 261). For geographer Juanita Sundberg, this entails a profound obligation and responsibility to confront the widespread implications of colonialism in [her] scholarship and to ask what (geographical) thought has to become to face the political, philosophical, and ethical challenges of decolonizing (2014, p. 34).

Colonialism is therefore more than a historical form of governance, but a powerful modern episteme that continues to shape cultures, territories, and economies by reproducing difference, power, and social hierarchies (Escobar 2008). Decolonization is therefore an ideological and political project that seeks to recognize, enable, and enact multiple epistemes through research, writing, teaching, and the mundane practices of everyday life.

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32 For Brazilian sociologist Alexandre Emboaba Da Costa (2014), “the colonial matrix of power orders peoples, worldviews, and cultures to legitimate, include, and institutionalize certain histories, forms of thought, and ways of being as ideal, superior, and universal, while colonizing, devaluing, unequally incorporating, and/or excluding others (p. 3). He argues that “decolonial politics contest the colonial matrix of power, the system that has hierarchically articulated racial (and cultural) classifications to labor (status), systems of knowledge production (epistemology), forms of authority (patriarchal and institutional), and intersubjective relations (being/non-being) (p. 3). He imagines the “decolonial in practice” as “constant reflection on how to turn thought and action into concrete institutional and societal transformations that eradicate the ontological and epistemological foundations of colonality and racism that dehumanize, subjugate, and compel the annihilation of racialized subjects” (p. 2).
Deploying Atlantic, postcolonial, and decolonial frameworks, political ecologists often work to historicize and undermine the colonial practices and processes that help reproduce the modern world (Fairhead and Leach 1996; Leach and Mearns 1996; Batterbury, Forsyth, and Thomson 1997; Offen 2004, 2012, 2013; Peet and Watts 2004; Davis 2009; Robbins 2012; Sluyter 2002, 2012; Fraser, Leach, and Fairhead 2014; Sundberg 2014; Bell 2015; Collard, Dempsey, and Sundberg 2015). Such historical-geographical analyses “often run counter to dominant colonial or Western ideas and narratives about nature in the Global South by revealing the often ‘invisible’ histories of farmers and forest peoples and their relationships to the landscape” (Fraser, Leach, and Fairhead 2014, p. 1223). Some geographers explicitly combine approaches to distinguish a historical political ecology—i.e. “a field-informed interpretation of society-nature relations in the past, […] how and why those relations have changed (or not changed) over time and space, and the significance of those interpretations for improving social justice and nature conservation today” (Offen, 2004, p. 21). Those scholars construct and analyze environmental histories to illuminate relationships that underlie present social-ecological conditions and connections, “relat[ing] their research to contemporary situations in order to try to envision / facilitate environmental development that is more socially just and ecologically appropriate” (Davis 2009, p. 285). As such contemporary political ecologists maintain connections to traditions of diachronic research in cultural geography and cultural and historical ecology while contributing to the decolonial project (Davis 2015; Sundberg 2014).

Thus far in this chapter I have argued that the empirical breadth and theoretical toolkits of geography in general and cultural / political ecology particularly are
increasingly diversifying. That diversity has accompanied a broader retooling of epistemological and ontological orientations underway across the social sciences and humanities (Zimmerer 2007). As those nascent theoretical perspectives gain traction among geographers and political ecologists, they offer exciting potential for innovation and advance. The following section reviews some of those recent theoretical engagements, particularly those with explicit relevance to this study.

**Assembling complexity**

Geographers have for decades theorized the social construction of nature (Harvey 1974; Smith 1984; Gerber 1997; Castree and Braun 2001; Eden 2001; Demeritt 2002). Those insights represented geographical contributions to a broader, poststructural project questioning the objectivity of science through notions of discourse and power / knowledge (Derrida 1972; Foucault 1972, 1977). Poststructuralism led scholars to reject and begin to unpack the distorting effects of binarisms in Western thought (Latour 1993). Only after obfuscating the ontological dualities of nature / society were they equipped to dissolve the epistemological polarity of subject / object (Botkin 1990; Haraway 1991a; Latour 1993; Whatmore 2002b). The Western separation of nature from culture carried ethical and political implications by privileging the human “subject” and objectifying the natural and the material as *less than* human. The Kantian epistemological divide

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33 For expansive and diverse takes on the current states and diversifications of political ecology, see the handbook edited by Perreault, Bridge, and McCarthy (2015).

34 Latour’s (1993) campaign to collapse “nature-society divide” remains highly influential in the social sciences, but the interconnectedness and inseparability of “nature” and “society” have long been hallmarks of geographical and anthropological, and more recently, historical scholarship. See Sauer’s (1925) *cultural landscape*, Steward’s (1955) cultural *adaptation* (Denevan 1983; Butzer 1989), and historical treatments by Merchant (1980) and Cronon (1991).
separating the subject from the object rested on that divided ontology, reverberating cyclical and unsatisfying debates on structure / agency and constructivism / realism (Latour 1993).

Why choose when we can have it both ways? Many scholars now approach scientific and other knowledges as both socially constructed and real (Bhaskar 1975; Haraway 1991a; Latour 1993, 1999a; Demeritt 1996; Hinchliffe 2000; Eden 2001; Forsyth 2003; 2005). Critical realists recognize the intrinsic reality of the world and the things in it, but understand that any model or attempt to understand the world and its contents is necessarily partial and contingent (Haraway 1991a; Forsyth 2003). A critical realist perspective thus transcends the epistemological cul-de-sac of constructivism / realism leaving an interactive relationship of discourse and reality that “refuse[s] the choice between word and world” (Whatmore 2002b, p. 3; Sayer 2000). Following Haraway (1991a), science and other epistememes become “situated knowledges” that account for and react to both the will of the knowledge producer and the contours of the object under study (see also Latour 1999a; Haila and Dyke 2006).

Those and other poststructural ideas transformed and continue to influence geography. While some geographers refocused landscape as the very materialization of discourse (Barnes and Duncan 1992; Schein 1997), others envisioned fluid, performed notions of place and landscape (Pred 1984; Thrift 1999). As noted above, poststructural analytical tools—particularly discourse analysis and treatments of power / knowledge—helped catalyze the emergence of political ecology (Peet and Watts 1996; Bassett and Zimmerer 2003; Robbins 2012). Those new tools and perspectives helped scholars reimagine Indigenous and (ethno)scientific knowledges, often in juxtaposition with
modernist ideologies (Butzer 1989; Bebbington 1991; Turnbull 1993; Peet and Watts 1996, 2004; Nietschmann 1997; Carney 2001; Braun 2002; Sluyter 2002; Whatmore 2002b; Bassett and Zimmerer 2003; Scott 1998; Sundberg 2014; Radcliffe 2015a, 2015b). At the same time, the general dissolution of binaries also led to a recognition that all knowledges, epistemologies, or ways of knowing are contingent, thus undermining the dichotomization of Indigenous and Western (or Modern or Scientific) knowledges (Agrawal 1995; Bebbington 2004). Nonetheless, cultural geographers and political ecologists now typically view landscapes as “bioculturally collaborative product[s],” a vision consistent with many Indigenous knowledges and ways of knowing (Head 2007, p. 840; Clay 1988; Robbins 2012).

Eclipsing polarized epistemologies and ontologies, geographers, anthropologists, and other social scientists are finally able to deploy an explicitly relational ontology that values and accounts for human as well as non-human actors in complex material networks (Haraway 1991a, 1991b, 2008; Ingold 1995, 2000; Demeritt 1996; Whatmore 2002b; Escobar 2008; Descola 2013; Kohn 2013). What is left is “an ontological struggle rather than yet another epistemological battle” that liberates research from the misleading modern binaries that falsely detach the cultural from the natural, the human from the nonhuman, the realist from the constructivist, and consequently, science from politics (Hinchliffe et al. 2005, p. 649; Latour 1993). For political ecology, a commitment to relational ontologies allows for a decentered research praxis that combines positivist claims with penetrating deconstructions of knowledge production and the politics of Science (Lave 2012; Robbins 2015). Epistemological (critical realist) and ontological (relational) formulations are far from settled, however, and continue to animate
conversations between geographers and other social theorists (e.g. Braun and Whatmore 2010; Goldman, Nadasdy, and Turner 2011; Harding 2011; Sundberg 2014). One recurrent focus of that dialogue is theoretical and methodological engagement with network models, especially but not exclusively, those collected under the umbrellas of *assemblages* (Deleuze and Guattari 1987) and *actor-network theory* (ANT) (Latour 2005).

For many social scientists, theorizations of assemblages help form the philosophical and material bases for network thinking and research. Following philosophers Deleuze and Guattari (1987), assemblages materialize a relational ontology, all its constituent parts, and their interconnections. Assemblies are networks that account for the real connections relating social, natural, and physical realms. Deleuze and Guattari (1987) elaborate assemblages with their concept of *rhizome*. They use rhizomes as a “natural” model for understanding how the world works and interconnects. If assemblages model the material connections of relational ontologies, rhizomes provide one way to account for assemblages as they exist in the world.

A rhizome as subterranean stem is absolutely different from roots and radicles. […] any point of a rhizome can be connected to anything other, and must be. This is very different from the tree or root, which plots a point, fixes an order. […] A rhizome ceaselessly establishes connections between semiotic chains, organizations of power, and circumstances relative to the arts, sciences, and social struggles. A semiotic chain is like a tuber agglomerating very diverse acts, not only linguistic, but also perceptive, mimetic, gestural, and cognitive: there is no language in itself, nor are there any linguistic universals, only a throng of dialects, patois, slangs, and specialized languages. […] There are no points or positions in a rhizome, such as those found in a structure, tree, or root. There are only lines. […] A rhizome may be broken, shattered at a given spot, but it will start up again on one of its old lines, or on new lines. […] Unlike trees or their roots, the rhizome connects any point to any other point […] It has neither beginning nor end, but always a middle (milieu) from which it grows and which it overspills. […] The rhizome operates by variation,
expansion, conquest, capture, offshoots. [...] The rhizome is an acentered, nonhierarchical, nonsignifying system (pp. 6-9, 23).

Rhizomes provide an insightful metaphor and material model for conceptualizing the ontological linkages that comprise and connect the world (Figure 12, Figure 13, and Figure 14). Rhizomes also provide a corrective for “arborescent” modes of thinking that misrepresent social / biological systems as hierarchical and binary (p. 8). Rhizomes emphasize instead interconnection, interactivity, multiplicity, mobility, growth, and

Figure 12: Microscopic image of an Osmunda fern rhizome.\textsuperscript{35}

\textsuperscript{35} Source: Wikimedia Commons, available online at: https://commons.wikimedia.org/wiki/File:Osmunda_stem_XS.jpg (last accessed 18 April 2015).
Figure 13: “May Apple” (*Podophyllum peltatum*), a rhizome illustrated by Ida Hrubesky Pemberton.\(^\text{36}\)

polycentrism within life, societies, knowledges, and politics. Rhizomes are at once metaphor, model, material, and mode of thinking. Rhizomes are useful for elaborating the ways that social, ecological, and physical processes are ineluctably linked. Political ecologists and other scholars continue to build on Deleuze and Guattari’s rhizomatic thinking to reimagine and conduct research (Latour 1993; de Landa 2000; Whatmore 2002b; Rocheleau and Roth 2007; Bennett 2010; Rocheleau 2011, 2015).

ANT draws on a relational ontology and concepts of assemblages to bind the material (things) with the semiotic (concepts) in social *actor-networks* (Law and

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37 Source: Lloyd and Lloyd (1884-1885, p. 256).

38 Here it is useful to point out the similarities between what Latour (2005) calls “actor-networks” and what have been variously labeled “rhizomes” and “assemblages” by Deleuze and Guattari (1987), “actant-rhizome ontologies” by Latour (1999b), “relational places” by Massey (1994), “meshworks” by Escobar (2001, 2008), and “webs of relation” and “emergent ecologies” by Rocheleau (2011). While these individual terms hold distinct meanings, they each stress interconnectivity within relational ontologies. For
Hassard 1999; Latour 2005). As Latour (1993, 6) puts it: “the networks are *simultaneously real, like nature, narrated, like discourse, and collective, like society*” (his emphasis). Those actor-networks form (and *re*-form and *perform*) social relationships that are actively assembled by and of humans, non-human beings, ideas, and things. This model fuses the troublesome subject / object divide in ambiguous actor-networks that are real and dynamic. Actor-networks are at once tangible, metaphorical, and theoretical frameworks that help researchers conceptualize and operationalize the relations and arrangements of social agents, revealing non-human agency within socioecological processes (Latour 1999a, 1999b, 2005; Turnbull 2002; Rocheleau and Roth 2007; Rocheleau 2011). ANT emerged from an interdisciplinary research program called Science and Technology Studies (STS) in the 1980s, and many of its early theorists analyzed the development of scientific knowledge as an inherently social and

more detailed accounts see Crawford (1993), Whatmore (2006), Dolwick (2009), and Rocheleau (2011).

39 These new epistemological and ontological approaches challenge scholars to reimagine the language they use to describe the world. Fusing false binaries sometimes calls for fusing terminology. The term “socioecological” signals the inseparability of “nature” and “society,” as well as relationships and interconnections between humans and bio-physical actors, processes, and ecosystems. “Socioecologies” are complex, more-than-human assemblages. We cannot extract purely human beings or societies from what is ecological or multiple, nor can we separate biological, physical, or chemical actors from social or cultural interactions or systems. Some scientists, particularly those from the “natural” fields, use the hyphenated term “social-ecological” to express a linkage (e.g. Folke et al. 2007; Ostrom 2009), but I prefer the compound “socioecological” to signal full integration. Mauro (2014) argues for the use of “ecosocial” with the “eco” purposefully preceding the reference to society. Following many others, I prefer to list “socio” first, thereby rendering the reference to human society (socio) as a modifier of the root term “ecological.” While one could make the case that the terms “ecology” and “socioecology” are indeed interchangeable, here I use the compound to invoke and emphasize connections, interactions, and assemblages among Earth’s constituents, whether cultural, economic, physical, chemical, biological, or social; see Haraway (1991a), Latour (1993), Haila (1999), Whatmore (2002), Escobar (2008), Rocheleau (2011), and Mansfield et al. (2015).
socializing endeavor (e.g. Callon and Latour 1981; Callon, Law, and Rip 1986; Callon and Law 1995; Latour 1999a, 1999c, 2000). Since then many scientists (mainly social but increasingly natural) have applied ANT to reframe and reimagine, as well as conduct, research (Hetherington and Law 2000; Sluyter 2002; Whatmore 2002b, 2009; Kwan 2004; Hinchliffe et al. 2005; Davies and Dwyer 2007; Lorimer 2012; Lave et al. 2014).

Amplifying the social, many scholars now refuse to purify notions of human, social, natural, cultural, scientific, or political, using instead more holistic network models that relate, without categorization or reduction, the myriad forces and materials constituting reality (Whatmore 2006; Bingham and Hinchliffe 2008; Panelli 2010; Lorimer 2012). Work by political theorist Jane Bennett (2010) exemplifies this critical return to materialism. She draws on Latour, Deleuze and Guattari, and Spinoza to propose a “vital materialism” that describes the power and agency of non-human beings, things, and people fused within complex networks or assemblages. Promoting a penetrating empiricism, she explains how those assemblages distribute and mobilize agency and power as actors (or actants)—some but not all of them human—rather than objects. “The locus of agency is always a human-nonhuman working group” (Bennett 2010, p. xvii). Humans, plants, animals, landscapes, and other things are fundamentally cooperative—connected, acting, creating, and performing via networks. Bennett thus enlivens and mobilizes networks (assemblages) in ways that decenter (but not disenfranchise) humans and elevate non-humans as collaborators and co-constituents within the composition and vitality of the world. Her “political ecology of things” (2010) provides a sturdy point of departure from which researchers are counteracting stale
modernist binaries and contradictions to reimagine and revitalize analyses of human-environmental or socioecological interactions.

Meanwhile scholars from across the academy are exploring similar vital materialistic and relational positions via a related but decidedly distinct avenue: the multi- and interdisciplinary sciences of complexity (Waldrop 1992; Johnson 2001; Manson 2001; Haila and Dyke 2006). Sciences of complexity combine contributions from ecologists (Haila 1999, 2000), physicists (Barabási 2002), biologists (Goodwin 2007) philosophers (Smuts 1926; Kim 1999), computer scientists (Holland 1998, 2014; Mitchell 2009), and mathematicians (Strogatz 2001), among others, to analyze the synthesis and interactivity of complex systems.

Classic examples of complex systems include ecosystems, stock markets, ant colonies, and the human brain. “Each of these complex systems exhibits a distinctive property called emergence, roughly explained with the common phrase ‘the action of the whole is more than the sum of the action of the parts’” (Holland 2014, p. 2). Individual agents (organisms, traders, ants, and neurons, respectively, in the examples cited above) self-organize into complex networks / assemblages / systems to co-produce collective properties, meaning, or direction. Complexity thus produces “emergent properties,” the “unexpected results of particular patterns of interaction between components in complex systems” (Goodwin 2007, p. 36). These synergistic properties emerge not from the a priori attributes of the individual agents, but rather their interactivity. Holland (2014, p. 4) illustrates emergent complexity with the liquidity or “wetness” of water. Wetness derives from the interactivity of H2O molecules in the aggregate and is irreducible to the individual molecules or even their summation. Complex emergent networks are thus
material representations of social, biotic, chemical, and physical interconnections and the emergent properties they collectively co-produce. These dynamic, self-organized socioecological assemblages, be them living, technological, or both,40 substantiate Earth, its histories, and its potentials (Holland 1998; de Landa 2000; Goodwin 2007; Rocheleau 2011).

Biologists and others from fields traditionally associated with the “natural” sciences tout theories of emergent complexity as potential interdisciplinary bridges. From a nexus of critical realism and biology, Goodwin (2007) argues for “extending scientific insight in such a way that nature and culture are understood to be one continuous and unified creative process,” creating a “shift from scientists as observers of a given world to scientists as co-creators of that world with beings that are much more like us cognitively and culturally than we have hitherto recognized” (pp. 12, 100). Haila (2000) sees great potential in complexity theory as a vehicle for “concrete analyses of socioecological complexity” that transcend fragmented understandings of natural / cultural systems (p. 156). Conversations bridging “social” and “natural” scientific camps are intensifying, and to great effect (Haila and Dyke 2006; Rocheleau and Roth 2007; Escobar 2008, 2010b; Rocheleau 2011, 2015; Dittmer 2014). Since geographers have long blurred the contours of the social and natural sciences and humanities, the discipline appears poised to contribute ever more to such newly animated socioecological analyses (Ackerman 1963; Brookfield 1964; Gober 2000; Carney 2001; Whatmore 2002b; Rocheleau 2008; Baerwald 2010; Lorimer 2012; Mansfield et al. 2015). Liberating researchers from the trappings of reductionism, social-ecological frameworks empower scientists—natural,

40 As in Haraway’s (1991a) cyborgs.
social, and otherwise—to confront the complex human-environmental relationships underpinning the Anthropocene. As Mansfield et al. (2015, p. 292) conclude,

In a world of massive and ubiquitous socioecological change, it is time to rally not around the tired environmentalisms of “protecting nature” but around protecting and fostering the social natures that lead to the most just outcomes for humans and nonhumans alike.

The complex, multi- and interdisciplinary dilemmas of the Anthropocene, that is, will surely require complex, multi- and interdisciplinary resolutions (Robbins and Moore 2013).

**Invigorating political ecology**

Political ecologists from a range of backgrounds, including geography, anthropology, and political theory, are increasingly applying, adapting, and variously combining assemblages, vital materialism, and complexity to model and analyze socioecological interaction and change (Whatmore 1999; 2002b; 2006; 2008; Braun 2005; Hinchliffe et al. 2005; Hinchliffe and Whatmore 2006; Robbins 2007; Rocheleau and Roth 2007; Escobar 2008, 2010b; Lorimer and Whatmore 2009; Bennett 2010; Rocheleau 2011, 2015; Sundberg 2011). Whatmore’s *Hybrid Geographies* (2002b) build on the *geophilosophy* and *biophilosophy* of Deleuze and Guattari (1987; Bonta and Protevi 2004) and philosopher Isabelle Stengers’ (1997) notion of “cosmopolitics” to

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41 A term for the current geologic epoch popularized by atmospheric chemist Paul Crutzen (2002; see also Steffen, Crutzen, and McNeill 2007), Anthropocene responds to the profound and irreversible influences that humans wield on Earth’s chemical, atmospheric, physical, and biological systems; see Lorimer (2012), Robbins and Moore (2013), Young (2014), Lewis and Maslin (2015), and Mansfield et al. (2015).

engage the creative relationships of humans and nonhumans (Whatmore 2002b; 2003b).

Her approach to hybridity unpacks the ethical and political implications of the dissolution of the nature / society divide (Whatmore 1999, 2002b). Hybridity blurs borders, “journeying between natures and societies; objects and subjects; humans and nonhumans and into their excesses” (Whatmore 2002b, p. 3). Hybrids provide an ontological basis for a relational geography and social science wherein the mixtures and configurations of machines, animals, states, organizations, ecologies, politics are continually made up of all manner of elements, which themselves are nothing if not hybrid forms (Hinchliffe 2007, p. 51).

Hybrid geographies are “cosmopolitical experiments” (Hinchliffe et al. 2005) that amplify conceptions of environments and societies to accommodate humans, urban space, and everything else (Whatmore 2002b; Hinchliffe and Whatmore 2006). The resulting perspective recasts environmental concerns as socioecological collaborations, refocusing the human “in here” as a part of the world “out there” (Whatmore 2006, p. 602).

Sundberg finds much to gain in a “posthumanist political ecology,” one that advances a relational ontological approach framing the human and nonhuman as mutually constituted in and through social relations […], exploring nonhuman agency and challenging anthropocentrism on ontological and epistemological levels” (2011, pp. 321, 333).

She remains nonetheless concerned that some posthumanist treatments tend to reify modern epistemes and “the colonial present” by affirming problematic claims of authority and universality, thereby obscuring or dismissing a multitude of Indigenous and other ways of knowing (Sundberg 2014, p. 33). Sundberg reminds us that more-than-human geographies “are but one approach in a world of inclusive or non-dualist frameworks, such as those articulated by Indigenous scholars” (p. 36). In an effort to decolonize the discipline and practices of geography, she promotes Rauna Kuokkanen’s
(2007) concept of “multiepistemic literacy” as one way to value and stimulate diverse ways of knowing and being in simultaneity, enacting what some scholars refer to as a *pluriverse* (p. 34; Escobar 2008; Watson and Huntington 2008; Blaser 2014).

Diverse epistemologies emerge from lived histories and distinct places and must interact in the politics of knowledge production (Rocheleau, Thomas-Slayter, and Wangari 1996; Smith 2012; Sundberg 2014). In efforts to situate complex relational networks within distinct places and apply them directly to political ecology fieldwork and activism, geographer Dianne Rocheleau (2008; 2011; 2015; and Roth 2007) and her collaborators are developing the concepts of “emergent ecologies” and “rooted networks.” They combine insights from a range of disciplines engaged in the theorization of networks—including feminist political ecology, STS, human geography, and complexity theory—to model, describe, and analyze intricate socioecological relationships. These “emergent ecologies” represent “complex assemblages of plants, animals, people, physical landscape features, and technologies—created through the habit-forming practices of connection in everyday life” (Rocheleau 2011, p. 209).

Building on Whatmore’s (2002) hybrid geographies, emergent ecologies recognize the emergent synergies arising from relational networks.

What is missing, according to Rocheleau (2011; and Roth 2007), is a treatment of the roles of place within complex emergent ecologies. (Socio)ecologies self-organize in distinct places and therefore must be reconciled with territory as well as varying levels and typologies of spatially- and temporally-contingent power.

We both inhabit and co-create these ecologies of home, often without being able to “see” them clearly. We live in networks of the sort defined by Bruno Latour (2005), as in [emergent ecologies], yet we are also rooted in specific territories and geographic locations, often several
simultaneously and in series. […] The challenge is to mesh social, ecological, and technological domains in theories and models of rooted networks, relational webs, and self-organized assemblages, all shot through with power, and linked to territories and larger systems. Integrative network models and theories can be powerful tools for thinking and acting in place and across places, to identify instances of viability in actually existing human ecologies and to imagine and foster just and humane alternative futures (Rocheleau 2011, pp. 209, 225).

In response then to the inherent territoriality and power-laden qualities of emergent ecologies, she proposes “rooted networks” as a way to integrate various network models for specific application to political ecology. In this case, “rooted” does not imply immobility or passivity. Dismissing again the limitations of rigid binaries, rooted networks refer to a “placed-based yet transnational” grounding in multiple territories, concomitantly (Escobar 2008, p. 32). Using various rooting strategies, networks connect vertically as well as horizontally to various nodes, networks, and territories (Rocheleau 2011, 2015). It is helpful then to imagine socioecological systems as hybrid, fluid, and non-essential. Drawing on Rocheleau (2011, and Roth 2007) and Whatmore (2002), Escobar (2010b) advises, “We need to understand how living and non-living beings create ways of being-in-place and being-in-networks, with all the tensions, power and affinities that this unprecedented hybridity entails” (p. 95).

Activating “root” and “network” as both nouns and verbs, rooted networks vitalize and mobilize political ecological methodologies. The approach advances and expands actor- and other network models to foster deeper understanding and promote alternative development and conservation initiatives—i.e. “viable ecologies” (Rocheleau and Roth 2007; Rocheleau 2011; Escobar 2008, 2010b). While false dichotomies of nature / culture and subject / object have fragmented our understanding of social / ecological realities (Latour 1993; Goodwin 2007), rooted networks provide a model to
reintegrate ontologies, and by extension material ecologies, in ways that are holistic and relational as well as localized and specific. For political ecology, emergence and rooted networks show potential to link and elaborate socio-biological systems and animate fieldwork and activism (Derickson and Routledge 2015). Building on hybridity (Whatmore 2002b) and vital materialism (Bennett 2010), emergent, rooted networks de-center the human in human-environmental research, recasting ecology as fundamental, polycentric, multiscalar, and placed. Rooted networks combine to produce meaning and livelihoods, and are therefore economic as well as ecological projects. Such placed assemblages can help enact and empower a multiepistemic pluriverse of viable and diverse ways of knowing and living in the world, each potentially applicable as strategies for development at various scales (Gibson-Graham 2006, 2008; Roelvink, St. Martin, and Gibson-Graham 2015; Collard, Dempsey, Sundberg 2015).

Animating places and territories as vital constituents of fluid assemblages allows us to address and theorize diaspora and knowledges produced there. The pluriverse of diverse and interactive epistemes is more-than-Indigenous and benefits from diasporic knowledge as well. Coloniality / modernity continues to obscure the knowledges and practices of Afro-descendants and their contributions to cultures and landscapes in diaspora (Mignolo 2005; Maldonado-Torres 2007; Carney and Rosomoff 2009; Sluyter 2012; Voeks and Rashford 2012; Watkins 2015). Coloniality works to subjugate certain communities of humans precisely by denying them history (Wolf 1982; Blaut 1993). Thus historical treatments that attend to diversity and the roles of Afro-descendants within colonial networks rooted in transatlantic places can contribute to the decolonization of knowledge and its production.
Ecological returns

At last connections between earlier approaches in cultural geography and contemporary political ecology begin to emerge, revealing complex webs of reinvention and return rather than linear hierarchies or replacements. In retrospect, the emergence of a critical, relational political ecology is less a renunciation of its roots in cultural geography and cultural ecology than healthy self-reflexive growth and theoretical honing (Sluyter 2005; Robbins 2012). A long and inclusive view of ecological research in geography harmonizes the natural / social interactivity of Humboldt’s Kosmos (1845-1862) and Sauer’s cultural landscapes (1956b) with Whatmore’s hybrid geographies (2002) and Rocheleau’s emergent ecologies (2011).

Commitments to fieldwork and attention to social and political influences in places and landscapes remain central themes in cultural geography and political ecology, effectively enrolling the work of Humboldt, Kropotkin, Reclus, and Sauer to underwrite contemporary scholarship (Mathewson 2001; Offen 2004; Robbins 2012). Humboldt’s field-informed analyses of interrelated physio-biotic systems essentially founded modern geography, both human and physical (Humboldt 1845-1862, [1807] 1889; Harvey 1996, 1998; Mathewson 2006a; Robbins 2012). Critical sociopolitical analyses by early geographers from Kropotkin (1888) to Sauer (1925, 1952, 1956a, 1956b) championed Indigenous and traditional production techniques as alternatives to (post)colonial systems of production, thereby prefiguring the emergence of both cultural ecology (e.g. Steward 1955; Nietschmann 1973) and political ecology (Robbins 2012), and setting precedents for a contemporary pluriverse of emancipatory scholarship (Sundberg 2014). More recent postcolonial cultural / political ecology continues to document and often promote various

Early cultural geography relied on the complex agency of culture to help explain the formation of landscapes (Sauer 1925). Geographers are now comparing the once prodded and admonished cultural landscapes (Brookfield 1964; Duncan 1980) to recent “hybrid landscapes” approaches inspired by relational thinking (Whatmore 2006; Duncan and Duncan 2010). Only now, a re-theorized “culture” is but one of myriad networked influences on landscapes. Contemporary relational political ecology approaches harken back as well to cultural ecology, which decades ago analyzed humans as members of biological ecosystems (Vayda and Rappaport 1967), presaging the ontological collapse of the nature / society divide. And while the network and assemblage thinking of STS has become a mainstay in contemporary geographical research (Goldman, Nadasdy, and Turner 2011), its focus on active processes recalls the forward-looking social / natural theorization James Blaut drew from Carl Sauer and submitted in his dissertation of 1958 (Sauer 1941; Sluyter 2005; see also Blaut 1954).

While earlier frameworks remain problematic in various ways,43 locating the roots of current approaches in those from the nineteenth and twentieth centuries nevertheless

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43 Here I wish only to establish a trajectory over time within ecological research in geography. Just as we recognize that critical political ecology approaches find roots in the nineteenth century naturalists, we must also continue to consider how those scientist-
reveals patterns of continuity and change in ecological research in geography 
(Mathewson 1999, 2001, 2011; Robbins 2012). In a striking illustration of such “returns,” 
Whatmore reminds us that Sauer’s cultural landscapes are essentially human-nonhuman 
assemblages, placing him in dialogue with recent vital materialist or hybrid geographies. 
She explains,

The creativity of cultural geography is generated not by a succession of “new” turns but by the gathering force of constant re-turns to enduring preoccupations with the processes and excesses of “livingness” in a more-than-human world. [...] Before one gets carried away with their claims to novelty, it is worth recalling earlier efforts to marry the “bio” and “geo” in cultural geography. Thus, for example, buried in his ‘morphology of landscape’ essay is an appeal by Carl Sauer [1925] (following Vidal de la Blache) that “Geographers should avoid considering the earth as the scene on which the activity of man (sic) unfolds itself, without reflecting that this scene is itself living” (Whatmore 2006, pp. 604-605).

Whatmore demonstrates once again the creative utility of bridging approaches; 
approaches in this case separated by almost a century, divergent theoretical loyalties, and 
vast aquatic and academic oceans. Thus “looking back” intellectually, as well as 
historically, we can imagine and work toward “abundant socioecological futures, [that is] 
futures with more diverse and autonomous forms of life and ways of living together” 
(Collard, Dempsey, and Sundberg 2015, pp. 323, 329).

Re-grounding such network-inspired approaches in ecology and place, Rocheleau 
(2011) and others are locating the return to materialism in discrete physical and cultural 
landscapes (Rocheleau and Roth 2007; Escobar 2008). Theorizing and operationalizing 
travelers (generally male aristocrats of European descent) remain ineluctably entwined in 
the violence of colonial subjugation and the transatlantic slave trade (Mignolo 2005; 
Robbins 2012). Sauer’s cultural geography and fieldwork are also somewhat problematic, 
grounded within “masculinist epistemologies” that continue to purvey geographical 
fieldwork, particularly in Latin America (Sundberg 2003).
emergence, rooted networks recall and integrate geography’s long devotion to fieldwork, culture, scale, and politics, and build momentum toward finally dissolving the artificial and counterproductive boundaries that segregate social from natural sciences and human from physical geographies (Kwan 2004; Sui and DeLyser 2014). Such relational, holistic approaches to ecological research in geography provide promising frameworks for inter- and intradisciplinary collaboration as well as potential breakthroughs in political ecology and related subfields. (Socio)ecologies are holistic expressions of connectivities and hybrids; they resist reductionism and remain simultaneously cultural, historical, and political. An inclusive embrace of the discipline provides more diverse, robust, and responsive toolkits for imagining, framing, and implementing ecological research, and thus allows us to work toward more holistic and just conceptions of the world and our places in it (Gober 2000; Matthews and Herbert 2004; Baerwald 2010; Sui and DeLyser 2012; DeLyser and Sui 2014; Mansfield et al. 2015). The long view of ecological research yields a conducive and accommodating point of departure for this study: an inclusive and fluid perspective of socioecological networks as hybrid, polycentric, emergent, and rooted.

An Afro-Brazilian landscape rooted in Bahia

Emerging from a long tradition of ecological research in geography, this study analyzes the dendê economy rooted in Bahia, Brazil. Drawing especially on concepts of networks, hybridity, and complexity, it deconstructs the self-organized social, political, and biological nodes that comprise its multiscalar networks. It attends to the emergent interactivity of complex, hybrid socioecologies binding humans, palms, cultures, institutions, and discourses to reconstruct and amplify the transatlantic processes of its
historical-geographical development from precolonial West and Central Africa to contemporary Bahia.

Bahia’s Afro-Brazilian landscape is a compelling exemplar of the rich and enduring contributions of Afro-descendants to colonial landscape transformations. Without a historical treatment of those transformations, public memory works to deny some of the fundamental roles of Africans and Afro-Brazilians and their knowledges in Brazil’s cultural, ecological, and economic development. Thus this study contributes to the decolonization of Latin American histories and geographies by responding to the call issued by geographers Judith Carney and Robert Voeks in 2003:

A geographical perspective on landscape legacies of Afro-Brazil promises to contribute to historical recovery of profound knowledge systems that African peoples introduced to the Americas, thereby improving pedagogical materials that too frequently cast slaves as passive agents in the shaping of Neotropical environments (p. 148).

This project identifies, analyzes, and maps the historical and contemporary nodes and networks that combine to form Bahia’s Dendê Coast. While those networks are rooted in a discrete stretch of Bahia’s coastline, they also root laterally within a dynamic, malleable Atlantic World, helping to create and reproduce a relational web of interconnections binding several continents, billions of biota, and countless ideas. With an analytical gaze widened to recognize networked agency and emergent meaning, the analysis embraces a holistic view of ecologies—at once biological, social, physical, fluid, and rooted. As such, Bahia’s dendê landscapes vitalize as transatlantic, (post)colonial collectives of African oil palms, people, cultural mores, economic transactions, historical trajectories, and much more (Figure 15). Sensitive to the creative power of relationships
and interactivity, this project emerges from a collaboration of many beings and things to chart the past, present, and potential of Bahia’s Afro-Brazilian landscape.

Figure 15: A traditional samba group parades beneath dendezeiros in the Lamego quilombo community in Taperoá, Bahia (2012).

The analysis begins with the historical development of Bahia’s dendê groves, tracing their roots within West and Central African landscapes and cultures. We cannot understand contemporary palm oil production without an ample appreciation of the historical networks and processes that created demand for palm oil in Bahia, transformed the region’s landscapes, and set in motion a trajectory of agricultural and economic development in Bahia. Those historical developments now interact with a broad suite of contemporary processes and networks—social, biological, and economic—at multiple scales, hinging on a variety of situated knowledges. Agricultural modernization efforts in
Bahia and elsewhere often ignore long histories of traditional production and the economic and alimentary security it provides. Reconstructing the processes of socioecological change is the first step in valorizing those histories. Thus this study charts the historical development of oil palm landscapes and the palm oil economy in Bahia to uncover an important contribution to New World cultural and ecological development led by Africans and Afro-descendants. It then analyzes the networked internal and external pressures that challenge the contemporary economy, based on that history, and points to the efficacy of traditional cultivation and management systems and their application to modern palm oil development.

This project, like most geographical studies and practically all political ecologies, relies on fieldwork. The next chapter discusses the project sites in coastal Bahia, Brazil—i.e. the field—as well as the research methods employed—i.e. the work. Because ecologies are rooted in place(s) and the practice of research is an inter-subjective and situated exchange, a joint treatment of field sites and methodology reveals nodes and synergies that link the two in a dynamic and placed research process.
CHAPTER 2: PLACING A HYBRID METHODOLOGY IN BAHIA, BRAZIL

Bahia is Brazil. They are inseparable.

—Luís Henrique Dias Tavares, História da Bahia
([1959] 2009, p. 46)

In the city of Salvador da Bahia de Todos-os-Santos, colors, things, sentiments, rituals, and gods are all mixed; our truth is a mixture of races, of cultures, of faiths, of rhythms, of happiness and pain, of the struggles of slaves—malês, jejes, nagôs, congos, and angolas, to create a Brazilian nation, original and unique, mestiço in civilization and culture, the luminous face of our people.

—Jorge Amado Bahia de Todos-os-Santos
([1944] 2012, p. 122)

What is crucial is the proliferation of hybrids, or geographies and geographers of the third kind: those that cut across the divides between the social-cultural and the spatial-analytical, the qualitative and the quantitative, the critical and the technical, and the social-scientific and the arts-and-humanities.

—Mei-Po Kwan “Beyond difference” (2004, p. 760)

This chapter describes fieldwork. It details places (field) and methods (work) to introduce and explore the empirical and theoretical foundations of the research design. A coupled treatment roots the collaborative encounters and actions of the research process within the landscapes, institutions, and ecologies where the research happens, revealing relational networks of knowledge co-production. The opening section on field outlines some of the physio-cultural-economic geographies of the places involved in this study. The next section on work describes the methodology, framing it within a particular model of hybridity. The final section melds the two in a hybrid of field-work, deploying a self-reflexive and placed research methodology that facilitates the project.
The field

Relational ontologies such as those advanced in Whatmore’s (2002b) hybrid geographies are congruent with prominent geographical theorizations of place. Places are at once subjective constructions in constant states of becoming (Pred 1984), and real communities linked in space and time with other locations and territories (Massey 1994; Henderson 2009). As ongoing theoretical engagements continue to elucidate the creative vitalities of more-than-human networks (Bennett 2010; Braun and Whatmore 2010; Goldman, Nadasdy, Turner 2011), researchers are revising treatments of place as active agents and relational spaces within complex socioecological systems (Rodman 1992; de Landa 2000; Escobar 2001, 2008; Phillips 2001; Amin 2002; Harcourt and Escobar 2005; Gibson-Graham 2006; Rocheleau and Roth 2007; Rocheleau 2011).

For researchers in “the field,” the vitality of place then generates analytical and methodological implications. Instead of passive backdrops for human and biological action, research settings are creative agents that interact with methodologies to co-produce and situate knowledge. That is, any discussion of how research is carried out deserves a treatment of where it happened. Thus Bahia’s Dendê Coast, its capital city Salvador, and its traditional agrarian hinterland—the Recôncavo, affect this study simultaneously as settings, subjects, and collaborators.

Bahia takes its name from the vast Bay of All Saints, the country’s second-largest, comprising a maximum area of 1,223 square kilometers (km). Bahia’s coastline is the country’s longest, stretching nearly 1,000 km along South America’s Atlantic littoral between 11.5° and 18.5° South. Extending inland approximately 1,000 km, the state of Bahia is roughly the areal size of the Iberian Peninsula, and exhibits extraordinarily
diverse edaphoclimatic conditions, geomorphology, and biogeography. Moderately hot and extremely humid along its seaboard, conditions become generally hotter and drier moving inland. Heavily eroded granites and gneisses underlie the coasts, providing the parent materials for the region’s soils. Quaternary strandplains of nutrient-poor white sands (spodosols) are common near the shores, giving way to moderately richer red and yellow clays (oxisols) further inland. Relief climbs abruptly from coastal lowlands to cliffed outcrops and coastal tablelands (tabuleiros costeiros), rising eventually to the Chapada Diamantina mountain chain before levelling off onto Brazil’s central plateau (planalto central). Three of Brazil’s six biomes occur in Bahia. From the coast, Atlantic rainforest (mata atlântica) yields to the semi-arid, xeric shrubland and thorn forest (caatinga) of the sertão, later opening to Brazil’s vast interior savanna (cerrado) in far-western Bahia (Figure 16) (Cirano and Lessa 2007; Braun and Ramalho 1980; Voeks 1997; IBGE 2001, 2002, 2004, 2013; Ab’Sáber 2006; Thomas and Barbosa 2008; Dominguez 2009; Dominguez et al. 2009).

Most of the ethnographic, archival, digital, and other fieldwork conducted for this project occurred in a relatively small portion of Bahia: the humid coastal lowlands and piedmont tablelands of the Atlantic rainforest biome, known commonly in Brazil as the zona da mata (Kent 2006). Focusing on socioecological landscapes of African oil palm

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44 The caatinga biome is associated with the sertão region (truncated from desertão, or big desert). Sertão represents the Brazilian backcountry, a dry, drought-prone hinterland in northeast Brazil. Caatinga (from a Tupí word meaning “white forest”) is the vegetation regime, ecoregion, or biome related to the sertão.

45 Instituto Brasileiro de Geografia e Estatística (IBGE) (Brazilian Institute of Geography and Statistics) is a public institute tasked with conducting decennial demographic, economic, and agrarian censuses, as well as various geographic, geodesic, and cartographic analyses. See http://www.ibge.gov.br/.
and the broader palm oil economy they help sustain, the primary study area centers on the Dendê Coast, but also includes the capital city Salvador and its traditional hinterland of export agriculture—the fertile lowlands ringing the Bay of All Saints known as the Recôncavo. Though not a bounded space, the study area stretches roughly 200 km from

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north to south and 40 km inland, a dynamic habitat of land, water, and mud that more
than 3.1 million people and countless plants and animals call home.\textsuperscript{47} Physically
contiguous but socioecologically varied, this place roots and links urban and rural, forest
and farm, land and sea, earth and concrete in the Atlantic Forest biome (see core study
area in Figure 10).\textsuperscript{48}

The physical landforms of the contemporary Bahian coast still indicate its
separation from Africa some 135 million years ago (Voeks 1997; Barcia 2014). A
Mesozoic rift valley of tectonic escarpments frames the Bay of All Saints as the region’s
defining feature. One such ridge rises to form a promontory at the bay’s southern inlet,
now home to the capital city Salvador. South of the bay, along the Dendê Coast, tidal
estuaries fragment coastal strandplains to form the Tinhare fluvial archipelago and fill the
rift basin surrounding Camamú Bay (Dominguez 2009; Dominguez et al. 2009).

Influenced by the South Equatorial and Brazil Currents, the area averages
temperatures above 23° Celsius (C) and 1800-2100 millimeters (mm) of precipitation
annually, with more than 100 mm in each of 12 months, peaking between April and July
(CEPLAB 1977; CPRM 2006; Kent 2006). Updated Köppen–Geiger models classify the
area, including Salvador, the Recôncavo, and the Dendê Coast, within the equatorial
rainforest climate region (Af) (Kottek et al. 2006; Peel, Finlayson, and McMahon 2007).
A larger-scale classification system developed by IBGE classifies the area as Climate

\textsuperscript{47} Population calculated from the 25 municipal districts (\textit{municípios}) that intersect the
study area (IBGE 2013a) (see Figure 24, Figure 10, and Figure 11).

\textsuperscript{48} These places comprised the primary study area. Subsequent sections discuss other
places, near and far, where relevant research was conducted.
Those edaphoclimatic conditions create a fluvial landscape punctuated by waterways, estuaries, bays, and islands. The region is climatically and seismically stable, as neither hurricanes, tornadoes, earthquakes, volcanoes, nor freezing temperatures occur in Bahia (Dean 1995; Voeks 1997).

With the Bahian coast at its core, the Atlantic forest (*mata atlântica*) biome runs the full length of Brazil’s eastern seaboard, from Ceará to Rio Grande do Sul states, extending south and west into parts of Paraguay, Argentina, and Uruguay. Atlantic forest vegetation once covered more than one million square kilometers, but only 8 percent of original cover remains. Areas in southern Bahia contain some of the largest and most biodiverse tracts of the surviving forest (Dean 1995; Galindo-Leal and Câmara 2003; Thomas and Barbosa 2008). The biome exhibits general geomorphological and biogeographic gradients extending from the margins of the open ocean westward over an upland piedmont of tablelands (Thomas and Barbosa 2008). Where coastlines are unprotected, breakwaters meet stretches of white sand beaches. Coasts sheltered by reefs, promontories, bays, counter coasts, and islands favor a tangled system of mangroves that creep inland into estuaries up to several km (Ramos 2002; Dominguez et al. 2009).

Mangroves are resilient coastal forests tolerant of extraordinarily broad ranges of salinity and temperature. The trees colonize sheltered coasts by propelling networks of woody branches into the muddy soils of the intertidal zone, securing footholds at the moving confluence of land and sea. By accreting and fabricating soils and cycling nutrients, mangroves create the base for a broader socioecosystem, known as mangal, that harbors a great diversity of flora and fauna (see Figure 17) (West 1956; Dean 1995; Saenger 2002). Following decades of modern development in Bahia, mangroves still
occupy 46 percent of the intertidal zone surrounding the Recôncavo, and 62 percent of the Dendê Coast (Cirano and Lessa 2007) (Figure 18).\textsuperscript{49}

Figure 17: Mangroves in (a.) the Rio do Inferno near Torrinhas, Cairu, Bahia (2012), and (b) the Rio Carapitangüí in Barra Grande, Maraú, Bahia, at low tide (2014).

\textsuperscript{49} An analysis of Landsat 7 imagery (2012) in a geographic information system (GIS) revealed mangal on 62.7\% of the Dendê Coast, delimited from the Jaguaripe inlet to the base of the Maraú peninsula.
Figure 18: Mangal ecosystems in Bahia’s Recôncavo and Dendê Coast regions.

Bahia’s shorelines, whether mangal or sandy beach, fade gently into restinga, a transitional zone of stunted vegetation adapted to the sandy, nutrient-deprived strandplain. That biodiverse zone can include alternations of dunes, lagoons, backswamps, grass- and scrublands, and pioneer forest (see Figure 19) (Lacerda et al.)
Rising from tidal flats, the sandy *restinga* yields to a piedmont of oxisol clays on the Tertiary Barreiras formation, supporting dense stands of broadleaf Atlantic forests that give the biome its name. From those tabuleiros, Bahia’s coastal forest ascends 25 meters or more, stratified into three-to-four story canopies of woody shrubs, vines, and trees dominated by the Myrtaceae (Myrtle) family. Exhibiting extraordinarily high levels of biodiversity and endemism, conservation biologists have prioritized the Atlantic forest biome among global “hotspots” for conservation (Dean 1995; Myers et al. 2000; Galindo-Leal and Câmara 2003; Mittermeier et al. 2005; Thomas and Barbosa 2008).

![Figure 19: A subspontaneous grove of dendezeiros in the restinga zone of the *mata atlântica* biome in the Guaibim district of Valença, Bahia (2015).](image)

The first human communities in what is now Bahia predated colonial settlement by 13,000 or more years, occupying the Atlantic Forest along its lush coastlines and immediate interior (Dillehay, Calderón, and Politis 1992; Lahaye et al. 2013). There
nomadic and semi-sedentary groups of Tupí–Guaraní speakers practiced interdependent systems of hunting, fishing, gathering, and swidden-fallow agriculture (Hemming 1978; Dean 1995). European sailors arrived by 1500, and Portuguese-led colonization began in earnest three decades later, organized around a mercantilist plantation economy of sugar mills, or engenhos. Sugar production in Bahia focused on the fertile black clays, or massapés, of the Recôncavo. There sugar planters and their estates dominated physical, socio-cultural, and political landscapes. In 1549, the Portuguese Crown installed the administration for its American colonies on the peninsula framing the entrance to the Bay of All Saints, christening the capital São Salvador da Bahia de Todos os Santos\(^5\) (Tavares [1959] 2009; Ribeiro 1962; Mota 1978; Schwartz 1985).

Rising dramatically from Salvador’s bayside harbor, an abrupt escarpment imposes a split-level layout on the city; the resulting upper (cidade alta) and lower (cidade baixa) districts create a residential and commercial divide that recalls similar Portuguese urban plans in Lisbon and Coimbra (Disney 2009; Amado [1944] 2012) as well as Camamú in southern Bahia, founded in 1561 (Souto 1987) (Figure 20 and Figure 21). Government buildings and palaces, major churches and monasteries, and an elite residential area sat atop the ridge in the upper city, but the port, warehouses, markets, stalls, and common residences of the lower city carried the city. An English mariner’s description of Salvador, written during a sojourn of 1880, captures the city’s geomorphological, architectural, and cultural singularity, albeit with a terribly condescending and racist tone.

\(^5\) Brazil now officially refers to the city simply as Salvador, but historically the toponym Bahia could refer to either the city or its broader region, whether the capitancy or its later designations as province or state (Pinho 2010).
Figure 20: The Dutch siege of Salvador, ca. 1628.\textsuperscript{51}

Figure 21: Salvador’s upper and lower cities from the Bay of All Saints (2012).

A picturesque place is Bahia as viewed from the sea. First along the shore is the Citade Baxa (sic), or lower town, the more ancient portion of the city. Here are the lofty stone houses of the old colonists, with antique churches of massive and quaint architecture. For Bahia is one of the most antique cities of South America. […]

The lower city is built on a narrow strip of land along the water, at the foot of a steep, black cliff some 240 feet high. One great street stretches along the beach, known as the Praya (sic)—it is four miles long, with a tramway running down its length. This Praya presents a very animated appearance. For here are the huge stores, magazines, and warehouses, and along the quays are moored the native craft, the queerest imaginable, with their gaudy paint, lofty sterns, strange rig, and semi-nude negro crews. Here are to be seen the giant blacks with glistening ebon skin, rolling down the bales of cotton, coffee, and sugar, and other produce of this rich province. At first sight, this is evidently one of the busy marts of the world. Along the front of the Praya is a fruit, vegetable, and odds-and-ends market, where at their stalls sit the fattest and most voluble of negresses, with the gaudiest and most voluminous of turbans on their heads, and a rather liberal display of their large charms.

Behind this Praya, as I said, rises a cliff, but not a smooth, bare cliff, but rugged, with quaint houses let into it, and rich vegetation filling each crevice. Most striking is the contrast between the two. For the houses are antique with gloomy arches, dingy, many of them, as if they had stood through centuries of London smoke, whereas the vegetation—who can describe its freshness, its marvellous exuberance of youth! Its fairy-like beauty! Graceful palms, luscious-leaved bananas, wonderful creepers of rainbow colours, overflow the cliff, forming a luxuriant curtain of tropical verdure, flower and fruit, depending from the upper to the lower city.

On the summit of this cliff is a plain on which is built the Citade Alta (sic), or upper city, with its crowded narrow streets (nearly each with its tramway line), its broad squares, and the cathedral. On either side of the town, on the hill-sides over-looking the bay, are the most beautiful suburbs imaginable, with palatial villas nestling in gardens of such colour and aroma as intoxicate the senses. No wonder if the Brazilian is voluptuous and lazy, living as he does in such a Paradise as this. […]

And many a great river is seen pouring in from the inner lands, and many towns and picturesque whaling villages are scattered here and there round the wonderful coast, which is one ever-changing tropic garden. For this is the world-renowned Reconcava (sic) of Bahia, surely one of the wonders of the world. A bay seven miles broad at its mouth, then opening out into this land-locked sea of more than one hundred miles in circumference, where all the fleets of the world could find safe anchorage, free from any danger, and opening out with its many tributary rivers one of the richest regions of Brazil, that wonderful country of tropical prodigality—a gulf which seems as if formed by nature to be the emporium of the universe (Knight 1884, pp. 57-59, 64).
As the region’s commercial entrepôt connecting agricultural commodities from the Recôncavo with Atlantic markets, Salvador served as colonial Brazil’s economic, administrative, and cultural nucleus until the Portuguese court decamped from Lisbon to Rio de Janeiro in 1763. Even as political power and influence shifted to Southeastern Brazil, Bahia remained a prominent agricultural producer and commercial hub in the South Atlantic through most of the nineteenth century (Schwartz 1985; Tavares [1959] 2009; Sousa 2012). While sugar reigned in the Recôncavo, south of the Bay of All Saints on Bahia’s sandy and humid Southern Coast the Crown mandated the production of the region’s staple—manioc.52 Manioc flour fed Bahia’s populations, urban and rural, enslaved and free, thus its production was of great economic and strategic importance (Barickman 1998; Graham 2010). From the Jiquiriçá valley to the Maraú Peninsula, the area now dubbed the Dendê Coast lie at the heart of colonial manioc production (Watkins 2015).

Undergirding the Luso-Atlantic economy in Bahia and elsewhere was the coerced labor of enslaved Africans. Whether on sugar plantations in the Recôncavo, manioc farms on the Southern Coast, or as porters in the urban center Salvador, enslaved Africans were the engine that ran the region’s economy (Schwartz 1985, 1987; Mattoso 1986; Barickman 1998). From 1580 to 1851 the transatlantic slave trade forced an estimated 4.8 million Africans to Brazil, and 1.5 million of them, or nearly one third of the total, disembarked in Bahia. That means roughly 14 percent of all enslaved Africans that arrived in the Americas did so in Bahia (Figure 22) (Emory University 2009a). Along

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52 English terms for species of the genus *manihot* include “cassava,” “yucca,” and “tapioca,” but as geographer Daniel Gade (2002) makes clear, “manioc” is most precise.
with Indigenes and Europeans, those Africans and their descendants transformed Bahia’s demography, cultures, and landscapes.

<table>
<thead>
<tr>
<th></th>
<th>1501-1600</th>
<th>1601-1700</th>
<th>1701-1800</th>
<th>1801-1866</th>
<th>All years</th>
<th>% Brazil Total</th>
<th>% Total</th>
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<td>784,457</td>
<td>1,989,017</td>
<td>2,061,625</td>
<td>4,864,374</td>
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<td>45%</td>
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<td>S.E. Brazil</td>
<td>4,770</td>
<td>221,083</td>
<td>756,561</td>
<td>1,281,500</td>
<td>2,263,914</td>
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<td>21%</td>
</tr>
<tr>
<td>Bahia</td>
<td>5,647</td>
<td>313,473</td>
<td>815,904</td>
<td>415,331</td>
<td>1,550,355</td>
<td>32%</td>
<td>14%</td>
</tr>
<tr>
<td>Pernambuco</td>
<td>18,571</td>
<td>246,522</td>
<td>329,336</td>
<td>259,404</td>
<td>853,833</td>
<td>18%</td>
<td>8%</td>
</tr>
<tr>
<td>Amazonia</td>
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<td>1,096</td>
<td>71,738</td>
<td>69,397</td>
<td>142,231</td>
<td>3%</td>
<td>1.3%</td>
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<tr>
<td>Br. unspecified</td>
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<td>2,282</td>
<td>15,480</td>
<td>35,992</td>
<td>54,041</td>
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<td>194,452</td>
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<td>225,504</td>
<td>145,533</td>
<td>752,505</td>
<td>1,292,912</td>
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<td>995,133</td>
<td>86,397</td>
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<td>295,215</td>
<td>25,355</td>
<td>444,728</td>
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<td>295,482</td>
<td>78,117</td>
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<td>68,608</td>
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<td>108,998</td>
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<td>3,122</td>
<td>2,317</td>
<td>150,130</td>
<td>155,569</td>
<td>1.5%</td>
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<td>640</td>
<td>2,981</td>
<td>5,240</td>
<td>0</td>
<td>8,861</td>
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<td>TOTALS</td>
<td>199,285</td>
<td>1,522,677</td>
<td>5,609,868</td>
<td>3,370,825</td>
<td>10,702,655</td>
<td>100%</td>
<td></td>
</tr>
</tbody>
</table>

Figure 22: Estimated disembarkations of enslaved Africans during the Transatlantic Slave Trade.\(^{53}\)

Visitors to Salvador were routinely astonished at the apparent numerical dominance and mobility of Afro-descendants,\(^{54}\) traits that distinguished that city from almost any other in the Americas (Pinho 2010). Arriving in Salvador in 1699, English privateer William Dampier noted “the negro-slaves in this town are so numerous, that

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\(^{53}\) Source: Emory University (2009a).

\(^{54}\) Calculations of census data combine descriptors of skin color *preta* (black) and *parda* (brown) to form an Afro-descendant composite. Previous writers have described such composites with the labels “Black,” “negro,” and “Afro-Brazilian”; see Kraay (1998a), Piza and Rosemberg (1999) and Sansone (2003).
they make up the greatest part or bulk of the inhabitants. Every house, as I said, having some, both men and women, of them” (1906, p. 386). In 1717 French intelligence officer Amédée-François Frézier estimated, “95 percent of the people one sees in the city are Black men and women […] so that this city appears to be a new Guinea” (1717, p. 532). Luís dos Santos Vilhena ([1802] 1969), Portuguese subject and professor of Greek to children of Bahia’s elite, estimated in 1798 that 110,000 people lived in Salvador and the towns and plantations of the Recôncavo, around one-third of them White, the rest of at least partial African descent (negros e mulatos). German physician Robert Avé-Lallemant, an avid explorer and colleague of Humboldt, commented of Salvador in 1859,

If one didn’t know the city was in Brazil, one could take it, without much imagination, for an African capital; seat of a powerful Black prince, through which passes practically unnoticed a population of white foreigners. It seems everyone is Black. Blacks on the beach, blacks in the lower city, blacks in the upper city. Anyone that runs, screams, works, carries, or pulls is Black. Even the carriage horses are Black in Bahia (1961, v. I, p. 20).

Population figures corroborate those travelers’ impressions. Though earlier counts exist, the first census of race and legal status in Bahia comes from 1775. A census of Salvador in that year counted 35,253 residents, 64 percent of them of at least partial African descent.55 By 1807, the total population of Salvador had risen 31 percent to 51,112, ranking it among the most populous cities in the Americas, while the Afro-descendant population, both enslaved and free and African and Afro-Bahian, jumped 39 percent, accounting then for 72 percent of the city’s residents. A census of Salvador and thirteen rural parishes conducted a year later found 249,314 total people, 79 percent of which were Afro-descendant, more than half of them free or freed (manumitted).

55 These included “blacks” and “mulattos,” both enslaved and free (Reis 2003).
Population estimates calculated by Reis appraise the total Afro-descendant share in 1835 at 72 percent (Reis 2003, pp. 20-24) (Figure 23).

The racial legacies of Brazil’s Atlantic history endure (Boxer 1963). The nation as a whole is now home to the largest population of people of African descent outside of Africa (Ferreira 1999), and Bahia remains the cultural and demographic center of Afro-Brazil. Brazilians of African descent accounted for 76 and 79 percent of the populations in Bahia and Salvador, respectively, in 2010. Afro-descendants accounted for 86 percent of the 16 municipalities in the Recôncavo and 83 percent of the eight along the Dendê Coast (Figure 23: Historical demography in Salvador and surrounding areas, 1775-1940.) (IBGE 2013a). Contemporary academics continue to celebrate Bahia as the “center” or “cradle of Afro-Brazilian culture” (Kraay 1998b, p. 4; Sansone 1999, p. 20). The primacy of Afro-Brazilians within regional and national histories and cultures was not, however, a destiny of demography, but rather the product of (post)colonial socio-political struggles (Mariano 2009; Romo 2010).

Academic studies of Afro-Brazilian cultures emerged in the 1930s through a series of academic conferences chaired by Brazilian social scientists, though with intellectual debts to Nina Rodrigues, Manuel Querino, and other innovative scholars of Afro-descendants in Bahia active in the late-nineteenth century (Freyre 1935). The second Congresso Afro-Brasileiro, held in Salvador in 1937, launched several noteworthy studies of Afro-Brazilian religion, cuisine, folklore, and ethnicity (Carneiro and Ferras 1940). Those scholars provided the intellectual framework for an influential Afro-Brazilian academic and cultural movement, but national politics repeatedly stifled the prospects of any real progress toward racial justice.
<table>
<thead>
<tr>
<th></th>
<th>1775</th>
<th>%</th>
<th>1807</th>
<th>%</th>
<th>1808</th>
<th>%</th>
<th>1835</th>
<th>%</th>
<th>1890</th>
<th>%</th>
<th>1940</th>
<th>%</th>
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<tr>
<td>Salvador</td>
<td>35,253</td>
<td>100%</td>
<td>51,112</td>
<td>100%</td>
<td>65,500</td>
<td>100%</td>
<td>174,412</td>
<td>100%</td>
<td>290,184</td>
<td>100%</td>
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</tr>
<tr>
<td>Whites</td>
<td>12,720</td>
<td>36%</td>
<td>14,260</td>
<td>28%</td>
<td>18,500</td>
<td>28%</td>
<td>52,425</td>
<td>30%</td>
<td>101,892</td>
<td>35%</td>
<td></td>
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<tr>
<td>Enslaved Blacks &amp; Mulattos</td>
<td>14,696</td>
<td>42%</td>
<td></td>
<td>27,500</td>
<td>42%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Free Mulattos</td>
<td>4,207</td>
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<td></td>
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<tr>
<td>Free Blacks</td>
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<tr>
<td><strong>Total free Afro-descendants</strong></td>
<td>7,837</td>
<td>22%</td>
<td></td>
<td>19,500</td>
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<td></td>
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<tr>
<td>Total Blacks</td>
<td></td>
<td></td>
<td>25,502</td>
<td>50%</td>
<td></td>
<td>46,007</td>
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<td>76,472</td>
<td>26%</td>
<td></td>
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<tr>
<td>Total Mulattos</td>
<td></td>
<td></td>
<td>11,350</td>
<td>22%</td>
<td></td>
<td>61,243</td>
<td>35%</td>
<td>111,674</td>
<td>38%</td>
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<tr>
<td><strong>Total Afro-descendants</strong></td>
<td>22,533</td>
<td>64%</td>
<td>36,852</td>
<td>72%</td>
<td></td>
<td>47,000</td>
<td>72%</td>
<td>107,250</td>
<td>61%</td>
<td>188,405</td>
<td>65%</td>
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<tr>
<td>Salvador &amp; 13 rural parishes</td>
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<td></td>
<td></td>
<td>249,314</td>
<td>100%</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Whites</td>
<td></td>
<td></td>
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<td>50,451</td>
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</tr>
<tr>
<td>Free Blacks &amp; Mulattos</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>104,285</td>
<td>42%</td>
<td></td>
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</tr>
<tr>
<td>Enslaved Blacks &amp; Mulattos</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>93,115</td>
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<td></td>
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</tr>
<tr>
<td><strong>Total Afro-descendants</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>197,400</td>
<td>79%</td>
<td></td>
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</tr>
</tbody>
</table>

Figure 23: Historical demography in Salvador and surrounding areas, 1775-1940.

56 Mulattos are people of mixed race. See Skidmore (1993).

57 Combines “préotos” and “mestiços,” but excludes “caboclos,” a term used for indigenous and Euro-indigenous persons.

58 Represents “parda.” In 1940, IBGE began collecting and classifying ethno-racial data using a series of “color” (côr) types: *branca* (white), *parda* (brown or *mestiço*), *amarelo* (yellow/East Asian), and *indígena* (indigenous). As of 2010, that system has remained the Brazilian standard (Sansone 2003; IBGE 2013a).

59 Excludes Cachoeira and Santo Amaro, districts with relatively high enslaved populations, and all of Southern Bahia.

60 Sources: Reis (2003, pp. 20-24); Brazil (1898); IBGE (1950). See also Butler (1998a, pp. 134-135) and Sansone (2003, p. 23). All percentages are of the total population for the indicated place and time.
<table>
<thead>
<tr>
<th>Municipality</th>
<th>2010 Total Population</th>
<th>White branca</th>
<th>Black preta</th>
<th>Asian amarela</th>
<th>Brown parda</th>
<th>Indigenous indígena</th>
<th>Total Afro-descendants</th>
<th>% Afro-descendants</th>
</tr>
</thead>
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<tr>
<td>Salvador</td>
<td>2,675,656</td>
<td>505,572</td>
<td>743,559</td>
<td>35,781</td>
<td>1,382,304</td>
<td>7,563</td>
<td>2,125,863</td>
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</tr>
<tr>
<td>Recôncavo</td>
<td>514,047</td>
<td>64,630</td>
<td>146,545</td>
<td>7,282</td>
<td>294,361</td>
<td>754</td>
<td>440,906</td>
<td>86%</td>
</tr>
<tr>
<td>Candeias</td>
<td>83,158</td>
<td>8,261</td>
<td>22,584</td>
<td>1,289</td>
<td>50,960</td>
<td>44</td>
<td>73,544</td>
<td>88%</td>
</tr>
<tr>
<td>São Francisco do Conde</td>
<td>33,183</td>
<td>2,239</td>
<td>13,278</td>
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<td>16,878</td>
<td>77</td>
<td>30,156</td>
<td>91%</td>
</tr>
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<td>17,376</td>
<td>2,063</td>
<td>2,757</td>
<td>225</td>
<td>12,302</td>
<td>29</td>
<td>15,059</td>
<td>87%</td>
</tr>
<tr>
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<td>57,800</td>
<td>4,398</td>
<td>22,190</td>
<td>1,411</td>
<td>29,690</td>
<td>66</td>
<td>51,880</td>
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</tr>
<tr>
<td>Saubara</td>
<td>11,201</td>
<td>831</td>
<td>3,926</td>
<td>284</td>
<td>6,098</td>
<td>11</td>
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<td>89%</td>
</tr>
<tr>
<td>Cachoeira</td>
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<td>3,311</td>
<td>12,948</td>
<td>695</td>
<td>14,747</td>
<td>131</td>
<td>27,695</td>
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</tr>
<tr>
<td>São Felix</td>
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<td>1,507</td>
<td>4,124</td>
<td>60</td>
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<td>70</td>
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<td>Maragogipe</td>
<td>42,815</td>
<td>7,291</td>
<td>9,629</td>
<td>487</td>
<td>25,396</td>
<td>12</td>
<td>35,025</td>
<td>82%</td>
</tr>
<tr>
<td>Salinas da Margarida</td>
<td>13,456</td>
<td>760</td>
<td>5,396</td>
<td>232</td>
<td>7,003</td>
<td>65</td>
<td>12,399</td>
<td>92%</td>
</tr>
<tr>
<td>Nazaré</td>
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<td>3,938</td>
<td>6,155</td>
<td>226</td>
<td>16,917</td>
<td>38</td>
<td>23,072</td>
<td>85%</td>
</tr>
<tr>
<td>Muniz Ferreira</td>
<td>7,317</td>
<td>1,290</td>
<td>1,605</td>
<td>37</td>
<td>4,384</td>
<td>1</td>
<td>5,989</td>
<td>82%</td>
</tr>
<tr>
<td>Santo Antônio de Jesus</td>
<td>90,985</td>
<td>20,256</td>
<td>21,010</td>
<td>700</td>
<td>48,788</td>
<td>108</td>
<td>69,798</td>
<td>77%</td>
</tr>
<tr>
<td>Jaguerípe</td>
<td>16,467</td>
<td>1,675</td>
<td>4,314</td>
<td>192</td>
<td>10,285</td>
<td>1</td>
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<td>89%</td>
</tr>
<tr>
<td>Aratuípe</td>
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<td>905</td>
<td>2,017</td>
<td>158</td>
<td>5,485</td>
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</tr>
<tr>
<td>Vera Cruz</td>
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<td>3,966</td>
<td>10,035</td>
<td>246</td>
<td>23,237</td>
<td>41</td>
<td>33,272</td>
<td>89%</td>
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<tr>
<td>Itaparica</td>
<td>20,725</td>
<td>1,939</td>
<td>4,577</td>
<td>151</td>
<td>14,032</td>
<td>26</td>
<td>18,609</td>
<td>90%</td>
</tr>
<tr>
<td><strong>Dendê Coast:</strong></td>
<td><strong>229,540</strong></td>
<td><strong>34,991</strong></td>
<td><strong>54,405</strong></td>
<td><strong>2,893</strong></td>
<td><strong>136,520</strong></td>
<td><strong>432</strong></td>
<td><strong>190,925</strong></td>
<td><strong>83%</strong></td>
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<tr>
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<td>15,336</td>
<td>17,830</td>
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<td>54,239</td>
<td>202</td>
<td>72,069</td>
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</tr>
<tr>
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<td>3,966</td>
<td>138</td>
<td>12,426</td>
<td>8</td>
<td>16,392</td>
<td>87%</td>
</tr>
<tr>
<td>Cairu</td>
<td>15,374</td>
<td>2,352</td>
<td>2,731</td>
<td>326</td>
<td>9,688</td>
<td>19</td>
<td>12,419</td>
<td>81%</td>
</tr>
<tr>
<td>Nilo Peçanha</td>
<td>12,530</td>
<td>1,676</td>
<td>1,977</td>
<td>113</td>
<td>8,762</td>
<td>2</td>
<td>10,739</td>
<td>86%</td>
</tr>
<tr>
<td>Ituberá</td>
<td>26,591</td>
<td>4,587</td>
<td>6,376</td>
<td>254</td>
<td>15,321</td>
<td>53</td>
<td>21,697</td>
<td>82%</td>
</tr>
<tr>
<td>Igrapiúna</td>
<td>13,343</td>
<td>1,743</td>
<td>4,514</td>
<td>290</td>
<td>6,778</td>
<td>18</td>
<td>11,292</td>
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</tr>
<tr>
<td>Camamú</td>
<td>35,180</td>
<td>5,036</td>
<td>10,858</td>
<td>582</td>
<td>18,577</td>
<td>127</td>
<td>29,435</td>
<td>84%</td>
</tr>
<tr>
<td>Maraú</td>
<td>19,101</td>
<td>2,051</td>
<td>6,153</td>
<td>165</td>
<td>10,729</td>
<td>3</td>
<td>16,882</td>
<td>88%</td>
</tr>
<tr>
<td><strong>TOTALS</strong></td>
<td><strong>3,419,243</strong></td>
<td><strong>605,193</strong></td>
<td><strong>944,509</strong></td>
<td><strong>45,956</strong></td>
<td><strong>1,813,185</strong></td>
<td><strong>8,749</strong></td>
<td><strong>2,757,694</strong></td>
<td><strong>81%</strong></td>
</tr>
</tbody>
</table>

Figure 24: 2010 population and racial data for each municipal district (município) in the study area.\(^{61}\)

\(^{61}\) Source: IBGE 2013a. In Brazil, as in the US, census racial categories are self-identified. The category for “Total Afro-descendants” is calculated by combining Black (preta) with Brown (parda); see for example da Costa (2014).
A forceful propaganda campaign led by the authoritarian Vargas regime, ruling from 1930-1945 and again from 1951-1954, enforced a myth of “racial democracy” in an attempt to consolidate power and control under an umbrella of national Brazilian unity. Vargas’ propaganda ministry promoted especially the ideas of Brazilian sociologist Gilberto Freyre ([1933] 2003), who claimed that Brazil was inhabited by a single mixed race and thus constituted a “racial paradise” (Reiter and Mitchell 2010, p. 4). The regime outlawed political parties and movements that spoke out against racial inequalities and ordered that all reference to race be removed from textbooks, censuses, and the official discourse in an attempt to construct a “tropical mulatto republic” based on a disingenuous myth of racial equality (p. 4). Two decades later, the United Nations commissioned an ambitious study of race in Brazil that found widespread discrimination and inequality at all levels of society throughout the country (Wagley 1952). Just as that academic production gained traction and began to filter into mainstream debates and movements, a military dictatorship took control of the country in 1964, squashing dissent and organization and forcing many of the most prominent academics and activists into exile. Only in the late 1970s, as the military regime began to crumble, did the Afro-Brazilian movement regain its popular and public momentum (Reiter and Mitchell 2010).

Recognition and appropriation of Afro-Brazilian cultural forms, in ways that de-emphasized their “Afro” origins as strategies of resistance to coloniality, was essential to the enforcement of racial democracy. By sterilizing and promoting certain forms of Afro-Brazilian culture, the state could proclaim the country free of racial bias (Hanchard 1994; Da Costa 2014). While that official culturism serves to blatantly exploit Afro-descendants and the histories and labors of their cultural expressions, the popular recognition of Afro-
Brazilian cultural practices does create complex if marginal spaces for negotiation and expression within public spheres, particularly in Bahia (Kraay 1999; Pinho 2010; Romo 2010; Ickes 2013; Finn 2014). Energetic street festivals including the annual pre-Lenten Carnaval, Lavagem do Bonfim, and Dois de Julho independence celebrations became platforms for Afro-Brazilian influence in (re)constructions of regional and national cultures, histories, and identities. Many Afro-Brazilian carnival groups—afolés and blocos afros—now convene throughout the year as popular cultural and socio-political organizations (Da Costa 2010a, 2014; Finn 2014). Afro-Brazilian cuisine—and its distinctive dendê oil—remain prominent symbols of regional culture long celebrated in Bahia and throughout Brazil (Lody 2009). Path-breaking scholar of Afro-Brazilian culture Manuel Querino ([1928] 1957, p. 23) did more than most to celebrate Bahia’s transatlantic gastronomy.

It is therefore evident that Bahia holds the superiority, the excellence, and the primacy in Brazil’s culinary arts; since the African element, with its exquisite seasonings, transformed Portuguese delicacies, resulting in a completely national product, savory and pleasing to the most discerning palate, which exceeds even the justified fame that precedes Bahian cuisine. The African introduced palm oil, dried shrimp, malagueta peppers, coconut milk, and other elements in the preparation of diverse Bahian dishes.

Other Afro-Brazilian cultural manifestations—especially the religions Candomblé and Umbanda and their various sects and denominations (nações), the martial art

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62 A ceremonial inter-faith parade culminating at one of Salvador’s most celebrated Catholic churches (Amado 1966; Verger 1976; Santana 2008).

63 According to Anthropologist Stefania Capone (2010, p. 269), there remain at least nine nations of Candomblé: “Nagô, Ketu, Efôn, Ijêxá, Nagô-Vodun, Jeje, Angola, Congo, [and] Caboclo.” The four most common nations are Nagô-Ketu (Yoruba), Jeje (Fon and Adja-Ewe), Angola (Bantu), and Caboclo (a term for people of mixed indigenous or mestiço descent) (Harding 2003). These nations are derived of ethnonyms used in the transatlantic slave trade, but now represent loyalties to Afro-Brazilian liturgical traditions.
capoeira, and several musical forms including samba and axé—highlight and sustain
Afro-descendant contributions to Brazilian national culture and help make Bahia a
prominent destination for domestic and international tourists. Rather than passive
artefacts, Afro-Brazilian cultures contribute powerful political symbols and social space
in the ongoing struggles for civil rights and social and racial justice (Carneiro 1964;
Voeks 1997; Kraay 1998a, 1999; Lody 2002; Harding 2003; Nishida 2003; Sansone
1999, 2003; Mariano 2009; Capone 2010; Pinho 2010; Romo 2010; Ickes 2013; Dawson
2014; Finn 2014).

Nevertheless, relatively few Afro-descendants benefit socially or economically
from the national celebration and commodification of Afro-Brazilian cultural forms.
Anti-black racism remains strongly and deeply embedded at all levels of Brazilian

more so than ethnic or geographic derivatives in Africa. As denominations of
Candomblé, these nations have long been contentious in Bahia. The concept of the
Candomblé nation, Capone (2010, p. 269) claims, “lost its original ethnic meaning and
now has a more ‘political’ and theological meaning.” Respective pantheons of deities
differ with each ethno-linguistic liturgical group. Nagôs revere Orixás, Jejes revere
Voduns, and Angolas revere Nkisis. Yet for all their distinctions, the various
denominations retain much in common as African-Brazilian cosmological expressions
and practices of spirit possession and intercession. For more on Candomblé nations, see
Costa Lima (1966, 1984), Harding (2003), Maurício, Oxaguiã, and Barros (2009) and
Parês (2013). Bahians considered “Jeje” the ethnicity of peoples coming from the “Gbe-
speaking area,” i.e. “the southern region of present-day Togo, Republic of Benin, and
southwest Nigeria, where live the peoples traditionally labeled as Adja, Ewe, Fon, or a
combination of these terms such as Adjja-Ewe” (Parês 2013, p. xii). Jeje Africans founded
terreiros devoted to the Jeje “nation” of Candomblé. Yoruba-speaking Africans and those
with ancestral links to Yoruba cultures, known by the umbrella ethnonym Nagô in Bahia,
founded terreiros devoted to Nagô, Ketu, or Nagô-Ketu nations of Candomblé. People
connected to Bantu traditions founded groups dedicated to Candomblé Angola. Many
devotees and researchers have long considered Candomblé Ketu, and to a lesser extent
Jeje, to be bastions of “African purity,” while other expressions such as Candomblé
Angola to be merely syncretic or “degenerate” (Rodrigues 1932; Ramos 1940; Carneiro
interpretations of “purity” and “tradition” to portray all Candomblé as fluid, contingent,
society, obstructing substantial socioeconomic or electoral gains (Reichmann 1999; Sansone 2003; Pinho 2010; Romo 2010; Da Costa 2014). Lingering effects of the myth of racial democracy have undermined Brazil’s Afro-Brazilian social movements (movimento negro). Many Brazilians continue to identify within a broad white-to-black spectrum of skin tones (cor) specified by hundreds of normative terms rather than a monochromatic racial dichotomy. Moreover, there exists a horizontal, interracial sociability between Brazilians of various skin tones, particularly among the poor and working classes, as well as a vertical socioeconomic stratification along racial lines (Telles 2004). Those horizontal relations operate alongside the vertical hierarchies and work to undermine their recognition and suppression thereby perpetuating the myth of racial democracy (Degler 1971; Andrews 1991; Skidmore 1993; Marx 1998; Piza and Rosemberg 1999; Nishida 2003; Sansone 2003; Telles 2004; Ickes 2013; Da Costa 2014).

Today, despite numerical superiority, Bahians of African descent remain partitioned from political and economic power. Following elections in 2010, only 18 of the 41 members of Salvador’s city council (vereadores), and just seven of Bahia’s 39-member delegation to the federal Chamber of Deputies, self-identified as Black (negro), despite respective majorities of self-identified Afro-descendants totaling 79 and 76 percent (Unegro and UFMG 2011). Neither Salvador nor Bahia has ever elected a Black executive (Romo 2010).

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65 Salvador’s lone Black mayor, Edvaldo Brito, was appointed in 1978 during the military dictatorship.
Euro-Brazilian political dominance is of course rooted in the country’s social, economic, and environmental histories as a Portuguese colony. Economic development in Brazil began with the colonial sugar economy, and its legacies remain apparent in modern race and class relations (Wagley 1952; Schwartz 1985; Romo 2010; Da Costa 2014). The colonial slavery system enforced patron-client relationships along racial lines, and that socio-racial hierarchy largely lingers despite abolition and successive bouts of democratization and liberal development (Butler 1998a, 1998b; Albuquerque 2009; Ickes 2013). Though social progress is evident over the centuries, the colonial relationship of white property owner and black worker largely endures (Schwartz 1985; Graham 1994; Nascimento 1999).

Following emancipation in 1888, twentieth-century economic development in Northeast Brazil moved at a consistently slower pace than in the Southeast. Industrialization focused around São Paulo and Rio de Janeiro as those cities became mega-metropolises integrated with global economies. Other regions lagged behind despite concerted efforts at development: Vargas’ Estado Novo nationalization programs beginning in the 1940s; Kubitschek’s strategy of national integration and development in the 1950s—highlighted by the construction of a new national capital, Brasília, in Brazil’s Center-West; and various development interventions enforced by the military dictatorship that ruled the country from 1964-1985 (Fausto 1999; Baer 2001).

Modern Salvador represents a telling microcosm of the linkages and paradoxes of coloniality and development in Brazil. With local and national economies in stagnation, the United Nations Educational, Scientific, and Cultural Organization (UNESCO) declared Salvador’s traditional upper city (centro histórico) a world heritage site in 1985.
Known popularly as the *Pelourinho*—or pillory—the historic district surrounds a cobblestone square of baroque religious buildings and colonial townhouses where proprietors publically auctioned and whipped enslaved humans (Figure 25) (Cerqueira 1995; Nishida 2003). International and state investments in the 1990s gentrified the historic urban core into a haven for tourists and the merchants who cater to them, driving many poor residents from their homes (Straile 2007). Thus public and corporate elites preserve the architectural symbols of coloniality to extract profits and maintain socioeconomic supremacy (Mignolo 2005; Maldonado-Torres 2007). And while official curation of the *Pelourinho* as Salvador’s “living museum” highlights Afro-Brazilian expressions, the appropriation and commodification of those cultures only reproduce

![Image](image.png)

Figure 25: The *Largo do Pelourinho* in the historic city center of Salvador, Bahia, a UNESCO World Heritage site (2012).
political struggles over the rights to preserve, express, and own Bahia’s transatlantic traditions and legacies (Straile 2007; Romo 2010).

At the national scale, economic inequalities encouraged a net out-migration from Brazil’s Northeast region over the twentieth century, a trend that continued but slowed through 2010. In that year, 3.1 million native Bahians lived in other Brazilian states, the second highest total among all states, 55 percent of whom resided in the state of São Paulo. Despite that ongoing trend, Bahia has maintained the single largest rural population of any state since 1970, totaling 3.9 million people in 2010. That year 39 percent of the state’s population lived in rural areas, more than double the national average of 15.6 percent (Perz 2000; IBGE 2012, 2013a). Agriculture continues to be an important economic sector and source of income in Bahia, accounting for 32 percent of the state’s workforce in 2009 (Bahia, SEI 2014). Recent initiatives enacted by President Lula da Silva and continued by his successor Dilma Rousseff have blended expansions of social programs with neoliberal reforms, nominally supporting smallholder and family farms alongside subsidized agroindustrial development. In 2004 the Lula administration implemented a national biofuel program aimed at the “social inclusion” of small and family farmers that has thus far produced mixed socioeconomic and environmental outcomes (Wilkinson and Herrera 2010; Andrade and Miccolis 2011). One component of the program subsidizes the production of biodiesel made from palm oil purchased from smallholders and family farms in Bahia. That state-led development intervention is but

66 Programa Nacional de Produção e Uso de Biodiesel (PNPB), see http://www.mme.gov.br/programas/biodiesel/menu/biodiesel/pnpb.html (last accessed 12 March 2014) and its detailed discussion in Chapter 7.
the latest episode in a centuries-long struggle to direct and transform the landscapes and economies of the Dendê Coast.

The study area for this project—a humid swath of South America’s Atlantic littoral extending from Salvador, around the Recôncavo, and down the Dendê Coast—is, like most Earthly places, a dynamic socioecological network of physio-chemical elements, biota (including humans), and technology. Distinct environmental and colonial histories and geographies nevertheless distinguish that place from others, situating it within the African diaspora, the Atlantic World, the Global South, and Brazil’s relatively less-developed Northeast region. Taken together, emergent traits give those place meaning, and issue a fluid realm of possibilities within which relevant research methods can operate and resonate.

The work

Analysis of (post)colonial, socioecological networks such as those rooted in Bahia provokes methodological challenges and opportunities. Eurocentric documentation, modernist discourse, and other legacies of colonialism often obscure the contributions of subaltern groups in the development of cultures and landscapes (Said 1978; Blaut 1993; Gilroy 1993; Bhabha 1994; Trouillot 1995; Rangan, Carney, and Denham 2012; Sluyter 2002, 2012; Sweet 2011, 2014; Carney and Rangan 2015); moreover the socioecological networks comprising cultural and economic landscapes are hybrid, historical, complex, and fluid systems (Carney 2001; Whatmore 2002b; Bennett 2010; Rocheleau 2011). Thus this study of the Bahian palm oil economy calls for an agile methodology responsive to many diverse voices and actions. It benefits from more-than-textual and more-than-human approaches operationalized through plural, inclusive methodologies (Carney
2001; Whatmore 2006; Lorimer 2005). Methodological plurality—the embrace of diverse strategies, methods, techniques, sources, and ways of knowing—can help to counteract the biases of colonial archives and anthropocentrism, attuned to the networked agency of marginalized actors, human and otherwise (Pile 1991; Rodman 1992; Carney 2001; Gagen, Lorimer, and Vasudevan 2007; Raju 2009; Bennett 2010; Lorimer 2010; Sluyter 2012; Sui and DeLyser 2012; Carney and Rangan 2015).

The “engaged pluralism” promoted by DeLyser and Sui (2014, pp. 303, 304) provides then a methodological point of departure for this project. They champion research endeavoring to reach across methodological and theoretical divides, and laboring to dispel the power asymmetries vested in different methods and knowledge communities. […] The complex problems of our times will demand both the greatest creativity and the greatest diversity of approaches—not a new paradigm or a new methodological “revolution,” but instead an embrace of engaged methodological pluralism, where different and divergent methods flourish to tackle issues from different angles. […] a generosity toward methods [emphasis added].

Their call followed similar arguments from Barnes (2009; Barnes and Sheppard 2010) and others (Gober 2000; Baerwald 2010) who see “the very strength of geography […] precisely in its methodological diversity and pluralism, which in the end will best contribute to understanding the changing planet” (Barnes 2011, p. 334). Plurality is inclusive and pragmatic. Plurality means remaining open to different methods and approaches, generously and judiciously applying various strategies when and where they best address specific research questions, without concern for (sub)disciplinary partisanship. While self-identified cultural geographers have been most active in promoting methodological plurality, their embrace of “radical methodological openness” (Shaw, DeLyser, and Crang 2015, p. 212) empowers social science and humanities
research writ large and plurality fits comfortably within the long view of human-environmental research and (re)turns to holism discussed in the previous chapter. Researchers have used various descriptors to label such heterogeneous methodologies, including plural, mixed, multi, and hybrid. Some researchers distinguish these terms as separate approaches (e.g. Tashakkori and Teddlie 2003), while others conflate them in service of inclusion (e.g. Cope 2010; Sui and DeLyser 2012). After briefly reviewing these concepts, I argue for hybrid methodologies as a distinct and deliberate approach—a portable methodological philosophy.

Batterbury, Forsyth, and Thomson (1997, p. 128) argued for “hybrid research,” or “(qualitative and quantitative information from several sources) to investigate concerns which are locally defined as well as globally acknowledged.” Their formulation of hybrid research was more epistemological than methodological as it may consider knowledge claims from varied sources, but also acknowledge that its subject (environmental degradation) is variously constructed from physical and social viewpoints. Its aim is to identify information about externally-real biophysical processes, yet also democratize the identification of environmental problems (p. 128).

Their approach does, however, endorse more ecumenical methodological approaches that combine physical and social sources and explanations, and frames the research process as inclusive, multiple, and polyvocal.

In her review of plural methods Elwood (2010, p. 95) points out that researchers in the social and behavioral sciences sometimes distinguish “mixed methods” and “multi methods” based on the various ways that techniques and data types are employed or integrated, especially in relation to each other. In formulating her own concept of mixed methods, however, she fuses what others consider “mixed” and “multiple” methods,
citing a lack of clarity or agreement in distinctions of the two. For Elwood (2010, p. 95) mixed methods approaches are “those that rely upon multiple types of data, modes of analysis, or ways of knowing, but may use these elements in a variety of ways in relationship to one another, for multiple intellectual and analytical purposes,” or as announced in the work’s subtitle, “thinking, doing, and asking in multiple ways.” Such multiple and mixed methods defy stale and restrictive allegiances between specific methodologies, epistemologies, and ontologies. She argues that mixing methods sometimes calls for mixing epistemuses, a stance congruent with (and perhaps encouraged by) recent engagements with critical realism in the social sciences and humanities (Forsyth 2003; Sundberg 2014). Elwood illustrates her essay with recent examples of mixed methods research in feminist geography and political ecology. Others point out the longer history of mixing and integrating methods apparent in work by disciplinary luminaries Humboldt, Huntington, Sauer, and de la Blache, among others (Godlewska 1999; Cope 2010; Mathewson 2001).

In a subsequent review of geographical methodologies, Sui and DeLyser (2012, p.113) highlight hybridity as a broad conceptual frame capable of bridging the artificial chasms partitioning not just methodologies, but also ontologies, epistemologies, and research disciplines / loyalties. Hybrid geographies, they argue, represent links that “challenge existing boundaries and forge creative connections within geographies—physical and human, critical and analytical, qualitative and quantitative.” This holistic perspective thus calls for multiple, mixed, and / or plural methodologies. The authors point to provocative and path-breaking methodological hybrids including qualitative GIS and archival ethnography, and remind us of the long tradition of hybridizing physical and
human geography within cultural / political ecology (Sluyter 2002; Knigge and Cope 2006, 2009; Kwan 2007; Cope and Elwood 2009; Dwyer and Davies 2010; Lorimer 2010; Mathewson 2011). Hybrid approaches counteract fragmentation and reductionism in social / natural research, promoting instead unification and synergy.

Even so, notions of hybridity and hybrid methods in geography have been complicated by contrasting and sometimes competing perspectives, and therefore deserve unpacking.\textsuperscript{67} The term hybrid derives from the Latin \textit{hibrida}, originally reserved for the offspring of a wild boar and a domestic sow (Hinchliffe 2007). From the eighteenth century, the term served as a vehicle for ethnocentrism as a pejorative descriptor of “unnatural” mixing (Rudy and White 2014). Environmental sociologists Alan Rudy and Damian White (2014) point out that formative African-American scholar W.E.B. Du Bois ([1903] 2007) prefigured much later theorizations of hybridity with his concepts of double-consciousness in the African diaspora (Gilroy 1993). Sanguine constructions of hybridity as fluid blends of cultures and politics now undergird many postcolonial and other social theories (Bhabha 1994; Sharp 2009; Rudy and White 2014).

Contemporary biologists continue to use the term in general reference to individual organisms of mixed genetic or phenotypic ancestry (Harrison 1993b), and geographers are deploying hybridity as a metaphor for understanding connectivities and holism. For Rose (2000, p. 364, quoted in Sui and DeLyser 2012) hybridity is an emergent novelty; hybrids “transgress and displace boundaries between binary divisions and in so doing produce something ontologically new.” Hybridity thus ruptures

\textsuperscript{67} For more thorough reviews of hybridity in geography see Hinchliffe (2007) and Lulka (2009).
boundaries and challenges uniformity. For Kwan (2004, pp. 758, 760) hybrids are
connections, “humans and nonhuman entities (e.g., objects, projects) that ‘travel’
between and connect existing divisions.” With her influential *Hybrid Geographies*,
Whatmore (2002b) synthesized postcolonial and cultural studies (Bhabha 1994),
agronomy (Simmonds 1979; Kloppenburg 2004), and STS (Callon and Law 1995; Serres
and Latour 1995; Haraway 1991a) to reconnect humans with the world. Her hybrids flesh
out relational ontologies, networking natures and cultures, humans and nonhumans, and
framing “the world as an always already inhabited achievement of heterogeneous social
encounters” (Haraway 2002b p. 3). Rife as it is with ontological and epistemological
implications, can hybridity also help us reimagine methodologies?

Despite her nuanced theorization of hybridity, Whatmore (2009, p. 361) later
downplayed its utility as methodological frame.

In geography and the wider social sciences and humanities, hybridity has
come to be used rather too loosely to mean any number of different kinds
of mixing, such as the notion of “hybrid methods” which means little more
than combining qualitative and quantitative methods in the conduct of
research, or what used to be called multi method approaches.

Whatmore suggests that hybrid methods denote only a simple re-packaging of multiple
methods, and are therefore redundant with preceding approaches. Her judgement then
amounts to a call for a new theorization of hybrid methods, one that transcends mere
conflation with multi and mixed methods. Below I argue that explicitly hybrid
methodologies offer useful ways to imagine and conduct research.

**Toward hybrid methodologies**

Hybrid methodologies build on the tremendous strides already advanced by
concepts of mixed, multi, and plural methodologies. Here I situate methodological
hybridity as a related and complementary yet distinct approach with a particular analytical vision/process: engaged interaction. Departing from the concept of methodological plurality as generous heterogeneity, methodological hybridity emphasizes interaction. When researchers deploy multiple theories, approaches, methods, and sources, they enroll plurality; when they bring those entities into dialogue or otherwise allow or encourage them to interact and exchange, they expedite hybridity. A hybrid methodology is therefore based in interactive plurality, with various approaches, methods, sources, and collaborators in conversation as a network of interlocutors (Crang and Cook 2007; Elwood 2010; Rocheleau 2011).

Ideas linking interaction with hybridity arise from many corners. A strict biological understanding of hybridity implies the procreative interaction of distinct beings (Harrison 1993a). Whatmore’s (2002b, p. 4) “hybrid geographies [commit] to a decoupling from the subject/object binary such that the material and the social intertwine and interact in all manner of promiscuous combinations” (Whatmore 2002b, p. 4 [emphasis added]). For Latour (2005, p. 168, n. 216), interaction similarly contributes to the dynamic production of culture […] simultaneously that which makes people act, a complete abstraction created by the ethnographer’s gaze, and what is generated on the spot by the constant inventiveness of members’ interactions.

Philosopher Donna Haraway (2008, pp. 10, 4), feminist STS theorist of the “mixed organic-technological hybrids figured in cyborgs,” reminds us that “those who are to be in the world are constituted in intra- and interaction.” Philologist Mary Louise Pratt’s (1992, p. 7) “contact zones” offer an explicitly postcolonial take on hybrids as
interactive, improvisational dimensions of colonial encounters so easily ignored or suppressed by diffusionist accounts of conquest and domination […] treating relations among colonizers and colonized, or travelers and “travelees,” not in terms of separateness or apartheid, but in terms of copresence, interaction, interlocking understandings and practices, often with radically asymmetrical relations of power.

Finally, in his treatment of hybridity, Hinchliffe (2007, p. 51) complicates interactivity while edging remarkably close to complexity theory:

[Hybridity] is different to interactionism in that we are not talking here of pure forms that mix to produce something that is reducible to constituent bits. […] The metaphor of hybridity allows for something different, it allows for change in all parties as they relate to one another. And it allows for novelty to be produced. Novelty that is not reducible to component parts. Indeed parties do not simply interact to produce a new (impure) form. Rather, in relating, the parties and the product must change too (this is the key to most versions of relational thinking). Nothing remains unaltered in the event of relating.

In Hinchliffe’s careful parsing we find a notion of hybridity that, while reliant on interactivity, recognizes fluidity not only in the resulting hybrids, but also in their constituent parts. It follows that hybrid methodologies, aside from creating novelties from the interaction of components, also alter and transgress the individual approaches, methods, and sources that comprise them.68 Thus it is possible to view hybrid methodologies, like other complex systems, as non-linear self-organizing systems with varying degrees of creative agency independent of the researcher (de Landa 2000; Goodwin 2007).

68 Hybridity and interactivity are not synonyms and must be approached with care. Hinchliffe (2007) warns that views of nature/culture stressing interactivity imply the existence of two or more pure forms that come together to create something new. As such, instead of hybridity, “some authors prefer terms like ‘crossings’ in order to avoid the image of hybridity as ‘static entities coming together to form a compound’” (Jane Bennett quoted in Hinchliffe 2007, p. 51). Here the concept of an explicitly methodological hybridity is decidedly less precarious than the nature-culture hybrids he discussed.
Drawing then on a complex rendering of interaction, methodological hybridity is at once a theoretical posture and a practical research process. Without loyalty to particular approaches, the researcher meets the project in the field, actively engaging various methods, techniques, sources, and (human and non-human) collaborators, allowing them to interact, alter, and affect each other along with the research questions, analysis, and pending conclusions. In other words, ontological and epistemological generosities yield methodological generosity. Hybrid methodologies embrace the challenges, uncertainties, and opportunities encountered in the field. They expedite a self-reflexive research design that situates the researcher within the actor-network of his / her research as an ambiguous subject / object (Sundberg 2003). They expand and liberate both the political and the ecological implications of political ecologies, offering more flexible and holistic realms within which to operate (Whatmore 2002b, 2003b). Plural techniques and sources converse, blend, and hybridize to emerge as something new, something greater than the sum of their parts, grounded in the field and the socio-spatial realities of the research process (Rose 2000; Rocheleau 2011). As polycentric, self-organizing research designs, hybrid methodologies are at once liberating and messy, invigorating and hectic, and as dynamic as the socioecological networks they seek to address. In my view, hybrid geographies deserve hybrid methodologies.

Hybrid methodologies are open-ended practical strategies that empower researchers in the field. Using the well-worn slogan of ANT, the central task for researchers is to “follow the actors” (Callon, Law, and Rip 1986, p. 4, 5, 228; Latour 2005, pp. 12, 68, 227, 237; 1999a) to detect, describe, and analyze the interconnections that co-produce and situate knowledge (Haraway 1991b)—
that is try to catch up with their often wild innovations in order to learn from them what the collective existence has become in their hands, which methods they have elaborated to make it fit together, which accounts could best define the new associations that they have been forced to establish (Latour 2005, p. 12).

Hybrid methodologies draw on generous, ecumenical toolkits to follow actors and their networks. They respond to and interact with the diverse agencies, contingencies, and challenges encountered in the field, granting flexible, responsive means for imagining, designing, and conducting research. To analyze the complex networks of socioecological, political, and economic transactions that constitute Bahia’s palm oil economy, this project deployed a hybrid methodology of diverse and interactive data-generation strategies.

**The field-work: Rooting a hybrid methodology in Bahia, Brazil**

Research site and methodology merge in a hybrid of field-work. Research happens in places, but neither methods nor settings can or should be purified into separate entities. Instead they are perhaps best conceptualized as interconnected in fieldwork. A hybrid of field-work consciously blends place and methodology to yield a research design grounded in the historical, cultural, and physical realities of the field yet responsive to the uncertainties and limitations of research practice. This project deploys a hybrid methodology in Bahia, Brazil, to follow the actors: humans, plants, animals, things, places, discourses, etc., that comprise a local but multiscalar, globally-interconnected palm oil economy.

Methods included archives and other texts, ethnography, quantitative analysis, and GIScience. Textual analysis interrogated archived documents, travelers’ accounts, and secondary texts. Ethnography co-produced semi-structured and “relatively
unstructured” interviews, life and oral histories, informal conversation and email, landscape observations—sometimes guided or shared and expressed here through photographs—and corresponding field notes, informal focus groups, and attendance at public addresses (Crang and Cook 2007, p. 60; Latham 2003). Digital geographic techniques included mapping / cartography, map overlay geoprocessing, and grounded visualization (Knigge and Cope 2006, 2009; Gagen, Lorimer, and Vasudevan 2007; Watson and Till 2010; Hawthorne et al. 2015).

From 2009-2014 I initiated 368 interviews with 453 different people: 41 interviews in 2009, 321 in 2012, and 6 in 2014. Of those interviews 19 amounted to small impromptu focus groups of 3-6 people (Adriansen and Madsen 2009), and many were at least in part life or oral histories. Due to overlap among life and oral histories and other subjects and interview styles, it is impossible to distinguish between types or provide exact counts. Together I refer to these interviews, oral and life histories, and focus groups as ethnography (Figure 26). Topics and styles were always diverse and open-ended, allowing the participants to shape and pose questions as well as responses and co-produce data in various ways. Research purposes and outlets and the options to participate and record were always disclosed and left open-ended. Interviewees granted permission to record 271 of those interviews in digital mp3 files, each of which was transcribed and

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69 I follow Jackson and Russell (2010) to distinguish between life and oral histories as such: Life history is a specific type of oral history focused on the biography of the person “giving” the life history. Thus, when I refer to oral histories I am implying life histories as well as broader oral histories focused on a range of topics related to Bahia’s dendê economy.

70 In 2009, after enrolling at LSU, I applied for and received retroactive IRB exemption (IRB# E4909). In 2011 IRB exemption was extended for dissertation research through 15 September 2014. See Appendix A for documentation.
coded (in Portuguese), yielding 1,742 double-spaced pages of interview data. Notes from the remaining 97 interviews are stored among 224 pages of field notes.

Other field notes correspond to landscape observations represented in and categorized by 314 GPS points (Figure 27). Those data were overlaid with remotely sensed imagery from China Brazil Earth Resources Satellite (CBERS 2011) and the US Landsat (USGS 2010) program and analyzed in geographic information systems (GIS) based on Google Earth 7.1 (2013) and ArcGIS 10.2 (ESRI 2013). I compiled 218 pages of notes on archived documents. Using digital cameras, I amassed 25,863 images of archived documents and rare works in 2009, 2012, 2014, and 2015; and 45,168 images of

Figure 26: An impromptu focus group at a bus stop shelter in the *quilombo* community of Garcia in Camamú, Bahia (2012).
Brazilian people, places, plants, and landscapes during 2004, 2005, 2008-2009, 2010, 2012, 2014, and 2015. Qualitative data, including those from interviews, archives, and notes, were compiled, coded, and otherwise analyzed using computer software NVivo 10 for Windows (QSR International 2014). Thus while this project promotes a hybrid methodological approach, it admittedly relied heavily on interviews and oral histories as
methods for finding, learning from, and sharing a diversity of voices. This study therefore attests to the endurance of the interview as a qualitative method in academic research, echoing recent reports from geographers reviewing qualitative methodologies (DeLyser and Sui 2013; Dowling, Lloyd, and Suchet-Pearson 2015).

Ethnographic and archival fieldwork moved through forests, farms, wetlands, villages, homes, markets, libraries, government offices, public institutes, Candomblé terreiros, churches, beaches, buses, restaurants, and bars, mainly in the Atlantic forest biome along Bahia’s coast. Settings were both rural and urban, concentrating mainly in the towns and fields of the Dendê Coast, the Recôncavo, and urban Salvador da Bahia. While Salvador hosted the great bulk of archival research, it also served as a setting for, and collaborator in, ethnographies.

Exploratory and preliminary observations and ethnographies began in July 2009 and continued in July 2010 in Salvador, the Recôncavo, and the Dendê Coast. A 2009 car trip from Salvador to Belém do Pará passed through each of the capital cities of Brazil’s Northeast region. The bulk of fieldwork, ethnographic and archival, occurred during a twelve month residence in Bahia during 2012. During that year I resided with my partner Kristin and our dog el Jefe on the Dendê Coast in Taperoá, Bahia, from January through May. After Kristin and Jefe returned to the US in May, I resided in Salvador from June through October, working most days at the Arquivo Público do Estado da Bahia

throughout the city. In July I travelled to Rio de Janeiro and São Paulo. In Rio de Janeiro I examined documents archived in the *Arquivo Nacional do Brasil* (Brazilian National Archive), the *Biblioteca Nacional do Brasil* (National Library), and *Instituto Histórico e Geográfico Brasileiro* (Brazilian Geographical and Historical Institute), and conducted fieldwork in urban markets and stalls in both cities. In November and December I returned to the Dendê Coast for three weeks, taking residence with friends in Valença, then traveled to the Recôncavo—based out of Cachoeira for two weeks, and later traveled most of Bahia’s coastline from its extreme southern limit at Teixeira de Freitas to Mangue Seco near the border with Sergipe, conducting interviews, field observations, and other ethnographic research along the way. In 2014 I studied briefly in the *Arquivo Histórico Ultramarino* (hereafter AHU) in Lisbon and returned to Bahia and for archival research at APB and follow-up interviews in Salvador and the Dendê Coast: Valença, Taperoá, Camamú, and Maraú. In the summer of 2015, I returned to Bahia for two weeks, again studying at the APB and visiting the Dendê Coast. Repeated trips allowed for rewarding iterations of fieldwork during data analysis and writing phases.

Besides the documents preserved in public archives, other archived materials, rare works, government reports, and secondary materials were analyzed in various libraries in Brazil and the United States and in online holdings from 2009-2015. Among the libraries most beneficial to this project were the libraries at APB, *Superintendência de Estudos Econômicos* (SEI), *Fundação Pierre Verger*, and *Biblioteca Pública do Estado da Bahia in Salvador; Biblioteca Nacional and Instituto Histórico e Geográfico Brasileiro* in Rio de Janeiro (IHGB); the *Centro de Pesquisa e Desenvolvimento* (CEPED) in Camaçari, Bahia; the *Centro de Pesquisas do Cacau* (CEPEC) of the *Comissão Executiva do Plano*
da Lavoura Cacaueira (CEPLAC) in Itabuna, Bahia; the Empresa Brasileira de Pesquisa Agropecuária (EMBRAPA) and the Senate library in Brasília; as well as many university and public libraries in the US and the interlibrary loan program. Conducted at various times from 2004-2015, fieldwork and landscape observations outside of the main study area, on Bahia’s northern (litoral norte), southern (litoral sul), and extreme southern (litoral extremo sul)72 coasts and in Rio de Janeiro, São Paulo, Sergipe, Alagoas, Pernambuco, Paraíba, Rio Grande do Norte, Ceará, Piauí, Maranhão, Pará, Minas Gerais, and Goiás states and the Federal District around Brasília, also informed the analysis.

Analysis of all qualitative data departs from a “grounded theory” approach that relies on systematic and repetitive memoing and thematic coding (Strauss 1987). Coding, memoing, and other data analysis began during fieldwork in Brazil and was completed in the US from 2013-2014. Though coding and memoing are generally associated with ethnographic research, I found them useful also in the organization and analysis of archival and other data. Following Knigge and Cope (2006, 2009), the ideals and methods of grounded theory mesh qualitative and remotely sensed geographic data in a technique they call “grounded visualization.” Notes and GPS points derived from field observations were combined with satellite imagery in a GIS to analyze land use, vegetation patterns, and other human-environmental relationships. The result is an inductive, iterative and interactive approach that grounds GIScience with ethnography, thus bridging (momentarily) the physical-human and qualitative-quantitative chasms still stubbornly entrenched in geography (Kwan 2004, 2007; DeLyser and Sui 2014; Lave et al. 2014).

72 Bahian microregions (Microrregiões da Bahia) according to IBGE (2013a).
While qualitative GIScience offers a range of established approaches (Cope and Elwood 2009), among them the melding of qualitative with remotely sensed data (McSweeney et al. 2014), and the use of GIScience in historical research is a growing trend (Bodenhamer, Corrigan, and Harris 2010; Hunter 2014), still few studies combine grounded ethnographies, archives, and digital geographic analyses in the same project. Political ecologists, however, have been forerunners in this regard (Robbins 2001a, 2001b; Sluyter 2002, 2012; Nightingale 2003; Sluyter et al. 2015), with some recognizing the contours of a distinct historical political ecology approach (Offen 2004; Davis 2009) that complements “work in various archives with analyses of the available biophysical data relevant to their research and, quite often, with interviews and other ethnographic methods” (Davis 2009, p. 285). The hybrid methodology iterated here seeks to “synthesize multiple and messy sources and kinds of information” to connect historical socioecological processes to contemporary landscapes, cultures, and economies (Shaw, DeLyser, and Crang 2015, p. 212). Together, the different types of information interact and blend into an inclusive, polyvocal research project (Raitz 2001; Carney 2001; Sluyter 2002, 2012; Escobar 2008, Lorimer and Whatmore 2009; Lorimer 2010; Sui and DeLyser 2012; Voeks and Rashford 2012; DeLyser and Sui 2014).

The project benefits also from quantitative data and analyses. Aside from census data across four centuries, GPS, and remotely sensed imagery, I conducted and plotted a bivariate regression with publically available online data. These included palm fruit prices in Bahia (Bahia, SEAGRI 2015), international palm oil price data from the Global Economic Monitor (GEM) Commodities database published by World Bank (2015), and currency exchange rates from Monthly Monetary and Financial Statistics (MEI)

Archival and other texts provided baseline understandings, representations, and histories of landscapes and cultures, which like all accounts are always framed by power and politics. As Sluyter (2012, p. 219) advises, “documents preserved in the archive emerged from the very social relations under investigation and cannot stand apart from, be an impartial witness to, or adjudicate the facts of their own emergence.” Thus assertions levied and sustained in texts were not passively accepted, but rather tested and augmented through ethnography and landscape observations. Especially significant for this project was the silence of archived documents, necessitating a broader range of data-generation strategies (Pile 1991; Carney 2001; Sweet 2014). Remotely sensed digital geographic representations offered different and often revealing perspectives of landscapes, cultures, and relationships mentioned or disregarded in texts. Quantitative analysis helped test claims made by informants in the field. Hypotheses variously gleaned from field visits, interviews, digital analyses, and texts were then further interrogated with other methods and sources, which variously honed, contradicted, or corroborated certain ideas and theories. This process was not linear, however, and did not begin or end with text. It was an iterative, interactive research process that placed in dialogue various sources, methods, and techniques to create novel representations and accounts. The hybrid methodology deployed here was therefore a fluid and accommodating series of inter- and re-actions among collaborators, methods, and the field.

In a broadly academic and institutional sense, hybridity allows and encourages a more holistic view of scholarship that bridges various approaches sometimes defended as
exclusive domains of specific disciplines. This project seeks to “cut across the divides between the social-cultural and the spatial-analytical, the qualitative and the quantitative, the critical and the technical, and the social-scientific and the arts-and-humanities” (Kwan 2004, p. 760). This project embraces holism by blending: historical scholarship with contemporary social science; quantitative with qualitative approaches and data—including archives, ethnography, census data, regression analysis, and GIScience; revisionist historiography with development practice; and humans, ecologies, and economies in a socioecological analysis.

Adhering to the concepts of co-production, hybridity, and decolonization from research through writing, this project will also generate diverse materials (Wolf 1992; Pryke 2003; Whatmore 2003b; Smith 2012; MacKenzie, Christensen, and Turner 2015). In parallel with this English-language academic dissertation, I am also co-producing with collaborators in Bahia a research report written in Portuguese to be distributed online and in print format to all participants and other interested parties. I will revise chapters of this dissertation for publication as research articles in peer-reviewed journals in both the English and Portuguese languages. In addition I am co-authoring a small book intended for children that celebrates Bahia’s long history with palm oil and its groves of African oil palms. With the dissertation, research report, articles, and children’s book, my intentions are ultimately the same: to valorize local knowledges and histories, integrate and amplify local voices to reimagine and mobilize possibilities, and to share all the knowledges co-produced in this venture.
Researchers are inseparable from research. Within and between field and work there is the researcher / writer. Researchers can no longer assume “evidence” to pre-exist the investigation, rather the embodied, situated practices of research create and re-create both “scientist” and “study” (Haraway 1991a; Stengers 1997; Whatmore 2003b). This project is an inter-subjective co-production wherein traditional categories of researcher and researched are blurred to affect a rich collaboration between all the humans, plants, and things that comprise the social (Latour 1999a, 2005; Whatmore 2002b, 2003b). From this perspective fieldwork in Bahia becomes a process of inclusion and connection, drawing on (and hopefully in some ways improving) the lives and conditions of many collaborators, human and otherwise, to co-produce multiple knowledges and accounts. Open-ended interview styles and inter-subjective approaches to ethnography account for and encourage multiplicity and participation in the design and conduct of research (Crang and Cook 2007; DeLyser et al. 2010).

Recognizing the researcher as embedded in the field necessarily calls attention to his / her positionality within the research process. Because research and knowledge are always situated, partial, and contingent, self-reflexive examinations of one’s positionality are crucial (Rose 1997; Gibson 2008). Within the swirling socio-political contexts of this corner of (post)colonial America, I the researcher am an invasive species—a “gringo ethnographer” (Veissière 2009, 2010). My light complexion, blue eyes, thinning blonde hair, and foreign accent carry social weights, and provoke various assumptions and responsibilities. My notebook, camera, and GPS bespeak significant social meaning. To many Bahian observers, my particular combination of phenotype and equipment signals elite and moneyed status, social privilege, and otherness. Peculiar though it may be,
positionality in Bahia and elsewhere remains in flux. Functional fluency in Brazilian Portuguese and Bahian culture sets us apart from most foreigners and helps to build trust (Gade 2001; Veeck 2001).

As a married, heterosexual, Anglo-American man I benefit from coloniality, heteronormativity, and White privilege in the United States, Brazil, and everywhere else; I am certainly not proud of those realities, nor do I consciously emphasize them or reinforce their destructive stereotypes (Sundberg 2003, 2015). I worked to counteract my outsider gringo status through generosity, camaraderie, conversation, and listening. My personal intentions were to develop friendly relationships with my collaborators / participants; however ethical concerns as a researcher caused me to constantly question whether I was narcissistically manipulating social relationships for personal gain. This was certainly not my intention nor my ultimate judgment of the situation. I came to accept my place in Bahian cultural milieus, and remained careful to practice full disclosure of my intentions as researcher and as person, emphasizing sensitivity and empathy with my collaborators and their contexts in all situations (Crang and Cook 2007; Massey 2003; Thrift 2003; Smith 2012). My field research ethics thus derive from thoughtful sensitivity and always full disclosure.

Finally, an anecdote from fieldwork helps illustrate the fluid uncertainties of field, methodology, and positionality. In the proposal submitted to my dissertation committee I detailed my intent to conduct participatory methods—including participatory observation, mapping, and photography—in the research design. Later as I returned to the field, would-be participants scoffed at these ideas. While they happily made time for repeated visits and questions and guided me on tours of their farms, fields, and palm oil processing
facilities, they refused in almost every case to allow me to join them in their work of harvesting and delivering fruit and processing oil. In this way my collaborators recognized my own positionality as researcher / gringo / other, and chose to keep my roles separate from theirs. This experience reminded me that “following the actors” is a peculiar socio-cultural process that I participate in, but ultimately remains out of my control. I would not be allowed to insert myself so seamlessly into people’s daily lives and labors. My collaborators preferred to maintain a friendly distance. Bahia’s palm oil producers and processors had spent years and lifetimes learning and practicing their crafts and gringo participation seemed to them all too ridiculous. Fortunately for this project, its hybrid methodological framework encouraged constant reassessments of methods and approaches in situ, which led to other, more appropriate data-generation strategies (Hobbs 2001). Fieldwork is, after all, always participatory, whether we like it or not; researchers, however, cannot always dictate or define the terms of their participation.

Fieldwork mobilized this project, situating a grounded and dynamic research process in Bahia, Brazil. Bahia’s Dendê Coast and its broader palm oil economy are hybrid geographies comprised by networks of cultural, biological, economic, political, and techno-scientific processes—each of them historical and rooted in place (Whatmore 2002b; Escobar 2008; Rocheleau 2011). Thus the analysis continues by reconstructing and reinterpreting the cultures, landscapes, and economies that coalesced to produce Bahia’s Afro-Brazilian landscape and its palm oil economy. The following chapter examines the socioecological antecedents of the Dendê Coast, beginning with the hybrid geographies of oil palm landscapes and cultures in West and Central Africa, and charts their subsequent transatlantic voyages to Bahia.
CHAPTER 3:
AFRICAN OIL PALMS IN THE ATLANTIC WORLD\textsuperscript{73}

As he offered a sacrifice of new yam and palm-oil to his ancestors he asked them to protect him, his children and their mothers in the new year.


The discovery of an unknown genus seemed to me far less interesting than an observation on the geographical relations of the vegetable world, on the migrations of the social plants.

—Alexander von Humboldt \textit{Personal narrative of travels to the equinoctial regions of America} ([1807] 1889, v. 1, p. x)

The Atlantic Ocean contained more than a world in motion; it was also a world created by migrations that connected distant places and brought diverse people together into new hybrid worlds.

—Alison Games \textit{Migration and the origins of the English Atlantic world} (1999, p. 193)

Scholars agree that African oil palms migrated to Bahia, Brazil, early in the colonial period, but the intertwined historical, cultural, biological, and economic processes that facilitated its transfer remain poorly understood. This chapter combines archived documents, travelers’ accounts, and secondary materials to elucidate and analyze the origins of African oil palm landscapes in western Africa and their subsequent diffusion to the Americas, with particular focus on Bahia. Charting the \textit{longue durée} of African oil palms and their proliferation through the Atlantic World, the analysis frames African oil palm landscapes as hybrid geographies spanning the Atlantic World in socioecological assemblages of humans, other animals, plants, knowledges, and physio-

\textsuperscript{73} Earlier portions of this chapter appeared as Case Watkins. 2015. African oil palms, colonial socioecological transformation and the making of an Afro-Brazilian Landscape in Bahia, Brazil. \textit{Environment and History} 21 (1):13–42. That content has been revised and expanded significantly, but see Appendix B for permission.
chemical geomorphs (Whatmore 2002b). This environmental history demonstrates how cultural landscapes and colonial economies root, propel, and (re)emerge in Africa and Bahia, helping to assemble and integrate an Atlantic World.

**Atlantic hybrids**

As theoretical frameworks and communities of scholarship, hybrid geographies and Atlantic studies have developed and remained in distinct camps. Only rarely and tentatively have scholars brought them into conversation. In one such intersection, Steinberg (2013), writing in the journal *Atlantic Studies*, proposes Whatmore’s (2002b) hybrid geographies as one of many possible tools for theorizing and understanding the more-than-human assemblages that comprise oceans, such as the Atlantic, that lie at the heart of ocean-region frameworks. While only suggestive, his proposition underscores the compatibility and potential synergy in collective theorization.

Atlantic studies and hybrid geographies are linked conceptually, if not yet theoretically. Though Whatmore does not engage Atlantic studies directly, her theoretical formations derive in no small part from postcolonial theories (e.g. Bhabha 1994), and her analyses of social / natural hybrids often foreground the spatio-temporal connections and disruptions wielded by colonial discursive and material flows (Whatmore and Thorne 2000; Whatmore 2002b, 2003a; Lorimer and Whatmore 2009). For many of the historians, philologists, geographers, and others who contribute to Atlantic studies, the notion of hybrid has become customary as both a metaphor and conceptual category, helping to imagine and describe (post)colonial creations and conditions. Building on the

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74 Here I reference hybrid geographies as an umbrella, combining theorizations of relational ontologies advanced in geography and allied disciplines (see detailed discussion in Chapter 1).
enduring concept of “double consciousness” first offered by W.E.B. Du Bois (2007) in 1903, Gilroy’s *Black Atlantic* (1993) was fundamental in that project, casting Africans in diaspora as hybrid beings operating in multiple physical and symbolic worlds and ways of being (Evans 2009). While postcolonial theorists continue to hone theories of hybridity (Bhabha 1994; Brah and Coombes 2005; Kuortti and Nyman 2007; Prabhu 2007), explicitly Atlantic studies tend to invoke the term as a descriptor of mixed geneses, especially regarding identities, cultures, and knowledges (Lovejoy 1994; Morgan 1997, 2009; Thornton 1998; Games 1999; Carney 2001, 2003a; Jackiewicz and Bosco 2008; Cañizares-Esguerra 2009; Schiebering 2009; Sweet 2011; Sluyter 2012).\(^{75}\)

Despite a lack of explicit dialogue, the approaches are congruent, overlap in many ways, and already benefit from tacit theoretical and empirical linkages. The Atlantic World is a more-than-human assemblage (Deleuze and Guattari 1987; Gilroy 1993; Latour 2002; Whatmore 2002b). The fluid, transnational spatio-temporalities of the Atlantic World dovetail with the relational ontologies expressed in hybrid geographies. The socioecological networks that bind the Atlantic World represent hybrid geographies of beings, biota, land, water, ideas, and institutions. Ongoing theorizations of hybridity within the geographical and other literatures can help explicate the material-social-biological networks examined in treatments of the Atlantic World. Viewing the Atlantic World as a dynamic, more-than-human assemblage is one way to elaborate the myriad actors and agencies at work in its historical formations and transformations of cultures.

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\(^{75}\) The concept of hybridity as a historiographical device is sometimes enrolled in a debate pitting Afrocentric versus creolist perspectives, but a third way emphasizing the simultaneity of African roots and New World hybridity combines the insights of both perspectives to further understandings of the African diaspora (Mann 2007; Sluyter 2012; Sweet 2014).
and landscapes (and waterscapes) (Steinberg 2013; Sluyter et al. 2015). Drawing on the
connectivities of a relational ontology, a hybrid Atlantic recognizes the multiplicity and
interactivity of peoples and places. Placing hybrid geographies within the Atlantic
World—or other ocean-based circulatory geographies—roots emergent socioecologies in
fluid but material spaces (Rocheleau 2011). The Atlantic World represents a frenetic but
cohesive platform for studying the historical-cum-contemporary nodes and networks of
the social; it is one territory from and on which hybrid geographies root, propel, and
emerge.

Explicit dialogue between the two camps could synergize the tremendous
theoretical and empirical advances represented in each. The resulting alliance could begin
to root hybrid networks in hybrid places, such as Atlantic Worlds, and materialize those
worlds with hybrid assemblages. The following analysis places hybrid geographies in the
Atlantic World to trace the emergence of African oil palm landscapes and cultures in
West Africa and their expansion to Bahia. It assembles a rhizomatic network of people,
plants, animals, landscapes, and knowledges that helped bridge and unite four continents
around the vast Atlantic.

**African origins**

Native to West Africa, the African oil palm now grows on much of the continent
south of the Sahara. Its range is immense, extending from approximately 16° North near
St. Louis, Senegal, around the Gulf of Guinea, and southwestward through the equatorial
rainforests of the Congo. From there sparse, isolated colonies dot East Africa until
approximately 20° South on the island of Madagascar. The densest groves of African oil
palms roughly correspond with the forest zones of West and Central Africa, from
contemporary Sierra Leone into the Congo, between approximately 7° North and 7° South (Figure 28). The African oil palm thrives in optimal conditions of at least 2,000 mm (80 in) of annual rainfall evenly distributed throughout the year, mean temperatures between 22° and 33° C (72°-90° F), 5-7 hours of sunlight per day, in altitudes below 300 meters, and in alluvial soils overlaying clays. Nevertheless, the tree adapts in less productive states to areas experiencing seasonal drought, lower temperatures, less sunshine, altitudes up to 1300 meters, and other soil types (Zeven 1972; Corley and Tinker 2003).

The palynological record reflects the African oil palm’s long history in West Africa. Eocene cores recovered near Conakry, Guinea, and Miocene cores from Nigeria revealed fossilized pollen grains from *Elaeis guineensis*, placing the palm in the region over the past several million years (Zeven 1964, 1965; Zaklinkaya and Prokofyev 1971, cited in Sowunmi 1999). Archaeobotanical findings suggest West Africans cooked with palm oil no later than 5,000 to 6,000 years ago (Okigbo 1980; Stahl 1993; Sowunmi 1999; Maley and Chepstow-Lusty 2001; D’Andrea, Logan, and Watson 2006). Cores from the Niger Delta and a Congolese swamp suggest a sharp and sudden increase of African oil palm arboriculture around 2,800 years ago (Sowunmi 1985; Elenga, Schwartz, and Vincens 1994). Linguistic analyses indicate early and widespread human use of the African oil palm and its products, especially in its densest concentrations across West and Central Africa (Zeven 1965; Williamson 1993; Burkill 1997; Fields-Black 2008).
Those and other analyses associate early oil palm groves with human communities, hunting camps, and migratory routes in West Africa’s Gulf of Guinea region; therefore scholars consider human use and mobilization fundamental to the early spread of the palm (Zeven 1967, 1972; Harris 1976; Okigbo 1980; Andah 1993; Corley and Tinker 2003; D’Andrea, Logan, and Watson 2006). Just by harvesting palm fruit and processing oil, humans helped disseminate seeds, which readily germinated and grew

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76 Sources: Corley and Tinker (2003); Emory University 2009b; fieldwork (2009–2012). A lack of precise locations precludes the mapping of historical African oil palm colonies in Central America and the Caribbean.
without planting (Zeven 1972; Logan and D’Andrea 2012). While the oil palm requires high levels of moisture, it does not flourish under the shade of contiguous forest; thus the species likely emerged on the forest-savanna ecotone and spread into gallery forests along riparian openings (Figure 29). To transition from the margins and into the forest zone proper, where it now thrives, the African oil palm relied on human intervention (Harlan, de Wet, and Stepler 1976; Sowunmi 1985; Hartley 1988; Harlan 1992, 2006; Andah 1993; Stahl 1993; Hartley 1998).

Beginning around 7,000 years ago, the advent of polished stone tools allowed West Africans to transform closed rainforest canopy into swidden mosaics of mixed polycultures based primarily on varieties of yams (Dioscorea sp.) (Ehret 1998; Carney and Rosomoff 2009). As farmers on the savanna began clearing forest for planting they
often spared African oil palms, prized for cooking oils, wines, construction materials, and many spiritual and medicinal applications (Hartley 1988). After one or two crops of yams (or other vegetables) farmers would leave the field fallow, allowing the soils and forest to rejuvenate. In low-intensity swidden regimes fallow periods would ideally last 15-20 years. Where human populations were relatively dense, such as southeastern Nigeria, pressures on the land were greater and fallow periods were much shorter, often as little as three years. In any case, oil palms would thrive and propagate in the opened canopy. Returning to clear secondary growth forests, farmers would spare oil palms yet again, selecting the most productive or otherwise preferred palms to grow above yams and other food crops. In longer fallows, the regrowth of the rainforest could eventually suppress young oil palms beneath the canopy, but in high-intensity swiddens, oil palms came to dominate in mixed groves. Following those patterns, West African farmers variously transformed tracts of rainforest into oil palm-tuber agroecologies, cultural savannas, and dense stands of African oil palms (Nye and Greenland 1960; Zeven 1972; Harlan, de Wet, and Stemler 1976; Okigbo 1980; Hartley 1988) (Figure 30).

Though farmers only rarely planted African oil palms in those traditional systems, uncultivated groves produced optimal and sufficient yields, thereby precluding any need for full domestication (Harlan 1992, 2006; Logan and d’Andrea 2012). Nevertheless some evidence suggests that West Africans encouraged specific phenotypic varieties based on communal preferences (Ascenso 1966; Meunier 1968). Botanist Jack Harlan (with de Wet and Stemler 1976) argued that certain West African ethnic groups distinguished, selected, and managed certain varieties of *Elaeis guineensis*, preferring to harvest the fruits of the homozygous but sterile *pisifera* and the heterozygous *tenera* for
processing oil, and tapping the homozygous *dura* exclusively for wine. While natural selection would generally favor the homozygote, repeated tapping would slow reproduction and sometimes kill trees, thereby favoring an anthropogenic expansion of the heterozygote (Zeven 1967; Andah 1993).

![Figure 30: A manioc-oil palm swidden-fallow cultivation system in the Congo (1973).](image)

The biocultural or socioecological morphology of African oil palm groves resists rigid scientific classifications that insist on separating natures from societies. Unable to unravel a purely “natural” provenance or habitat from anthropogenic influence, Western

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77 Photo credit: Robert J. Williams, 1973. Photo taken in the Bas-Zaire region of the Congo, now the Bas-Congo or Kongo Central province of the Democratic Republic of the Congo. The caption reads “Cassava cropped on land cleared of secondary forest; Cassava is planted on the slopes cleared of oil-palm dominant secondary forest, which can be seen to the right of the photograph.” From the Robert J. Williams Plant Disease Images collection of the Plant Pathology Herbarium (CUP) at Cornell University. Available at www.artstor.org (last accessed 7 July 2015).
scientists describe West Africa’s oil palm groves with equivocations such as “semi-wild,” “semi-domesticated,” and “subspontaneous” (Ascenso 1966, p. 269; Zeven 1967, 1972, p. 275; Harlan, de Wet, and Stemler 1976, p. 12; Hartley 1988, p. 4; Corley and Tinker 2003, pp. 1-5; Madelaine et al. 2008). Humans are inextricably enmeshed in oil palm ecologies, and have been for millennia. The structure and distributions of African oil palm landscapes are simultaneously biological, physical, and social. Oil palm ecologies are therefore compelling examples of hybrid geographies—fluid socioecological assemblages emerging from complex systems of seeds, palms, fruit, groves, farmers, knowledges, and culture (Figure 31).

Mixed swidden-fallow polycultures diffused African oil palm groves across the continent, from the Atlantic margins of the Sahel to Indian Ocean islands off the East African coast (Corley and Tinker 2003). Indigenous African agroforestry systems combined oil palms with varieties of yams, pearl millet (Pennisetum glaucum), African rice (Oryza glaberrima), plantains (Musa sp.), cocoyam or taro (Colocasia esculenta), various legumes, and livestock in vigorous polycultures (Netting 1968; Harlan, de Wet, and Stemler 1976; Sowunmi 1985; Hartley 1988; Andah 1993; Altieri 2009; Carney and Rosomoff 2009; Logan and D’Andrea 2012). Pearl millet was historically the most important crop in the drier savannas at the northern margins of the oil palm belt, but moving towards the Atlantic and into the wetter areas of the Senegambia, millet gives way to rice cultivation. Both systems complemented staple crops with scattered colonies of oil palms (Harlan, de Wet, and Stemler 1976; Netting and Stone 1996; Carney 2001; Carney and Rosomoff 2009; Neumann et al. 2012).
Figure 31: A village in Kinshasa, Democratic Republic of Congo, surrounded by subspontaneous groves of African oil palms (1952).

In parts of tropical Africa free of trypanosomiasis (sleeping sickness), such as the Jos Plateau of Northern Nigeria, farmers practiced oil palm silvopastoralism by grazing livestock such as goats, cattle, and sheep beneath oil palms and other tree crops, and applied animal manure to regenerate soil and fertilize crops including the oil palm (Netting 1968; Netting and Stone 1996). African oil palm cultivation was most abundant, however, as part of the oil palm-yam complex beginning just south and east of the rice belt running from Lower Guinea across the derived savannas of the Dahomey Gap and through the Niger Delta (Nye and Greenland 1960; Mabogunje 1972; Harris 1976;)

Posnansky 1984; Harlan 1992). From there oil palm cultivation and use extended deep into the Central African rainforests where swidden famers mixed palms with small plots of yams, cocoyams, plantains, legumes, and other crops, and where dense rainforest alternated with subspontaneous oil palm groves (Carney and Rosomoff 2009; Neumann et al 2012). Palm oil helped balance dietary systems providing fats, provitamin A carotenoids (mainly α- and β-carotenes), and vitamin E to complement carbohydrate-rich tubers and grains (Sowunmi 1985; Andah 1993; Manorama, Brahmam, and Rukmini 1996). The source of fats is particularly important within the broad swath of sub-Saharan Africa where the voracious tsetse fly (Glossina sp.) and the pathogens it carries make livestock husbandry almost impossible (Zeven 1967).

Aside from its prominence in African foodways, the African oil palm has long filled medicinal, spiritual, and domestic needs. Diverse groups of West and Central Africans prized the palm for its fruits, oils, fibers, palm hearts, and wines. The oil palm was also an important raw material in West African domestic life. People commonly use fronds for roof thatching, stalks as walls and fencing, fibers for woven mats, cordage, and fish traps and lines, and the biomass from empty fruit bunches, shells, and fronds as garden mulch or fertilizer and as a base for soaps (Pacheco Pereira [1506-1508] 1937; Bascom 1951; Andah 1993; Atinmo and Bakre 2003; Duku, Gu, and Hagan 2011). Ethnopharmacologists list a range of uses of palm oil including as a topical ointment, analgesic, and vulnerary treatment, and as a remedy for cancer, headaches, and rheumatism (Duke 1983). A modern compilation of common names for *Elaeis guineensis* on the African continent lists 332 distinct appellations, indicating widespread and multiethnic affinity for the palm (Burkill 1997).
Several West African ethnic groups integrated the oil palm into their cultural, spiritual, and economic systems, thereby reinforcing its prevalence and productivity within cultural landscapes. A selection of a few of the larger and most influential groups that work with the African oil palm illustrates the cultural and historical significance of the palm in West and Central Africa. For example, groups settling in and around the Niger Delta, notably the Igbo and their Nri kingdom and the Edo and their Benin Empire, cultivated yam-oil palm agroforests and processed palm oils and wines for culinary, cultural, and economic purposes (Mockler-Ferryman 1898; Achebe 1959; Martin 1988; Aniakor 1998; Ugwueze 2011). After Europeans began sailing down the West African coasts and up the Niger Delta in the fifteenth century, Edo and proximate groups became prominent suppliers of palm oil in transatlantic markets (Castelo Branco [1621] 1881; Phillips [1694] 1732; Eltis 2013).

Yoruba cultures regard the oil palm as the “tree of life,” and consider the palm and its products spiritually potent (Ojo 1967). Europeans first witnessed Yoruba priests toss exactly sixteen palm kernels79 in a divination ritual known as *Ifá* in the seventeenth century (Bascom 1969, 1980). Yoruba women have long prepared foods in palm oil and used it and the oil from its kernels to make a black soap (*ọsẹ dàdù*) (Bascom 1951; Sudarkasa 1973). In an extensive survey of the use of plants in Yoruba society, ethnographer Pierre Verger cataloged numerous practical and spiritual applications of the oil palm. In his compilation of 447 “medicinal and magical formulae,” 58 (or roughly 13

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79 Following Corley and Tinker (2003, p. 28) “In botanical terms the kernel is the seed, but in common parlance the word ‘seed’ is used for the nut, comprising shell and kernel, since it is the nut that is stored, germinated and planted.” Here and elsewhere in this study, I use ‘kernel’ to refer to the whole nut, which includes both shell and kernel.
percent) employed seeds, fronds, or oils from the African oil palm, and he ascribed no less than 31 distinct names for the palm in the Yoruba language (Verger 1995). Those 31 names contrast with only three variants of the single *Elaeis guineensis* species distinguished in Western botany, indicating an extraordinary ethnobotanical intimacy between the Yoruba and the African oil palm.

Aja groups including the Ewe and Fon peoples have a long history of cultural and commercial exchange with the Yoruba, especially the Fon-Gbe sub-group known for its nineteenth century kingdom of Dahomey in contemporary Benin (Akinjogbin 1967, 1972; Manning 2004). Aja groups share the Yoruba’s affinity for the oil palm, evidenced by its integration in their spiritual practices. Europeans traveling through Ouidah in the early eighteenth century described a palm kernel divination ritual called *Fa* similar to its Yoruba counterpart *Ifá* (Bascom 1969; Law 2013). Devotees of the *vodun* deity Sakpata80 used palm oil in ritual cleansings in the early eighteenth century, and likely much earlier (Sweet 2011). The kingdom of Dahomey built the first oil palm plantation monocultures, supplying the British and other European trades beginning in the 1830s (Verger 1976; Law 2006; see Chapter 5). Connections to the African oil palm helped define Aja settlement patterns into the twentieth century, with one African historian noting the “cluster[s] of hamlets generally scattered in the bush of wild oil palm trees” (Asiwaju 1989, p. 23).

Human use of the African oil palm was widespread too in ancient Central Africa, where archaeobotanical and linguistic evidence indicate it as a key cultural resource for

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80 This deity is a cognate for Babalú-Ayé in Yoruba, and Omolú and Obaluaiê in Brazilian *Candomblé*. Some traditions in the African diaspora syncretize this deity with the Catholic Saint Lazarus.
proto-Bantu groups over the past 2,000 years (Eggert 1993; Williamson 1993). Bantu peoples and other groups in that region (around present-day Angola and the Congo) used palm oil as a “butter,” fuel for lamps, and medicinal unction for the treatment of headaches and fever (Sale et al. 1781, v. 13, p. 91; Barbot 1746), or more regularly “anointing the entire body to preserve themselves in health” (Pigafetta [1591] 1881, p. 68, 26, 112). The oil palm also provided a “wholesome and nutritious bread (palm heart),” wine, cloths, garments, woven mats, thatching, and baskets (pp. 68-69, 108). Portuguese trader Duarte Lopez claimed that wolves in Angola were “beyond measure fond of palm oil and scent it afar off. [...] These wolves can take a gourd full of it between their teeth and carry it away on their shoulders” (Pigafetta [1591] 1881, p. 52). The palm remained essential among Bantu-speakers, including the Kimbundu, through the early modern period. Portuguese soldier and historian Captain António Cadornega ([1680] 1972, vol. 3, pp. 357-358) penned a chapter on the oil palm in his seventeenth century tome. He considered it “the most useful tree in the Kingdom of Angola,” providing fruit, cooking oils, wines, ointments, soaps, lubricants, lamp oil, and a flour ground from its kernels, all enjoyed by both Africans and Portuguese.

In each of those West and Central African cultures and many others, men and boys typically harvested the fruit, using climbing belts to ascend trees reaching up to 30 meters (98 feet) (Figure 32) (Poku 2002; Corley and Tinker 2003). Processing palm oil was traditionally the domain of women, who used two traditional methods for extracting the oil (Salmon 1738; Montefiore 1794; Achebe 1959; Bay 1998; Mann 2007; Manning 2004; Chuku 2005; O’ Hear 2005; Bishop 2015). Pounding fruit with a wooden mortar and pestle was most common, but some women used their feet to trample fruit in canoes
or special wooden troughs to press the oil from the fruit (Figure 33) (Millson 1892; Bascom 1975; Aniakor 1998; Poku 2002). The oil and other palm products such as kernels enhanced many women’s social and economic power and prospects, and their surpluses from farms in the savanna and rainforest zones supplied early trade routes.

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across prehistoric Africa, helping to integrate a continental economy (Figure 34) (Aniakor 1998; Mann 2007; Manning 2004; Chuku 2005; Carney and Rosomoff 2009; Ferreira 2012).

![Figure 33: A woman in the Holi region of Benin uses a mortar and pestle to process fresh palm fruit (1948-1979).](image)

Archaeological and historical evidence places palm oil and kernels in the West African and trans-Saharan trades that linked the Senegambia and the Niger Delta with the

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Maghreb and the Nile Delta (Brooks 1993). Writing in the fifth century BCE, Greek historian Herodotus (1959) noted that Egyptians used palm oil in their embalming processes, and 19th century archaeological findings at Abydos corroborated his claim (Zeven 1965). Archaeologists unearthed remains of oil palm nuts dating to the same period near Khartoum, suggesting to some that the climate in that area was wetter 2,500

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years ago, to others that oil palm nuts were a well-traveled early commodity (Shaw 1981). Sundiata, legendary king of the Mali Empire in the thirteenth century moved the seat of his domain to Nianí in the extreme northeast of contemporary Guinea. Aside from political and military reasons for the move, the new capital was near the rainforest ecotone and therefore the source areas of kola nuts, gold, and palm oil, all vital trade items of the day (Niane 1998). Several Arab travelers encountered the African oil palm in their Medieval journeys through West Africa beginning with geographer al-Dimashqi in the kingdom of Samaqanda in the early fourteenth century (Lewicki 1974), and subsequent historical analysis suggests the Arab trade networks may have carried the oil palm across the continent to Africa’s east coast and Madagascar, initiating the isolated botanical colonies that persist there (Sauer 1993). Palm products were thus important and widespread commodities on the inter-biome continental trade networks, contributing to the development and integration of West African societies from the first millennium CE and continuing through the arrival of European sailors on Africa’s west coast in the fifteenth century.

**Atlantic exchanges**

Europeans encountered the African oil palm and its products on their first forays down West African coasts. Venetian sailor Alvise da Ca’ da Mosto, in service to Henry the Navigator from 1455-1457, journeyed south of the Senegambia to the mouth of the Geba River in contemporary Guinea-Bissau where he witnessed Africans drinking palm wine “as sweet as the sweetest wine in the world” and cooking with “a marvelous” palm

He documented “a species of tree bearing small red fruits with black eyes in great quantity,” and “a kind of oil, used to season their foods, with three properties: the scent of violets, the flavor of our olive oil, and a color like saffron, but more polished” (Ca’ da Mosto 2012, f. 2v).  

Valentim Fernandes recorded a Banyun (or Bainuk) religious ceremony from the late fifteenth century involving palm oil and wine near the Cacheu River (Brooks 1993). Between 1506 and 1508, Portuguese explorer Duarte Pacheco Pereira (1937) documented a Luso-African trade in “slaves, cotton textiles, animal skins, and palm oil” (p. 121) linking the Niger delta town of Warri on the Forcados River with São Jorge da Mina Castle on the Gold Coast in contemporary Ghana. Working in Angola and the Congo during the 1570s and 80s, Portuguese trader Duarte Lopez documented the Portuguese trades in “ivory, wax, honey, palm oil, and negro slaves” in the Gabon Estuary near the equator (Pigafetta [1591] 1881). Later correspondence from a Portuguese official in 1621 recorded a regular palm oil trade on the Bight of Benin.

With our friend the King of Arda, near the Mina Coast, we send to trade for slaves, ivory, cotton textiles, palm oil, and many vegetables like yams and other foodstuffs. Every year one or two ships leave this port filled with those goods (Castelo Branco 1881, p. 27).

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84 Also referred to as Alvide Cadamosto, Alvise Da Mosto, Alouise da Mosto, and in Portuguese as Luís Cadamosto.

85 Crone (1937) surmised this oil to be of the “ground-nut,” but based on the geographical location of the observation in the woodlands and derived savannas between the Gambia and Geba Rivers, as well as its use as a seasoning, it was more likely palm oil as interpreted by Zeven (1965, 1967), Lewicki (1974), and Hartley (1977, 1988). This translation is the author’s based on the Italian script in Paesi novamente retrovati compiled by Montalboetto in 1507. See also a French translation by Schefer (Ca da Mosto 1895) and an English translation by Crone (1937).
Castelo Branco went on to list six more monarchs, from the Mina Coast to the Niger Delta, involved in Luso-African palm oil trade. An Afro-Portuguese class of go-between merchants, known as *lançados*, emerged to mediate trade between European ships and African producers. Human chattel, kola nuts, and palm products were among their earliest and most prominent currencies, ensuring access for European traders and markets for African goods (Rodney 1970; Mark 2002; Metcalf 2005). Thus palm oil became a primary commercial medium linking Europeans and West Africans during the opening and early development of the transatlantic slave trade.

The Columbian Exchanges that began in 1492 traded people, plants, animals, and ideas between the Old and New Worlds, radically transforming cultures, landscapes, demographics, and politics around the circum-Atlantic (Crosby 1972; Alpern 1992, 2008; Carney and Rosomoff 2009). This momentous expansion was never unilateral, or even bilateral, but rather circulatory, as Old World ships and sailors plied the Atlantic and Indian Oceans they transferred biotic materials between Europe, Africa, Asia, and the Americas with profound effects on the cultures and landscapes of each (Rangan, Carney, and Denham 2012; Carney and Rangan 2015). As key players in the earliest Columbian Exchanges, the Portuguese introduced several South American cultivars to the African continent, and vice-versa; among the most consequential were the various landraces of manioc (*manihot esculenta* and *manihot* sp.) they transferred from Brazil to Africa (Jones 1959; Alpern 1992, 2008).

The tropical American root tuber manioc grows remarkably similar to the West African yam, but is more adaptable, drought-tolerant, and durable. By the early seventeenth century, manioc flour became a leading victual aboard Portuguese slave
ships, and thereafter spread throughout Africa where farmers readily adapted it to diverse landscapes (Clusius 1605; Jones 1959; Camargo 2005). Following the initial exploratory voyages, the transatlantic slave trade came to dominate flows between the Old and New Worlds, and palm oil was ubiquitous in that system. The major ports of slave embarkation roughly corresponded with the pre-modern dispersal of the African oil palm, and from its beginnings, the transatlantic trades in human chattel integrated palm products into its commercial networks (Hartley 1988; Emory University 2009b) (Figure 28). Though palm oil had symbolized African cultural-environmental ingenuity and innovation since antiquity, in the transatlantic slave trade it became a standard material resource of slave trafficking operations, facilitating the cruel bondage and suffering of those caught in its grip.

Portuguese slavers in Angola as well as their English counterparts at Cape Coast typically mixed palm oil into the rations fed to captives in coastal holding sheds (Miller 1997; Smallwood 2007). Slave factors on the African coast promoted their human chattel by rubbing their bodies with palm oil before selling them to ship captains. The glistening unguent worked to conceal some of the exhaustion and abuse suffered during apprehension and incarceration (Phillips [1694] 1732; Rømer [1760] 2000; Mendes [1793] 2004; Dow [1927] 2011; Mattoso 1986). Following purchase, palm oil was sometimes part of a horrific branding procedure (Phillips [1694] 1732). As a Dutch surgeon reported in 1692, “The slaves that were taken were made to kneel, twenty or thirty at a time; the right shoulder was greased with palm-oil, and it was branded in the middle with an iron” (Oettinger quoted in Westergaard 1917, p. 142). Brazilian
merchants operating in Dahomey continued that practice through the mid-nineteenth century (Costa e Silva 2004).

From the 16th century, slave ships stocked palm oil and melegueta (or malagueta) peppers to season and enrich the various gruels that sustained their human cargo during the Middle Passage (Hawkins [1593] 1847; Clusius [1598] 1605; Jadin [1642] in Thornton 1998; Phillips [1694] 1732; Labat 1730; Dow [1927] 2011; Verger 1976; Postma 1990; Svalesen 2000; Carney and Rosomoff 2009). Flemish botanist Charles de l’Écluse [Carolus Clusius] (1605) first described mixtures of palm oil and manioc flour used to victual captives aboard Portuguese slave ships departing São Tomé in 1598. A widespread belief that familiar foods improved captives’ chances of survival reinforced the practice of provisioning slave ships with African staples (Rømer [1760] 2000; Westergaard 1917; Viana Filho 1976; Klein 2004; Carney and Rosomoff 2009). Preferred foods varied by region, according to the general zones of dominant staple crops moving from north to south. Regional differences reflected not only local preferences but also commercial availability. Rice prevailed in the Senegambia and Upper Guinea, millet and corn held sway near the Gold Coast, yams dominated from the Bight of Benin to the Niger Delta, while manioc became the preference among Luso-Brazilian slaving outfits in Angola and elsewhere in Central Africa (Labat 1730; Alencastro 2012; Klein 2004; Carney and Rosomoff 2009). Correspondence from seventeenth-century slave traders working West Africa’s Slave Coast along the Bight of Benin indicates how traffickers considered regional foodstuffs crucial to profits.

A ship that takes in five hundred slaves, must provide above a hundred thousand yams; which is very difficult, because it is hard to stow them, by reason they take up so much room; and yet no less ought to be provided, the slaves there being of such a constitution, that no other food will keep
them; Indian corn, [fava] beans, and Mandioca [manioc] disagreeing with their stomach; so that they sicken and die apace (Barbot and Grazilhier [1699] 1745, p. 111).

Dominican friar and sugar planter Jean Baptiste Labat (1730) suggested that modest expenditures on palm oil could ensure a healthy return on a slave ship’s investment.

We can buy sweetbreads (ris) and peas at Cape Mesurado (contemporary Monrovia) where vegetables are very cheap. Or instead of peas, one might buy maize, which can be processed on board the vessels by enslaved women (negresses), and diversify the captives’ food. If the company was willing to spend extra for six barrels of lard, and two or three hundred pounds of palm oil to add to the salt that seasons the vegetables, it can ensure that its cargo of slaves arrives to the West Indies intact. This small additional expense is hardly considerable, and would be amply rewarded by the good condition of the slaves when we sell them (v. 2, p. 141).

Of course those expectations were not always realized, and slaving operations often lost as much as half of their human cargo to inhumane conditions. “All the ships that loaded slaves with the Albion Frigate at Kalabar lost, some half, others two-thirds of them, before they reached Barbados; […] so that above fifty percent of the capital was lost” (Barbot and Grazilhier [1699] 1745, p. 111). The commitment to African staples and condiments nevertheless ensured that palm oil and other African products regularly traversed the Middle Passage. An order from the Danish authorities in 1725 dictated the “weekly allowance for each slave consisted of 1/2 lb. pork, 2 qts. beans, 2 qts. barley, 2/3 qt. millet, 1/4 pint brandy, 2 oz. tobacco, 1 pipe, 1/8 pint palm oil” (Westergaard 1917, p. 143). A “bill for refreshments” rendered to the slave ship Fredensborg listed 26 jars of palm oil for its journey from the Gold Coast to the Danish West Indies (Svalesen 2000, p. 111). Brazilian slaver Bento de Arousio de Souza traded for 65 enslaved Africans and their provisions, including “80 chests of Corn, 50 pounds of Malaguetta, 4 bushells of
salt, 30 gallons of Palm oil” on the Gold Coast in 1724 (Verger 1976, p. 41). No matter the region, no matter the staple, slaving operations from the Senegambia to Angola usually seasoned their concoctions with peppers and palm oil, making those African products indispensable in the transatlantic slave trade (Postma 1990; Miller 1997; Thornton 1998; Alencastro 2012; Harms 2008; Rediker 2008; Carney and Rosomoff 2009).

Slavers appropriated African medicinal uses of palm oil, and often used it to treat ailing captives on the journey (Postma 1990; Harms 2008). A Lutheran priest stationed at Ghana’s Christiansborg Castle in the early eighteenth century extolled the homoeopathic and healing properties of palm oil.

[Palm oil] may, in truth, be called the most excellent medical agent in the country. The Negroes smear it over their entire bodies daily, […] and because of that their bodies stay flexible and supple until an advanced age. When it comes to bruises, scratched, blows, or cuts, as well as sores caused by the so called [Guinea] “worm”—from which boils break on many (persons), […] and cause great pain—nothing is better than a salve of palm oil. And when you become accustomed to eating it, it keeps your stomach in a very good and healthy condition; so we can reasonably consider it a great gift from God (Rask [1713] 2009, p. 56).

Admiring West African medicinal prowess, Father Rask concluded that “[Africans] are much better suited than we are, as regards their health care (p. 113).” Dutch slavers mixed palm oil with beans to treat dysentery (Postma 1990).

An English slave ship captain recommended palm oil as a treatment for dreaded smallpox.

The negroes are so innocent to the small-pox, that few ships that carry them escape without it, and sometimes it makes vast havoc and destruction among them; but though we had 100 at a time sick of it, and that it went through the ship, yet we lost not above a dozen by it. All the assistance we gave the diseased was only as much water as they desired to drink, and some palm oil to anoint their sores, and they would generally recover
without any other help but what kind nature gave them (Phillips [1694]
1732, p. 237).

Before physicians connected scurvy with vitamin C deficiencies in 1754, some
captains recommended palm oil as a topical remedy for captives suffering from the
condition (Harms 2008). French (Labat 1730) and Danish merchants placed palm oil in
the slaver’s essential medicine bag during the mid-eighteenth century.

A ship’s medicine chest should only contain anti-scorbutics and anti-
venerics. Should the slave fall victim to the (endemic) illnesses of the
land, such as worms, etc., a couple of female slaves can be allowed to take
over, after we have supplied them with mallaget and piment,\textsuperscript{86} palm oil,
and citrons, from which they can prepare medicines, and the sick will feel

Those accounts demonstrate how European slavers relied on Africans and their cultural-
botanical knowledge to diagnose and treat disease. The slavers merely supplied Africans
with the basic materials they needed to prepare and administer treatments. African
agricultural produce and medical knowledge were thus co-opted in support of the
transatlantic slave trade (Hicks 2015).

Enslaved Africans continued to use palm oil on the Middle Passage as a preferred
skin treatment through the beginnings of abolition in the nineteenth century.
Commanding the final legal slaving operation to leave Liverpool in 1807, English
Captain Hugh Crow (1830) claimed his crew “allowed [captives] to use palm oil, their
favourite cosmetic (p. 147).” Finally, as their ships approached New World shores,
sailors and dockhands would rub enslaved bodies with palm oil yet again to disguise the
suffering of the Middle Passage and prepare them for sale (Figure 35) (Mattoso 1986;

\textsuperscript{86} “Mallaget” refers to melegueta pepper (\textit{Aframomum melegueta}). “Pimenta” is a generic
Portuguese term for pepper and could refer to any species in the genera \textit{Pimenta} or
\textit{Capsicum}. 

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Svalesen 2000; Smallwood 2007; Harms 2008; Rediker 2008). Thus palm oil, used to sustain, promote, brand, heal, and finally commodify human chattel, followed the transatlantic slave economy through Africa, at sea, and on arrival in the Americas.

Figure 35: Sailors aboard a slave ship rub down captives with palm oil.87

87 Source: Reid (1864, facing title page); while this is a work of fiction, it draws on the author’s personal experiences in Jamaica. The caption beneath the original references a passage on page 28, which reads: “The living ‘bales,’ hitherto restrained below, were now ordered, or rather driven, upon deck—not all at once, but in lots of three or four at a time. Each individual, as he came up the hatchway, was rudely seized by a sailor, who stood by with a soft brush in his hand and a pail at his feet; the latter containing a black composition of gunpowder, lemon-juice, and palm-oil. Of this mixture the unresisting captive received a coating which, by the hand of another sailor, was rubbed into the skin, and then polished with a ‘danby-brush,’ until the sable epidermis glistened like a newly-blacked boot. […] It was not the first time those unfeeling men had assisted at the spectacle of a slaver’s cargo being made ready for market.

One after another were the dark-skinned victims of human cupidity brought from below and submitted to this demoniac anointment.”
As a labor-intensive, value-added commodity, palm oil was not cheap. Slavers James Barbot and John Grazi lhier ([1699] 1745) documented prices for common provisions in 1699, listing the price of one jar of palm oil at 1 1/4 iron bars, compared to just one bar for “one hundred and fifty slaves yams” (p. 109). A slaving contract between the British Royal African Company and a Brazilian slave merchant signed in 1724 stipulated 30 gallons of palm oil per each 100 captives on the run between Cape Coast (present Ghana) and Rio de Janeiro (reproduced in Verger 1976, p. 41). The list of rations calculated for a Danish slave voyage in 1753 noted “palm oil is always mixed into porridge, which can be estimated weekly at 1/4 pægl (1/8 pint) per slave” (Svalesen 2000, p. 112). Loaded with 265 captives, that ship took 78 days to complete a journey from Fort Christiansborg on the Gold Coast to the Danish West Indies in 1767, and would have therefore required more than 46 gallons of palm oil for alimentary purposes. A slaver working at Ouidah suggested that for every 100 slaves a ship would require 24 gallons of palm oil (John Willis 1705 in Eltis 2013, p. 43). Palm oil supplies were plentiful and less expensive on the Bight of Biafra and the island of São Tomé, and those places became prominent early sources for palm oil among slavers (Clusius [1598] 1605; Castelo Branco [1621] 1881; Phillips [1694] 1732; Alencastro 2012; Eltis 2013).

If slave operations wished to save on costs, slavers could procure fresh bunches of oil palm fruit for on-board processing. Milling oil palm fruit required only a mortar and pestle, a stove, and a pot to transform the fruit to oil in bulk. Along with grinding stones for maize (Phillips [1694] 1732) and millet (Svalesen 2000), mortars and pestles were

88 That calculation does not account for other uses of palm oil, such as in medicines and as an ointment. During that 1767 voyage, “All the slaves rubbed themselves with palm oil” on at least four separate occasions (Svalesen 2000, pp. 108, 117, 118, 190).
available on many slave ships where cooks, frequently enslaved women, processed African staples such as rice and millet and prepared captives’ meals. An illustration of a Danish slave ship circa 1785 depicts African women processing what is likely millet with a mortar and pestles (Svalesen 2000, pp. 93, 107; Carney and Rosomoff 2009, pp. 74-76, plate 3). References from other slave ships link mortars and pestles to rice milling (Smeathman 1773 and Pinkard 1796, quoted in Carney and Rosomoff 2009, p. 75). Dutch authorities forced enslaved women to process millet fed to captives awaiting transport at Elmina (Postma 1990). Processing palm oil aboard slave ships was not unheard of, particularly on Portuguese vessels. In 1837 British forces seized the Portuguese schooner Ligeira, accusing its crew of illicitly trading in humans in defiance of the Anglo-Brazilian anti-slave trade treaty that went into effect in 1830. Along with 313 enslaved Africans they inventoried “a boiler for making palm oil; and some raw cotton” (Macaulay and Lewis 1838, p. 25).

Producing palm oil aboard slave ships would have yielded a surplus of palm kernels (i.e. seeds) that would remain viable for months after milling. On arrival in the Americas those seeds, even if simply thrown out at port, could secure footholds on New World shores (Corley and Tinker 2003; Smallwood 2007; Rediker 2008; Carney and Rosomoff 2009) (Figure 36). Following that logic, scholar of oil palm ecology in Bahia Hermano Peixoto de Oliveira (2009) links the diffusion of *Elaeis guineensis* directly with the coerced migration of people and palm fruit to Brazil and the ships that carried them.

On the Middle Passage, oil palm fruits were served to enslaved Africans as food. Over the course of the transatlantic slave trade, thousands of tons of palm oil were brought from Africa [to Bahia] and, following disembarkation, any leftover cargo accompanied the slaves to their final destination, where the pulp and the kernels of the fruits supplemented diets. After consuming the fruit, the unused kernels would have been
discarded, generally giving rise to new palms, which later developed into the primordial groves of African oil palms surrounding the settlements of the enslaved Blacks (pp. 26-27).

Brazilian anthropologist and historian Luís da Câmar Cascudo ([1967] 2011), suggests that African and Afro-descendant sailors and other crew members involved in the Atlantic trades of humans and other chattel had ample opportunity, motive, and facility to exchange preferred botanical and other species between Africa and the Americas. Enslaved, free, and freed Afro-descendent sailors were common operators in the South Atlantic, and often carried with them botanical goods and produce for

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Small amounts of dendê fruit periodically pass through this harbor along the Rio do Céu. That dock illustrates how even a small anchorage could attract and support the subspontaneous growth of African oil palms.
alimentary, medicinal, and cultural purposes (Hicks 2015). Because oil palm kernels convey spiritual and divinational properties in many western African cultures (Bascom 1951, 1969; Verger 1999), many sailors would have had deep cultural incentives to carry viable seeds of *Elaeis guineensis* on their person during transatlantic voyages.

Yet despite the importance of palm oil in western African cultures and Afro-Euro-Atlantic colonial economies, written sources are all but silent on the introduction of the African oil palm to the Americas. A scattering of colonial references from the Neotropics, along with contemporary linguistic and ethnographic evidence, does however link the early diffusion of the African oil palm with the transatlantic slave trade.

African oil palms appear early and often in observations of New World landscapes. From the mid-seventeenth century, colonial documents referred to African oil palms growing in the British West Indies. Those accounts framed the palm and its oil as African. Ligon ([1657] 2011) described “Negro-oil” in Barbados in the 1640s, Sloane (1688) observed oil palms “from Guinea” on the Colbeck plantation in Jamaica, and African oil palms grew on an English plantation in Antigua by 1729, presumably as a subsistence crop (Harris 1965). Decades later a general account of Jamaica referred to the oil palm as “chiefly cultivated by the Negroes only,” and alluded to its culinary and medicinal uses (Long 1774, p. 740). Dutch botanist Nikolaus Jacquin (1780) bestowed the palm with its Latin scientific name in 1763 based on observations, not in its native Africa, but rather on Martinique in the French Antilles (Figure 37). In the eighth edition of his *Gardener’s Dictionary* dated 1768, Philip Miller claimed that African oil palms were “first carried from Africa to America by the negroes. [...] now the trees are in plenty in most of the [West Indies], where the negroes are careful to propagate them”
Reverend Abiel Abbot (1829, pp. 44-45) wrote of 100 “Guinea palms” yielding wine and “palm oil, which constitutes an important article in African commerce, and African food” on a sugar plantation in Camarioca, Cuba, in 1828. The 170 enslaved Africans and their creole children held at the mill, he claimed, “prefer it to butter” (Figure 38). In a study of Caribbean botany that drew on extensive fieldwork in Haiti and Cuba around the turn of the nineteenth century, French physician and botanist M. E. Descourtilz (1821-1829 vol. 6, p. 107) wrote that the “Avoira de Guinée […] grows spontaneously in Africa and Cayenne [French Guiana], and is cultivated in the Antilles”

Figure 37: Botanical sketches of *Elaeis guineensis* by Jacquin, ca. 1780 (left), and Descourtilz, ca. 1800 (right).90

People throughout the Caribbean, he claimed, used its oils for cooking and food preparation, as a fuel, and as a versatile medicine. The physician endorsed palm oil as a soothing ointment and as a remedy for ear infections, rheumatism, ringworm, enteritis, and dysentery, as well as a palliative for infants and post-partum women served in a chicken or beef broth (pp. 108-109).

Elsewhere in the circum-Caribbean, including Dominica, Guadeloupe, Puerto Rico, Suriname, Trinidad, and Garifuna Central America, subspontaneous African oil palms persist in small numbers, and botanical, linguistic, and historical analyses suggest centuries of use by Afro-descendants (Grisebach 1864; Drude 1881; Herskovits [1937]

80 (last accessed 6 July 2015); (right): Descourtilz (1821-1829, vol. 6, pl. 408, facing p. 93).
In 1500, Portuguese sailors happened upon the eastern coast of South America and claimed it for the Portuguese crown. There they encountered several groups of Indigenous peoples that had thrived for millennia gathering seafood and cultivating manioc and other crops. Already thinned by Indigenous management, the Atlantic forest provided easy access to *pau-brasil*, or Brazilwood (*Caesalpinia echinata*), the lucrative dyewood that gave the Portuguese colony its name (Dean 1995). Brazilwood extraction comprised most Portuguese activity in the region until mid-century when the crown initiated colonization (Tavares [1959] 2009).

Using techniques and slave labor regimes developed on Atlantic island colonies, especially São Tomé, the Portuguese successfully transferred their specialized sugar plantation economy to Brazil, and along with Pernambuco to its north, Bahia became a principal center of New World sugar production (Schwartz 1985; Seibert 2013). The crown dispatched Brazil’s first governor-general to Salvador in 1549, installing its colonial capital at the entrance to the Bay of All Saints. To supply Portuguese America, Atlantic islands off Africa’s western coast served as primary ports of call, stocking ships bound for the colonies with provisions, domesticates, and African captives (Mintz 1985; Schwartz 1985). Beginning in the early sixteenth century the Portuguese colonies of
Angola, São Tome, and Bahia developed as interconnected maritime spaces along the Atlantic basin through tightly woven social and economic networks (Alencastro 2012).

Writing in the 1570s, Portuguese sugar planter Gabriel Soares de Sousa (1879) credited Cape Verde and São Tomé with providing Bahia’s original livestock, sugar cane, bananas, rice, ginger, coconut palms (*Cocos nucifera*), and African yams that “produced in a way that amazed the Africans, who use them the most” (p. 169). Despite vivid descriptions of Bahian landscapes, neither his *Tratado* nor two other sixteenth-century accounts of the colony mentioned the African oil palm (Gândavo [1576] 1984; Cardim [1583-1589?] 1939; Ribeiro 1962). Soares de Sousa ([1587] 1879) was, however, the first European to describe Brazil’s oleaginous *pindoba* palm (*Attalea sp.*) “from which [Indigenous peoples] make an oil (azeite) for their remedies (pp. 177-178).”91 His and other European descriptions of Bahia in the sixteenth century indicate a strong connection to *pindoba* and other palms in Indigenous Tupí cosmology and spirituality (Anchieta [1554-1594] 1933; Cardim [1583-1589?] 1939; Metcalf 2005).

Likewise in the first history of Brazil, completed in Bahia in 1627, Frei Vicente do Salvador (1889) described “many varieties of palm trees, some we eat the fruit and

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91 Though usually associated with *Attalea oleifera*, *pindoba* (or *pindova*) can refer to many oil-yielding species in the South American genus of *Attalea*, notably, *A. maripa*, and *A. humilis* (sometimes called *catolé*). *Pindoba* palms are sometimes conflated with several species and hybrids known commonly as *babaçu*, notably *A. racemosa* and *A. speciosa*, and licuri (*Syagrus coronata* and *S. picrophylla*), and related palms *S. vagans* and, *S. romanzoffiana* (*pindô*) (Brazil CBE 1876; Henderson, Galeano, and Bernal 1997). Pintaud (2008, p. 60) classified an *Attalea oleifera* complex including *A. burretiana*, *A. compta*, *A. oleifera*, *A. pindobassu*, *A. salvadorensis*, and *A. seabrensis*. Brazilian geographer Sílvio Fróis de Abreu noted “indigenes use ‘pindova’ to describe young babaçu palms [...]” With growth a pindova becomes a *palmeira*” (Costa Pereira 1944, p. 142). Based in Bahia and describing the trees as “very tall and thick,” Soares de Sousa [1587] 1879 likely indicated *A. oleifera*. 
palm hearts, some have bunches of *cocos* from which we make oil to eat” (p. 13). Hoehne (1937, p. 327) interpreted Vicente as describing *Elaeis guineensis*, but that claim is unverifiable. The ambiguous term “cocos” could describe the fruit of most any palm, including several Indigenous to Brazil.92 Vicente could have been referring to any of Bahia’s many species of Indigenous oil-yielding palms93 as well as the coconut palm, established in Bahia by the sixteenth century (Soares de Sousa [1587] 1879). That wealth of oleaginous palms combined with imprecise botanical documentation to complicate and ultimately obscure Brazil’s historical record regarding the African oil palm. Europeans struggled for centuries to discern Bahia’s many indigenous oleaginous palms. Writing much later, in the late eighteenth century, a Portuguese professor of Greek working in Bahia, Luis dos Santos Vilhena ([1802] 1969, p. 713) qualified his description of useful palms in Bahia.

Infinite are the trees and plants, both tame and wild in Brazil, that produce *azeites* and oils of various qualities and benefits, especially the palm trees, which are so abundant that it is doubtful that one individual could know all their names.

Such enduring Portuguese confusion and lack of botanical knowledge suggests the European colonists relied in part on Indigenous and diasporic African knowledges to

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92 A dictionary of “Brazilian vocabularies” published in 1853 lists 17 species under its listing for “côco,” and another 11 species, including côco-da-bahia (*Cocos nucifera*) and côco-de-dendê (*Elaeis guineensis*), in its listing for “palmeira” (Costa Rubim 1853, p. 24, 56). Another dictionary from 1889 lists “côco” as the “general name of the fruit of any species of *palmeira*, whether indigenous or exotic, accompanying always a specific epithet: Coco da Bahia (*Cocos nucifera*); Coco de dendê (*Elaeis guineensis*); Coco de catarrho (*Acrocomia* sp.), etc” (Rohan 1889, p. 49).

93 See for example those listed in notes 91 and 92, as well as the tucum palm (*Bactris setosa*) (Rebello 1829).
navigate and live within Brazil’s tropical environments (Hemming 1978; Dean 1995; Carney 2003a; Parrish 2008; Carney and Rosomoff 2009).

Notwithstanding the limited and confounding historical record, African palm kernels (seeds) or seedlings likely crossed the Atlantic to South America during the first century of Brazil’s colonization in a process of botanical transfer so mundane that it seemed unworthy of documentation or celebration (Carney and Rosomoff 2009). The early modern South Atlantic was a frenetic space where various Portuguese, Spanish, French, Dutch, and privateer ships passed frequently and often covertly, building settlements and conducting clandestine commerce in both Africa and South America (Johnson 1987; Postma 1990; Metcalf 2005; Thornton 2012). Regardless of homeland, transoceanic colonists viewed botanical materials as essential components of their endeavor (Crosby 1972; Carney and Rosomoff 2009), and the African oil palm was an especially useful plant during the early colonial period. As we have seen, the subspontaneous range of the African oil palm extends from Senegambia to Southern Angola, including the proximate Atlantic islands of São Tomé and Príncipe; therefore palm oil and kernels were prominent in all the areas and ports frequented by European ships in the early colonial period.

São Tomé became a “tropical laboratory” especially active in early Luso- and Dutch-African trades as a producer of palm oil and supplier for ships on transatlantic runs (Alencastro 2012, pp. 63-70; Lains e Silva 1958; Ribeiro 1962). An anonymous (1867) account of a Portuguese pilot first published in 1550 discussed palm oil commerce on the island, 48 years before Clusius ([1598] 1605) observed palm oil as a provision on slave ships. And a Dutch ledger from the 1640s lists a recurrent trade in palm oil and kernels
moving between São Tomé, Angola, and Brazil (Jones 1995). While those documents 
cannot pinpoint an original introduction of the palm, they do attest to its frequent use and 
mobility in the early modern Atlantic World (Anonymous [1550] 1867; Clusius 1605; 
Johnson 1987; Jones 1995; Metcalf 2005). Specifics remain elusive, but based on 
circumstantial evidence Brazil’s first African oil palm seeds likely came from one or 
more European vessels during the mid-sixteenth to early-seventeenth centuries. A review 
of extant references reveals ambiguity before 1699 when a verifiable account, discussed 
later in this section, placed the species in Bahia.

The lack of direct documentation of the African oil palm’s introduction to Brazil 
and other New World locales is somewhat surprising given the importance of oils during 
the colonial period. Used in cooking, illumination, lubrication, and soap making, oils 
were fundamental in the daily lives of many Europeans, as well as Africans, Asians, and 
Indigenous Americans. After boasting of the azeite made from cocos in Brazil (p. 13, 23), 
Vicente do Salvador ([1627] 1889) lamented the country’s 
great lack of grease or fish oil (azeite de peixe) needed to lubricate ships 
and boats as well as illuminate the engenhos that work all through the 
night. If azeite doce (olive oil) was used to light the engenhos, as much as 
that would take, combined with the demands of the Blacks, who are very 
fond of it, all the azeite in the world would fail to suffice. A little came 
from Cabo [Frio?], and from Biscay by way of Vienna, but it was very 
expensive and scarce. It was often necessary to use azeite doce, mixing it 
with other bitter and malodorous oils, to keep the Blacks from licking the 
lampstands (pp. 170-171).

Early colonial Brazil suffered from an oil deficit.

The colony first turned to whale oil for crude fuels and lubricants. Oil derived 
from whales was already an important source of illumination and soaps, and its industry 
quickly expanded across the early Atlantic World. Habsburg King Philip III, ruling over
the kingdoms of Spain and Portugal, granted Basque whalers a royal whaling contract for the Bay of All Saints in 1602 under the condition that they teach Portuguese mariners based there the arts of whale hunting (Ellis 1968). By 1610 Bahia benefitted from “a very profitable fishery of whales, from which oil is drawn in such great abundance that they lade ships with it and drive a very great commerce therein […] The Bay of All Saints] is the richest in the matter of oil in the whole world, and is a very great business” (Pyrard de Laval 1890, pp. 317, 321). While the Atlantic market for whale oil was lucrative for a few, it was expensive and often scarce (Tønnessen and Johnsen 1982; Miller 2007).

Both consumers and colonial authorities were eager to augment supplies with other sources. In a 1612 royal order (regimento) to Brazil’s governor-general, seated in Bahia, the Portuguese crown mandated the cultivation of palms to supplement whale oil.

I am informed of whaling on the coast of Brazil, as they do in other parts of the world. This could provide a great supply of oil (azeite), because there are so many [whales] in the seas along those coasts [of Brazil]. […] They also say that you can extract [oil] from palm fruits (côco de palmeiras); it would be very useful to plant them in greater numbers along the coast where they could best grow, because besides the oil, the fibers (cairo) and other fruits that are harvested from palm trees are very useful. So you are hereby ordered to carry out both these endeavors [whaling and palm cultivation] (Sousa [1612] 1972, p. X).

The specific objective of that order is nonetheless unclear. “Côco” is vague and “palmeira” can refer to most any palm in the family Arecaceae. Yet the reference to coir, i.e. the fibrous mesocarp, generally implies the fruit of coconut palms (Figure 39). The mention of “other fruits” does however imply a convolution of multiple palm species, potentially including the African oil palm. The administrator’s ambiguity suggests his knowledge of palms was imprecise. Nine years later, the crown issued a similar order, but omitted mention of the fibrous coir, instead emphasizing the potential for oil extraction.
Brazil is hereby ordered to continue its whale fishery, so that you may make great use of their oils. I am informed that there are many whales in those seas, as well as many skilled Portuguese whalers. While this is important, you could also extract from the husks (cascas) of palm trees (palmeiras) a great supply of oil if you planted them correctly and in greater number along the coasts. Besides the oil, which I understand is very useful, there are other fruits which are harvested from the palm trees.94

![Figure 39: Dried coconuts covered in fibrous mesocarp, or coir, sold next to azeite-de-dendê at the São Joaquim market in Salvador, Bahia (2012).](image)

A third version of the order went in 1623 to the Portuguese colony at Maranhão near the mouth of the Amazon. Almost verbatim to the second order, it curiously restored reference to the fibrous coir (Studart 1909). Though ambiguous, those orders clearly

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94 “Traduzido do regimento do governador Diogo de Mendonça Furtado, de 16 de janeiro de 1621,” APB, Seção de Arquivos Colônias e Províncias (SACP), maço 264.
encouraged the cultivation of oil-bearing palms in Portuguese America. Whether some of those palms were *Elaeis guineensis* is uncertain, but by then the Portuguese had been aware of palm oil for at least a century (Ca’ da Mosto [1507] 2012) and were already using it to provision slave ships (Clusius 1605).

An account from Maranhão in 1619 confirms the outlines of a Portuguese palm program that included the coconut palm, but other species remain indistinguishable. Just four years after Portuguese forces wrested tenuous control of São Luis from the French, a fleet of Azorean colonists arrived to occupy the colony (Mauro 1987; Fausto 2012). In a letter to the crown, Captain Estaço da Silveira identified “coconut palms (*coqueiros de cocos*) that come from Pernambuco, and this land has an infinity of huge palms (*palmeiras*), of all castes, of which they use the palm hearts (*palmitos*) for a treat, and sometimes as a staple (p. 29).” He then listed several of the land’s “infinite fruits” including guava, bananas, “mangos from India” and “little coconuts (*coquinhos de palma*) and others to make oil, like those from Guinea” (p. 29). In a later section on “*drogas,*” the captain is emphatic, “You can make oil from the Guinea palms, which they have here in quantity (p. 31).” Estaço da Silveira had frequented African coasts for decades, so he would have been familiar with the African oil palm. It is possible that those palms were indeed *Elaeis guineensis,* and if so, they would most likely be related to the earlier French presence there (1594–1615),95 since Estaço da Silveira delivered his report shortly after the Portuguese took Maranhão. Previous French accounts, however, suggest that Estaço da Silveira’s palms were likely indigenous. Two reports from French

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95 Although the French established their “Equinoctial” colony at Saint-Louis (later *São Luís do Maranhão*) only in 1612, a shipwreck off the coast of Northern Brazil in 1594 marked the beginning of French presence in the region (Fausto 2012).
Capuchin priests (d’Abbeville 1614; d'Evreux [1614] 1864) make no mention of African oil palms; instead d’Abbeville (1614) admired many indigenous species, including a palm “called pindo (pindoba) by the Indians, […] from which they make a very good and sweet oil (p. 221).” Further complicating the verifiability of the species is the abundance of the American oil palm (Elaeis oleifera) in that region. Indigenous to the Amazon basin, the New World palm appears similar to its African relative, and unions of the two produce fertile interspecific hybrids (Singh et al. 2013).

Other ambiguous descriptions come from Northeast Brazil, under Dutch control from 1630-1654. Prince Johan Maurits van Nassau-Siegen governed Dutch Brazil for seven of those years, accompanied by a retinue of naturalists and documentarians including three accomplished Dutch painters. Albert Eckhout, Frans Post, and Abraham Willaerts produced hundreds of detailed depictions of people, plants, and landscapes (Figure 40) (Whitehead and Boeseman 1989; Mark 2002; Brienen 2006). Physician Willem Piso and astronomer Georg Marggraf studied zoology, ethnobotany, medicine, and geography across much of Northeast Brazil, including the captaincies of Paraíba, Pernambuco, Ceará, and Maranhão, but not Bahia. In collaboration with Post and Eckhout they later published their findings along with 533 woodcut illustrations in the eight volumes of Historia Naturalis Brasiliae (Figure 41) (Piso and Marggraf 1648),

96 In that original French version, d’Abbeville lists the palm as “Pindo,” but the temperate Butia capitata does not extend to the Amazon. An 1874 Portuguese translation by P. A. Marques lists the palm, in my opinion correctly, as “Pindoba” (d’Abbeville 1874, p. 256).

97 Using the Artstor database (artstor.org), New York Public Library Digital Collections (http://digitalcollections.nypl.org), and other online repositories, I scrutinized all available works from those artists and found no verifiable images of Elaeis guineensis. Post depicted several unnamed palms, some of which could conceivably be based on African oil palms, but most appeared to be coconut or pindoba palms.
followed ten years later by a revised and expanded second edition (Piso et al. 1658; Hochstrasser 2014). Their detailed depictions of seventeenth-century Brazil portray the colony as an accommodating botanical laboratory where plants and environmental knowledges from the Old and New Worlds readily coalesced into novel, creole landscapes.

Figure 40: Landscape painting from Pernambuco, ca. 1650-1655, by Frans Post.

98 See also the Portuguese translations of those tomes: Piso ([1648] 1948 and [1658] 1957). Other notable accounts of Dutch Brazil include the 109 watercolors of plants, animals, and people illustrated and annotated by Dutch soldier Zacharias Wagener ([1641] 1997), and a report from Johan Nieuhof ([1682] 1813), an officer with the Dutch West India Company stationed in Brazil from 1640-1649. Published posthumously, most of Nieuhof’s botanical, cultural, and geographical descriptions appear to be verbatim translations of passages published previously in Historia Naturalis Brasiliae (Piso and Marggraf 1648; Hochstrasser 2014).

99 “House of a ‘labrador’ (planter of sugar cane) in Brazil, formerly called ‘The Village of Serinhaem (Pernambouc),’ a painting by Frans Post (1650-1655).” Photograph by Hervé
Lewandowski of the original displayed at the Musée du Louvre, Paris. Image and original data provided by Réunion des Musées Nationaux / Art Resource, N.Y.; made available online by ArtStor at http://www.artstor.org/ (last accessed 6 July 2015). None of the palms pictured appear to be *Elaeis guineensis*, though the left most palm may be a type of pindoba.

Most of their trees and shrubs bear optimal flowers and fruits throughout the year, so that at any one time, one can see spring, summer, and autumn. Principal among these are the passion fruit, *mangaba*, *pacoba*, banana, *ianipaba*, *araca*, *pindova*, coconut palm, papaya, pine nuts, and peppers. To these are added the vines, citrus, and many legumes, roots, and vegetables previously brought from Portugal and Angola, and more recently from the Netherlands, now widely cultivated in gardens and commonly used in kitchens (Piso 1648, vol. 1, p. 5).

They too hint at a program of botanical transplantation that included palms.

Thus all these seeds and fruits are cultivated and produce during the whole year, with more or less satisfactory results, depending on the place and species. This is evident especially in those tall trees called coconuts and palm trees (*cocos & palmas*), which are transplanted here without the least regard to their age, size, or the season, and grow vigorously, bearing optimal fruit. […] On properties near the coast, the Portuguese and Dutch cultivate palms, especially the coconut, for both ornamentation and utility; and customarily transplant them, even adult palms, during any time of the year (Piso vol. 1, p. 5; vol 4, p. 61).

Without specifying *Elaeis guineensis*, Piso and Marggraf describe 12 species of indigenous palms, comparing them to the exotic but by then abundant coconut and date palms (Piso et al. 1658, p. 125). They gave special treatment to the indigenous pindoba, presenting it as an abundant plant of great utility, primarily for Indigenes and Portuguese colonists.

Brazil produces many types of palms, some of which grow wild, some are planted and cultivated by the Indigenous inhabitants, growing tall and elegant. Most numerous among the wild ones is the Pindova, a magnificent and slender tree that forms dense groves. […] Instead of bark, the Pindava has a whitish rough trunk, which contains instead of wood a spongy fibrous marrow, from which [the Indigenes] make a good and strong lye. For others the tree is of little or no use, procured only as an ornament, due to its elegant height and finely splayed fronds. From these beautiful crowns covered on both sides with radiating leaves, the Portuguese adorn their courtyards and the walls of their churches, while the Indigenes use them as roofing, protecting their shelters from rain (Piso vol. 4, pp. 61-63).

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101 “Palma dactylitcra” (*Phoenix dactylifera*).
Their careful differentiation of the exotic coconut palm from the indigenous pindoba exemplifies their attention to botanical and ethnographic detail.

Coconut palms, called by the Indigenes *Inajaguacuiba*, and its fruit *Inajaguaca*, are very different from the aforementioned Pindava. Their trunks are rarely straight, but usually crooked, growing sometimes from four to seven wide [at the crown], and as much as fifty feet tall. [The palm] has no branches, but up to fifteen or twenty winged fronds, arranged in a circle, erect but arching, [...] each around sixteen feet long. [...] They produce fruit during the whole year, forming bunches at the top of the trunk. [...] The oil that is extracted from [the coconut] is reserved for many culinary and medicinal uses (Piso vol. 4, pp. 63).

Marggraf (1648 vol. 3, pp. 138-141) used several pages to carefully describe the coconut palm. Distinguishing it from palms native to the Philippines, Mexico, Iberia, and Africa, he discussed its botanical mechanics of transplantation. “Similar to palms from Africa or the Algarves,” he noted, “[the coconut] has soft shoots which can be carefully removed without harming the tree” (vol. 3, p. 140). In their description of the fruit they for the first time link Afro-descendants with pindoba, which to that point had been associated almost exclusively with Indigenous use.

The ripened fruit is greenish yellow and sometimes dark. The cortex is fibrous like the coconut, but not as dense, with the thickness of two eggshells. It breaks open easily to reveal a tasteless pulp the color of saffron; which the Afro-descendants (*Æthiopibus*) eat with farinha. [...] From the saffron-colored pulp they make an oil of the same color, used in illumination. From the core they use pressure to extract a very clear oil used in cooking (Marggraf 1648 vol. 3, p. 134).102

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102 In the original, it is unclear whether the writer refers to indigenous people or Afro-descendants as extractors of the oil, but it is probable that Marggraf was referring to indigenes. The original passage reads: “Cortex exterior filamentosus ut in Coco, verum haud crassus, sed duplam tantum crassitiem testæ ovi habens; qui incisus detrahi potest: ill detracto apparit paucà caro crocei coloris, nullo manifesto sapore, quæ ab Æthiopibus cum farinha commeditur [...]. Ex carne croceasit oleum croceum quod in lucernis usurpatur: ex nucleo limpidissimum per expressionem ad coniendos cibos quamdiu recens est, & itidem ad lucernas quando vetus” (Marggraf vol. 3, p. 134).
It remains possible that the Dutch naturalists could have misidentified or conflated pindoba fruit with that of Elaeis guineensis, yet their otherwise meticulous descriptions draw from years of fieldwork and ethnography and subsequent scientists continued to celebrate their accuracy two centuries later (Cuvier 1841). Moreover, the naturalists recognized Africans as active disseminators of both plants and botanical knowledge.

Just as Europeans transported to America plants and seedlings they deemed profitable, so too did Africans. Among the useful herbs they brought here, they continue to carefully cultivate that called *belingela* by the Portuguese, and by the Angolan Africans *tonga or macombo*, as well as two others, *quigombó* and *sésamo*. These fruits are highly esteemed by the local inhabitants and the Africans have taught the Indigenous Americans how to use and prepare them (Piso et al. 1658 p. 209, 210).

Piso was particularly impressed with the versatility of okra, or “*quigombó*, brought from Africa and transformed as if it were native to Brazil,” as well as sesame “brought here by Africans (*Æthiopes*) from that part of Africa known as the Congo” (Piso et al. 1658 p. 211). Together the Dutch naturalists identified several other species transferred to Brazil from Africa, including yams, fava or broad beans (*Vicia faba*), an unspecified type of pigeon, melegueta peppers, groundnuts (*Arachis hypogaea*), and the guinea fowl (*quetele or gallina africana; Numida meleagris*) (Piso and Marggraf 1648; Marggraf 1648 vol. 3, p. 192; Piso et al. 1658, pp. 86, 92, 251, 256-257).

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103 *Solanum melongena*, commonly *beringela* or eggplant.

104 *Abelmoschus esculentus*, commonly *quíabo* or okra, and *Sesamum* sp., the genus of sesame plants, respectively. For sesame in Africa and the African diaspora, see Bedigian (2012).

105 Some of those species, such as groundnuts and sesame, are not native to Africa, but were nonetheless transferred from that continent to Brazil during the early colonial encounter. By associating those species with Afro-descendants in Brazil, Piso and
Judging from their extraordinary biogeographical awareness, it remains unlikely that Piso and Marggraf mistook *Elaeis guineensis* for pindoba in Pernambuco. They more likely observed a creole culinary innovation. Accustomed to various African porridges spiced with palm oil, Afro-descendants in Northeast Brazil apparently turned to fruit and oil from the pindoba to season the bland manioc flour that provided the bulk of their calories. As Africans and Europeans arrived in early Brazil, their traditions and preferences hybridized with Indigenous knowledges to affect dynamic processes of cultural-environmental change.

Standing in for the African oil palm, the pindoba became an important symbol of Afro-Brazilian resistance as the namesake and “principal source of extraction” of Brazil’s largest and best-known maroon settlement, *Palmares* (Alves Filho 1988, p. 15; Carneiro [1947] 1958). Located in colonial Pernambuco, Palmares was a “neo-African kingdom” comprised of a number of proximate maroon settlements and thousands of inhabitants (Schwartz 1992, p. 122). According to groundbreaking Afro-Bahian ethnographer Edison Carneiro (1958, p. 45), the settlement’s “name comes from the extraordinary abundance of the pindoba palm, whose plumes tower over the tallest trees, […] and the presence, to a lesser extent, of *ouricuri* [*Syagrus coronata*], *catolé* [*Syagrus cearensis*], and *titara* [*Desmoncus* sp.] palms.” Through practically the entire seventeenth century (1597?-1694), the community beat back successive Portuguese and Dutch strikes before its final dissolution (Gomes 2005b). Reports of Dutch and Portuguese military campaigns in 1645 and 1678 (Anonymous 1999) mention oil made from palms, which Carneiro (1958) and Marggraf (1648; Piso et al. 1658) acknowledge the fundamental importance of African knowledges within colonial transformations of cultures and landscapes in South America.
others (e.g. Gomes 2005b) interpreted as Pindobas. In his account of Palmares, Dutch officer Jan Blaer described “pathways lined with alleys of palms, which are of great utility to the Blacks,” who used them to construct houses and beds, as fuel, to make smoking pipes, and the fruit and hearts as food (in Carneiro 1958, p. 257).

From the cocos they make oil (azeite) to eat, a clear whitish butter, and a type of wine; from the trees they gather worms as big around as a finger and eat them; [providing much for them,] they hold this tree in high esteem. Those trees also wounded many of our men by way of the caltrops made from them and placed around the houses. This was the great Palmares that is so widely discussed in Brazil; its land is appropriate for planting all sorts of foods (cereais), being irrigated by many beautiful rivers (p. 258).

Palmares and its pindobas therefore illustrate the importance of oleaginous palms in African and Afro-Brazilian culture as well as the collective resilience of Afro-descendants in adapting to unfamiliar landscapes and flora (Moraes and Cerqueira e Silva 1854; Schwartz 1992).106

Just as pindoba oil gained traction in Afro-Brazilian communities and cultures in Northeast Brazil, African oil palms suddenly appear in the historical record for Bahia. In 1699, English privateer William Dampier arrived in Salvador where he recorded the first incontrovertible account of Elaeis guineensis growing in Brazilian soil. Among a population of Afro-descendants “so numerous, that they make up the greatest part or bulk of the inhabitants,” he reported:

Palm-berries (called here Dendees) grow plentifully about Bahia; […] These are the same kind of berries or nuts as those they make the palm oil with on the Coast of Guinea, where they abound; And I was told that they make oil with them here also.

106 Palmares was located at altitudes of approximately 500 meters in and around the Serra da Barriga, a rugged forest in the agreste region of contemporary Alagoas. Elaeis guineensis does not usually thrive in such conditions.
Dampier’s brief account is nonetheless telling. Calling the fruit “Dendees,” he recorded what remains its contemporary Afro-Brazilian name—“dendê,” derived from the Kimbundu Bantu term for *Elaeis guineensis*—“ndende” (Schneider 1991, p. 129).

Speakers of Kimbundu and related Bantu languages from West Central Africa comprised the overwhelming majority of Africans sent to Bahia and elsewhere in Brazil during the seventeenth century (Verger 1976; Schwartz 1992). Kimbundu served as a lingua franca among enslaved peoples during that period, eventually lending many familiar words to the Luso-Brazilian lexicon, including *samba*, *dengue* (fever), *quilombo* (maroon community), *moqueca*, and *candomblé* (Mendonça 1935; Schneider 1991; Sweet 2006).

Numerous common names for *Elaeis guineensis* exist in Africa—one modern compilation lists 332 (Burkill 1997). Thus by establishing the term “dendê” in Brazil, despite the many potential alternatives, western Africans managed to define and retain a measure of control over the species in the New World.

As Luso-Bahian slaving operations shifted away from West Central Africa in the subsequent century, Yoruba, Fon, Hausa, and other West Africans became more prevalent among the captives sent to Bahia (Verger 1976; Emory University 2009a). Even so, the initial Bantu influence in terminology persisted. Combining the fruit’s Kimbundu lexeme with an Arabo-Iberian word for olive oil, the creole compound “*azeite-de-dendê*” became the standard term for palm oil in Bahia, and the palm itself became known as the dendêzeiro. Yet elsewhere in the Luso-Afro-Atlantic, from the sixteenth to the early-twentieth centuries, the prevailing term for palm oil remained “*azeite de palma,*” stressing a Eurasian etymology (Pacheco Pereira [1506-1508] 1937; Cerqueira e Silva 1835, p.158), and merchants in Brazil continued to use that phrase to
refer to palm oil imported from Africa into the early twentieth century (Caldas [1751] 1951, pp. 166, 249; Fernandes and Monteiro 2001). That contrast in nomenclature helped distinguish Bahia’s domestic dendê from palm oil of African extraction, and indicates a fundamental and enduring African influence in Bahia’s oil palm cultures and landscapes (Watkins 2011, 2015).

Finally, Dampier claimed that African oil palms grew “plentifully” in Bahia by 1699, indicating that its introduction(s) began some decades earlier. Using pre-modern germination techniques, African oil palm seeds would have taken several years to grow into productive, seed-bearing palms (Corley and Tinker 2003); therefore considerable groves could have developed only after decades of introduction and propagation. Thus Dampier’s account, combined with linguistic, demographic, and botanical evidence, dates the African oil palm’s introduction to Bahia no later than the mid-seventeenth century.

107 Registers of imports and exports sent to the king list “azeite de palma” arriving from the Mina Coast in 1797; see “Registros de correspondência expedida para o Rei,” APB, SACP, maço 138. Colonial port administration records show permits to deal in humans, “azeite de palma,” and other goods in the 1820s; see “Correspondência Recebida do Comandante das Forças Navais,” APB, SACP, maço 3176. The Series of Customs Manifests (Série Manifesto, hereafter SM), APB, Seção Alfândega (hereafter, SA), shows imports of “azeite de palma” from 1825-1881. “Mapas dos Trapiches, 1890s,” APB, Seção Republicano (hereafter, SR), Secretaria do Governo (hereafter, SG), maços 2295, 2902 record imports of West African “azeite de palma” to Bahia in 1895. For 20th century imports of “azeite de palma” to Bahia, see “Mercado de Importação,” Boletim da Secretaria de Agricultura, Viação, Indústria e Obras Públicas do Estado da Bahia Anno 2, vol. 1, nos. 1-2 (January-February, 1904, p. 89). A Brazilian dictionary published in Rio de Janeiro in 1889 listed “azeite-de-dendê” as “oil extracted from the fruit of the dendzeiro (Elaeis guineensis). It is this that the Portuguese call oleo de palma” (Rohan 1889, p. 11). Some Afro-Brazilian religious rituals refer to palm oil as “epô,” following the Yoruba (Verger 1999), but the Kimbundu “dendê” is much more common. Adhering to the distinction between “dendê” oil and “palm oil” (i.e. azeite de palma), I use the terms “dendê” and “Dendê Coast” throughout this dissertation and elsewhere to emphasize the novel Afro-Bahian formulation; see also n. 14. Chapter 5 details the Bahia-Africa palm oil trade.
and possibly more than a century earlier. His description attests to the existence of African oil palm landscapes in Bahia sufficient to support a culture of oil extraction and processing and the many uses that would follow.

Following Dampier, visitors to Bahia continued to associate the African oil palm with New World Africans. In a letter to the Crown dated 1751, Vice-King and Royal Governor of Bahia Luís Peregrino de Ataíde, the Count of Atouguia, reported on an economic analysis of useful palms in the Portuguese Empire. With a team of five Luso-Indian (canarin) fact-finders, the Count evaluated the commercial utility of palms in Goa and Bahia. After discussing the value of several other species, he glossed over the dendezeiro: “And for the blacks to eat, [oil] from a seed, here called dendê, that is so abundant its price rarely increases to that of olive oil from Portugal.”108 The governor dismissed the economic prospects of domestic palm oil, even as the same product produced in Africa was already a valuable Atlantic commodity and popular in Salvador. By referencing the creolized Kimbundu term for the oil and discounting its commercial viability, the governor—in the name of the Portuguese Crown—effectively conceded Bahia’s palm oil economy to Afro-descendants.

Palm oil became integrated into Afro-Bahian identities in the nineteenth century, during what Câmara Cascudo ([1967] 2011, p. 224) called the “golden age of azeite-de-dendê.” At the turn of the nineteenth century, correspondence from Vilhena ([1802] 1969), suggests that palm oil had contributed to an emergent Afro-Brazilian cuisine. In the first documentation of comida baiana, he bemoaned the “insignificant and vile” fare sold by ambulant blacks; including “carurú, vatapá, acarajés, and abarás,” all based in

108 Arquivo Histórico Ultramarino (AHU), Conselho Ultramarino, Caixa 2, Docs. 167-8.
palm oil, “the essential seasoning in the greater part of Black cuisine” (pp. 130, 188).

Travelling through Bahia in 1818 and 1819, Bavarian naturalists and explorers von Spix and von Martius (1938) (Figure 42) reported,

In the words of the Brazilians themselves, the African oil palm was brought by the Negroes of Guinea and grows, like the coconut palm, in the provinces of Bahia and Pernambuco, not only near the sea, but also in the interior (p. 85).

Figure 42: Botanical illustration of *Elaeis guineensis* by von Martius, 1826.\(^{109}\)

\(^{109}\) Source: Martius (1826, vol. 2, tab. 54).
They go on to link palm oil production and use directly with enslaved people, pointing out culinary, material, and medicinal uses.

The preparation of palm oil is done by slaves, and because of this, without great care. [...] They use this common oil in cooking, where it is greatly appreciated, especially by Blacks; and also in lamps and as an ointment. They consider the ointment a treatment for skin diseases (p. 85).

Finally, they hint at Afro-Brazilian spiritual uses. “Frequently one observes, on the streets of Bahia, a black man rubbing himself with cooked dendê, preparing himself, that is to say, for the nocturnal dances [Afro-Brazilian religious expressions of possession-trance, e.g. *Candomblé*]” (p. 85).

Like their counterparts in West and Central Africa, Afro-descendants in colonial Bahia used the African oil palm to meet culinary, domestic, and spiritual needs. More than just a flavorful caloric supplement to spice bland starches, the palm provided soaps, shampoos, ointments, palm hearts, and wines, as well as thatching for roofs, fuel for lamps, and fibers for weaving traditional mats (*esteiras*) and shellfish traps (*manzuá*) (Figure 43) (Querino [1928] 1957; Lody 2009).

Propagating throughout the Atlantic World, the African oil palm represented a diasporic link to Africa and by the nineteenth century became a sacred symbol of Afro-Brazil (Spix and Martius 1938; Reis 2008; Parés 2013). The spiritual potency of the African oil palm and its products within Afro-Brazilian culture reflects the broad demographic shifts in Bahia’s transatlantic slave trade. Dominant in flows of Africans during the seventeenth century, Kimbundu-speakers adapted their name for the palm and its fruit to the New World. The Ewe, Fon, and Yoruba peoples that predominated in the eighteenth and nineteenth centuries arrived in Bahia with staunch ancestral traditions of spiritual and religious reverence for the African oil palm. Those cultures valued palm oil
Figure 43: Shellfish trap (*manzuá*) woven from fronds of an African oil palm in the Tanques community of Taperoá, Bahia (2012).

and other palm products, not only for their broad practical uses, but also for their spiritual and cosmological connections to the familiar cultures and landscapes of the homelands. In Bahia, Afro-descendants collaborated with Europeans, Amerindians, and other peoples to create and proliferate hybrids within New World cultures and landscapes.

The African oil palm was a prominent agent of environmental, cultural, and economic change on the African continent long before European sailors arrived there in the fifteenth century. Symbiotic relationships encouraged the socioecological spread of oil palm landscapes in western Africa over the past several millennia. With the arrival of the

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110 For the four “cycles” of the transatlantic slave trade in Bahia, see Verger (1976, p. 1).
Atlantic economy in western Africa, palm products and knowledges played fundamental and tragic roles as commodities facilitating the transatlantic slave trade. As sailors, ships, enslaved Africans, and colonists traversed the Atlantic beginning in the late-fifteenth century, African oil palm landscapes, cultures, and economies diffused to the Caribbean and South America as part of a momentous human and botanical diaspora and an early African contribution to the Columbian Exchange (Carney and Rosomoff 2009; Watkins 2011, 2015).

*Elaeis guineensis* migrated to New World landscapes and cultures during the seventeenth century, if not before. The species likely arrived in Brazil as part of a Royal Portuguese palm transplantation program that began around the turn of the seventeenth century, but the exact processes and timing of the palm’s introduction(s) to South America remain elusive. By 1699, the African oil palm was apparently abundant in Bahia when it suddenly appeared in the record. Primary accounts and linguistic evidence suggest African agency played a significant role in the palm’s initial establishment and perpetuation, if not its actual introduction. Nineteenth-century naturalists Spix and Martius credited Africans themselves with transferring the palm to Bahia but subsequent scholars, beginning with French botanist Charles Antoine Lemaire (1866) and continuing with prominent Brazilian intellectual Edison Carneiro (1964), have assumed that slave traffickers first planted the palm there. Either way, diaspore transfers were only a tenuous beginning in what became a significant and enduring New World environmental transformation. As primary teacher and *Candomblé* initiate Carlinhos explained,

I don’t believe that the traffickers brought [dendê to Brazil]. It wasn’t the Europeans. It was the enslaved, the Africans. The European traffickers brought only their slave ships, but the Africans gave us the whole system of [dendê] cultivation. […] So in my way of thinking, it was the Africans
themselves that brought the dendezeiro, in the holds of slave ships, together with the traffickers.\textsuperscript{111}

Regardless of how the African oil palm arrived, its subsequent propagation in New World cultures and landscapes undoubtedly drew from knowledges and preferences descended from Africa. Because western Africa’s oil palm belt coincides with the major embarkation zones of the transatlantic slave trade, most of the enslaved Africans displaced to Brazil would have been familiar with the tree, its fruit, and the cultural-environmental knowledge systems of its cultivation, processing, and use. Thus the skills and knowledge associated with the African oil palm disembarked in the New World in the minds of the enslaved Africans it sustained on the journey. Kimbundu-speakers asserted their control of the palm with an enduring moniker in the seventeenth century, signaling familial connections to the plant with roots in Central Africa. Centuries later, cultural groups from West Africa expanded the Afro-Brazilian connection with African oil palms, integrating them in novel spiritual and religious forms. Moreover, European documents from the seventeenth to nineteenth centuries consistently associate the African oil palm and its products with Afro-descendants. Once in Bahia, Afro-descendants, the dendezeiro, and its traditions all rooted in new environments, expanding a socioecological network of people, plants, ships, and ideas across the Atlantic. As that network expanded, it transformed cultures and landscapes on both sides into fluid transatlantic hybrids (analyzed in Chapters 4 and 5).

Bahia’s dendê cultures and landscapes are compelling exemplars of transatlantic hybrid assemblages. Both social and natural, they emerge, expand, change, and

\textsuperscript{111} Interview of 8 February 2012. Carlinhos is a pseudonym.
reemerge—that is they constantly become—through self-organized negotiations of more-than-human actors connected in complex, rhizomatic networks (Deleuze and Guattari 1987; Latour 2002; Whatmore 2002b). The subspontaneous groves of African oil palms permeating the rainforest zones in western Africa and Bahia remain testaments to the deep-rooted but dynamic interconnections of humans, plants, animals, tools, and environmental conditions that form historical, ecological networks. Just as stone axes allowed the African oil palm to colonize western Africa’s forest zone at least three millennia ago, Eurasian sailing technology, slaving routes and customs, and socioecological African oil palm cultures all combined to naturalize the palm and its associates across the Atlantic where it is now materializes diasporic knowledge. African oil palm landscapes and the African and Atlantic rainforests they suffuse are at once historical, cultural, and ecological.

A “flux and reflux” of African oil palm landscapes and cultures between the Old and New Worlds helped enmesh the complex networks known collectively as the Atlantic World (Verger 1976). Best understood as an emergent whole, the Atlantic World is itself a hybrid of water, land, biota, politics, and technology; a broad social, ecological, and historical network imbued and materialized by flows of power (Rocheleau 2011). This chapter demonstrates how African oil palm cultures and landscapes forged connections with people, ideas, ships, seeds, and other biota to traverse an ocean, create new places and cultures, and integrate an Atlantic World. But once transferred through that Atlantic assemblage, how did Bahia’s landscapes and cultures of African oil palm develop? What were the prominent social, ecological, and historical processes that transformed Bahian environments? The next chapter demonstrates how complex networks of people, palms,
birds, mangroves, and colonial agroecologies collaborated to create and recreate Bahia’s Dendê Coast.
CHAPTER 4:
THE EMERGENCE OF AN AFRO-BRAZILIAN LANDSCAPE

The agency of slaves and maroons would make a lasting imprint on Brazilian culture. In using edible, medicinal and spiritual plants of African origin for survival and religious practices, Brazil’s blacks affirmed cultural identity and resistance while Africanizing an Iberian colony. Like native peoples and European settlers, Africans also shaped the landscapes where they settled to meet their cultural and spiritual needs.


When Africans brought dendê here, they must have been thinking about how they would survive in a new country, how they would feed themselves. It was crucial then for them to bring dendê. It was a form of resistance just to be able to survive here.

—“Carlinhos,” Bahian, Candomblé initiate, college student, primary teacher (interview of 8 February 2012)

Originating from diverse regions of Africa, the oil palm disembarked on the coast of Brazil in the early days of colonization. It arrived at our ports along with the slave trade, and rapidly diffused along the coasts. It was among the key commodities in the established trade with Africa, disseminating widely among diverse segments of the population. Thus it set down its roots in our land, becoming part of the everyday life of its inhabitants, integrating within its customs and participating in the construction of its imaginary universe.

—José Flávio Pessoa de Barros, anthropologist, ethnobotanist, and babalorixá, in preface to Tem dendê, tem axé: Etnografia do dendezeiro (Lody 1992, p. vii)

Following their introductions to South America in the sixteenth and / or seventeenth centuries, African oil palms diffused throughout much of coastal Brazil.

Nineteenth century chroniclers recorded the trees and consistently associated them with

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112 Earlier portions of this chapter appeared as Case Watkins. 2015. African oil palms, colonial socioecological transformation and the making of an Afro-Brazilian Landscape in Bahia, Brazil. Environment and History 21 (1):13–42. That content has been revised and expanded significantly, but see Appendix B for permission.
Afro-descendants. Travelling in Pernambuco in 1816, French merchant Louis-François de Tollénare (1905) described cultivated fields of coconut palms and African oil palms (dendezeiros) amid “several cabanas thatched with palm leaves, inhabited by mulattoes and free blacks” in Afogados, a small suburban village along the Capibaribe River one league south of the old city of Recife (p. 42). After crediting Africans with transferring the African oil palm to Brazil (Spix and Martius [1823] 1938), Karl von Martius (Figure 44) placed the palm all along the Brazilian coast from Rio de Janeiro, to Bahia, Pernambuco, and finally Maranhão at the foot of the Amazon Rainforest in the second volume of his Historia naturalis palmarum (1826, vol. 2, pp. 62-63).

Decades later, officials at a prison in Pernambuco submitted to the 1866 Brazilian National Exposition a display of azeite de dendê it produced “not in large scale, but as a simple teaching program (ensaio)” (Rego 1869, p. 310). Municipal reports solicited by Brazil’s national library in the 1880s documented African oil palms and cottage palm oil industries in Bahia, Alagoas, Pernambuco, and Ceará. More than a century after von Martius’ report, a mid-twentieth century monograph by Bahian state agronomist Gregorio Bondar (1954) placed Elaeis guineensis across much of Atlantic Brazil, from the southeastern states of Rio de Janeiro and Espírito Santo to Bahia, Piauí, and Maranhão in the Northeast.

The African oil palm naturalized in Brazil, and now grows subspontaneously—with little or no anthropogenic input—across a diversity of edaphoclimatic conditions and land uses ranging from Amazon rainforest to urban metropolis. In my own fieldwork

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Figure 44: African oil palm near *Serra dos Órgãos* in Rio de Janeiro, 1861.114

114 Source: Houtte (1861, plate between pp. 264 and 265; narrative pp. 265-266); based on earlier fieldwork and illustrations published by von Martius (1826, vol. 2, pp. 62-63).
from 2009-2014, I observed isolated colonies and individual African oil palms growing uncultivated in every state on Brazil’s tropical Atlantic coasts from Rio de Janeiro to the mouth of the Amazon in Pará, as well as the landlocked states of Goiás and Tocantins and interior swamps near Lençóis, Bahia, roughly 300 kilometers from the coast (Figure 45). Indeed the palm’s adaptation to Brazilian landscapes became so widespread that some scientists argued for its South American origin well into the twentieth century (Azevedo 1938; Cook 1942; Hodge 1961; Zeven 1964, 1965).

Nevertheless, Bahia’s Dendê Coast remains Brazil’s and the New World’s densest and most productive landscape of subs spontaneous *Elaeis guineensis*. What set that landscape apart? This chapter marshals evidence from colonial archives, travelers’ accounts, ethnography, landscape observations, and remotely sensed and other data deployed in a geographic information system (GIS) to analyze the development of Bahia’s Afro-Brazilian landscape. While Africans and Afro-Brazilians emerge as principal actors, the analysis places humans within a broader socioecological framework to demonstrate how historical processes, geographies, agroecologies, and human agency all coalesced to establish and sustain Bahia’s Afro-Brazilian landscape.

**Resistance, landscapes, and the African diaspora**

Despite the crushing physical and psychological violence of the transatlantic slave system, enslaved peoples managed profound contributions to colonial transformations of cultures and landscapes, from the American South to Argentina and beyond (Du Bois [1915] 2001; Blassingame 1972; Price [1973] 1996a; Sweet 2003; Reis 2003; Andrews 2004; Carney and Rosomoff 2009; Sluyter 2012; Sluyter and Duvall 2015). Recent studies of the African diaspora have framed enslaved peoples, not as passive victims, but
rather complicated beings involved to varying degrees in the creative processes and networks that transformed the New World. Examining the cognitive and corporeal contributions of Afro-descendants in the Western Hemisphere, such treatments rightfully restore Afro-descendent voices in colonial histories and reveal the epistemological complexity and plurality of the formation and reproduction of the Atlantic World (Gilroy 1993; Voeks 1997; Thornton 1998, 2012; Mann and Bay 2001; Carney and Voeks 2003;
Scholars studying slavery in Brazil have elaborated the concept of resistance on a spectrum of “negotiation and conflict” (Reis and da Silva 1989; Schwartz 1992; Carney and Voeks 2003; Reis and Azevedo 2012). Unraveling violent insurrection and flight from more routine forms of bargaining and subterfuge, the concept frames enslaved humans as calculating and innovative actors. Resistance was not always direct or violent, more often it was understated, shrewd, and mundane (Araujo 2013; Van Norman 2013). Any assertion that resistance only occurred through physical violence reinforces masculinist tropes of subjugation and conquest and dismisses the everyday strategies of subversion and survival conceived and carried out by enslaved women and men (Gaspar and Hine 1996; Price [1973] 1996a, 1996b; Campbell, Miers, and Miller 2007; Rangan, Carney, and Denham 2012; Araujo 2013; Barcia 2014). Resistance is ubiquitous as a function of and response to power (Foucault [1976] 1990, 1977; Butler 1997; Philo 2012), and enslaved peoples worked constantly to counter the power expressed in the slave system through means variably individual, collective, active, passive, violent, conciliatory, and cunning. Leveraging myriad forms of resistance—from routine bargaining and manipulation to all-out revolt—Afro-descendants shaped their experiences and contributed to the development of novel cultures and landscapes in the Americas.

One prominent form of everyday resistance was the cultural-environmental, or socioecological agency of the enslaved. In provision grounds, dooryard gardens, pastures, maroon communities, and even plantation monocultures, enslaved and freed Afro-
descendants used ethnobotanical and agricultural knowledge to transform colonial landscapes. By applying and adapting cultural knowledge to ecological processes, enslaved humans exploited narrow spaces of negotiation to realize their own culinary, spiritual, medicinal, and economic preferences. As such, the African diaspora contributed to the Columbian Exchange, transforming New World landscapes with biological, material, and intellectual inputs (Câmara Cascudo [1967] 2011; Crosby 1972; McClure 1982; Berlin and Morgan 1993; Voeks 1997, 2012a, 2012b; Carney 2001; Carney and Rosomoff 2009; Sluyter 2012; van Andel et al. 2012).

According to geographer Judith Carney (2010), Africans in diaspora used cultural-environmental knowledge to create “landscapes and places of memory,” or recollections of Africa inscribed in New World environments. Developed in (post)colonial Southeast Asia, political scientist James C. Scott’s (1985) “landscape of resistance” is an allied model that views landscape as a set of human-environmental parameters for class relations. In short, while Carney sees the landscape as a product of resistance, Scott understands landscape as the stage on which resistance operates. In combining the two concepts, we recognize landscapes of resistance in the African diaspora as contexts for political struggle as well as novel socioecological transformations. Thus landscapes of resistance stand as extraordinary historical documents of and dynamic monuments to cultural-ecological relationships, power relations, and environmental change.

115 *Elaeis guineensis* is not mentioned in Crosby’s (1972) *Columbian Exchange.*

116 The transformation of such cultural landscapes has long been a prominent theme among cultural geographers (e.g. Duncan 1990; Cosgrove 1993), but the discipline had until recently largely neglected African agency in such transformations. Recent geographical scholarship is, however, working to uncover the socioecological legacies of
While in many cases landscapes of resistance represent remarkable human achievements, at a fundamental level such landscapes, like any others, are more-than-human assemblages linking humans with other biotic and physical actors in particular culminations of historical, cultural, political, and ecological processes. Thus analysis of such (post)colonial, more-than-human landscapes and networks provokes methodological challenges. Eurocentric documentation, modernist discourse, and other legacies of colonialism obscure or de-emphasize subaltern voices and contributions to landscape change.

Postmortem estate (or probate) inventories, for example, provide a wealth of historical documentation on agriculture and related social and environmental relationships in Bahia. Yet those documents privilege elite White voices whose disproportionate shares of land, enslaved workers, and other property bias the colonial record (Barickman 1998). Probate officers only resorted to formal inventories when heirs were unable to reach agreements on the distribution of the estate for technical, financial, legal, or interpersonal reasons, and their services demanded considerable payment. During Brazilian slavery, Afro-descendants typically worked or owned small farms and held minimal formal property relative to their counterparts of European descent, and often divided their properties without incident among their heirs; therefore colonial inventories effectively diminish Afro-Brazilian voices. An example from Bahia’s Southern Coast illustrates the racial and class bias evident in some of the colonial

the African diaspora, see Carney and Rosomoff 2009; Carney 2010; Watkins 2011, 2015; Sluyter 2012; and the related discussion in Chapter 1 of this dissertation. For a sweeping treatment of Landscape within geography, see Wylie (2007). For a geographical theorization of colonial landscapes, see Sluyter (2002).
documentation used in this project. In 1878, municipal authorities registered five total probate inventories and just a single will in the parish (freguesia) of Taperoá. Two years later a census of enslaved people in that same district counted 741 people. Scant references to some of those enslaved Afro-descendants may appear in registers or in the inventories of their deceased proprietors, yet overall colonial documentation largely obscures their individual and collective stories.

This is not to suggest that analyses that relied on those inventories are somehow tainted. Depending on the research question, probate inventories and other colonial archives have long supported rich analyses that illuminate colonial agriculture and the lives of enslaved Afro-descendants in Brazil (e.g: Schwartz 1985; Mattoso 1986; Barickman 1985; Mahony 1996, 1997; Reis 2003; Graham 2010; Hawthorne 2010). For some research questions, such as those addressed in this study, text alone is insufficient. This study therefore joins a growing corpus of scholarship deploying plural methodologies—those drawing on diverse sources and methods in supplement to colonial archives—to counteract, rather than reflect, (post)colonial power relations in accounts of cultural and landscape transformations (Balée 1989; Fairhead and Leach 1996; Voeks 1997; Carney 2001; Sluyter 2002, 2012; Carney and Voeks 2003; Rangan, Carney, and Denham 2012; DeLyser and Sui 2014; Sweet 2014; Carney and Rangan 2015).

Just as studies of subaltern agency must look beyond text, research into landscapes of resistance must recognize the networked agencies of diverse beings and things. That is, analyses of human-environmental interaction necessarily place people

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within more-than-human, socioecological assemblages. In deconstructions of such networks, scholars have actively engaged nature and culture, not as separate entities, but as fused, collaborative systems (Latour 1993; Whatmore 2002b). This holistic framework does not diminish the potential for human agency, but rather views people and their ideas as actors in broad systems that, being both social and natural, also include the agency of edaphoclimatic and other geophysical conditions, flora, and fauna. So to engage and analyze the socioecological agency of enslaved people, we must amplify our gaze beyond text and beyond humans. Here I use a hybrid methodology (Chapter 2) that stresses the interactivity of plural sources and methods to reconstruct the diverse socioecological inputs and processes that created the Dendê Coast.

From the early colonial period, Bahia’s African oil palm landscapes developed in a complex and gradual socioecological process. This chapter disentangles that development into three interactive and overlapping components—coastal and estuarine geography, colonial agroecologies, and Afro-Brazilian resistance—to offer a historical political ecology of Bahia’s Afro-Brazilian landscape. Analyzing each component individually deconstructs the dynamics of place formation, isolating various influences that coalesced to transform the landscape. We begin by assessing the interactions of the African oil palm with Bahia’s littoral.

### Coastal and estuarine geographies

Western Africa’s subs spontaneous oil palm belt spreads over four distinct climate zones, as defined by precipitation and temperature patterns in the Köppen-Geiger climate chart: tropical rainforest (Af)—i.e. perennially hot and wet with no distinct dry season, tropical monsoon (Am), and tropical savannah (As and Aw)—the latter two having
distinct dry seasons. The climate of coastal Bahia, from just north of the capital to the state’s southern reaches, is exceptionally conducive to oil palm groves, similar to climates in West Africa’s Niger Delta and Congolese Rainforest where the palm has thrived for millennia. Nevertheless, the oil palm has diffused and adapted across three distinct tropical climate regimes in West and Central Africa. Comparable areas in South America classified as Af, Am, or Aw stretch its tropical littoral from Pacific Colombia to Southern Brazil, along with much of Central America and the Circum-Caribbean (Kottek et al. 2006). The African oil palm, then, is readily adaptable not only to Bahia’s Southern Coast, but to many Latin American and Caribbean coastal zones. Thus, ambient conditions alone cannot be the determining factor for the concentration of subspontaneous oil palm groves in that small portion of the state’s coastline; there must be other influences as well.

As discussed in chapter 3, the African oil palm thrives in rainforest clearings rich in sunlight and precipitation. Coastal Bahia’s Atlantic forest biome fits that profile, but colonial planters with little regard for the palm ostensibly controlled the vast majority of land uses there, and they systematically removed unwanted arboreal species when clearing fields. While planters occasionally spared a few palms on their properties, the abundance of African oil palms in the colonial period and beyond suggests broader and more complex processes of diffusion.

*Elaeis guineensis* is salt-tolerant (Corley and Tinker 2003). That adaptation has allowed the palm to propagate near African coasts for millennia and near Bahian coasts for centuries. On either side of the tropical Atlantic, African oil palms abound near the fringes of the intertidal zone, especially tucked in at the upslope margins of mangrove
forests and contributing to their broader ecosystem, the mangal\textsuperscript{118} (Figure 46 and Figure 47) (Fields-Black 2008). Mangroves (\textit{Rhizophora sp.}) are various species and hybrids of halophytic trees and shrubs that occupy the saline intertidal zone of land and water. In Bahia, mangal fades variously into lowland sandy shrub forests known as \textit{restinga} and remnants of moist Atlantic forest. Those ecotones provide open canopies with access to sunlight and precipitation, albeit in moderately salty soils. Conversely, the sugar, tobacco, and manioc that comprised the great bulk of Bahia’s colonial agriculture could not prosper in saline soils; therefore, neither export nor subsistence agriculture could

\begin{figure}[h]
\centering
\includegraphics[width=\textwidth]{image}
\caption{A fisher boats past a coastal mangrove forest flanked by a subspontaneous grove of dendezeiros, Pau d’Óleo community of Igrapiuna, Bahia (2012).}
\end{figure}

\textsuperscript{118} Known in Brazilian Portuguese as \textit{mangue} and its broader (socio)ecosystem as \textit{manguezal}.
challenge the African oil palm for space in the intertidal zone, leaving it to flourish and proliferate. The mangal then served as a conduit for the expansion of the African oil palm in Bahia, much as it had in western Africa millennia earlier.¹¹⁹

The mangal is widespread in coastal Bahia. Soares de Sousa ([1587] 1879) marveled at the ubiquity and utility of the mangroves in the sixteenth century.

¹¹⁹ Rice is one of few crops that flourish in the intertidal zone. Its commercial production in Bahia, however, remained secondary through the colonial period, accounting for only 5.05% of the foodstuffs handled by Bahia’s public granary (celeiro público) from 1785-1849. Manioc flour averaged 87.44% in the same period, see Appendix B in Graham (2010). Rice was, however, common as a subsistence crop in coastal Bahia, including Cairu, Camamú, Ilhéus, and Boipeba in the eighteenth century, where lowland fields likely integrated with the oil palm-mangal, as they do in Senegambia (Vilhena [1802] 1969, vol. 2; Carney 2004). Africans have cultivated rice in mangrove forests for millennia (Carney 2001, *Elaeis guineensis* in fig. 2.15). Some groups of mangrove rice farmers, such as the Diola, continue to supplement grains with palm oil processed by women (Personal communication via email with Judith Carney, 26 September 2014).
Seventeenth century Dutch physician and naturalist Willem Piso (1648) portrayed Brazilian estuaries as choked with mangroves.

The mouths of their rivers, where rising tides inundate the coasts and multitudes of oysters and crabs run about, are essentially blocked with a genus of tortuous trees called guaparaiba or mangle, rendering them completely impenetrable for travelers (vol. 1, p. 5).

Travelling along the coast of Bahia from Ilhéus to Itaparica in the early nineteenth century, Bavarian explorers von Spix and von Martius ([1823] 1938) described the landscape as it transitioned inland from mangroves to farms.

Near the ocean, the coasts of the mainland and numerous islands are in large part covered with mangroves; to the interior extensive plantations and tended properties are seen; the foot of the hills, which rise gently, [are] covered in secondary growth forest and scattered palms (p. 224).

Tollenare ([1816] 1905) noted a similar transition of coastal vegetation in Pernambuco, and even mentioned Elaeis guineensis by name.

As you move away from the sea, the coconut palm becomes increasingly rare; the African oil palm (dendezeiro) becomes more common, however, increasing slightly [forming groves] but is soon suppressed by more robust vegetation [forest] (p. 103).

Today, following decades of modern development, mangrove ecosystems still occupy 46 percent of the intertidal zone surrounding the Bay of All Saints, or Recôncavo (Cirano and Lessa 2007), and 62 percent of the southern coastline from Jaguaripe to the Maraú Peninsula.120 Along the latter, the Tinharé fluvial archipelago, the Serinhaém estuary, and the Bay of Camamú protect the 70-kilometre stretch of mangrove forests lining the Dendê Coast. There the brackish tidewater mangal gives way to dense stands of African oil palms that help symbolize and sustain the region (Figure 48).

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120 A field-informed GIS analysis of Landsat 7 imagery (USGS 2010) revealed mangal on 62.7% of the Southern Coast from the Jaguaripe inlet to the base of the Maraú peninsula.
Figure 48: Mangal ecosystem and registered quilombo communities intersecting the study area.121

121 Sources: Mangal drawn from Landsat 7 GLS imagery (USGS 2010), http://landsat.usgs.gov/ (last accessed 7 November 2013); Locations of quilombos from Projeto GeografAR (UFBA 2010) and fieldwork (2009–2014).
Figure 49 combines location data for existing palm oil processing facilities with mangal distribution derived from satellite imagery to illustrate the durable cultural-economic-environmental geography of Bahia’s oil palm-mangal socioecosystem. The enduring relationship between palm oil production and tidewater mangal hints at the historical development of Bahia’s African oil palm landscape. Ethnography corroborates the association; local farmers now consider the shore the preferential zone for oil palm cultivation. As one smallholder instructed,

There’s more dendê down near the coast, because it takes to the land down there by the sea, the sort of land we don’t have up here (10 kilometers inland). Dendê does not take to clay soils. And the wind down there is salty; every breeze that passes through brings salt to the dendê. […] By the time it gets up here, the salt has dissipated. Dendê loves salt! It loves salty lands. Up here [dendê] more often dies.\(^\text{122}\)

\begin{figure}[h]
\centering
\includegraphics[width=\textwidth]{figure49.png}
\caption{Mangal with observed palm oil processing facilities and registered \textit{quilombo} communities on Bahia’s Dendê Coast (2009-2012).\(^\text{123}\)}
\end{figure}

\(^\text{122}\) Interview of 2 November 2012.

\(^\text{123}\) These include small-to-medium-scale commercial operations, both artisanal and mechanical, but not industrial (see Chapters 6 and 7 for more on those distinctions). Groves of dendezeiros of varying densities permeate the area. Sources: fieldwork, 2009-2012.
Modern scientists would likely qualify his argument, but the farmer’s sentiment is pervasive in the region, and illustrates the enduring socioecological connection between the dendêzeiros and Bahia’s coastal geographies. Since dendê tolerates the salty conditions of the coastal tidelands and their immediate vicinities, its positioning there reserves other more upland spaces for other plants and crops thereby preserving and encouraging the region’s sociobiodiverse polycultures. Moving dendezeiros only slightly upland would pressure and displace fields of manioc, sugar cane, cacao (*Theobroma cacao*), and vegetable gardens.

In addition to its beneficial floristic and ambient conditions, the mangal also marshals its fauna to diffuse the African oil palm. Besides humans, a range of creatures including birds, rodents, reptiles, and domesticated animals all partake in the oil palm’s fruit, sowing its seeds as they move about. Following Bahian biologist H. P. Oliveira (2009, p. 27),

> The centenarian subspontaneous oil palm groves emerged thanks to many determined animals, including hawks, vultures (*urubús*), various rodents (*Cuniculus paca* and *Dasyprocta* sp.), and armadillos, among others. By eating the fruit and disseminating the seeds, these animals are truly responsible for the establishment of dendê in Brazilian flora.

The Southern American Black Vulture (*Coragyps atratus brasiliensis*) is a particularly effective dispersant of oil palm seeds. The vernacular for subspontaneous oil palm groves in Bahia is fields “planted by vultures (*urubú*),” and the phrase has long been common even in Brazilian scientific literature. One of the first agronomic treatments of Bahia’s dendê fields, published in the state’s official daily record in 1923 in a section on coconut palm agriculture, claimed “all the azeite [de dendê] produced [in Bahia] is fabricated through manual processes, and is harvested from dendêzeiros
propagated by vultures (*urubús*) that disseminate the *cocos*” (Argollo Ferrão [1923] 2004, p. 94). Four decades later, a description of Bahia’s oil palm landscapes penned by federal agricultural research agency CEPLAC begins: “In the state of Bahia the African oil palm is found along the entire coast, in subsppontaneous situation, planted by vultures (*urubús*), formed in subnative groves in autoctonal secondary growth forests (*capoeiras*)” (CEPLAC and IICA 1975, p. 45). The agronomist Bondar (1954) claimed “two or three million subnative dendezeiros exist in Bahia, disseminated by vultures (*urubús*), which are gluttons for the oleaginous palm drupes” (p. 19) (Figure 50).124

![Figure 50: Vultures (*urubús*) perched in a dendezeiro, Camamú, Bahia (2012).](image)

The oil palm’s intimate connections to vultures emanate from western Africa where the tree co-evolved with *Gypohierax angolensis*, an avid disseminator of *Elaeis*

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124 Interviews from 2009-2014 in Taperoá, Valença, and Camamú are replete with references to oil palm fields “*plantado pelo urubú.*”
*guineensis* commonly known as the palm-nut vulture for its affinity for oil palm fruit (*Zeven* 1967; *Van Dooren* 2012). Vultures also claim a prominent role in West African cosmology, and therefore provide a transatlantic spiritual connection between the subspontaneous oil palm groves of Bahia and Africa. Yoruba tradition holds that vultures (*Igún*) carry the remains of sacrificed animals to their proper resting place among the deities. From the verses of an *Ifá* divination ritual:

Vulture, come and eat sacrifice  
So that sacrifice may be acceptable the gods.  
One does not always realize that without Vulture,  
One cannot perform a sacrifice (*Abimbọla* 1976, p. 210-211).

Of course, vultures and people help comprise a complex socioecosystem. Notwithstanding their presumably fundamental role in spreading oil palm seeds, vultures operate(d) in a humanized landscape that supported increases in the bird population, which in turn would have increased candidates for seed vectors, expediting the oil palm’s expansion. Human harvesting and associated management not only dislodges and disperses seeds but works to increase the palm’s productivity by pruning fronds and fruit bunches allowing new growth to emerge.

Bahia’s tidewater mangal thus provided a vital foothold for the African oil palm where it continues to proliferate. Edaphoclimatic conditions, flora and fauna, and humans collaborated to welcome and disseminate the African oil palm through a complex and dynamic socioecological network. Nevertheless, dense subspontaneous groves of dendezeiros now stretch inland from the coast as far as 45 kilometers. Therefore other processes of diffusion helped draw African oil palms upland from the intertidal mangal.

We now turn to the fundamental roles of colonial agriculture and its patterning in the
landscape to analyze the particular agroecological contexts that transformed and amplified the Dendê Coast.

**Colonial agroecologies and the dendezeiro**

In Bahia, the Luso-Brazilian sugar economy concentrated west of the capital in the fertile lands ringing the Bay of All Saints, a region known as the Recôncavo. By the seventeenth century, a particular agricultural geography had taken shape. Sugar barons and their mills (*engenhos*) held sway along the bay’s northern rim where rich *massapé* clays abounded. In the western Recôncavo, inland from the town of Cachoeira, tobacco farms dominated. Southward from Nazaré das Farinhas and Jaguaripe, in sandier soils less apt for the major export crops, manioc-producing lands stretched for hundreds of kilometers through the southern Captaincy, and later *Comarca*, of Ilhéus (Barickman 1998). Manioc flour was the indispensable staple that fed Bahia’s agricultural workers and the growing urban capital, accounting for more than 87 percent of produce handled by Bahia’s public granary from 1785-1849; thus its production was of great economic and strategic importance to colonial authorities (Graham 2010). Successive royal decrees beginning in 1639 ordered farmers on the Southern Coast to plant manioc instead of sugar or tobacco (Schwartz 1987). Southern Bahia became the colony’s breadbasket, earning the moniker “the Sicily of Bahia” (Schwartz 1985, p. 87). From the Jiquiriçá

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125 Here I consider the period of “colonial agroecologies” to extend past Brazil’s formal independence from Portugal in 1822 (i.e. the Empire of Brazil) until emancipation in 1888. During that period, major agricultural changes occurred throughout Brazil, but in Bahia, slavery-based agriculture and other hallmarks of the colonial system remained stubbornly entrenched and practically unchanged (Dean 1971; Viotti da Costa 2000). Therefore I argue that a period of colonial agroecologies lasted from the earliest Portuguese colonial efforts in the mid-sixteenth century to Brazil’s final proscription of slavery in 1888.
valley to the base of the Maraú Peninsula, the area now dubbed the Dendê Coast lie at the core of Bahia’s colonial manioc landscapes.

In response to a resurgence of sugar production and a growing internal foodstuffs market, population and manioc fields boomed on the Southern Coast beginning in the 1780s (Schwartz 1992). That expansion encroached into national forests reserved for logging, opening the Atlantic forest to a rush of mixed polyculture based around manioc farms (Barickman 1998). Despite a prevalence of poor farmers and small land holdings in the region, enslaved workers comprised more than half its population (Schwartz 1985). According to a thorough archival analysis by Barickman (1998), typical manioc farms in coastal Bahia employed between two and eight enslaved laborers. Of the manioc farmers (roceiros) listed in a 1781 survey of Jaguaripe, 78 percent claimed enslaved workers (Barickman 1998). A 1786 census of Cairú listed 188 manioc farms, 169 of which employed 635 enslaved workers for an average of 4.3 per farm (Schwartz 1992). The region’s Afro-Brazilian presence was not however limited to the enslaved. Bahia’s relatively high rates of individual liberation, i.e. manumission, contributed to the expansion of an Afro-Brazilian peasantry of subsistence farmers by the eighteenth century, many of whom worked manioc fields on the coast, some with enslaved workers of their own (Mattoso 1972; Schwartz 1974, 1992; Nishida 1993; Klein and Vidal Luna 2010). Thus Afro-descendants, enslaved and free, predominated on Bahia’s Southern Coast.126

126 Mattoso (1972), Schwartz (1974), and Nishida (1993) have analyzed manumission in Bahia, their findings and those of others are summarized by Klein and Vidal Luna (2010). There were three major categories of manumission: gratis, wherein an enslaved person was freed immediately and without condition; conditional (sometimes labelled oneroso, or onerous), wherein the enslaved person is tasked with certain conditions to achieve
Throughout Bahia, modes of agricultural production reflected a racial hierarchy. Farmers of European descent typically produced for export markets (i.e. sugar, tobacco, coffee, cotton, and cacao), although some produced manioc for regional and urban markets. Finding fewer opportunities in the export markets, free people of African descent engaged primarily in subsistence production, growing manioc and other foodstuffs for consumption and selling surpluses on the internal market. By the late-eighteenth century if not before, enslaved, freed, and free Afro-descendants predominated among manioc farmers on Bahia’s Southern Coast (Dias 1978; Schwartz 1985, 1992).

Though manioc is indigenous to South America, its cultivation is remarkably similar to the West African staple yam, and early transatlantic exchange made both tubers common throughout the basin. Portuguese traders introduced manioc to western Africa in the sixteenth century from whence it proliferated throughout the continent (Jones 1959; Camargo 2005). Discussed in the previous chapter, Portuguese planter Soares de Sousa (1879) documented the introduction of African yams to Bahia in the 1570s. Those early modern transatlantic circulations placed hardy root tubers cultivated in similar freedom such as work, respect, or piety for a certain period; and self-purchase, wherein authorities and / or manumitters assign a certain value to an enslaved person, which he or she could pay to purchase freedom. Manumission helped foment an extraordinarily large population of free and freed Afro-descendants relative to other slave-holding societies in the Americas. Manumission was most frequent in urban areas, where earnings and knowledge of legal rights were more prevalent among the enslaved, but the practice also occurred in rural areas, where surpluses grown in provisional plots could generate income used to purchase freedom. By the early-nineteenth century, free and freed Afro-descendants amounted to a majority of all residents in Bahia and elsewhere in Northeast Brazil (Klein and Vidal Luna 2010, ch. 9).

The region remains predominantly Afro-Brazilian. The 2010 Brazilian Census lists 83.29% of the population of the eight municipalities of the Dendê Coast as “preta” or “parda,” the two official racial designations corresponding with African descent, see Figure 23: Historical demography in Salvador and surrounding areas, 1775-1940.
agroecological systems and landscapes on either side of the early modern South Atlantic (Voeks 2012a). Yet even without direct knowledge of manioc, its cultivation regimes would have rang familiar to West and Central Africans accustomed to working with other root crops, especially yams and taro.¹²⁷ Manioc agriculture in Bahia followed a swidden-fallow regime roughly analogous to yam cultivation in western Africa. The first Portuguese visitors to Brazil, familiar only with the West African staple, observed Indigenous peoples cultivating manioc and misidentified it as yams (Ribeiro 1962). Both are root tubers traditionally cultivated in tropical rainforest biomes, and thrive best in systems with relatively long fallow periods of five to fifteen years (Jones 1959; Harris 1976).

Although manioc requires processing into flour to remove lethal prussic acids naturally occurring in the roots, overall labor requirements were considerably lower than for sugar production (Schwartz 1992). Low labor inputs combined with the economic and ecological reliability of manioc flour to allow farmers on the Southern Coast ample time and wherewithal to experiment with various polycultural arrangements. Farms based around manioc production typically grew a range of food and medicinal crops for sustenance and sale (Barickman 1998), cultivating varieties of grains, fruits, and vegetables—including rice, beans, corn, squashes, and citrus—and even small amounts of export crops such as cacao and coffee, enriching diets and markets throughout Bahia and beyond (Dias 1978). Diffusing along Bahia’s coasts, the African oil palm became a useful addition in many of the region’s polycultural farms. Requiring practically no labor

¹²⁷ Also known as cocoyams (Colocasia esculenta).
to cultivate, African oil palms offered a risk-free, vitamin-rich oil to manioc farmers seeking to diversify output.

Dendezeiros thus complemented colonial manioc landscapes in Bahia. Eighteenth century documents of Maragogipe hint at the diversity of the landscapes and livelihoods in the Southern Recôncavo, even as crown had designated that area as a manioc producer. After a decree from 1704 ordered the farmers of that district to pull out all the tobacco plants in favor of manioc (Milton 1899), a description of the area from the eighteenth century compiled a long list of subsistence and commercial activities including fishing, cattle, lumber, pottery kilns (olarias), piaçava fiber, coquilhos, straw weaving (esteiras), rum distilleries (alambiques), and dendê, to go along with manioc and tobacco.128

Shifting tuber agriculture propagated African oil palms in Bahia much as it had in West and Central Africa. As farmers felled tracts of Atlantic forest to plant manioc, they spared oil palms. Once in fallow, spared palms proliferated in the opened canopy. The legacies of that agroecological history remain embedded in the cultures and landscapes of coastal Bahia. As a third-generation manioc farmer and palm oil producer in Taperoá explained,

Nowadays dendê is mostly planted, but it wasn’t always like that. It was [planted by] the animals that fed in the fields. […] [Farmers] would burn the forest to plant manioc. Other crops don’t take well to swidden agriculture (fogo), but [manioc] is a life of fire. So it was like that, no one taught us how to plant dendê, because it was always ready to go, […] Like

we always say, “Planted by vultures.” Every animal plants it, rats love dendê, all animals love dendê. […] When they eat it, they carry it off. After a little while, they drop it and it grows right there in the ground. […] Before too long the fields fill up with dendê. […] You never see fields with only manioc or sugar cane around here, there’s always lots of dendê, too.129

Speaking in his freshly-cleared field, another farmer recounted a similar explanation.

Look here at this cleared field. Here a dendê palm could sprout at any moment, at any moment anywhere in this field. A vulture or any other wild animal could come through and drop a kernel (coco) in this field where a dendê tree would later grow (nasce um pé de dendê). It doesn’t have to be planted or fertilized in any way. Just placed in the field, it will sprout and grow to produce beautiful fruit, without needing much cultivation, because the land here is so productive.130

Yet another farmer described oil palms as an “invasive agriculture.” Dendê, he told me, simply “invades” fields of manioc, sugar cane, and other crops.131

Together those farmers’ accounts place oil palm expansion within a complex, more-than-human agroecosystem of swidden manioc blazed into Atlantic forest (Figure 51 and Figure 52). While they are quick to highlight floral and faunal influences, the farmers’ testimony emphasize the networked agency of humans working to clear and manage forest and spare oil palms. Ultimately various actors collaborate to diffuse oil palms. The resilient palms tolerate not only the salty tidelands at the foot of mangrove forests but also the fire that humans use to clear forests. The heat of the flames can trigger germination in dormant oil palm seeds conveyed by gravity, water, vultures, or other forces and animals (Corley and Tinker 2003), and established palms are extraordinarily fire-resistant even in comparison to other wet tropical species (Voeks 1997).

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129 Interview of 23 February 2012 in Serra Grande, Taperoá.
130 Interview of 12 August 2014 in Marimbú, Taperoá.
131 Interview of 19 April 2012 in Sarapuí, Valença
Figure 51: African oil palms tower over manioc plants with papaya trees and banana plants in the background, Orobó district of Valença, Bahia (2012).

Figure 52: Subspontaneous African oil palms surround a polyculture of manioc, bananas, clove trees, and mango trees in the Garcia quilombo community in Camamú, Bahia (2012).
A manioc-oil palm farmer explained how clearing for manioc fields works to activate dendê seeds dispersed in the forest by vultures.

I’ve known about this since I was little. Even the vultures plant dendê around here. Because the birds pick these up [dendê fruit] in their beaks, fly into the woods, and drop the kernels on the ground. A palm grows up in that spot, another bird grabs some fruit, flies along into the woods, drops the seed, and so forth...When you buy a tract of woods, you clear it for planting, you burn the trees out to clear a field. When you clear your field, here comes a whole field of dendê trees! But no one knows who planted them. Sometimes people say they made those fields, but it was the birds that planted them.132

A farmer in his fifties recalled planting manioc and dendê with his grandfather sometime in the 1960s as a polycultural strategy. “Manioc and dendê go together,” he said.

A year or two after planting manioc, you would plant a little dendê around it. Maybe two or three plants or so. Later when you leave the manioc field fallow, your dendê would begin to produce, so you’d have a few dendê fruit bunches while you let your field rejuvenate.133

Through those socioecological negotiations, manioc farmers entered into networks with plants, other animals, tools, fire, and environmental conditions and processes in coastal Bahia to draw African oil palms from the mangal onto upland farms, encouraging dense subspontaneous groves in tabuleiro Atlantic forests (Figure 53). As such, farmers fused African and Brazilian cultural-environmental knowledges to help create a novel Afro-Brazilian agroecological framework that transformed New World landscapes and cultures. Based on oil palms and tubers, those agroecological systems lined coasts in Eastern South America and western Africa, contributing to a floristic homogenization of Atlantic landscapes (Voeks 2012a). After the establishment of the

132 Interview of 27 February 2012.
133 Interview with a small-scale producer and processor in the Graciosa quilombo community in Taperoá, Bahia, of 26 March 2012.
African oil palm in Bahia and manioc in western Africa, agroforests of perennial palms growing above herbaceous tubers and other crops grew on both sides of the tropical Atlantic. Rich in fats and carotenoids, palm oil complements carbohydrate-rich tubers (Harris 1976); thus Bahia’s manioc-oil palm agroecologies provided nutritional balance similar to western Africa’s yam-oil palm complex. The South Atlantic then represented an interconnected cultural-environmental assemblage hybridized through chaotic circulations of biota, knowledge, and technology from three continents.

Figure 53: An Afro-Brazilian landscape in the Baiacu community on the counter coast of Itaparica, Bahia (2012).\textsuperscript{134}

\textsuperscript{134} Charred remains in the foreground indicate a recent fire used to clear a field for planting. To the right of the clearing spared African oil palms line a polycultural field of manioc, bananas, okra, and sugar cane. In the background a subs spontaneous grove of dendezeiros border a coastal mangal.
A synergy of coastal geography and agroecological patterning provided venues for the African oil palm in Bahia, and the subsequent Afro-Brazilian landscape emerged from an amalgam of Indigenous, European, African, diasporic, and more-than-human agencies and epistemes. Europeans mandated the cultivation of manioc along the Southern Coast; however peoples of African descent were its principal cultivators. And while the indigenous *Manihot esculenta* and its swidden-fallow cultivation and processing techniques are native to north-eastern South America, the tuber-African oil palm relationship derives from African swiddens. Moreover, agroecological similarity of American manioc and African yams, along with their transatlantic exchange in the sixteenth century meant that most Afro-descendants in diaspora shared a degree of familiarity with manioc and its cultivation techniques (Jones 1959). Figure 54 provides a generalized representation of the various socioecological zones and processes that embrace the African oil palm on Bahia’s Dendê Coast.

African oil palms spread via more-than-human, socioecological processes that leveraged a range of floral, faunal, and environmental influences and conditions. Afro-Brazilian knowledge and resistance, however, proved decisive in the establishment and maintenance of Bahia’s dendê landscapes and cultures. Analyzing the African oil palm within Bahia’s colonial slave economy reveals how enslaved people circumvented legal and social constraints to participate in socioecological processes that transformed the Americas.
Figure 54: A Generalized transect of Bahia’s Dendê Coast depicting typical environmental zones, habitats and land uses, especially as they pertain to the African oil palm.\textsuperscript{135}

\textsuperscript{135} Sources: Fieldwork (2009–2012); Thomas and Barbosa (2008).
Landscapes of resistance in Bahia

Using a construct of negotiation and conflict (Reis and da Silva 1989), we can distinguish two general categories of resistance to slavery in colonial Bahia: violent insurrection, or conflict, and mundane bargaining, or negotiation. Despite the brutal restrictions of the slave system, enslaved people in Bahia (and elsewhere) used guile, sacrifice, force, and flight to gain access to land and other resources, transforming landscapes and cultures in the process. Those variously overt and nuanced resistance strategies contributed to the gradual development of the cultures and landscapes of African oil palm that came to define coastal Bahia. Resisting the slave system and colonial cultural hegemony, both Afro-descendants and Amerindians helped create, manage, and exploit landscapes of resistance as cultural-environmental antecedents of today’s Dendê Coast.

While Bahia’s export agriculture long concentrated around the Recôncavo, a few sugar engenhos did appear in the Captaincy of Ilhéus to its south as early as the sixteenth century (Schwartz 1985). Portuguese royal cosmographer João Teixeira Albernas (1640, fl. 53) described it among Brazil’s finest lands for producing sugar in the early-seventeenth century. A map he prepared of the area placed four sugar engenhos near the village of Ilhéus in 1631 (1997). That same map shows the area from Camamú to Cairu only sparsely inhabited, with settlements and churches on the Tinharé archipelago, in Cairu, and mainland Boipeba (present-day Nilo Peçanha).136

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136 Copyright precludes reproduction of that map here; but see Albernas ([1631] 1997) and Kantor (2009).
Decades before colonial Bahia turned to the Luso-African slave trade to supply the majority of its labor, planters in Bahia enslaved Indigenous peoples to work their fields and sugar mills. From the earliest days, the Southern Coast was a contentious space of violent conflict pitting colonists and Portuguese-backed paramilitary groups against formidable bands of Amerindians. Aimoré and other Indigenous groups relentlessly attacked Portuguese engenhos from the Southern Recôncavo at Jaguaripe and down the coast as far as Ilhéus, forcing planters to abandon all but a few of the early mills in the region (Schwartz 1985, 1992). Already by 1570, Soares de Sousa (1879) reported that Portuguese settlers were “fleeing the mainland in fear of the Aimorés that had destroyed their fazendas\textsuperscript{137} and killed many slaves,” sheltering in the Jesuit villages of Cairú and Boipeba on the Tinharé Archipelago (p. 43).

The Portuguese were able to assert only tenuous control over the Southern Coast as Indigenous attacks continued into the eighteenth century (Schwartz 1992), including a devastating invasion of the island of Cairú in 1719 that drew a royal declaration of war.\textsuperscript{138} Aimoré resistance effectively limited Portuguese settlement and mobility in the Ilhéus Captaincy to a narrow coastal strip for two hundred years from the mid-sixteenth to the mid-eighteenth centuries (Schwartz 1985; Mahony 1996). That resistance shaped the early balance of power in Bahia, helping to concentrate export agriculture in the Recôncavo and around the village of Ilhéus, leaving the sparsely populated Southern Coast for nascent and intermittent efforts at manioc production on smaller farms.

\textsuperscript{137} In Brazil an estate or farm, generally large.

\textsuperscript{138} APB, SACP, Cartas Régias, March 23, 1719, v. 10, doc. 43.
As resistance, war, and disease limited Amerindian labor, the Portuguese turned to Africa and the transatlantic slave trade to supply its colonial workforce. Slave trade scholars estimate that just over 5,600 enslaved Africans disembarked in Bahia during the last quarter of the sixteenth century but that figure jumped eight-fold to more than 46,200 in the first quarter of the seventeenth century. Once in Brazil, many of those bonded Africans and their descendants resisted their plights by fleeing into the forests surrounding Portuguese settlements and farms. Following Bahian historian João José Reis (2012, pp. 69-70), “The hills, woods, lakes, and rivers of the rural countryside provided ecological support for the development of a relatively autonomous and semi-clandestine African collective spirit.” Maroon communities known as mocambos and later quilombos sprang up across Bahia where escapees staged attacks reminiscent of those by Indigenes, causing significant economic loss for Portuguese planters and authorities (Bastide 1996; Schwartz [1973] 1996).

The concept of quilombo is itself a transatlantic hybrid. Portuguese soldier and historian António Cadornega referred to several war camps in Angola as quilombos, including one commanded by the powerful Queen Nzinga of Ndongo and Matamba (Rainha Ginga Dona Anna de Sousa) in the early seventeenth century (Cadornega [1680] 1972, vols. 1, 2, 3). Quilombos such as hers and the storied Afro-Brazilian garrison at Palmares were thus analogous groundswells of resistance to Portuguese colonialism on either side of the Atlantic.

The first documentations of maroon communities in Brazil come from Bahia in 1575, at the opening of the transatlantic slave trade (Moura 2004). The Bahian coast south of the Recôncavo was home to more quilombos and maroon attacks than any other
region. An analysis by Schwartz (1992, pp. 105-109) demonstrates that, even as the Recôncavo had a much higher proportion of slaves, the towns of Cairú, Camamú, and Ilhéus on the southern littoral saw consistently higher incidences of *quilombo* formation and retention (Figure 48). Those clandestine settlements and the raids they launched were a constant threat to Portuguese and Brazilian authority throughout the period of slavery, and contributed to a general “tradition of rebellion” in Bahia that continues to underscore contemporary *quilombo* settlement patterns (Gomes 1995, 2005a).

Continued attacks by Amerindians, difficult terrain, and long distances to military reinforcements housed in the capital all served to complicate efforts at *quilombo* suppression. A report from an anonymous Jesuit priest in 1619 relates the palpable fear and tangible effects instigated by maroons. Enslaved Afro-descendants, he claimed,

> [have] the custom of fleeing to the woods and joining in hideouts where they live by attacks on the settlers, stealing livestock and ruining crops and cane fields which results in much damage and many loses beyond that of loosing [sic] their daily labor. And many of these (escapees) live for many years in the forest never returning and living in these *mocambos* which are places or villages that they have made deep in the forest. And from here they set out to make their assaults, robbing and stealing and often killing many and from these attacks they seek to carry off their male and female relatives to live with them like gentiles [Indigenes].

*Quilombola* raids and revolts were a constant threat to colonists on the Southern Coast. At the end of the seventeenth century, fugitives sacked several farms around Camamú, spreading fear through the region. In response, the Portuguese Crown appointed a special militia for battling fugitive slave communities in Ilhéus in 1696. Those early efforts failed to subdue the revolts. By 1723, a *quilombo* in Cairú reportedly

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139 Archivum Romanum Societatis Iesu, Bras. 8, quoted in Schwartz (1992, p. 105).
140 APB, SACP, Cartas Régias, novembro 19, 1696, v. 4, doc 50.
housed more than four hundred maroons, and decades later, militias continued to battle large and complex maroon communities in the region, such as the Oitizeiro quilombo in Barra do Rio de Contas just south of Maraú, dispersed in 1804 (Schwartz 1992). In that extraordinary community, close to three dozen runaways lived alongside smaller numbers of Euro-and Indigenous Brazilians. They all held slaves that worked manioc fields and then sold the resulting flour to local markets and even some of the nearby plantations from whence they escaped.\footnote{“Ouvidoria geral do crime: Quilombos, 1806,” APB, SACP, maço 572-2; see also Reis (1996).}

Despite royal commitments to suppress quilombo formation, fugitives continued to band together and move against colonial forces. In 1825, a letter from the municipal assembly in Camamú appealed to the state government to bolster its defense forces after incessant raids by fugitive slaves had left several settlers dead, including the captain of the anti-quilombo militia.\footnote{“Correspondência Recebida da Câmara de Camamú, 1823-1887,” APB, SACP, maço 1282.} A letter from Santarém dated the same year reports similar incursions by fugitives, causing “all the manioc farmers (lavradores) to seek refuge in more populated places.”\footnote{“Correspondência Recebida da Câmara de Santarém, 1824-1859,” APB, SACP, maço 1419. Santarém is a former name of contemporary Ituberá.} Two years later, another letter from Camamú reported that a “huge quilombo,” was drawing fugitive slaves from the Recôncavo and “Villas of the North” south to the forests surrounding Camamú, inciting murderous attacks on farmers, stealing provisions, and destroying manioc fields.\footnote{“Escravos Assuntos Diversos, 1825-1887,” APB, SACP, maço 2896.} In that same year, provincial authorities in Salvador ordered officials in Ilhéus to print daily registers of fugitive slaves
apprehended in their territory, so that their rightful owners in the Recôncavo could reclaim them. In a series of letters dated 1835, the Justice of the Peace in Camamú reported on the ongoing “rebellion of Africans in [that] city.” He relayed that “many farmers have abandoned their fields, fleeing instead to the village to escape the furies of the evil bands.” He appealed to the governor for police, soldiers, arms, munitions, and canons to quell the “insurrection of Africans” there.

While colonial documents suggest that marooned Afro-descendants comprised a majority of marauding paramilitary groups in nineteenth century Bahia, Indigenous groups and others continued to resist and raid farms and villages on the coast. A curious letter from the municipal assembly in Camamú reported in 1825 on the vicious attacks of a cavalry of “infamous criminals” composed of “Bedouin Arabs” and “fugitive slaves” from “the woods around Nazaré” and led by a “Cigano” named Egípcio Charque.

Together those accounts suggest that the threat of violence was palpable on Bahia’s Southern Coast, and in some cases, helped shape settlement geographies there. Maroons and other outcasts moved readily between the Recôncavo and the Southern Coast in defiance of Portuguese authority, influencing the spatial organization of settlement in Southern Bahia through the colonial period. Through this lens, violent resistance appears to have helped to shape practically all landscapes on Bahia’s Southern Coast.

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146 “Juízes de Camamú,” APB, SACP, maço 2298.
147 “Correspondência recebida da Câmara de Camamú, 1823-1887,” APB, SACP, maço 1282. Cigano is a Portuguese exonym for peoples of Roma descent. The village of Nazaré is approximately 125 kilometers north of Camamú, suggesting an extensive range for the roving bandits, spanning the entire Dendê Coast.
Coast. Marooned and revolting Amerindians, Afro-descendants, and others forced small farmers to abandon their fields and move into defensive positions concentrated around villages, effectively depopulating the countryside. Consequently, African oil palms became free to propagate in the opened canopies of abandoned fields carved into Atlantic rainforest. Within socioecological networks of birds, humans, precipitation, and other forces, palms outpaced forest hardwoods to diffuse just upland from the mangal.

_Quilombos_ also formed in the Recôncavo and around Salvador, but the importance of the export economy to colonial authorities prioritized resources to thwart flight and quash revolt. Though bloody conflict did occur around Salvador and in the Recôncavo, enslaved workers there more often relied on subtler, but still effective, forms of resistance to improve their situations, what Reis and da Silva (1989) termed negotiation. Such compromises often centered on basic needs such as food and shelter. Plantation owners and enslaved workers negotiated quota systems and specific agreements, often in concordance with the religious calendar (Sundays as well as feast days), allowing workers time and often land to tend to their own sustenance (Schwartz 1985, 1992). Such concessions date to the colony’s earliest days. Visiting Bahia in 1610, French sailor Pyrard de Laval considered it “a great pleasure on feast-days and Sundays to see all the slaves, men and women, assembled, dancing and enjoying themselves in the public places and streets, for on those days they are not subject to their

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148 A royal decree in 1701 formalized the practice by ordering planters to either provide necessary sustenance to their enslaved workers or allow them Saturdays off to produce their own foods, leaving Sundays and Catholic feast days for worship; see APB, SACP, Cartas Régias, 31 January 1701, v. 07, doc 103. Planters resisted most components of that order, but provisional gardens remained a common feature on slave-holding estates in Bahia; see Linhares and Silva (1981) and Schwartz (1985).
masters” (1890, pp. 319-320). Soares de Sousa ([1587] 1879), himself proprietor of an engenho near Jaguaripe, referred to fields belonging to enslaved Africans in the sixteenth century. Those dooryard gardens and subsistence plots were landscapes of resistance where enslaved workers cultivated foodstuffs to augment sustenance and occasionally to sell. By the time Bavarian painter Johann Moritz Rugendas arrived in Bahia in the 1820s, the practice was firmly entrenched throughout colonial Brazil, benefitting both enslaved workers and plantation owners.

Every fazenda allots a portion of land to [the enslaved workers] proportionate in size to the number of slaves. Each cultivates as she or he pleases. In this system, not only does the slave receive sound and sufficient rations as a product of his or her own work, but they are often able to sell some for profit (Rugendas [1827-1835] 1954, pp. 180).

Such land use concessions ensured a degree of culinary autonomy and sometimes increased food security among the enslaved, while augmenting planters’ profits by reducing alimentary expenses. Moreover those plots served to introduce and adapt a variety of species unknown or unappealing to many Europeans, diversifying the agricultural landscapes and culinary cultures that were transforming the Southern Coast (Vilhena [1802] 1969; Schwartz 1985, 1992; Barickman 1994, 1998; Carney and Rosomoff 2009).

Provisional gardens were not the only source of extra sustenance in colonial Bahia, however. Enslaved laborers also used time off to hunt, fish, and forage for vital nutrients and proteins often lacking in their diets. Sugar plantations and manioc farms near the coast exploited enslaved workers skilled in harvesting shellfish and other seafood in the mangal, including abundant crabs, oysters, shrimp, and crawfish (Barickman 1998; Miller 2003). In this way, Afro-descendants benefitted from
Indigenous knowledge of Brazil’s vast estuarine and maritime resources. “The Indians were experts when it came to fishing,” an Afro-Brazilian farmer relayed to me, “they taught us how to fish, and how build canoes and rafts.”

Bahia’s mangal teemed with protein. One English sailor, crossing the Bay of All Saints in 1880, exclaimed “the branches of the mangroves were thick with oysters hanging like fruit” (Knight 1884, p. 69). A cotton planter in Camamú claimed that the manioc farmers near the coast there, their crops often ravaged by relentless ant attacks, could hardly survive without access to the riches of the mangal. “Lacking reliable sustenance, those folks do not dare depart the vicinities of the mangroves, for fear of losing the benefit of the *caranguejo* (crab)” (Bettencourt 1798, p. 21).

That rich socioecosystem was familiar to many New World Africans, especially those with ties to coastal Africa, where the mangal has sustained foragers and farmers for millennia (Moloney 1890; Carney 1998; Sowunmi 1999; Fields-Black 2008). For Afro-descendant communities throughout the Neotropics, the mangal served (and serves) as a refuge and resource (West 1956, 1957; Friedemann and Arocha 1986; Coe and Anderson 1996; Carney 2001; Escobar 2008; Miller 2009). In Bahia, as in western Africa, the mangal counted the African oil palm among its many assets. For free, enslaved, freed, and marooned workers fortunate enough to live near coasts, the mangal provided a vital lifeline, supplying protein in the form of seafood, and from its stands of African oil palm, a preferred oil rich in calories and nutrients and a once popular wine. As the Afro-

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149 Interview of 12 August 2014.

150 Câmara Cascudo ([1967] 2011) and Lody (2002, p. 28) claim that wine made from the dendezeiro, known as “*vinho-de-palma, malafu, sura,* or *emun,*” was popular in Bahia until the turn of the twentieth century. In interviews from 2009-2014, I have found no one in Bahia that continues to make or drink local palm wine.
Brazilian peasantry on the Southern Coast grew through the nineteenth century, manioc farmers with coastal access diversified their economic activity by fishing with traps and nets and gathering shellfish. The African oil palm even provided raw material for a common shellfish trap known as a manzuá, made from fronds woven into a cylindrical basket (Figure 43).

Moreover, Portuguese colonial property law eased access to the coast. With salty soils of little use for agriculture, royal decrees maintained tidelands as public property. The mangal became a de facto commons for fishing, hunting, shellfish harvesting, and other subsistence and commercial activities, granting extraordinary usufruct access to poor farmers and workers whether free, freed, or enslaved (Miller 2003).

The mangal also became a center of entrepreneurial and commercial activity on the Southern Coast. Coastal shell middens compiled by Indigenous peoples over millennia offered construction lime used to cement and seal buildings (de Laet [1625] 1640). Bahia’s original international industry was timber and sawmills were fixtures in coastal Bahia from the beginnings of European contact (Dean 1995; Miller 2000). By 1856 six sawmills were still operating in the small coastal parish of Santarém, four of them powered by 32 enslaved workers, the other two by steam. Their coastal locations

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151 Correspondence related to a conflict over mangrove access in Cairu links manioc farmers with fishing and other uses of the mangal in 1845, APB, SACP, maço 4839. “Relação dos terrenos ocupados por diferentes pessoas com as informações a baixo declarados, 1860” APB, SACP, maço 4839-1, lists fishers also engaged in manioc farming near Camamú.

152 Interviews and observations of 10 March 2012 and 30 October 2012. Larger lobster traps made from vines in Northeast Brazil are also known as manzuá; see Araújo (1964).

afforded access to both Atlantic Forest timber and local and international shipping networks.

Pottery kilns were crucial in the colonial export economy, supplying the clay molds needed to purge sugar along with bricks, roof tiles, and other construction materials. By 1766, at least twenty pottery kilns dotted the coast at Maragogipe and Jaguaripe near the Recôncavo (Barickman 1998; Schwartz 1985) (Figure 55).

Bark from the red mangrove (*Rhizophora mangle*) provided a valuable tannin used in the production of leather. Conflicts with the fishers and farmers of the Southern Coast arose, however, as an increasing number of tanners stripped mangroves, degrading fish and shellfish habitats. Colonial authorities intervened in the early eighteenth century with bans on mangrove extraction in and around Camamú, Cairu, Boipeba, and Jaguaripe, thus prioritizing the common subsistence value of the mangal over the commercial prospects of its liquidation (Miller 2003).

The coastal mangal harbored a frenetic transportation network of ship channels and landings suitable for a range of vessels, including the agile canoes and sailboats that carried local produce to urban markets in the seventeenth and eighteenth centuries (Graham 2010). The mangal then represented an extraordinary socioecological confluence of flora, fauna, and economic activity in colonial Bahia, providing sustenance, resources, and mobility to its many denizens.

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155 APB, SACP, Cartas Régias, August 6, 1720, v. 6, doc. 98.
While many Afro-Brazilians used the oil palm-mangal as a commons, returning on occasion to forage, hunt, and cultivate sustenance and surplus, others seized refuge there. Maroon communities concentrated along Bahia’s coast, both in the colonial Recôncavo and to its south, where the oil palm-mangal harbored fugitive and free Afro-descendants (Schwartz 1992). Centuries later, thousands of communities descended from quilombos still exist in Brazil. The contemporary locations and socioecological contexts of those quilombos exemplify enduring relationships of geography, agriculture, and resistance (Figure 48, Figure 49, Figure 56, and Figure 57).  

The Brazilian constitution of 1988 codified federal support for quilombos, granting public services and sometimes communal land titles for certified communities. The
Figure 56 and Figure 57 use remotely sensed representations of the Recôncavo to reveal some socioecological aspects of resistance still apparent on the Iguape peninsula—a district of the northwestern Recôncavo long-prized by elite sugar planters. From the seventeenth to nineteenth centuries, the parish of Iguape ranked among the greatest concentrations of sugar engenhos in Brazil (Schwartz 1985; Barickman 1998, map on p. 115); now the district is home to an extraordinary concentration of maroon communities. Removed from choice land holdings and monocultures, the spatial distribution of quilombos in that region instead clusters around the resource-rich mangal. The locations of the communities represent an ecotonal subsistence strategy, balancing access to the sea and mangal with community ownership of upland fields fit for subsistence farming. Today residents gather shellfish, farm manioc, and tend the subsponsive oil palm groves near the shore of the Bay of All Saints, maintaining transhistorical socioecological links with their predecessors. Those communities stand as legacies of Afro-Brazilian resistance inscribed in local landscapes, and underscore a protracted struggle for land, livelihood, and human rights that persists in contemporary Bahia (French 2009; Leite 2012, 2015).

157 quilombo has become an instrument for state policies, and obtaining formal status as quilombo is a complicated and often protracted political process contested by many internal and external stakeholders. Many apparently deserving communities find the certification process inaccessible for various reasons (Mattos 2008; French 2009; Leite 2012, 2015). As of August 2015, the Brazilian government officially recognized 2,606 quilombo communities throughout the country. Bahia had the largest number of certified communities at 653, with another 189 in various stages of processing. For ongoing certification, see Fundação Cultural Palmares, http://www.palmares.gov.br/ (accessed 12 August 2015). Besides federal certification, many states also recognize quilombos through separate formal processes. For palm oil production in contemporary quilombo communities, see Chapter 6.

157 Interviews and observations of 14 August and 9 November 2012.
Contemporary palm oil harvesters and processors in Iguape draw on long-established local traditions. An account ledger dated 1791 from an engenho bordering Iguape’s mangal provides a rare look into the production of palm oil by enslaved

158 Sources: Locations of quilombo communities from Projeto GeografAR, (UFBA 2010) and fieldwork (2009-2012); imagery from Landsat 7 GLS (USGS 2010).
Figure 57: Registered *quilombo* communities in the Iguape district of Cachoeira, Bahia.\(^{159}\)

workers. Attached to the post-mortem inventory of Felix Alves de Andrade, owner of Engenho Maroim, the ledger registered the significant sum of four *milréis* (Rs. 4$000)

\(^{159}\) Sources: Locations of quilombo communities from *Projeto GeografAR*, (UFBA 2010) and fieldwork (2009-2012); imagery from Landsat 7 GLS (USGS 2010).
paid to Benta, a Brazilian-born (crioula) enslaved woman, for beans and palm oil. She was married to Antonio, listed as a pardo\textsuperscript{161} sugar kettleman (caldeireiro), a skilled position of relative status among Afro-descendant workers at Bahian sugar engenhos. Benta, whose name means “blessed” in Portuguese, processed palm oil to resist the monotonous and likely inadequate diet imposed by her captors. Benta’s surplus production enhanced not only her nutrition but also her economic situation. She represents an inter-generational, transatlantic connection between Africans and Afro-Brazilians caught in the grip of sugar slavery, struggling to survive all the while transforming cultures and landscapes through socioecological knowledges and expressions. While the production and sale of foodstuffs by enslaved people in colonial Brazil is widely recognized, Benta’s account is extraordinary for its direct reference to palm oil, as well as its implication for labor divisions. As a woman, Benta provides a gendered connection to Africa, where palm oil processing had long been the domain of women.

Such documentations of palm oil processing on the grounds of Bahian engenhos are rare, but the omission of such production from probate inventories suggest that enslaved workers controlled the practice. Colonial probate officers inventoried only the property of deceased proprietors. By omitting provision grounds or foodstuffs produced

\textsuperscript{160} Inventory of Felix Alves de Andrade, Cachoeira, 1791, APB, Seção Judiciária (SJ), 2/706/1168/3. I am indebted to B. J. Barickman for this reference. The ‘real’ (plural ‘réis’) was the standard unit of currency in colonial Brazil. One thousand units became a ‘milréis,’ written as Rs. 1$000. In 1791, Rs. 4$000 was enough to purchase 11 kilograms of beans in Salvador, see Barickman (1998, p. 62). A map by Barickman (1998, p. 115) shows Engenho Maroim bordering the mangal on the northern end of the Iguape Basin.

\textsuperscript{161} The racial designation pardo / pardã signals people of mixed European and African heritage, similar to what other traditions sometimes refer to as mulatto / mulatta; see Schwartz (1985), Piza and Rosemberg (1999), and Sansone (2003).
by enslaved people, inventory takers tacitly recognized their ownership of such property (Barickman 1994).

While the regularity of palm oil processing by enslaved workers is unknown, it was certainly not isolated to that one occurrence. A contemporary of Benta, Vilhena [1802] (1969) confirmed and encouraged the availability of African oil palms on sugar engenhos. “There should also be dendeleiros [next to the master’s house],” he suggested, “prohibit the slaves from selling the fruit bunches, but allow them to take them home and extract the oil” (p. 188). Implying that enslaved laborers sometimes sold raw fruit, Vilhena recommended against that practice, presumably to augment workers’ rations without added expenditures. Subspontaneous dendeleiros were a boon then not only to the Afro-descendants who relished the oil, but also to miserly planters looking to evade responsibility for their captives’ nourishment (Figure 58).

When enslaved people and others produced surpluses, they could access a robust regional foodstuffs market. A list of produce marketed at an outdoor fair in Nazaré das Farinhas in the summer of 1823 lists a wide range of local goods. Alongside staples, livestock, and an impressive array of fruit, customers could buy palm oil and the unprocessed fruit of the African oil palm. Though the effort to produce palm oil was considerable, a bottle of the oil claimed a relatively high price, even when compared to other processed produce such as manioc flour.162 Proprietors sometimes purchased palm oil along with other luxuries such as bacon and olive oil as a treat for wage laborers. An

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162 “Mappa especulativo dos efeitos entrado pelas estradas de Nazaré Termo de Jaguaripe na semana e feira de 12 de Janr° de 1823,” Biblioteca Nacional, Rio de Janeiro (BN), Seção de Manuscritos (SM), II-34, 8, 29 lists “dendê in bunches” for Rs. 1$280 each and bottles of “azeite de dendê” for Rs. 2$560 each. For the sake of comparison, 1 unit of manioc flour cost Rs. $320.
inventory of the Sururú sugar engenho in Maragogipe from 1860 lists *azeite-de-dendê* among such mundane goods as rice, beans, manioc flour, and coffee purchased (in this case from unlisted sources) to feed paid employees.\footnote{163} That internal market was an important source of foodstuffs for the large planters and of income for smaller subsistence farmers and even some enslaved workers. Subspontaneous groves of *dendezeiros* were indeed a windfall for rural Bahians.

![Figure 58: Palms surround enslaved workers and their *senzala* in Northeast Brazil, ca. 1647.\footnote{164}](image)

\footnote{163} Inventory of Francisco de Oliveira Guedes, Maragogipe, 1860, APB, SJ, 04/1876/2347/01.

Analyzing the interplay of coastal geographies, agroecological patterns, and socioecological resistance, we have seen how the African oil palm began its process of naturalization in the landscapes and cultures of nineteenth-century Bahia. The palm established a socioecological niche within Bahia’s coastal mangal, found accommodation in manioc swiddens on upland farms, and entered an internal, rural market for palm oil in resistance to imposed European diets and cultures. Just as those manioc farms integrated transatlantic agroecologies to disseminate African oil palms on Bahia’s Southern Coast, myriad other cultural-economic landscapes also worked to spread dendezeiros in the region. The felling of Atlantic Forest opened canopies and created space for oil palms and other fast-growing botanical species. Each native tree removed from the tabuleiro forests for use in sawmills or as fuel for sugar mills or pottery kilns therefore made areas ecologically available to African oil palms.

The next and final section returns to the concept of colonial agroecologies to deliver the results of those socioecological interactions. Taken together, socioecological and political changes on Bahia’s Southern Coast encouraged the development of dendê landscapes and cultures in the mid-to-late nineteenth century.

**Colonial agroecologies revisited:**
**The rise of cacao, the end of slavery, and the emergence of Bahia’s Dendê Coast**

Domestic palm oil production in nineteenth-century Bahia emerged in complement to the three major crops of Bahian coastal agriculture: manioc, sugar, and cacao.\(^{165}\) Analyzing each of these agroecological relationships elaborates the cultural-
environmental processes that drove the expansion of African oil palm landscapes.

Detailed in an earlier section, the symbiotic relationship of the African oil palm and manioc farming formed its most prolific agroecological relationship, as a transatlantic extension of the palm-tuber complex of West and Central Africa. Swidden-fallow manioc polycultures encouraged the subspontaneous spread of dendezeiros in Bahia, but other agricultural systems also contributed to the growth of the domestic market in the nineteenth century. After touching on the relationships of sugar and African oil palm in nineteenth-century Bahia, we will turn to another tree crop closely associated with Bahia’s Southern Coast—cacao.

As we have seen, the export sugar economy indirectly stimulated domestic palm oil production through the ingenuity of enslaved workers, the avarice of planters, and the fecundity of the palm on Bahia’s coastal plain. Enslaved workers such as Benta illustrate how palm oil represented an act of cultural resistance on the grounds of Bahia’s iconic sugar mills. Even as demand for palm oil grew in the second half of the nineteenth century, the growing domestic palm oil market failed to attract much attention among elite sugar planters in the Recôncavo who remained disinterested in dendê production through the colonial and imperial periods. A probate inventory from 1875 is instructive.

At the time of his death, affluent planter and slaver Tomás Pedreira Geremoabo owned sugar mills in Maragogipe and Iguape, along with 57 enslaved workers. Included in his post-mortem inventory was Ilha dos Coelhos, an islet in the mouth of the

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cultivated 26 leagues (144.456 kilometers) from the more humid coast at Camamú where “the regularity of the climate combines with the fertility of the soil to become appropriate for planting crops, particularly for cotton fields, where it grows wild amidst the caatingas (pp. 6-7).”
Paraguaçu River at the Bay of All Saints, near his engenhos. Appraisers listed his islet “in poor state (mau estado),” and valued it at Rs. 5000. Three years later, a notice in the Salvadoran daily O Monitor advertised the public auction of Geremoabo’s estate and described the same islet simply as “with African oil palms (dendezeiros).” Its appraisal had dropped to Rs. 30000, just 2.3 percent of the price of his most valuable enslaved worker. Apparently, an abundance of oil palms amounted to degraded land of little worth in the 1870s. That islet also demonstrates how African oil palms and their primarily Afro-Brazilian harvesters could quietly exploit the neglect of landed elites.

The value of subspontaneous African oil palm groves, such as those dispersed through wooded landscapes on the Ilha dos Coelhos and the Fazenda Grande do Retiro north of Salvador (see Chapter 5), was likely imperceptible to probate assessors more accustomed to appraising monoculture. Scattered irregularly across fields and forests, subspontaneous oil palms would have generally failed to draw the attention of officials; but when cultivated in rows, the orderly geometry would have signaled valuable agriculture. An 1871 inventory from Jaguaripe offers a rare and revealing example of that distinction. At the time of his death, Portuguese subject Manoel Martins de Andrade owned three houses in Salvador and the Fazenda Muttá on the Bay of All Saints in

166 Inventory of Tomás Pedreira Geremoabo, Salvador, 1875, APB, SJ, 5/2183/2652/1. British authorities suspected Geremoabo of involvement in the clandestine slave trade in the 1840s. In December of 1850, just as the clandestine trade to Bahia was finally coming to a close, he advertised the sale of a fazenda on the counter coast of the Ilha dos Frades in the Bay of All Saints. Bay islands were well-known as covert landings for African captives during the clandestine trade (Verger 1976; Eltis 1987), and if he in fact used his Fazenda Itapipuca to conceal human trafficking, the property would have outlived its usefulness by 1950, despite an orchard of “60 coconut palms, 60 dendezeiros, 20 some odd mango trees, lots of high-quality orange trees […], and a straw hut to accommodate four slaves”; see “Annuncios,” O Guaycuru, 12 December 1850, 4.

northern Jaguaripe. At the fazenda, assessors inventoried a large townhouse along with ten captives and an orchard of “several coconut palms in production, several mango trees, African oil palms, and other fruit trees [all] being situated in their own fields with free access to the sea.” His inventory depicts monocultures of African oil palms as distinct from the biodiverse agroecological landscapes of palms, tubers, and other food crops that, while perhaps more typical of the region, assessors generally disregarded. It also suggests an increase in both supply and demand for domestic palm oil.\footnote{Inventory of Manoel Martins de Andrade, Jaguaripe, 1871, APB, SJ, 3/1292/1761/07. One of those ten people was a two-year-old boy named Silvano. According to Castillo and Parés (2007; Castillo 2011a), Manoel Martins de Andrade was likely the former owner of Candomblé babalaô Bamboxê Obitíkô (baptized as Rodolfo), a native of Africa’s Mina Coast who later became a key figure in the early development of Afro-Brazilian religions and a co-founder of the renowned Candomblé temple Casa Branca do Engenho Velho. Obitíkô’s connection to his former owner’s dendêzeiro orchard is unknown. See also Chapter 4, n. 211.}

Sugar planters on the Southern Coast may have been minimally more willing than their counterparts in the Recôncavo to engage in planned cultivation of African oil palms, though there is only scant evidence that planters engaged in commercial palm oil production in the nineteenth century. An inventory from 1876 listed 500 oil palms on the grounds of one of the largest sugar mills in Ilhéus, staffed by 30 enslaved workers. Those palms were part of a massive polycultural operation that included cane fields, a sawmill, a rum distillery, a fish pond, a general store, rows of coconut palms, and 20,000 covas of manioc to support its flour mill, one of the largest in the area.\footnote{Inventory of Maria da Piedade Melo e Sa, Ilhéus, 1876, APB, SJ, 03/1406/1875/22. For more on dendê cultivation in the nineteenth-century cacao landscapes around Ilhéus, see Mahony (1996).} Nonetheless, that instance appears exceptional, and such cultivated dendê fields were still rare during this
period, even on the Southern Coast. Elite sugar planters remained disinterested in dendê through the nineteenth century.

While sugar planters showed only minimal interest in Bahia’s expanding market for domestic palm oil, the expansion of another tree crop—cacao—contributed significantly to the development of oil palm landscapes on the Southern Coast. Over the nineteenth century, cacao agriculture gradually transformed the Southern Coast of Bahia, most conspicuously around the boomtowns of Ilhéus and Itabuna (Santos 1957). Cacao farms implement a closed-canopy agroforestry system called cabruca wherein squatty cacao trees thrive under the shade of taller vegetation, including various palms (Mahony 1996, 2006) (Figure 59). That agroecological system offered yet another welcoming venue for the African oil palm in Bahia. As a participant in the cabruca agroforestry system, African oil palms contribute to cacao incubation while augmenting local production with a spiritually-potent and culturally-useful oil.

While the areas around Ilhéus and Itabuna and to their south transformed almost fully into cacao landscapes over the nineteenth century, the coastal areas extending from their north to the southern Recôncavo never fully succumbed to the cacao boom. Instead, the area that would become the Dendê Coast remained a biodiverse landscape of polycultural subsistence farms and commercial experiments dominated by manioc but replete with smaller-scale cacao, coffee, and sugar fields, often mixed on the same property. An application by Manoel Ignacio de Faria for a small land concession in the Cajaíba district of Valença in the mid-nineteenth century is typical for that time and
Figure 59: A view of a *cabruca* agroforestry system from afar (a); and from within (b), Jenipapo district of Taperoá, Bahia (2012).\(^{170}\)

\(^{170}\)The top view (a), shows a bio diverse *cabruca* agroforestry system from afar; hardwoods and subsponaneous dendezeiros are spaced irregularly. A view from within the *cabruca* (b), beneath the canopy, reveals productive cacao trees and the trunks of
place. He petitioned provincial authorities for a tiny plot of four braças (fathoms) along the Rio do Engenho to plant manioc, coffee, and cacao in 1844.\textsuperscript{171}

Such biodiversified farms provided opportunities for the African oil palm. Evidence from probate inventories in the late-nineteenth century suggests that deliberate cultivation of dendê was expanding along with cacao on the Southern Coast, even if authorities failed to recognize the former’s value. Taken in 1874, the inventory of a small farm in the Campo district of Valença owned by José Joaquim da Luz assessed 25 fathoms of land abutting the mangal and “planted with cacao, jackfruit trees, and dendezeiros.” Appraised at Rs. 500$000, all the lands and crops combined amounted to just 62.5 percent of the value of Antonio, the 26 year-old enslaved agricultural worker listed with the property.\textsuperscript{172} When Luz’s eldest son Antonio Viera died fourteen years later, and different probate officers arrived to inventory portions of the same property, they mentioned no dendezeiros, but only cacao.\textsuperscript{173} In coastal Bahia African oil palms require only minimal effort to cultivate and generally remain productive for decades. Moreover, the oil palms were likely part of the cabruca growing above the cacao; therefore it is likely that some if not all of the African oil palms inventoried in the hardwoods and dendezeiros. Such eccentric landscapes may have vexed probate officers accustomed to appraising uniform monocultures and row crops.

\textsuperscript{171} “Correspondência recebida da Tesouraria da Fazenda da Bahia, e da Repartição Especial das Terras Públicas da Bahia, 1832-1861” APB, SACP, maço 4839-1. A Portuguese braça approximates an English fathom, about six imperial feet, or roughly 2.22 meters. The plot in question extends laterally along the river for four braças.

\textsuperscript{172} Inventory of José Joaquim da Luz, Valença, 1874, APB, SJ, 06/2581/3081/17. The linear distance of 25 braças or fathoms is equivalent to 45.72 meters.

\textsuperscript{173} Inventory of Antonio Viera da Luz, Valença, 1887, APB, SJ, 05/2149/2618/20.
father’s fields remained through son Antonio’s death, but the probate officers failed to
assign value to them.

Other inventories from the Southern Coast support the association of cacao and
dendê. Portuguese native José Fernandes Panam died in 1880 with four cacao, sugar, and
manioc farms in Taperoá. One of which, the Fazenda Panam in the coastal district of
Jordão, lists 10 dendzeiros, valued at just Rs. $300 each, along with 1,450 cacao trees
worth Rs. $900 each, six jackfruit trees at Rs. $300 each, 12 orange trees at Rs. $200
each, one coconut palm at Rs. $400, and three enslaved men worth an average of Rs.
666$000 each.174 Three years later officials inventoried the neighboring Fazenda Jordão
that also bordered the mangal in Taperoá, and appraised 500 cacao trees, 30 dendzeiros,
18 jackfruit trees, 4 orange trees, 2 jabuticaba trees (Plinia cauliflora), and a few coffee
trees.175 Other agroecological arrangements on cacao farms suggest that oil palms were
sometimes a part of diverse fruit orchards. An 1870 inventory of the Fazenda São Thiago
in Ilhéus lists 20 dendzeiros along with 112 coconut palms, 26 orange trees, 14 jackfruit
trees, and 5 mango trees, along with more than 1,000 cacao trees.176

Despite those mentions, listings of specific fruit trees in Bahian inventories are
rare. Assessors more commonly conflated them with ambivalent abstractions such as
“crops (plantações or benfeitorias),” “orchards (arvoredos),” and “fruit trees (árvores
frutíferos),” thus failing to specify many instances of dendê cultivation or management.
Probate officials would have generally ignored African oil palms in dooryard gardens or

174 Inventory of José Fernandes Panam, Taperoá, 1880, 1/123/190/01.
175 Inventory of José Gonçalves de Oliveira, Taperoá, 1883, 01/126/200/01.
176 Inventory of Emerenciana Arouca, Ilhéus, 1870, 02/741/1206/08.
at the margins of wooded areas. Still the increase in documented oil palm cultivation during the late nineteenth-century is telling. During the final throes of slavery-based agriculture, proprietors in Bahia moved to appropriate Afro-Brazilian palm oil production, presaging the modern agroindustrial development that began in the next century (see Chapter 6).

Notwithstanding the changing market forces, palm oil remained an important culinary activity and source of revenue for rural Afro-descendants at the close of the colonial period. A full century after Benta’s account, freedwomen continued to process palm oil for consumption and sale. Nine years after emancipation, in 1897, probate officers in Camamú inventoried the contents of a home owned by the recently deceased Gaudencia Martins, a formerly enslaved native of Africa. Among her few possessions were a mortar and pestle and a large jug (moringa) and small bottle of “azeite dendê.” Together those goods and implements suggest that Martins processed palm oil in surplus amounts, likely for sale. Officials appraised her jug of palm oil at Rs. 7$000, more than 23 times the value of one of the African oil palms appraised at the Fazenda Panam the previous decade, and 70 times the going rate of one kilogram of manioc flour. Long prized for its nutritional benefit and connection to Africa, palm oil had become a relatively lucrative value-added commodity for Afro-descendants emerging from the ruins of the slavery economy.177

177 Inventory of Gaudencia Martins (Africana), Camamú, 1897, APB, SJ, 1/412/800/10. Weekly commodities prices, including manioc flour, listed in “Pauta e oficio semanal, 1896,” APB, SA, Diretoria das Rendas, 060.05. Appraisals of African oil palms in Inventory of José Fernandes Panam, Taperoá, 1880, 1/123/190/01. Preferred for processing palm oil in bulk, the mortar and pestle were unnecessary for preparing small amounts; although now relatively rare, contemporary Bahians continue to press preheated palm fruit by hand to produce enough oil for a family meal (e.g. “moqueca mão lavada”).
While the dense stands of African oil palms comprising the Dendê Coast
developed southward from the Jaguaripe Inlet to the Maraú Peninsula, commensurate
groves failed to appear elsewhere in Bahia where less accommodating agroecologies and
historical processes prevailed. Scattered with sugar engenhos and cattle pastures during
the colonial period, Bahia’s sparsely populated Coconut Coast extends north from
Salvador to the border with Sergipe. Though dendezeiros do occur sporadically there,
coconut palms predominate along its sandy, unprotected shoreline, lending that area its
name. The elite landscapes of the Recôncavo, surrounding the Bay of All Saints, boast a
longstanding and formative relationship with the African oil palm, but land pressures
associated with export agriculture there have confined the palm mainly to the mangal.
South of the Dendê Coast, in the lands around Ilhéus, colonial population and manioc
production lagged well behind areas further north, and a nineteenth century boom
bestowed that region with its moniker—the Cacao Coast. By then, industrious farmers
exploited legal regimes and production mandates to collude with birds, fire, mangroves,
manioc, and cacao agroforests, (re)producing a distinct and productive landscape
distinguished by its dendezeiros and laying the groundwork for Bahia’s Dendê Coast
(CEPLAC and IICA 1975; Bahia 2001).

Along much of the Bahian coastline, the mangal socioecosystem harbored the African oil
palm and served as a conduit for its diffusion. Although non-human inputs were crucial
for the spread (i.e. subspontaneity) of the palm, traditional and scientific emphasis on the

The above moringa was likely a large ceramic jug made from clay with intrinsic
monetary value independent of the palm oil it contained.
role of vultures and other animals works to devalue the fundamental contributions of New World Africans in the development and maintenance of Bahia’s oil palm groves. Enslaved freed, and free workers tended dendezeiros for cultural and economic uses, and benefitted from the vibrant mangal where the palm and shellfish thrived. Born into Brazilian slavery, Benta learned to process palm oil in the New World. Forced to toil in an economy in which animal fats remained scarce, the fatty palm oil she processed in Bahia bolstered diets there just as it had in the rainforest zone of western Africa. Harnessing African and Brazilian knowledges, she leveraged a transatlantic network of tradition and innovation to enhance her nutritional and economic conditions and contribute to profound cultural and ecological change in the African diaspora.

As an Afro-Brazilian peasantry emerged in the late eighteenth century, farmers in coastal Bahia blended African and Brazilian agricultural and ethnobotanical knowledges to proliferate the African oil palm. Swidden mosaics of Atlantic forest and manioc fields transformed coastal Bahia into a transatlantic simulacrum of the palm-tuber complex of western Africa, creating an Afro-Brazilian landscape. The resulting Dendê Coast endures as a testament to African and diasporic contributions to the economic, ecological, and cultural development of the Americas. As subspontaneous groves of *Elaeis guineensis* came to crowd the coastal rainforest zones in both Africa and South America, the African oil palm contributed to the “floristic homogenization” of the Atlantic basin (Voeks 2012a).

For Africans such as Gaudencia Martins, and Afro-Brazilians such as Benta, Bahia’s socioecological assemblages of rainforest, palms, crops, and mangroves would have represented familiar biocultural landscapes that recalled their ancestral homelands.
across the Atlantic. As Afro-descendant women they conveyed age-old traditions of palm oil processing bestowed to them by female ancestors. Gaudencia’s legacy perseveres in Camamú and on the Dendê Coast where a brutal transatlantic slavery economy forced her to work in manioc fields. There she contributed to a transatlantic transformation of Bahia’s Southern Coast that resisted colonial hegemony to forge an Afro-Brazilian landscape filled with ecological, cultural, and economic opportunities.

Benta’s legacy perseveres in the landscapes of resistance she helped create in Iguape. There a group of registered quilombo communities welcomes visitors on “Route of Freedom (Rota da Liberdade)” tours that highlight traditional Afro-Brazilian subsistence, culinary, and religious practices, including processing techniques of manioc and palm oil (Figure 60). By showcasing their cultural-ecological heritage in situ, those communities maintain creative and commercial control of their personal and regional histories. Besides generating an important revenue stream for the community, exhibitions of palm oil processing and sales of artisanal produce during tours and at local markets propel historical narratives of resistance into the present. Artisanal palm oil production there and in communities throughout coastal Bahia provides a cultural-environmental link with the African continent, as well as a window into the complex historical development of the Americas.

As Bahia’s dendê landscapes and cultures developed through the periods of colonialism and slavery, Bahians remained in close contact with the African continent. The Bahia-Africa trade routes mobilized ships, goods, and diverse peoples across the

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South Atlantic for centuries. Those extraordinary Atlantic circulations helped establish an urban market for palm oil in Salvador and in turn contributed to the development of Bahia’s dendê cultures and landscapes during the eighteenth and nineteenth centuries. The following chapter details those Atlantic circulations. Focusing on imports of palm oil and other ritual African goods, it demonstrates how the Bahia-Africa trade supplied the materialities of Afro-Brazilian culture, creating economic and cultural demands that influenced the socioecological construction of Bahia’s Dendê Coast.
CHAPTER 5:
SOUTH ATLANTIC TRADE AND AN URBAN PALM OIL MARKET IN SALVADOR

The dendezeiro is another palm, one that grows very tall and thick with extremely long fronds. From its crown sprout large bunches of fruit with berries similar to grapes and the size of our chestnuts with a very pleasing appearance. […] From it one extracts the azeite called de palma, and here [in Bahia] called dendê, of which comes so many barrels from the Mina Coast, serving as the preferred seasoning of the Blacks, and many of the Whites; besides being of great medicinal use.


Certain Afro-Brazilian dishes preserve something of a religious or liturgical character in their preparation. And in order for their authentic preparation, [Afro-descendants] have for ages imported from Africa, aside from azeite-de-cheiro or dendê, a host of exquisite [peppers]: bejerecum, ierê, uru, and ataré.


Since the early sixteenth century, Atlantic trade routes have linked Brazil with the African coasts and contributed to cultural, economic, and ecological development throughout the Atlantic World (Rodrigues 1965; Verger 1976; Chapter 3). Among the goods circulating in that trade, shipments of African palm oil to Bahia became increasingly prominent from the early-eighteenth through the late-nineteenth centuries. Contemporaneous with the growth of the Bahia-Africa trade, dendê landscapes gradually developed on Salvador’s urban periphery and along Bahia’s Southern Coast (Chapter 4). The urban market for palm oil imported from Africa contrasted in some ways with the concomitant rural networks that produced and distributed domestic dendê, yet both rural and urban Bahians enforced similar cultural preferences and economic demands for palm
oils, and as this chapter argues, those markets developed in complement—rather than competition—to one another.

**Legitimate landscapes in the South Atlantic**

While some Afro-descendants in Bahia were cultivating oil palms and producing domestic *azeite de dendê*, others helped set up and exploit transatlantic networks to import, distribute, and consume African *azeite de palma* in Bahia. Early commerce in palm oil helped to diversify the trades with West and West Central Africa that had since the sixteenth century concentrated on human captives. Along with the transatlantic slave trade, trade in palm oil and other bulk African goods such as wax and ivory generated revenue in Salvador and elsewhere in Brazil while providing a steady export market for produce from Bahia’s rural hinterland, especially rolled tobacco (*fumo de cordo*) and cane rum (*cachaça* or *aguardente*) (Figure 61) (Rodrigues 1965; Verger 1976).

African palm oil and other imports helped materialize Afro-Brazilian cultures developing among Bahia’s growing populations of Afro-descendants—enslaved, free, and freed—who had long amounted to a plurality of its populace (Freyre [1933] 2003; Turner 1942; Voeks 1997; Matory 2005).179 Palm oil and other African foodstuffs supplied Afro-Brazilian cuisine and religion with living links to the homeland—they helped furnish and replenish Bahia with *axé*, the vital force underpinning Afro-Brazilian cosmologies (Camargo 1990; Voeks 1997; Lody 2008). Expanding in the mid-nineteenth century, the Bahia-Africa trade, this chapter demonstrates, placed Salvador as an international hub for the consumption, distribution, and re-exportation of African products—especially palm oil. Ultimately, Bahia-Africa commerce wielded great

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179 See tables and discussion of Bahia’s historical demographics in Chapter 2.
socioecological influence throughout the South Atlantic, creating economic and cultural pressures that influenced an expansion of African oil palm landscapes and commodity flows, in both western Africa and Bahia.

Figure 61: Bahian rolled tobacco (fumo de cordo) for sale in Santo Amaro, Bahia (2012).

British and other abolitionists proposed African palm oil as a so-called “legitimate”180 economic replacement to the transatlantic trade in enslaved humans in the

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180 This term, as Robin Law (2002a) points out, “is clearly open to objection, both because it is Eurocentric (since the slave trade itself initially remained ‘legitimate’ in African societies, although now illegal for Europeans), and because it tends to obscure the fact that commodities other than slaves (including agricultural produce such as palm oil) had been exported from Africa even before the legal abolition of the slave trade; it
early-nineteenth century (Law 2002a; Lynn 2002). With British backing and military patrols by the Royal Navy, the transatlantic slave trade slowly gave way to commerce in African agricultural commodities, especially palm oil from the Bights of Benin and Biafra and groundnuts from the Senegambia. The gradual transition from traffic in humans to intensified agricultural production transformed landscapes and economies on either side of the Atlantic. While scholars have long debated the economic and ecological effects of the shift(s) to the legitimate trade in western Africa (e.g. Eltis 1987; Martin 1988; Law 1995; Lynn 2002; Mann 2007), the effects of those changes in Bahia are much less studied. Analyzing Bahian customs records, travelers’ accounts, nineteenth century maps, and other archived and published primary documents, this chapter treats Bahia-Africa commerce during the eighteenth and nineteenth centuries. Focusing on palm oil and other western African goods, it links South Atlantic exchange with economic, cultural, and ecological change in and around Salvador.

remains, however, so deeply embedded in the literature that it is difficult to avoid” (p. 26).


182 Despite many important treatments of abolition and its aftermath in Bahia and Brazil, including Toplin (1972), Scott (1988), Butler (1998a), Nishida (2003), and Graden (2006), the “legitimate” trade from a Bahian perspective has received only limited attention. Important exceptions are Rodrigues (1965) and Carneiro da Cunha (2012).

183 The Bahian State Archive (APB) made its Customs Section (Seção Alfândega) available for public research only in 2004. This study is one of very few based on that section of documents; see also Castellucci Junior (2010).
African goods became material anchors for Afro-Brazilian cultures, particularly their culinary and religious expressions, linking Afro-descendants in Brazil—who played integral, complex, and diverse roles in that transatlantic market—with their ancestral homelands. An elite class of transatlantic traders, many of them also involved the transatlantic slave trade, dealt in African palm oil and Salvador became an international hub for the commodity. Bahia’s urban consumption of African goods enhanced the local market for palm oil in Bahia—both foreign and domestic, and reinforced economic and cultural demands that contributed to the expansion of Bahia’s rural dendê landscapes on the urban periphery and the Southern Coast. Compiling a historical and cultural record of the Bahia-Africa trade, this chapter demonstrates how Atlantic circulations encouraged not only the development of Afro-Brazilian cultures and economies, but eventually the socioecological transformation and expansion of palm oil landscapes on either side of the South Atlantic.

**African palm oil and the transatlantic slave trade**

Chapter 3 details how African palm oil followed the transatlantic slave trade from Africa’s sub-Saharan interior to arrival in New World harbors. Slave traffickers appropriated the African commodity as an indispensable foodstuff, ointment, and medicine to brutally subjugate and commodify African captives. The Bahia-Africa trade in palm oil therefore developed in tandem with the transatlantic slave trade, and many of the most notorious slavers dealt in both commodities, including José Cerqueira Lima, Manuel Francisco Moreira, Pedro Martins Jambo, Domingos José Martins, Felix Francisco “Chacha” de Souza, and many others (Rodrigues 1965; Carneiro da Cunha...
2012). African palm oil supported the nefarious trade in humans not only on the Middle Passage, but also on either side of the Atlantic, as a familiar seasoning used to sustain and perhaps appease captives awaiting embarkation in western Africa and on arrival in Bahia. The 1836 inventory of slaver Moreira’s Bahian estate shows expenditures for foodstuffs used to feed 120 recently-arrived Africans he held at his plantation at the time of his death. Listed were 8 ½ canadas of azeite-de-dendê along with manioc flour and “herbs for carurú,” a stew of greens and okra seasoned with African peppers and palm oil popular in both western Africa and Bahia (Wetherell 1860; Querino [1928] 1957; Amado 1967; Omari-Tunkara 2002; Voeks 2012a).
Those commercial relationships linking the slave trade with bulk imports of African palm oil speak to the cruel ambiguities of colonial exchange in the Luso-Afro-Atlantic. Ships trafficking African captives and the accoutrements of slavery to Bahia often also carried preferred African commodities to be sold among the growing Afro-descendant population, freed as well as enslaved. Just as Portuguese ships linked colonists to their homelands with supplies of material, dietary, spiritual, and pharmaceutical preferences, so too did ships from Africa supply Afro-descendants in Bahia with their own preferred goods. Ships from Porto and Lisbon brought olives, olive oils, wines, Iberian hams, luxurious desserts and candies, hand-painted tiles (azulejos), ritual candles, and traditional medicines and remedies; while mainly Brazilian, Italian, French, and American ships carried palm oil, peppers, kola nuts (Cola acuminata; C. millenii; C. nitida), gold, African plants and seeds, jewelry, beads, woven mats (esteiras), ritual cowry shells (buzios), and the colorful handmade textiles known as panos da costa from the Gold Coast, the Bight of Benin, the Niger Delta, and Angola to Bahia (Figure 62).187 Such diverse payloads linked the brutal trade in humans with another form of Afro-Brazilian resistance: the importation and sale of African goods in defiance of European cultural preferences and colonial regulations.188 Afro-descendants displaced to Bahia cherished authentic African goods as reminders of home and as building blocks for

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187 Lists of goods from Portugal and Africa compiled from instances in the Series of Customs Manifests 010, Série Manifesto (SM) and import / export records “Despacho de Consumo,” and “Despacho de Importação,” APB, SA, 020 Entrada e Saída de Mercadorias (ESM) from 1788-1881, the full period for which those records are available; those lists represent common items but are far from exhaustive. Portuguese for “from the coast,” the toponymic adjunct “da costa” refers to products or people originating from (the coast of) Africa.

188 On resistance, see Chapter 4.
Figure 62: An Afro-descendant woman wears a *pano da costa* in Bahia, early nineteenth century.\(^{189}\)

\(^{189}\) From “Negre & Negresse de Bahia,” *Voyage pittoresque dans le Brésil*, Rugendas (1835, div. 2, pl. 8).
novel, hybrid Afro-Brazilian cultural forms and commercial transactions. To obtain such goods, many were willing and able to pay the exorbitant import tariffs excised by the Crown, from the eighteenth century until independence, and thereafter the taxes levied by Brazil.\(^1\) Direct trade routes linked Africa immediately with Bahia, and thus challenge the traditional historiographical views of “triangular trade” that purported to connect, all too neatly: metropole, colony, and labor supply. Instead Bahia’s commercial connections to Africa generally bypassed Portugal altogether, and helped integrate the South Atlantic, developing cultures, economies, and landscapes on both continents (Rodrigues 1965; Verger 1976; Alencastro 2000; Araujo 2011; Carneiro da Cunha 2012).

Exchanges of Brazilian manioc flour for human cargoes from Central Africa established early South Atlantic trade. Describing Bahia on a visit in 1610, French mariner François Pyrard de Laval (1890, p. 316) documented “such store of [manioc flour] that they lade cargoes of it for the kingdom of Angola, on the Guinea coast,

\(^1\) Portugal struggled to control the commerce that passed through its colonies, especially Brazil. Following the earthquake that devastated Lisbon in 1755, the Crown issued a 4% tax on all goods dispatched through its customs houses in Brazil. Facing immense pressure from Napoleon’s troops, Portugal opened Brazil to foreign trade in 1808, and placed an \textit{ad valorem} tax of 24% on dry goods and a 48% tax on liquids or wet goods, including wines, oils, and \textit{azeites} imported from foreign countries. Later that year, a decree designed to create a commercial advantage for the Crown reduced the rate to 16% for Portuguese goods and to 19% for foreign goods entering aboard Portuguese ships. An order a year later exempted goods already subject to tariffs in Lisbon and Porto. Bowing to pressure from London in 1810, a Portuguese-British treaty reduced the tax on imports of British goods to 15%. In 1818, the Crown reduced the tariff on Portuguese goods to 15% matching that of British imports. Following Brazilian independence, the Empire of Brazil equalized the tariff to 15% for all foreign goods entering the country in 1828. Thus from 1808-1828, products from Africa were subject to the general tariffs of 24% and 48%. From 1844 forward, successive laws divided imports into classes and articles, each subject to varying rates of taxation; see Almeida (2001). In 1887, a comprehensive revision of classes and rates taxed foreign \textit{azeites}, including those from Africa, at 15%; see Brazil (1887) and Verger (1976).
whence come the slaves for the West Indies.” As such the South Atlantic trade levied ecological effects in Bahia as farmers and suppliers transformed landscapes to derive the products consumed in the transatlantic trades. By the eighteenth-century, rolled tobacco and cane rum produced in Bahia became common currencies in the transatlantic trade for enslaved Africans (Jones 1959). Providing export markets for manioc, tobacco, and a sugar-based rum, South Atlantic trade helped diversify Bahia’s agricultural landscapes beyond the royal sugar operations. While European markets consumed the refined Bahian sugars produced on expansive fields and mills owned by an elite class of landed aristocrats, African markets for manioc, tobacco, and rum reinforced a wider range of agricultural operations, many operated by middling and lower class landowners of diverse backgrounds (Schwartz 1985; Barickman 1998; Chapter 4).

Those Atlantic circulations intensified over the next century as the trade in African palm oil expanded beyond its alimentary and medicinal uses in the conduct of the slave trade. Large volumes of African palm oil began to arrive in Bahia from ports in São Tomé, the Mina Coast, Luanda, Lagos, and Ouidah, among others, to meet a growing urban demand for wholesale African oil in Salvador. Beginning in the early-eighteenth century, if not before, wholesale imports of palm oil arrived in Bahia in supplement to the trade in humans (Figure 63) (in Caldas ([1759] 1951); Vilhena [1802] 1969; Cerqueira e Silva 1854; Rodrigues 1965).

In 1715 a Portuguese merchant craft returning to Bahia from the coast of West Africa intercepted a Dutch ship “heading toward Bahia with a cargo of 120 enslaved Africans, 3,500 elephant tusks, and a great quantity of [bees] wax and azeite de palma”
Figure 63: Cross-section of a slave ship bound for Bahia and captured by the English in 1829.\(^{191}\)

(Cerqueira e Silva 1835, vol. 1, p.158, n. 62). Writing in the 1750s, Portuguese military engineer Jose Antonio Caldas (1951) reported that European ships occasionally negotiated for palm oil on the West Coast of Africa and at São Tomé.\(^{192}\) The earliest records of a trade in palm oil held at Bahia’s public archive come from 1797. That year colonial authorities processed 3,938 African captives from 18 slave ships arriving in Bahia from the Mina Coast. Augmenting those human cargoes were unspecified amounts of gold, \textit{panos}, and “\textit{azeite de palma}.”\(^{193}\) One year later Vilhena ([1802] 1969, p. 61)

\(^{191}\) Source: Lithograph by Reverend Robert Walsh (1830, vol. 2, facing p. 479). The barrels in the hold of the ship held fresh water and possibly palm oil.


\(^{193}\) “Registros de correspondência expedida para o Rei, 1797-1798,” APB, SACP, maço 138. Those records list only one ship arriving from Angola that year, carrying 580
documented 1,000 *canadas* of palm oil arriving from the Mina Coast, and another 500 from São Tomé.

After the Portuguese reconstructed their trading fort, *São João Baptista de Ajudá*, at Ouidah in 1721, South Atlantic trade routes began to crystallize. Though Bahia maintained contact with various ports of embarkation across western Africa, by the eighteenth century, the so-called Mina Coast in the Bight of Benin had become Bahia’s leading trade partner, while trade originating from Rio de Janeiro focused mainly on Angola (Alencastro 2012; Ferreira 2012; Hicks 2015). Human trafficking continued to dominate South Atlantic exchange, but palm oil commerce was on the rise. Those two trades remained tightly interwoven, and proceeded to modulate broad commercial, cultural, and ecological developments in the South Atlantic over the long nineteenth century.

**Transatlantic palm oil and an Afro-Brazilian market**

Portraying life in Bahia at the close of the eighteenth century, Vilhena ([1802] 1969) carefully distinguished domestic dendê from imported African oil in a series of letters to his associates back in Portugal. After describing the dendezeiro growing in Bahia, he went on to detail the process of extraction of “the azeite called *de palma*, and here called *dendê*, of which comes so many barrels from the Mina Coast to serve as the preferred seasoning of the blacks, and many of the whites; besides being of great enslaved Africans and 70,000 pounds of raw wax (*cera bruta*). Another ship arrived from São Tomé with unspecified cargo. Those archival data indicate only a limited window into the transatlantic slave trade for 1797. The Transatlantic Slave Trade Database (Emory University 2009a) estimates that 8,580 enslaved Africans disembarked in Bahia that year. That inconsistency suggests that Portuguese authorities waged only limited control over Atlantic trade, in humans and otherwise, during the colonial period.
medicinal use” (p. 714). Vilhena was thus among the first to point out the similarities and differences at once discerning and linking African palm oil and Bahian dendê, relating the former to direct trade with Africa, the latter to subspontaneous palm landscapes in Bahia, and both to Afro-descendants. While many people of European descent—including Portuguese, Italians, and English—amassed considerable fortunes in Bahia’s palm oil trade, Afro-descendants in Bahia also managed to carve out many essential and sometimes lucrative roles in the South Atlantic palm oil economy—as sailors, wholesale merchants, retail vendors, and consumers (Rodrigues 1965; Guenther 2004; Hicks 2015).

Afro-descendants both free and enslaved comprised a majority of sailors that moved produce and goods about the Bay of All Saints in small vessels during the nineteenth century (Knight 1884; Graham 2010), and they were common even on transatlantic journeys to the West African coast. An analysis by Mary Hicks (2015) of 1,096 sailors registered at the port of Salvador in 1775 found that 662 identified as African, Creole, or otherwise Afro-descendent, and of those, 392 were enslaved. That is, more than 60 percent of mariners involved in cabotage or transatlantic sailing out of Bahia were of full or partial African descent, an extraordinary figure when compared to other Atlantic ports, even Rio de Janeiro and Pernambuco. Some of those sailors purchased containers of palm oil during trips to West Africa, transporting them back to Bahia aboard the ships that employed them (Verger 1976; Hicks 2015). On May 11, 1812, British authorities inspected the São Miguel Triumfante, a brigantine captained by João da Silveira Vilasboas, on its way from Ouidah to Bahia. Agents cited the ship for violating a previous British-Portuguese treaty limiting slave trafficking to Portuguese holdings, an indictment that officials in Salvador adamantly denounced on the ship’s
return. Among the goods on board, officers inventoried 132 African captives and a great assortment of palm oil, including 24 canadas held by the ship’s enslaved barber surgeon, Domingos do Rosario, which he used to treat the captives, and another 80 canadas owned collectively by a group of 13 enslaved mariners. Despite their restricted legal standings, the sailors managed to invest their allowance of pocket monies (peculium) in Rs. 240$000 worth of palm oil, which they planned to sell for profit in Bahia, helping to satisfy the growing demands for authentic African products there.\(^{194}\)

Free, freed, and enslaved vendors in Salvador tapped transatlantic trade networks to foment Afro-Brazilian culinary and religious cultures in the city and beyond, often at the expense of royal profits and in resistance to colonial and elite authority. Vilhena ([1802] 1969) warned in the eighteenth century that “groups of black women,” in concert with powerful European merchants, sold “mostly contraband goods […] bought from foreign ships […] coming from factories on the coasts of Guiné and Mina, in this way stealing [excise revenue] from His Majesty” (pp. 130, 131). His colonialist admonition acknowledges enslaved and freed Afro-descendant women vendors as powerful and independent economic agents (see also Verger 1981), and unwittingly portrays the transatlantic trade as a vehicle for anti-colonial economic and cultural resistance.

Yet resistance in Salvador’s urban marketplace was not always subtle. Street vendors were prominent in the 1835 Malê Revolt, one of the largest and most influential urban slave insurrections in the Americas (Reis 2012; Graham 2010). One of the vendors prosecuted after the revolt, freed Hausa African Paulo da Silva Guimarães, testified that

\(^{194}\) “Francisco Joaquim Barro proprietário do Bergantim Triumfante Friderico Lindeman, Consul Britanico No. 12,” Arquivo Nacional (AN), Caixa 410, Fundo 7X, Pac. 1. I am indebted to Mary Hicks for this reference.
he split his time as a sedan chair porter and small-scale vendor. He traveled frequently between the coasts of Africa and Bahia in the 1830s, procuring palm oil, *panos*, and other goods to retail in Salvador (Reis 2012). Besides offering detail for understanding the rebellion, his account links slavery, freedom, and Afro-Brazilian social mobility with the transatlantic trade for palm oil and other African goods in the nineteenth century.

Fallout from that 1835 revolt triggered geopolitical shifts across the South Atlantic, leading to social upheaval in Bahia while strengthening ties between that province and Africa. Bahia’s judiciary deported hundreds of freed Afro-descendants to Africa, most without any incriminating evidence, and lawmakers enacted brutal reforms to limit the rights and mobility of Afro-descendants. In the years that followed, thousands returned voluntarily to their ancestral continent, fleeing harsh legal and social repression (Strickrodt 2004; Reis 2012).

An account of Yoruba freedwoman Francisca da Silva illustrates the outmigration precipitated by the state’s response to the revolt, the complexity and mutability of slavery in urban Bahia, and the networked transatlantic development of Afro-Brazilian culinary and religious cultures. After gaining her manumission in the early nineteenth century, da Silva built a successful retail business on the streets of Salvador, though it is unknown what kinds of products she dealt in. Documentary analysis conducted by Lisa Earl Castillo and Luis Nicolau Parés (2007) reveals her as Iyá Nassô, a formative Afro-Brazilian religious leader now canonized in oral histories as a spiritual founder of the renowned *Ilê Iyá Nassô Oká Candomblé terreiro* (popularly known as *Casa Branca do Engenho Velho*). Formerly enslaved herself, she used profits earned as a vendor in Salvador to purchase and later free several other Afro-descendants. Following her sons’
alleged involvement in the *Malê* Revolt, Francisca convinced imperial authorities to commute their sentences to exile, and the family left for West Africa in 1837 with several Africans that she and her husband had recently freed under conditional manumissions.\(^{195}\) Two years later her spiritual heir (filha de santo) and former slave Marcelina da Silva—remembered in oral histories by the Yoruba devotional name Obatossi—returned to Bahia where she in turn acquired and subsequently freed at least thirteen enslaved Africans from the 1840s-1880s. Employing them as *ganhadeiras (os)*,\(^{196}\) or “slaves for hire” in Salvador, she used the profits to invest in real estate properties throughout the city. She eventually leveraged her economic and social status—decidedly privileged among Afro-descendants in Bahia—to resume and greatly expand the Afro-Brazilian religious legacies of her former proprietor. Obatossi relied on transatlantic knowledge and connections to help guide a blossoming Afro-Brazilian religious movement. Oral histories collected from Salvador’s prominent *Candomblé* circles over the twentieth century consistently recall her as an essential founder (Verger 1981; Reis 2001, 2012; Castillo and Parés 2007).

Francisca and Marcelina’s lives highlight the complex and variable realities of Africans and their descendants involved in Bahia’s transatlantic economy. Though Bahia’s slave regime was as brutal and violent as any other in the Americas, it was extraordinarily fluid, allowing some enslaved people to earn and purchase freedom

\(^{195}\) On processes of manumission in Bahia, see Chapter 4, n. 126.

\(^{196}\) *Ganhadeiros (as)*, or *escravos (as) de ganho* were enslaved workers that performed services or sold goods to raise money for their proprietor, keeping any profits for themselves. Such arrangements allowed for varying degrees of mobility and independence and were relatively common in urban areas in Brazil, especially Salvador and Rio de Janeiro in the nineteenth century; see Mattoso (1986), Oliveira (1988), and Nishida (2003).
through a variety of manumission procedures, and also to own slaves of their own. Indeed it was quite common for Salvador’s freed Afro-descendants to own slaves. One study of 257 last wills registered by Afro-descendants in Salvador from 1790-1850 found that 75 percent of freed Africans owned at least one slave before their death (Oliveira 1988).

From a purely and grotesquely economic perspective, enslaved people were valuable and sound investments that could improve the socioeconomic status of those who owned them, and the practice extends from deep roots in West and West Central African societies (Thornton 1998; Green 2012). In Bahia and elsewhere in Brazil the slave economy and the transatlantic trades with western Africa that supported it became potent tools for some Afro-descendants to enhance their material conditions and legal standings (Frank 2004; Hicks 2015).

While there is no evidence that either Francisca or Marcelina dealt directly in African merchandise (other than human beings), products from West Africa and recipes inspired by them were certainly among their wares both as vendors and as Candomblé clergy, and they and many others benefitted from the transatlantic mobilities actuated in the growing palm oil trade (Sterling 2012). Marcelina and her daughter Magdalena were among the first of the transatlantic “returnees” that traveled to and fro between Bahia and West Africa in the nineteenth century, anticipating the broader flux and reflux of people, products, and ideas that would influence cultural, economic, and ecological change throughout the Atlantic in the nineteenth century (Verger 1976; Matory 2005; Carneiro da Cunha 2012). Ship traffic in the ensuing decade shows sustained contact between the two coasts. Verger (1981) counted 56 ships travelling between Bahia, Ouida, and Lagos in 1846; 72 in 1847, 91 in 1848, and 77 in 1849. Many of the African and Afro-Brazilian
returnees engaged in South Atlantic commercial networks as traders and go-betweens linking merchants and sailors in Salvador with slavers and palm oil suppliers on African coasts (Rodrigues 1965; Verger 1976, 1992; Soumonni 2001; Strickrodt 2008; Carneiro da Cunha 2012). Returnees used their transatlantic connections to build fortunes, families, and communities while contributing to economic and cultural development along much of the western African coasts from contemporary Ghana to Angola (Boadi-Siaw 2005; Matory 2005; Olliz-Boyd 2010; Sterling 2012). By the mid-nineteenth century, freed Africans from Brazil came to control much of the trade out of Ouidah, a leading slaving and palm oil port in the Kingdom of Dahomey (Forbes 1851; Law 2006).

Prominent among the freed returnee merchants was Joaquim d’Almeida, formerly enslaved to Manoel Joaquim d’Almeida, himself a well-connected Bahian trader of African captives and palm oil. After gaining his manumission, the liberated African returned to West Africa, settling in Dahomey near his native Mahi in the 1830s. There he worked with merchants based in West Africa, Bahia, and Sardinia to develop a transatlantic shipping enterprise dealing in palm oil and the clandestine slave trade (Verger 1992; Law 2006). Before moving to West Africa permanently in 1844, he submitted a will in Salvador to settle his Bahian estate in the case of his death abroad. His properties included a house in the posh upper city parish of Santo Antonio Além do Carmo, one-fourth of the cargo of a Sardinian polaca\(^\text{197}\) bound for West Africa, 20 slaves on the market in Pernambuco, 36 in Havana, and another 9 in his own company. He named his former master as principal executor, and left money to settle a debt with

\(^{197}\) A two- or three-masted ship similar to a xebec or small brig used widely in Mediterranean trade (Navarrete 1831; Harbron 1988).
Senhora Thomazia de Sousa Paraíso, a freed African woman originally from the Gbe-speaking areas around Dahomey (Jeje) then working as a merchant in West Africa.\footnote{Thomazia likely took her name from her former owners, and if so was intertwined with that powerful slaving family and their transatlantic networks discussed in Chapter 6.} In Bahia he left money to free two Nagô\footnote{Nagô is the presiding exonym for Yoruba peoples in Brazil (Law 1997).} women, a woman from the Mina Coast, and a Creole girl named Benedita, whom along with a boy named Sotéiro, he named as heirs.\footnote{Testament of Joaquim d’Almeida (Africano), Salvador, 1857, APB, SJ, 03/1228/1697/13. His one-fourth share of the total cargo of Rs. 400:721$850 was Rs. 100:180$462. Verger (1976, pp. 475-477) published his testament.} Despite submitting his last will, d’Almeida lived to amass a considerable fortune in Ouidah. He worked with his former owner to ship African palm oil and human captives to Bahia. For instance, Manoel Joaquim d’Almeida was among the cosignatories for another Sardinian schooner arriving in Salvador from the “costa d’Africa” on October 11, 1848, one of six such arrivals of Sardinian ships carrying palm oil in a period of less than four months.\footnote{“Italia” in 010 APB, SA, SM, 1848-1849. A seventh Sardinian ship arrived two months later carrying bees wax from Angola.} The next year Royal Navy Captain Frederick Forbes (1851, p. 151) named d’Almeida as “the richest slave-merchant resident in Whydah,” and in 1853 the English Consul in Bahia ranked him among Bahia’s top three slavers (Verger 1992, p. 47).\footnote{In March of 1830, treaties with Great Britain prohibited the slave trade in Brazil, but the trade continued clandestinely. As a legal trade good, palm oil appears frequently in the customs documentation, while shipments of captive Africans were less documented; see below, Eltis (1987), and the Estimates Database for the transatlantic slave trade compiled and made available online by Emory University (2009a).}

D’Almeida’s ascendance may have been extraordinary, but it was not unique. Freed African Geraldo da Lima, for example, inherited the surname and transatlantic
trading firm of his former owner César Cerqueira Lima, and went on to build a lucrative palm oil export business in the Volta estuary on the Gold Coast (Costa e Silva 2004; Strickrodt 2008). The experiences of freed Africans d’Almeida and Lima show how the transatlantic trades provided recourse from the slave economy, albeit for a fortunate few. A class of freed African merchants harnessed the Bahia-Africa trades to negotiate lines of credit, build lucrative businesses, and purchase freedom for themselves and others. Back in Bahia, documents of Afro-descendant merchants dealing in transatlantic flows of African materials, produce, and ritual objects demonstrates the fundamental and persistent roles of the Bahia-Africa trade within the development of Afro-Brazilian cultural and religious expressions, as well as its fundamental importance in Bahia’s mainstream economic development in the second half of the nineteenth century.

After African freedwoman and merchant Maria do Rosario died without a will, authorities publically auctioned her estate in 1865, which included an enslaved African woman, her creole son, and an extensive collection of African goods. Among her belongings were items produced and sold in western Africa and prized in Bahia as spiritually potent materials. They included: 3 arrobas\(^2\) of soap (sabão da costa) made from palm oil, three pounds of shea butter (limo da costa), 17,500 kola nuts, 2,000 West African peppers (pimenta da costa), four pounds of lêlêcum beans, four arrobas of bijiricum beans, six arrobas of cowry shells (buzios da costa), 8 panos da costa, four cuías da costa,\(^3\) a large balaio (woven basket) and five empty wooden casks

\(^2\) An Arabo-Iberian unit of weight roughly equivalent to 14.7 kilograms or 32 imperial pounds.
\(^3\) Decorative vessels handcrafted from African calabash gourds of great symbolic and utilitarian importance in Yoruba and other western African cultures; see Layiwola (2008) and Figure 64.
(barricas)—which likely stored African palm oil (Querino 1957; Pessoa de Castro 2001; Elias and Carney 2007). Maria made her living selling those goods, and her efforts supplied her neighbors with the authentic African merchandise imperative in Candomblé and other Afro-Brazilian religions (Figure 64 and Figure 65) (Verger 1999; Parés 2013).

Profits from the Bahia-Africa trade could also be used to purchase manumission. African freedwoman Mariana Joaquina do Espírito Santo came to own a store in Salvador specializing in West African and European textiles and operating on substantial capital and lines of credit. At her death in 1871, the executor of her estate oversaw the liquidation of her properties to close the outstanding debts she incurred as consignments of imported goods. Four years earlier she willed manumission and panos da costa to two enslaved Yoruba women, Felicidade and Maria, and their five children. Thus income from her dealings in the South Atlantic trade purchased not only her own freedom, but that of others.

——“Edital,” Jornal da Bahia, 28 November 1865, 3. A partial copy of that newspaper is attached to the inventory of Serena Leonor Barriga, Salvador, 1863, APB, SJ, 03/1016/1016/01. Bijiricum is a variant of pejericum, a West African bean with ritual functions (Pessoa de Castro 2001). The Portuguese often used barricas to transport olive oil (Girão 1833), and the wooden casks also carried palm oil from the coast of Africa. The São Miguel Triumfante carried 6 barricas containing a total of 1,060 canadas of palm oil from the Mina Coast to Bahia in 1812; see “Francisco Joaquim Barro proprietário do Bergantim Triumfante Friderico Lindeman, Consul Britanico No. 12,” AN, Caixa 410, Fundo 7X, Pac. 1. In 1957, ethnographer and polyhistor Pierre Verger (1999) published a Yoruba fable (mito) he recorded in Bahia featuring a “barrica de azeite”:

“Arriving at a certain distance, [deity] Exu Elepo announced himself.

‘—Oh, Oxalá, oku lailai, it’s been a long time since I’ve seen you. Come give me a hug.’ Exu had a barrica de azeite on his head dripping oil, and when he hugged [deity] Oxalá, he dumped the barrica de azeite all over him, and cracked up laughing” (p. 428).

——Testament of Mariana Joaquina do Espírito Santo (Africana), Salvador, 1871, APB, SJ, 05/2151/2620/23 and Inventory of Mariana Joaquina do Espírito Santo (Africana), Salvador, 1871, APB, SJ, 03/984/1453/11.
Figure 64: A clay *cunda* containing offerings for the Afro-Brazilian deity *Exú* at a crossroads in Mata de São João, Bahia (2012).

Figure 65: Culinary, botanical, and ritual items, some of them all three at once, for sale at Salvador’s São Joaquim market (2012).

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207 Photo credit: K.D. Burns.
Born in Africa, traffickers sold Sabina da Cruz into Brazilian slavery. In Salvador she earned wages as a *ganhadeira*, selling goods for her owner and eventually accumulating enough to purchase her freedom. As a freedwoman she built a business of wholesale goods from Western Africa, notably black soap, cowry shells, *cuias*, peppers, and *panos da costa*, but especially kola nuts. She paid cash for a house in 1860 where she lived with five others, including Maria Cezaria da Cruz and her daughter Serafina, as well as three minors, two of them children of the late Jesuíña, an enslaved woman formerly owned by Sabina. At her death in 1872, she owned two enslaved Yoruba Africans, Maria Luíza and Antonio, who promptly purchased their own freedom at their appraised value, suggesting that they too worked in and benefitted from Sabina’s international wholesale business (Graham 2012). Her estate included outstanding debts with four merchants prominent in the Bahia-African trade.

Pantaleão Lopes Vilasboas, João do Prado Carvalho, Manoel Gonçalves da Costa, and Pompeu Justino Fernandes were all preeminent importers of African products whose names appear repeatedly in the extant manifests from ships plying the South Atlantic. They supplied Sabina with the bulk goods from Ouidah, Lagos, and elsewhere that she in turn sold to the many retail vendors about town. There is no evidence that Sabina was involved with the palm oil trade, but African palm oil supported in large part the lucrative South Atlantic trade networks and helped ensure the regular flow of ships that kept her in business. Furthermore, she or her associates could have produced or otherwise dealt in domestic dendê. Of the debts pending at her death, the largest belonged to Fernandes, a
freed African trader of considerable wealth, for three large chests (*caixões*) of kola nuts.\(^{208}\)

Pompeu Justino Fernandes was part of the Afro-descendent merchant community that helped broker the heyday of the palm oil trade in the 1860s and 70s. On 27 April 1878, port officials in Salvador dispatched to Lagos the Portuguese *patache* *Garibaldi*. On board were nine barrels of honey, 2,434 rolls of Bahian tobacco (*mangotes de fumo*), 100 large bottles (*garrafões*) of *cachaça*, 21,900 cigars, and an assortment of other commodities and domestic goods to trade for African produce and merchandise.\(^{209}\) On September 26 of that year, the *Garibaldi* returned to Bahia with 13,697 gallons of the Lagos palm oil Sir Richard Burton (1863, vol. 2, p. 235) called the “best and clearest upon the West African coast,” along with 1,163,700 kola nuts, and various other African

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\(^{209}\) “Despachos Marítimos,” *O Monitor*, 27 April 1878, 2. The cargo outbound for Lagos included nine barrels of honey (*mel*), three sacks of ground coffee (*café pilado*), 2,434 rolls of Bahian tobacco (*mangotes de fumo*), eight sacks of dried beef (carne seca), 15 chests (*caixas*) of wine, five *barricas* of wheat flour, one *barrera* and one box of tableware (*louça, vidros, miúdez*), 100 large bottles (*garrafões*) of *cachaça*, three large bottles of honey (*mel*), one barrel of white fish (*paraty*), one box and two canisters of bee’s honey (*mel de abelha*), 50 articles of cured meats (*mantas de carne*), 2 boxes of Chilean-style straw hats (*chapeus do Chile*), 21,900 cigars, two boxes of sandals (*chinellos*), 4,700 beetles (*bezouros*), 400 clay vessels (*quartinhos and muringos*), and 35 brimmed cotton hats (*chapeus de sol de ganga*).
products, including *panos*, *cuias*, black soap, shea butter, and five caged parrots.

Fernandes signed for 560 gallons of the palm oil and a chest of 5,000 kola nuts, goods that he presumably sold at profit to vendors in Salvador.\footnote{“Garibaldi” in 010 APB, SA, SM, 1878-1879, 3 of 4; “Importação: Manifestos,” *O Monitor*, 27 September 1878, 2. The manifest published in *O Monitor* listed 20 large bottles (*garrafões*) and 18 casks (*cascos*) of “azeite de palma,” 275 volumes of kola nuts (*obi*), 7 volumes of *panos da costa*, [illegible], 1 barrel of seeds (*pevides*), 3 sacks of fruits, 6 volumes of [black] soap, 1 barrel of paint, 1 sack of *pejerecum* beans, 1 caged Angolan monkey (*macaco de Angolla*), 1 cage of parrots (*papagaios*), 1 small cask (*barrica*) of shea butter (*limo da costa*), [illegible], and 1 volume of assorted items (*vários gêneros*).}

Such cargo ships sometimes ferried passengers across the Atlantic. Traveling aboard the *Garibaldi* on that run were 22 passengers, most of them freed Africans returning to Bahia from Lagos with a load of African goods. Merchant Eliseu do Bonfim, a Yoruba native of Abeokuta formerly enslaved in Bahia (Turner 1942; Castillo 2011a), imported 43,400 kola nuts and declared in his luggage a bundle of *cuias* and a caged songbird. Rodolfo Martins de Andrade, the *babalaô* (priest associated with the Yoruba-based cult of *Ifá*) also known as *Bamboxê Obitikô*, returned with 39,500 kolas, a bundle of *cuias*, a sack of miscellaneous goods (*miúdezas*), and a large bottle (*garrafão*) of four gallons of palm oil, as well as a small amount of African peppers and *panos da costa* in his luggage. Oral histories of *Candomblé* circulating in Bahia memorialize Martins de Andrade as an integral co-founder of the *Casa Branca do Engenho Velho* along with Marcelina da Silva, or Obatossi. Though Marcelina never returned to West Africa after her sojourn ended in 1839, she relied on transatlantic ship routes, members of her religious congregation such as Eliseu do Bonfim and Bamboxê Obitikô, and cultural-economic demands for African goods in Bahia to remain in contact with the eastern
shores of the Atlantic. The manifests of the *Garibaldi* therefore illustrate the
socioecological Atlantic networks that linked Bahia and Africa in the late-nineteenth
century, supplying the botanical products and derivatives fundamental to Afro-Brazilian
cosmologies and religions. Religious clergy, freed merchants, philosophies, palm oil,
tobacco, rum, and other ritual and commercial materials flowed across the South Atlantic,
affecting cultures, economies, and ecologies on both coasts and beyond (Figure 66).211

Goods imported from Western Africa became essential “materialities of ritual” in
Bahia, symbolizing and encouraging Afro-Brazilian cultural and spiritual resistance
across the Black Atlantic (Gilroy 1993; A. L. Araujo 2010; Ogundiran and Saunders
2014). State-sponsored religious harassment and suppression were recurrent in
nineteenth- and twentieth-century Bahia and highlight the role of African products,
including palm oil, in the perpetual grind of mundane Afro-Brazilian resistance (Butler
1998a; Harding 2003; Santos 2009; Parés 2013). At 1 a.m. on April 12, 1858, Bahia’s
Secretary of Police ordered his troops to raid a *Candomblé* ceremony in Salvador’s
upscale Vitória neighborhood. They arrested 32 participants in all: 18 free creole women,
two *pardas* (mixed race women of partial African descent), three freed African women,

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Porto—Entrada de passageiros, vol. 1, 2 July, 1873-12 February 1879,” Seção
Republicano (SR), APB. Eliseu do Bonfim is the father of the well-known babaláô
Martiniano Eliseu do Bonfim; see Turner (1942) and Ayoh’Omidire and Amos (2012).
Martiniano went on to wield extraordinary influence in the academic and intellectual
construction of Bahian *Candomblé* as a founding member of *terrieros*, a Yoruba teacher
and translator, a key informant for foundational scholar of Afro-Brazilian studies
Raimundo Nina Rodrigues, and a prominent contributor to the second Congress of Afro-
Brazilian Studies held in Bahia in 1937 (Carneiro 1964; Matory 2005; Capone 2010).
Rodolfo Martins de Andrade is listed among the passangers as “Rodolfo Manoel
Martins.” These are variations of the same person, also known in Yoruba as Bamboxê
Obitikó, formerly owned by a Portuguese planter named Manoel Martins de Andrade; see
Castillo and Parés (2007), Pares (2010, 2013), Castillo (2011a), and Chapter 4, n. 168.
Figure 66: South Atlantic trade, ca. 1878.\textsuperscript{212}

\textsuperscript{212} Arrows indicate movement of goods between Bahia and western Africa, as well as foreign re-exports and domestic cabotage of palm oil and other goods from Bahia. Transatlantic cargoes appear as listed in the out-bound and in-bound manifests of the \textit{Garibaldi}, 27 April and 26 September 1878, respectively. The ship depicted is, like the \textit{Garibaldi}, a two-masted, schooner-rigged patache. “\textit{Garibaldi}” in 010 APB, SA, SM, 1878-1879, 3 of 4; “Despachos Marítimos,” \textit{O Monitor}, 27 April 1878, 2.
five creole men (one enslaved), and two freed African men. Officers confiscated the illegal ritual materials they found inside, including the ceremonial garb worn by the men and women. They removed three steel swords used to appease the African deity Ogun and several articles of ceremonial clothing—some adorned with West African gold and cowries. As a fundamental symbol of Afro-Brazilian spirituality, palm oil and other African products were almost certainly a part of the ceremony, but as licit goods with uses other than religious, police chose not to list them in their report.213

Similar police raids, however, ended in the confiscation of otherwise legal goods when officers recognized them as components of Afro-Brazilian worship. In 1853, police raided an Afro-Brazilian religious ceremony led by freed African Cipriano José Pinto on the Paramerim sugar plantation near São Francisco do Conde in the Northern Recôncavo (Soares 1992). The ritual items confiscated from the candomblé demonstrate the integral roles of African goods in Afro-Brazilian religious practices and a blending of diverse African and Indigenous traditions in the Bahian context. Police found Pinto along with African-born Sofia da Matta in a room festooned with “cowries, beads, coral, feathers, and other ornaments from the Mina Coast.” They confiscated a long list of ritual objects and offerings, among them “azeite de dender,” six feathered headpieces (penaxos), 30 panos of diverse colors—some adorned with cowries, four new panos da costa, a human skull covered with pins, two stuffed boa snakes, bottles of wine and cane rum (aguardente), a gris-gris talisman filled with Muslim script, two freshly harvested yams

213 “Correspondência Recebida dos Delegados de Polícia: Delegados de Polícia (capital e interior), 1842-1866,” APB, SACP, maço 2994-1. Compare these African/Afro-Brazilian goods and others mentioned in this chapter with items listed among the many ceremonies and rituals detailed by Verger (1999).
“da costa,” woven African floor mats (*esteiras da costa*) inlaid about the floor, and other odds and ends (*miúdezas*) (documents archived at APB reproduced in Soares 1992, p. 139). Already by the mid-nineteenth century, African merchandise was lending perceived authenticity to Afro-Brazilian religious practices in rural areas outside of the urban capital. Listed as “African,” the newly harvested yams—with their leaves (*grelos*) still attached—presumably grew from Brazilian soil, yet they represented African flora in diaspora along with the freed Africans in charge of the ceremony. With the *azeite-de-dendê*—which could have been either African or Bahian—those diasporic, socioecological commodities and communities were assembling a novel, transatlantic Afro-Brazilian cosmology.

**Trades clandestine and legitimate in Salvador da Bahia**

For all its cultural and religious significance, palm oil remained an important economic resource in Salvador and throughout the Atlantic World. First developed by Yoruba women, black soap made from palm oil (*ọsẹ dúdu*) served practical and symbolic purposes as a powerful ritual cleanser (Sudarkasa 1973; Verger 1995). An anonymous Portuguese pilot encountered soap made from palm oil on São Tomé in the mid-sixteenth century, and boasted that it was “more than twice [as effective] as ordinary soap” ([1550] 1867, p. 85). Production of the soap spread across Atlantic Africa and beyond and São Tomé remained a prominent manufacturer and trader. A royal contract from 1751 authorized a monopoly of African black soap in Lisbon, and by the early-nineteenth century...
century soap manufactories throughout Portugal were using African palm oil.\textsuperscript{216} The São Tomé trade was significant enough by 1813 to warrant a special royal tax on the import of palm oil and black soap made there.\textsuperscript{217} Bahia entered the Atlantic soap market as well, as nineteenth-century records reveal the outlines of a local industry. A ship manifest from 1852 shows a shipment of Brazilian black soap from Bahia to the Sergipe province to its north.\textsuperscript{218} A recurring column on industrial techniques in Salvador’s commercial daily \textit{O Monitor} from September of 1876 discussed the widespread and expensive use of palm oil in Bahia’s soap factories, but failed to specify if typical supplies were domestic or imported.\textsuperscript{219}

Scattered evidence suggests some local industries made soap from domestic dendê in the nineteenth century. A soap manufactory on Santa Luzia, a small island in the cove that forms Salvador’s Itapagipe Peninsula (Figure 67), went up for sale in 1843. Its ad in a local daily listed quarters (\textit{senzalas}) for “slaves and animals,” a caldron, furnace, and “other utensils for soap-making” along with a fruit orchard that included “dendezeiros […] other fruit trees, and budding crops—[to be sold] with or without the slaves.”\textsuperscript{220} A catalog of Brazilian products submitted to the 1862 Universal Exposition in

\begin{footnotesize}
\begin{itemize}
\item \textsuperscript{216} “Memoria, ou Descripção Fizico-Politica, das Ilhas de Cabo Verde, 1809,” ANTT, maço 62, caixa 203. I am indebted to Mary Hicks for this reference.
\item \textsuperscript{217} Alvará of 20 September 1813 in Código Brasiliense, ou Colleção das leis, alvarás, decretos, cartas régias, &c. promulgadas no Brasil desde a feliz chegada do príncipe regente N. S. a estes estados com hum índice chronologico. Rio de Janeiro: Na Impressão Régia, 1811–1816, vol. 2 (1817).
\item \textsuperscript{218} “Correspondência Recebida sobre pedidos de Passaportes: Polícia (assuntos), 1828-1883,” APB, SACP, maço 3193-1.
\item \textsuperscript{219} “Estudos industriaes,” \textit{O Monitor}, 27 September 1876, 2; “Estudos industriaes,” \textit{O Monitor}, 29 September 1876, 2.
\item \textsuperscript{220} “Annuncios,” \textit{O Commercio}, 16 August 1843, 4. According to Rebello (1829, p. 136) the “very small” \textit{Ilha de Santa Luzia} was “fully cultivated.” Successive land reclamation
\end{itemize}
\end{footnotesize}
London lists palm oil as both a foodstuff and an ingredient in soap manufacture (Brazil 1862, p. 38). More than a decade later, in 1876, the steam-powered soap factory projects in the twentieth century infilled land around the island and the area is now a bayfront neighborhood.


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**Figure 67**: Map of Salvador, Bahia, and environs ca. 1850.\(^{221}\)
Perseverança opened in Nazaré das Farinhas, a regional hub for manioc production just south of the Recôncavo, using coconut, castor, and palm oils produced in Bahia.\textsuperscript{222}

Much like the broader palm oil trade, soap production in Salvador remained entwined with the slave trade. On November 9, 1837, Brazilian brig Feliz Constância arrived in Salvador from São Tomé with a light and miscellaneous cargo including panos, soap, woven baskets, two jugs (potes) of palm kernel oil (xoxô), and 18 barrels and 15 meias pipas of palm oil, four of which were purchased by Wenceslau Miguel de Almeida, a prominent slave marketeer.\textsuperscript{223} Almeida may have used that African oil in a soap factory he owned in Pilar parish near the harbor in the lower city. Following his death in 1861, probate officers inventoried his factory, as well as a considerable amount of bank stock and shares in a Bahian import company. Of the fifteen enslaved men and women listed with his property, seven were natives of Africa; officers described five of them only as “Africanos,” but labelled the other two as Nagô, the Bahian exonym for Yoruba-speaking peoples. The inventory listed one of those Nagô men, Tiburcio, as skilled in soap making. Curiously both of the Nagô men suffered from leg injuries: Vicente’s was amputated, and Tiburcio’s was listed only as crippled (aleijada).\textsuperscript{224} Almeida and Tiburcio may have used

\textsuperscript{222} “Correspondência recebida da Câmara de Nazaré,” APB, SACP, maço 1370.

\textsuperscript{223} “Feliz Constância” in 010 SM, AS, APB, 1837-1838. A Portuguese pipa (“pipe” or “butt” in English) is half a liquid tun or nearly 477 liters. A meia pipa refers to half of a pipe. The original record lists “chochô.”

\textsuperscript{224} Inventory of Wenceslau Miguel d’Almeida, Salvador, 1861, APB, SJ, 05/2007/2478/01. Almeida owned a prominent slave market on Julião Street in the lower city that figured prominently in the Malê Revolt of 1835. On 25 January, a group of approximately 20 enslaved Africans led by Nagô men instigated the revolt by attacking the market. The rebels temporarily freed more than one hundred newly arrived Africans from their holding cells, but later fell to heavily armed police and a lynch mob (Reis [1986] 2012; Nishida 2003; Araujo 2014).
the imported African palm oil to make soap in the factory, although they also procured less-expensive animal fat and domestic palm oil, which were probably more common feedstocks. Either way, Tiburcio’s occupation and Nagô label suggest that his proprietor valued and profited from African expertise in the manufacture of soap, an industry common throughout western Africa, and especially in Tiburcio’s Yoruba homeland.

Soap making was part of a booming demand for palm oil on the global market in the nineteenth century that also included candles and tinplating. Increases in workloads and mechanical grime during the Industrial Revolution influenced changes in European hygiene practices and amplified demand for soaps and candles (Mintz 1985). And as Great Britain promoted palm oil commerce as the “legitimate” alternative to the transatlantic slave trade, UK imports of West African palm oil boomed more than 20 orders of magnitude from 1795-1854 (Lynn 2002). British trade in African palm oil stimulated Atlantic commerce binding Europe, Bahia, and the African coasts, as well as the overall production of palm oil in western Africa (Dike 1956; Martin 1988; Lynn 2002; Guenther 2004; Carneiro da Cunha 2012).

Brazilian slave trader Felix Francisco de Souza was a central figure in the development of commercial palm oil production and trade in the Kingdom of Dahomey. He moved from Bahia to Ouidah sometime around 1820. There he developed close relations with King Gezo who named him the kingdom’s first Chacha, a sort of viceroy. Great Britain signed a treaty with Portugal in 1815 outlawing the slave trade north of the

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225 D’Almeida announced in 1838 his intentions to purchase “azeite de dendê,” tallow (cebo), lard (toucinho), butters, and other fats at his factory; see “Annuncios,” Correio Mercantil, 1 August 1838, 4.
equator, threatening the economic engine that Dahomey and Souza depended on. Souza used his influence to promote palm oil production in the kingdom, and built a palm oil plantation, staffed with enslaved workers, to augment his trade in human chattel, which he continued to market illegally to Bahia and Cuba for decades (Rodrigues 1965; Bay 1998).

Increased global demand for palm oil stimulated broad economic and socioecological changes in many parts of western Africa. Palm oil operations boosted production in the hinterland to meet demands at the coastal export depots all along the West African coasts from Freetown to Old Calabar (Dike 1956; Law 2002a; Mann 2007). While traditional forms of production intensified in most places, monocultural plantations of African oil palm sprang up in and around the Kingdom of Dahomey. Forbes (1851) documented his visits to several oil palm plantations there in 1850, all staffed with enslaved workers. Aside from the enterprise owned by de Souza, he recorded a few along the road between Dahomey and Abomey, another belonging to Ahjohvee—a native of Dahomey, and the royal plantation, “justly remarkable for the superiority of its cultivation and the industry of its denizens” (p. 68). He described a bustling operation owned by the former slaver José Francisco dos Santos, known as Zé the Tailor (Zé Alfaiate), “filled with traders, —some with only a gallon, others having slaves loaded with large calabashes of oil; while dozens of his own slaves were counting out cowries to pay for the produce” (p. 114). Finally he complimented a plantation of “the highest order” owned by an unnamed “liberated African from Bahia,” intercropped with corn,
cotton, yams, and manioc (p. 123; see also Verger 1952, 1953). Along with industrialists in the UK, merchants operating out of Bahia imported much of the palm oil produced on those plantations, helping to expand the transatlantic trades, legitimate and otherwise (Lynn 2002; Law 2006).

In 1830, Brazil finally acted on British demands to prohibit the import of slaves, but that original law was weak and rarely enforced. Though human cargoes arriving in Bahia initially declined, slavers modified their operations to evade the British fleets that policed ship traffic and the clandestine trade rebounded through the 1840s (Eltis 1987; Nishida 2003) (Figure 68). Instead of the well-equipped harbor at Salvador, clandestine slave operations landed captives on islands in the Bay of All Saints, especially the many islands and harbors on and near the western counter coast of Itaparica, and later along Bahia’s Southern Coast, including the mouth of the Una River in Valença and a coastal fishing village on the Maraú peninsula called Taipús (Verger 1976; Eltis 1987; Caíres Silva 2007). The area that would later become the Dendê Coast, with its myriad remote estuaries and archipelagos, provided slavers with countless convenient anchorages for the clandestine trade (Barcia 2014).

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226 French Member of Parliament René Felix Le Hérissé (1903) described similar intercroppings in Porto Novo in 1902. He documented a “vast plateau covered by a rich vegetation of palms, sheltering beautiful cultures of corn, yams, cassava, etc.” where “men, women and children cultivate the fields, harvest grains, and produce palm oil, selling their produce directly at neighboring markets” (p. 53).

227 The Transatlantic Slave Trade Database (Emory University 2009a) estimates that 97,926 enslaved Africans arrived in Bahia from 1821-1830, the decade prior to the original, weak ban. After declining to 34,133 over the next decade, imports rebounded to 65,022 between 1841 and 1850, before a stronger ban effectively ended the trade in September of that year. Estimates for Southeast Brazil (dominated by Rio de Janeiro, which had overtaken the Northeast a century earlier to become Brazil’s leader in human imports), show a similar pattern over those three decades: 337,888 from 1821-30; 265,909 from 1831-40; and 308,114 from 1841-50.
Across the Atlantic in western Africa, the gradual shift from traffic in humans to intensified palm oil production was transforming economies and landscapes (Law 2002a). Despite British intentions of replacing the trade in humans with trade in palm oil, the “legitimate” trade worked to complement—rather than supplant—continued human trafficking. Legal restrictions on slave exports merely pushed the trade underground, and as noted above, many oil palm plantations employed slave labor, especially those in Dahomey. Elsewhere enslaved workers produced local foodstuffs that supplied export economies; all of these factors contributed to increases in enslaved labor in West Africa (Manning [1982] 2004; Lovejoy 1983; Law 2002a).

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Coastal merchants continued to send slaving expeditions into the interior. They clandestinely shipped most of the men to Brazil and Cuba, while they employed many of the women and a few of the men in palm oil production. That gendered division meshed with the overseas market for captives as well as traditional divisions of labor common in the oil palm groves across western Africa (Verger 1976; Law 2002c; Mann 2007). Thus the growth of the Atlantic palm oil trade in the early- and mid-nineteenth century perpetuated slave activity in both Africa—where enslaved workers staffed palm oil and other plantations, and across the Atlantic in Brazil—where disembarkations of captive Africans continued despite the official ban (Dike 1956; Rodrigues 1965; Verger 1976; Manning [1982] 2004, 1990; Lovejoy 1983; Eltis 1987; Martin 1988; Asiwaju 1989; Lynn 2002; Law 2002a, 2006; Costa e Silva 2004; Carneiro da Cunha 2012). For their part, many of the merchants entrenched in the transatlantic slave trade often listed the palm oil trade on passport applications for the coasts of Africa, only to engage in the clandestine trade for humans. As the clandestine trade became less viable, many of those merchants avoided, or at least mitigated crisis by finally adapting to the “legitimate” trade. Before the definitive end of the Africa-Brazil slave trades in 1850, some prominent factors on the African coast, such as Domingos José Martins, had gradually shifted to palm oil exports—first as a supplement but eventually as a replacement (Verger 1976; Eltis 1987).

Whether in complement to human cargoes or as standalone ventures, ships laden with African palm oil arrived in Bahia through most of the nineteenth century. The transatlantic slave trade had long provided an export market for goods produced in rural Bahia, and the legitimate trade prolonged that exchange after the traffic in humans ended.
Port records from 1869 show a typical cargo sent to West Africa in exchange for palm oil, *panos*, kolas, and other goods. The Portuguese *palhabote*[^229] *Aguia* left Salvador on 18 February with a cargo of 40 pipas of *cachaça* (Brazilian rum), 1,200 cords of tobacco (*mangotes*), 10 canisters (*latas*) of sugar, 10 *caixas*[^230] of soap, and one *caixa* of miscellaneous goods (*miúdezas*). Manoel Gonçalves da Costa, a merchant earlier involved in the clandestine slave trade to Rio de Janeiro, bankrolled the venture. The ship had just arrived from Ouidah on 7 January with a load of 39 barrels and 110 casks containing 14,390 gallons of palm oil, 107,400 “masculine” kolas, 12,600 “feminine” kolas, 8 barrels and 2 *caixas* of soap, hundreds of *panos* and woven baskets, and various other goods, all underwritten by Gonçalves da Costa. Extant customs records show the *Aguia* especially active on the Bahia-Ouidah run, disembarking in Bahia on 21 separate occasions from 1856-1878.[^231] Thus that ship represents somewhat of a microcosm for the broader Bahia-Africa trade in the second half of the nineteenth century.

[^229]: From the English “pilot boat”; a small, speedy, and agile schooner (Navarrete 1831). Those merchants probably used this boat in the clandestine slave trade that ended in the previous decade, later converting it to traffic in palm oil and other goods (Eltis 1987; Costa e Silva 2004).

[^230]: A wooden chest traditionally used to package sugar for trade. In the sugar trade its dimensions were tightly regulated at 1.75 meters long by 0.65 meters wide; see Miller (2000). Import/exporters working the South Atlantic trade appear to have repurposed the *caixas* to package other goods moving between Bahia and Africa.

Manifests from ships plying the South Atlantic such as those provide insight into the economic, cultural, and ecological factors that reinforced and resulted from the Bahia-Africa trade. Bahia’s fragmentary customs records and their often vague weights and measures preclude systematic analysis, but the extant documentation shows a sustained trade over the period for which records remain available (1837-1879). Over that period, 111 ships unloaded African palm oil in Bahia, at least one in each year except 1845. Based on those data, the ship traffic moving between Bahia and Africa seems to have peaked in the 1860s with 63—or more than half of those ships—arriving between 1859 and 1869.\textsuperscript{232} The ending of the transatlantic slave trade after 1850 forced ships and crews formerly involved in human trafficking to adapt to the new economic realities. Palm oil was a convenient substitute for human captives, albeit with lower profit margins that continued to decrease over the second half of the nineteenth century (Law 2002b; Mann 2007).

Ships carrying African goods to Bahia expanded their profits by diversifying cargos beyond just palm oil. Records from those ships show they carried diverse payloads of bulk West African goods, and bales of panos or chests of kolas sometimes dwarfed cargoes of oil. The manifests listed in the volume available for 1863-1864 are exemplary. They show the arrival of 69 ships, six of which came from African coasts. Two of those, the \textit{Julieta} and the \textit{Emilia}, were Italian schooners coming from Lagos loaded with West African goods, but neither carried palm oil. The former landed in Bahia on 27 April 1863.

\textsuperscript{232} The 63 volumes of ship manifests in 010 APB, SA, SM, 1837-1879. There is also a volume for 1791-1792, but it lists only exports from Bahia. In 2012, 63 volumes of ship manifests were available for consultation. The diligent staff there are currently restoring other volumes and more may be available now and in coming years.
with various containers of West African products including black soap, shea butter, pejerecum beans, peppers, panos, ritual salt (cão), baskets, cuias, palm fronds or straw (mandim), ritual and medicinal African buffalo horns (laguidibás), and a large load of kola nuts separated into male and female genre according to ceremonial use (Verger 1999). Emmanuelle Pittaluga, member of an affluent cadre of Sardinian merchants operating between West Africa and Bahia, underwrote the ship’s full payload. The latter ship, a former slave schooner christened Emilia, docked in Salvador on 30 April with a load of 18 barricas and 33 caixas of kolas, one caixa of panos, and 50 caixas of woven palm mats (mandim) all dispatched to the Hasselmann brothers, a European outfit with connections in Hamburg and London.

Almost three weeks prior, the Aguia arrived from the unspecified African Coast (costa d'Africa) with a motley cargo of West African merchandise consigned to Manoel Durães Lopes Vianna. Of the 81 entries on its manifest, 39 referred to various containers of kolas, and 11 to panos, all later dispatched to various merchants in Salvador. There were also 56 ponxes of palm oil, all dispatched to Vianna, save for the four meias pipas later signed out by João Gonçalves Baêta, a former slaver and agent of Zé Alfaia at Agoué who had returned to Bahia to oversee their legitimate imports (Verger 1953).

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233 On mandim, see Sarmento (1891, p. 74); not to be confused with an indigenous name for Brazilian catfish (Bagre bagre; Bagre marinus; Genidens genidens; Bagropsis reinhardtii).

234 “Julieta” in 010 APB, SA, SM, 1863-1864.


236 “Aguia” in 010 APB, SA, SM, 1863-1864. A Portuguese ponxe likely refers to a small barrel known as a “puncheon” in the English customary system, equivalent to 1/3 of a liquid tun, or about 318 liters. Sir Richard Burton pointed out in 1863 that puncheons in Lagos were not “of a fixed size” and could vary widely (p. 235).
In December of 1863, the swift Portuguese cutter Paquete de Porto Novo arrived from the costa d'Africa with 5,164 gallons of azeite de palma in 46 casks consigned and dispatched to Portuguese (former) slaver Joaquim Pereira Marinho, a trusted accomplice of Domingos José Martins, then operating out of Cotonou (Verger 1976). A month later, the Portuguese patache Destimido landed with a load of assorted goods including kolas and panos similar to that of the Emilia, only lesser overall and also including 161 ponxes, 16 casks, 5 barricas, 3 barrels, and 2 meias pipas of palm oil. The Brazilian brig Maria Roza docked on 3 February 1864 with freight from both Lagos and Ouidah underwritten by Sebastião José Figurido and sons. It carried the usual West African goods including various containers of kolas and panos, accounting for 35 and 25 of the 112 entries on the manifest, respectively.

The cosignatory Figurido signed for 80 ponxes of palm oil, as well as nine casks of a fine, filtered palm oil—what Bahians now refer to as flor de dendê. Another 60 ponxes went to Joaquim José Teixeira Cardoso, former slaver and associate of Marinho, earlier based in Lagos. The Argentine consul in Bahia, F. Edmund Schutt, signed for 27 barricas, and the final four barricas went to merchant Maria Euzebia Pacheco. Besides the palm oil, wealthy merchants including Francisco Cardoso da Silva, Emmanuel Pittaluga, Pantaleão Lopes Vilasboas, João do Prado Carvalho, and Pompeu Justino Fernandes signed for panos, soap, woven baskets, kolas, and assorted West African

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237 “Paquete de Porto Novo,” in 010 APB, SA, SM, 1863-1864. That small cutter was probably converted to “legitimate” service after earlier use as a clandestine slaver (Eltis 1987; Costa e Silva 2004).

merchandise. Manifests such as that suggest that elite traders controlled the bulk of the palm oil arriving in nineteenth-century Bahia; smaller-scale dealers nonetheless accessed the transatlantic market as buyers of diverse and spiritually-potent African products. Those various wholesalers would then distribute those goods through a vast network of retailers, ambulant vendors, and Candomblé terreiros in Bahia and beyond.

The documented traffic between Bahia and West Africa suggests that merchants and ships gradually transitioned from human trafficking to a trade in ritual West African goods—goods demanded by the freed, free, and enslaved Afro-descendant populations that accumulated in Bahia as a direct result of the earlier trade in African people. Merchants in Bahia continued to trade domestic cachaça and tobacco with traders on African coasts, gradually shifting from imports of human captives to that of palm oil, kolas, panos, and other “legitimate” African products. Palm oil participated in but did not dominate that legitimate trade flowing between Africa and Bahia, especially when compared with goods that Bahia produced in only very limited amounts such as kola nuts, and goods especially prized for their African authenticity, such as panos da costa. The great number of units of kolas and panos suggests that traders likely distributed those goods among many different retail merchants in urban and rural Bahia, while bulk

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240 A similar manifest, listing most of the same people and spiritually-potent West African products, is “Aguia” in 010 APB, SA, SM, 1861, 1 of 3.
imports of palm oil reveal an elite few in control of its wholesale, if not its retail, in Bahia. Many of the merchants most active in the Bahia-Africa palm oil trade had earlier dealt in clandestine human cargoes, converting their transatlantic commercial networks, surplus capital, and small, swift craft to maintain an edge in the “legitimate” trade. Yet by sustaining and reinforcing South Atlantic trading routes, the Bahia-Africa palm oil trade opened a space for smaller-scale merchants—many of them Afro-descendant—to exchange goods between the two coasts, build retail businesses, and supply Afro-Brazilian spiritual and cultural needs and preferences with a host of West African merchandise. That trade in turn fused and maintained influential transatlantic connections by ferrying Africans, Afro-Brazilians, and others across the South Atlantic, and through re-exports, helped develop Bahia’s economy while radiating Afro-Brazilian material culture throughout Brazil.

An Atlantic entrepôt: Bahia and circulations of African palm oil

Records indicate that merchants re-exported a considerable amount of the African palm oil that arrived first in Bahia, making Salvador a national and global hub for the legitimate trade. As early as the 1820s, African palm oil arrived in Bahia only to be re-exported to other ports in Europe and Brazil. In 1825 Manoel da Silva Friandais, a leading Luso-Brazilian merchant in early nineteenth-century Salvador (Lugar 1980), signed for more than 2,460 canadas of palm oil to US merchant William Bartlett in January, and an additional 384 canadas to his compatriot Eldridge Nickerson in April. The following July Bartlett bought another 1,415 canadas for re-export (Lugar 1980; da Silva 2005). In 1857 a Portuguese patache arrived from Agoué with a load of miscellaneous West

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African goods including 181 casks of palm oil. Cosignatory Maximo Lourenço Gomes promptly re-exported 159 of them. Two years later, Joaquim Pereira Marinho arrived from the “costa d’África” on the Portuguese brig Energico with 221 casks containing 35,557 gallons of “azeite de palma” that he intended to re-export to London aboard the Brazilian brigantine Amelia.

That trend appears to have continued through much of the nineteenth century. On October 30, 1865, Emmanuelle Pittaluga’s Italian schooner Emilia arrived from Lagos and dispatched 151 casks of azeite de palma to German merchant Heinrich Hasselmann’s trade group “to be moved aboard another ship for London.” Also included were 26 chests of kolas, panos, and four “enchanted African figurines (figuras feitiços da costa),” all signed for by Pittaluga. Less than one month later, on 20 November, the Brazilian patache Barros 1° arrived from Lagos with 15,035 gallons of palm oil, 176 panos, and more than 100,000 kolas belonging to Mamede Amaro Lopes, a Portuguese sugar planter and tobacco merchant operating out of Bahia. He later sold 13,422 gallons, or 89 percent of that oil, to the Austrian consul in Bahia, Johann Georg Lohmann, for re-export, perhaps to his native Bremen. Rare customs statistics compiled for 1872-1873 record


244 “Emilia” in 010 APB, SA, SM, 1865, 2 of 4.

the re-export of 109,124 liters of African palm oil, worth Rs. 43:649$600, from Bahia to Great Britain, and similar figures for 1880-1881 list 39,700 liters of “azeite de palma / dendê” from the “costa d’Africa” re-exported from Bahia to Portugal. Finally, of the 13,697 gallons of palm oil that arrived to Bahia aboard the Garibaldi in 1878, traders re-exported 11,226, or 82 percent, to unspecified ports. When that ship pushed off for Aracaju, capital of Sergipe province, on 27 December 1878 it was likely carrying palm oil and other goods sourced in Lagos.

While European ports were frequent recipients of African palm oil re-exported from Bahia, cabotage, or port-to-port coastal shipping, supplied other Brazilian ports. Though sparse, references to domestic cabotage scattered through travelers’ accounts, customs records, and commercial periodicals situate Salvador as a national hub for palm oil commerce in the nineteenth century. Spix and Martius (1824, v. 1, p. 187) mentioned flows from Bahia to Rio de Janeiro including “articles from Guinea and Europe” during their Brazilian travels in 1817. Customs statistics compiled for the inter-provincial cabotage of foreign goods from 1871-1872 specified only “diverse vegetable oils,” but broken down by province, those numbers place Bahia at the center of the national oil market. Of the three provinces listed, Rio de Janeiro transshipped only a small “indeterminate” amount, Maranhão moved 740 liters, and Bahia shipped 132,439 liters.

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247 “Garibaldi” in 010 APB, SA, SM, 1878-1879, 3 of 4. The manifest announced at the Garibaldi’s departure to Aracaju lists only “various goods (vários gêneros)”; “Embarcações despachadas,” O Monitor, 27 December 1878, 2.
(Soares 1878). Figures compiled for the next year, 1872-1873, record the cabotage of 35,306 liters of African palm oil, worth Rs. 14:122$400, from Bahia to Rio de Janeiro.\textsuperscript{248}

Import records from May and June of 1877 record former slaver Manoel Gonçalves da Costa and company shipping, on two separate occasions, 10 casks of “azeite de palma” aboard the Marinho 4° from Bahia to Pernambuco—oil they had originally imported from Lagos aboard the Portuguese patache Boa Fé earlier that year.\textsuperscript{249} Figure 69 compiles customs records for domestic cabotage from Bahia to other Brazilian provinces during the years 1880-1882. Salvador was the headquarters for African palm oil in Brazil (Figure 70).\textsuperscript{252}

\begin{table}
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\begin{tabular}{llllll}
\hline
Province & 1880-1881 & & & 1881-1882 & & TOTALS \\
 & liters & value & & liters & value & \\
Alagoas & 6,639 & 2:857$100 & 4,092 & 2:046$000 & 10,731 & 4:903$100 \\
Ceará & 1,120 & 421$000 & nd\textsuperscript{250} & nd & 1,120 & 421$000 \\
Maranhão & 5,030 & 2:624$600 & nd & nd & 5,030 & 2:624$600 \\
Pará & 84 & 50$400 & nd & nd & 84 & 50$400 \\
Pernambuco & 6,722 & 4:512$000 & 28,646 & 14:323$000 & 35,368 & 18:835$000 \\
São Paulo & 600 & 480$000 & nd & nd & 600 & 480$000 \\
Sergipe & 4,747 & 4:298$200 & nd & nd & 4,747 & 4:298$200 \\
\hline
TOTALS & 44,277 & 40:717$000 & 98,630 & 49:315$000 & 142,907 & 89:611$000 \\
\hline
\end{tabular}
\end{center}
\caption{“Re-exports” [cabotage] of African palm oil from Bahia to other Brazilian provinces, 1880-1882.\textsuperscript{251}}
\end{table}

\textsuperscript{248} 060 Diretoria das Rendas, SA, APB, 060.10, Mapa de Importação e Exportação, 1872-1873 (listed as 1871-1872 in the archive’s catalog).

\textsuperscript{249} 050 Termos, SA, APB, 050.14 Termos de Reexportação 1877, fl. 8-9.

\textsuperscript{250} No data.

\textsuperscript{251} 060 Diretoria das Rendas, SA, APB, 060.10, Mapa de Importação e Exportação, 1880-1881; 060 Diretoria das Rendas, SA, APB, 060.10, Mapa de Importação e Exportação, 1881-1882.

\textsuperscript{252} Rio also imported African oils, but on a smaller scale, generally for retail instead of wholesale, and typically from West Central Africa, an area with a palm oil export industry much less robust than the Bights of Benin and Biafra and elsewhere in West Africa.
Figure 70: A group of Afro-descendant workers bring a hogshead, very likely filled with palm oil, ashore in Salvador, ca. 1820s.253

Commercial dailies printed in Salvador often announced the movement of goods through the city’s port. References to palm oil begin to appear in the nineteenth century, detailing Salvador’s role as the epicenter of Brazil’s growing palm oil economy. The Brazilian patache Minerva, for example, left Bahia for Rio de Janeiro in May of 1843 with packages of sweets and cheeses, a bin and six casks of rapadura brown sugar, 100 pumpkins (abóboras), and seven bottles (garrafas) of “azeite de dendê.”254 While the provenance of that palm oil is unspecified, the label dendê—as opposed to palma—


253 Source: Dénis (1839, facing p. 113).

254 “Mesa do Consulado: Generos despachados no dia 19 de maio (Para dentro do império),” O Commercio, 20 May 1843, 3.
suggests that the oil could have been produced in Bahia, along with the sugar and pumpkins, although it could have just as easily arrived from Africa. The small container unit of “bottle,” rather than barrels or casks, suggests that vendors in Rio retailed it as a cooking oil and condiment in Afro-Brazilian cuisine, as opposed to the larger containers sent to Europe mainly for industrial ends.

By the 1870s steamships had finally begun to supplant sailing vessels in the Atlantic (Baronov 2000; Carneiro da Cunha 2012). Consequently, interprovincial cabotage between the various Brazilian ports became less expensive, faster, and more frequent. Along with the increased movement of Brazilians, announcements of palm oil leaving Bahia surged in the local press. Figure 71 compiles data from Bahian periodicals during 1877-1881 to elaborate the energetic national market for palm oil. Steamship cabotage of palm oil went overwhelmingly to Rio over the next few years, but also dispatched to northeastern and Amazonian Brazil, including ports in Pernambuco, Ceará, Maranhão, and Pará, as well as re-exports bound for Europe. The table also suggests a frenzied circulation of palm oil leaving Salvador confounded by nonstandard measures, conflated naming conventions, and unspecified origins. A typical announcement in O Monitor for instance, recorded the embarkation of the English steamship Ptolemy to Rio de Janeiro on July 16, 1877, with a cask of quartz and a “large bottle (garrafão) of azeite de palma.”

A year later, Correio da Bahia announced the French steamer San Martin leaving for Paris with one cask of manioc flour, two sacks of ground coffee, one “handful

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255 “Commercio: Generos exportados em 16 de julho de 1877 (Para dentro do império),” O Commercio, 17 July 1877, 2.
“mão)” of shrimp, and 12 bottles of “azeite de cheiro.” Those references suggest an active and somewhat chaotic flow of retail palm oil moving through Salvador and into national and global markets.

In addition to (re-)exports and cabotage, ships plying the Bahia-Africa routes often ventured beyond the South Atlantic to broaden the circulations of African palm oil. Data compiled by Carneiro da Cunha ([1985] 2012) indicates that many of the ships leaving Bahia to procure palm oil on the coast of Africa in the second half of the nineteenth century did not return directly to Salvador, instead carrying their African cargoes to far-flung Atlantic ports, among them London, Rio de Janeiro, and Pernambuco (Figure 72). She cites the example of the Brazilian vessel Maria Helena which left from Bahia, loaded palm oil in Lagos, and disembarked in London in 1864 (p. 156). Thus the

256 “Parte comercial: Generos exportados em 16 de maio de 1878, para fora do império,” Correio da Bahia, 17 May 1878, 3. “Cheiro” translates to “smell” or “aroma.” A Brazilian dictionary published in Rio de Janeiro in 1889 listed “azeite-de-cheiro” as “azeite-de-dende” manufactured in Brazil by a different process from that of Africa (Rohan 1889, p. 11). An announcement in a Bahian commercial daily conflates dendê and palma in 1839; see “Anuncios,” Correio Mercantil 25 January 1839, 4. In a compilation of Bahian flora in 1949, Menezes conflated azeite de dendê, -de cheiro, and -de palma (p. 91). Prominent Brazilian scholars Raymundo Nina Rodrigues (1932, p. 253), Gilberto Freyre ([1933] 2003, pp. 545-546), Luís da Câmara Cascudo ([1967] 2011, p. 556), and Raul Lody (2008, p. 109), all conflated two or more of the Brazilian terms for palm oil through the twentieth century. Maritime manifests from 1866 show that merchants sometimes referred to palm oil imported from Africa as azeite de cheiro, albeit in distinction to the more common “azeite de palma.” Along with more than 7,000 gallons of “azeite de palma,” the Aguiá arrived in Bahia from Ouidah in December of 1866 with 7 large bottles (garrafas) of “azeite de cheiro” dispatched to João Gonçalves Baêta. It is unknown what distinguished the two azeites, and no pricing information is included on the manifest. “Azeite de cheiro” could conceivably refer to filtered palm oil, otherwise known as azeite de bomba or flor de dendê in Bahia (Fernandes and Monteiro 2001), such as that which arrived from Lagos by way of Ouidah aboard the Maria Roza in 1864. See “Maria Roza,” in 010 APB, SA, SM, 1863-1864 and “Aguia” in 010 APB, SA, SM, 1866-1867, 1 of 6.
Bahia-Africa palm oil trade projected at times an extraordinary triangular circulation to connect a wide variety of Atlantic ports.

<table>
<thead>
<tr>
<th>Destination</th>
<th>year</th>
<th>amount</th>
</tr>
</thead>
</table>
| Rio de Janeiro | 1877 | 1 garrafão azeite de palma  
20 garrafas azeite de cheiro                                           |
|              | 1878 | 6 latas azeite de cheiro  
12 garrafas azeite de dendê  
4 volumes 35 litros azeite de palma  
70 litros azeite de cheiro  
12 garrafas azeite de cheiro |
|              | 1879 | 1 barril azeite de cheiro  
20 garrafas azeite de cheiro  
9 latas azeite de palma       |
| Ceará        | 1878 | 5 barris azeite de palma                                              |
| Maranhão     | 1877 | 12 garrafas azeite de cheiro                                           |
| Pará         | 1877 | 19 garrafas azeite de cheiro                                           |
| Pernambuco   | 1877 | 14 garrafas azeite de cheiro                                           |
|              | 1878 | 1 garrafão azeite de cheiro                                            |
| Liverpool    | 1880 | 1 panchão & 15 quartolas azeite de palma                               |
| Le Havre     | 1878 | 10 saccos cocos de dendê                                               |
| Paris        | 1878 | 12 garrafas azeite de cheiro                                           |
|              | 1879 | 6 garrafas azeite de palma                                             |

Figure 71: Dispatches of palm oil from Bahia, 1877-1880, as recorded in commercial dailies in Salvador

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257 Data compiled from Salvador daily commercial periodicals O Monitor, O Commercio, and Correio da Bahia for the period 1877-1880. “Garrafa” refers to bottle, “garrafão” is a large bottle; “lata” is a metal canister; “litro” is liter; “barril” and plural “barris” refer to barrel; “panchão” is an imperial puncheon; “quartola” is an imperial hogshead equivalent to one quarter liquid tun; “sacco” is a sack, equivalent to 2 alqueires or 27.6 liters.
By the late-nineteenth century the Bahia-Africa palm oil trade had assembled an extraordinary cultural-ecological-economic network binding Africa and South America with Europe and Great Britain. Arrivals and re-exports of African palm oil in Bahia kept Atlantic freight lines occupied and encouraged the flow of other products and people between South America, the African continent, and Europe. Along with Dahomey, Lagos, and Liverpool, Salvador became a primary international hub for African palm oil, helping to supply global and national markets. The high volume of palm oil re-exports from nineteenth-century Salvador suggests that Bahia could have been meeting a substantial portion of its demand for oil through domestic production. Nevertheless, following centuries of steady growth, the Bahia-African palm oil trade buckled to external pressures and quickly eroded in the late-nineteenth century.

<table>
<thead>
<tr>
<th>Ships</th>
<th>1867</th>
<th>1868</th>
<th>1870</th>
<th>1871</th>
<th>1892</th>
</tr>
</thead>
<tbody>
<tr>
<td>Departing Bahia for Africa</td>
<td>23</td>
<td>15</td>
<td>21</td>
<td>18</td>
<td>0</td>
</tr>
<tr>
<td>Arriving in Bahia directly from Africa</td>
<td>13</td>
<td>8</td>
<td>8</td>
<td>9</td>
<td>3</td>
</tr>
</tbody>
</table>

Figure 72: Ships plying the South Atlantic for select years.\(^{258}\)

**South Atlantic commerce in decline**

Over the 1870s, a host of international geopolitical and economic factors converged to cripple South Atlantic trade. An economic recession in Great Britain precipitated declines in palm oil and kernel prices, weakening the market for African palm products (Law 2002a; Mann 2007). Despite the recession, steamship lines

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connecting Great Britain and West Africa helped bolster North Atlantic trade at the South’s expense (Lynn 2002; Mann 2007; Carneiro da Cunha 2012). More generally, the expansion of European colonial seizures and proxy conflicts in Dahomey, Nigeria, and most of western Africa destabilized economies throughout the region, and served to diminish palm oil supplies and sideline Brazilian influence in the Atlantic (Lynn 2002; Law 2006). By the time international prices for palm products rebounded in 1905 (Martin 1988; Mann 2007), the Brazil-Africa trade for palm products had all but vanished. As a result, large-scale trade between Bahia and Africa fell into steep decline (Bay 1998; Mann 2007; Câmara Cascudo [1967] 2011; Carneiro da Cunha 2012). By the 1880s exports from Lagos to Brazil amounted to only 3 percent of the total leaving that port (Mann 2007, p. 127) Figure 73 compiles available customs records from 1872-1891 to demonstrate the subsiding Bahia-Africa trade at the end of the nineteenth century and the slavery era. Foreign trade appears to have peaked in the early 1880s, and by 1889, customs records show an overall decline in foreign trade with the port at Salvador with zero ships arriving from Africa in that year.

The overall decline in the Africa-Bahia trade reduced arrivals of African palm oil in Brazil and South America, but according to Turner (1942) and Matory (2005), trade in other African religious goods and ideas continued well into the twentieth century. A class of transatlantic Afro-Brazilian (and Brazilianized African) merchants including Martiniano do Bonfim (son of Eliseu), Felisberto Sowser, Lourenço Cardoso, and perhaps most conspicuously, Joaquim Francisco Devodê were active in the late-nineteenth and early twentieth century Bahia-Africa trade. They amassed considerable wealth stocking Bahia’s Candomblé terreiros with kolas, straw, cowries, black soap,
peppers, *panos*, and other liturgical paraphernalia—all *da costa* (Herskovits [1958] 1966; Carneiro 1987; Costa Lima 2004; Matory 2005). The value and symbolic power of such merchandise rested on its authenticity as bona fide African, and adherents of Afro-

<table>
<thead>
<tr>
<th>Origin</th>
<th>1872-73</th>
<th>1880-81</th>
<th>1881-82</th>
<th>1889</th>
<th>1891</th>
</tr>
</thead>
<tbody>
<tr>
<td>Africa</td>
<td>10</td>
<td>10</td>
<td>4</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Great Britain</td>
<td>209</td>
<td>218</td>
<td>224</td>
<td>83</td>
<td>116</td>
</tr>
<tr>
<td>USA</td>
<td>36</td>
<td>43</td>
<td>47</td>
<td>23</td>
<td>60</td>
</tr>
<tr>
<td>Portugal</td>
<td>32</td>
<td>23</td>
<td>34</td>
<td>5</td>
<td>7</td>
</tr>
<tr>
<td><strong>TOTALS</strong></td>
<td>287</td>
<td>294</td>
<td>309</td>
<td>111</td>
<td>185</td>
</tr>
</tbody>
</table>

Figure 73: Numbers of ships arriving from foreign ports to the port of Salvador by origin and year.

Following the decline of the 1880s, however, African palm oil was generally not among the goods imported to Bahia, at least not at the large scales typical of earlier decades. Instead of supercargoes of oil casks aboard international fleets of brig- and schooner-rigged clippers, the late-nineteenth and early-twentieth century trade between Africa and Bahia typically consisted of much smaller cargoes handled by individual merchants making frequent transatlantic journeys (Matory 2005) such as the kolas, *cuias*,

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259 According to Voeks (1997), small-scale merchants continued to travel to West Africa to source authentic African products well into the 1980s, when the transatlantic trips became prohibitively expensive. In the 1990s, adherents began relying on Nigerian diplomats and other West Africans to bring spiritually-potent goods to Bahia, among them *palha* (straw), *sabão* (soap), and *limo* (shea butter)—all *da costa*.

260 There were zero arrivals for that year, but 4 ships left Bahia for the African coast.

261 One ship arrived from Lagos, and another from Congo via Lagos. That year two ships left for Lagos, one of which in was in ballast (Vianna 1893, pp. 180-184).

and miscellaneous African goods declared by Eliseu do Bonfim and Bamboxê Obitikô on their return to Bahia aboard the Garibaldi in 1878.\textsuperscript{263} Though there were exceptions—such as a group of Afro-descendants in Brazil and their patache Allianca who, despite obstructions from the British colonial authorities, struggled to trade at Lagos—modest operations remained the norm (Carneiro da Cunha 2012).

Though incomplete and irregular, statistics from Salvador’s dockside warehouses (trapiches) in the 1890s further corroborate the decline in palm oil imports. Those warehouse records list goods coming in and out by a date range but do not specify destination, whether for local consumption or re-export. In the second half of 1890 (July 1-December 31), 135 casks of azeite de palma entered and left the União warehouse. In the full year of 1891, 249 casks entered and left União. Records for the second halves of 1892 and 1894 list no palm oil, only azeite doce or imported olive oil. Records for 1895 combined olive and palm oils into composite figures, suggesting that the trade in African oils had by then dwindled near a point of bureaucratic irrelevance.\textsuperscript{264} Nevertheless, that trade had not completely dissolved by the turn of the twentieth century, as a bulletin from Bahia’s Secretary of Agriculture lists stocks of expensive azeite de palma in 1903 and 1904. Priced as high as Rs. 6$600 per canada, African palm oil cost more than Portuguese olive oil at the turn of the twentieth century.\textsuperscript{265}

\textsuperscript{263} “Garibaldi” in 010 APB, SA, SM, 1878-1879, 3 of 4. While that ship carried a considerable load of oil and African goods and passengers were merely supplementary, later shipments consisted mainly of passengers who exchanged smaller amounts of goods between Bahia and West Africa. On types of ships plying Brazil’s transatlantic trades, see Costa e Silva (2004) and Carneiro da Cunha (2012).

\textsuperscript{264} “Mapas dos Trapiches, 1890s,” APB, SR, Secretaria do Governo (SG), maço 2295.2902.

\textsuperscript{265} “Importação,” Boletim da Secretaria de Agricultura, Viação, Industria e Obras Públicas do Estado da Bahia Anno 1, vol. 2, no. 1 (July 1903, p. 79) “Mercado de
Placing intrinsic value on authentically African goods, some consumers were willing to pay higher prices for African palm oil even as less expensive domestic supplies were readily available. Then as supplies of African palm oil declined, prices of imports increased and the gap widened. Data on palm oil prices are scarce before the twentieth century, but a few scattered references provide insight into the foreign and domestic markets. A pricelist printed in the Bahian newspaper *Idade d'Ouro do Brazil* in 1813 did not list foreign palm oils, but among domestic products curiously lists “azeite de dendê da costa” for Rs. 1$280 to Rs. 1$600 per canadá.266 Customs records from 1825 list retail prices for African “azeite de palma” at Rs. 1$280 per canadá.267 In the early nineteenth century then, prices for domestic and foreign palm oils appear to be around the same.

By the 1870s, prices of foreign oil had tripled to Rs. 3$700 per canadá.268 Official commodity registers priced domestic “azeite de dendê or de cheiro” at Rs. 1$000 per liter in 1896. Subsequent weekly price indexes show that value remained locked in through 1901-1903, 1907-1909, 1912-1913 and 1917.269 Meanwhile official listings from 1903

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266 “Preços correntes dos gêneros de estiva” and “Dos gêneros do paiz” *Idade d'Ouro do Brazil* 6 August 1813, 2-5. That curious and uncommon nomenclature combined the “da costa” suffix generally reserved for goods imported from Africa with “dendê,” the Afro-Brazilian term for palm oil, and underscores yet again the fluid transatlantic character ascribed to palm oil in nineteenth-century Bahia. A similar list printed the 20th of that month dropped the “da costa” suffix and the price remained the same. Subsequent listings through 8 October of that year returned the suffix and the price increased to exactly Rs. 1$600.


268 Rs. 3$800 in “Importação,” *O Monitor*, 27 October 1877, 2; Rs. 3$600 to Rs. 3$700 in “Importação,” *O Monitor*, 12 April 1878, 2.

269 “Pauta e oficio semanal,” volumes for the years 1896, 1901, 1902,1903, 1907, 1908, 1909, 1912, 1913 APB, SA, Diretoria das Rendas, 060.05. “Mercado da Bahia: Generos
and 1904 put imported palm oil ("azeite de palma") at Rs. 6$400-6$500 and Rs. 6$300-6$600 per canada, respectively, almost double its rate three decades before. Due to nonstandard weights and measures, those canadas and liters are incommensurate. 

Official pricing schedules would have applied to the formal market in Salvador and may have had little bearing on retail prices and informal trades in the city and in rural areas (Graham 2010), especially for a commodity like palm oil with readily available raw material. The trend of increasing prices for foreign oils over the nineteenth century does, however, suggest that Bahians had mounting incentives to buy local palm oil, or perhaps just make their own. Eventually Bahian palm oil consumers traded authenticity for ubiquity. By 1908, both African palm oil and ships from Africa are absent from trade reports circulated by Bahia’s Secretary of Agriculture. Those reports do include, however, monthly stocks of domestic azeite de dendê.

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271 If, however, we assume that the 1904 canada amounted to 2.667 liters (see note 185), foreign oil would cost Rs. 2$475 per liter, almost two and a half times the contemporary price of domestic oil.

272 “Importação,” “Quadro do numero de navios a vapor e á vela entradas no porto da Bahia por longo curso e cabotagem...” Boletim da Secretaria de Agricultura, Viação, Industria e Obras Públicas do Estado da Bahia Anno 6, vol. 11, nos. 1-3 (January-
By the 1880s, declining imports, strong re-export markets, and increasing prices of African palm oil would have reinforced demands for domestic palm oil in Bahia. Likewise, the related increases in domestic production would have amplified demands for expensive foreign oil among Bahia’s Afro-Brazilian community as consumers and devotees came to integrate Bahian palm oil into recipes and rituals. Those cultural, economic, and ecological forces would eventually influence an intensification of dendê landscapes on the Southern Coast, but historical evidence indicates that urban Salvador and its periphery had long produced considerable amounts of domestic dendê and served as a buffer between the rural and urban dendê economies of the nineteenth century.

Palm oil production in and around nineteenth-century Salvador

Less-expensive domestic dendê oil circulated in the urban market long before the decline of South Atlantic trading in the late-nineteenth century. Dampier reported African

oil palms growing in abundance around the city by 1699, and claimed that residents there processed palm oil similar to their counterparts in western Africa (Chapter 4). It appears plausible, as Cardoso (1948) noted, that slave ships first introduced dendeziers to Salvador from whence they spread to the Recôncavo and along Bahia’s coasts. With ready access to dendeziers and the knowledge and utensils required to harvest and process the oil, urban and peri-urban household and subsistence production and consumption of azeite de dendê remained constant from the seventeenth century, if not before.

Similar to the archival record for the Southern Coast, documentation of domestic oil processing in Salvador is paltry before the late nineteenth century, but there are a few telling entries. Aside from the domestic oil that Wenceslau Miguel de Almeida used in his soap factory, other businesses in Salvador actively sought supplies, such as that owned by Daniel José Fernandes in 1840. Customs records hint at overlaps in Salvador’s foreign and domestic palm oil markets. In 1859, the Portuguese patache Catharina arrived from Ouidah with a load of West African products including 132 casks of palm oil and “three empty casks to fill with azeite.” In June of 1867, the Portuguese schooner Aguia arrived with 10 empty ponxes marketed “for filtered palm oil (azeite de bomba).” Arrivals and sales of empty casks in supplement to African palm oil

See Chapter 3. Diverse people and ships plying the South Atlantic likely introduced African oil palms to Salvador and several other Brazilian ports active in the transatlantic slave trade, including Recife, Rio de Janeiro, and São Luis do Maranhão.

See documentation in Chapters 3 and 4.

“Annuncios,” Correio Mercantil 4 August 1840, 4.

“Catharina” in 010 APB, SA, SM, 1859, 1 of 3.

demonstrate how material and economic networks of goods and agricultural techniques moved across the Atlantic. Transatlantic merchants, sailors, and captives travelling between the coasts surely gathered and communicated African agroecological and production information to exploit the palms growing in Bahia. As Bahia-Africa commerce went into decline in the early 1880s, official customs statistics for the first time listed imports of African palm oil under the heading “azeite de palma / dendê.”

The simple act of conflating the two terms into a single category suggests changing attitudes and growing interactions in the demands and supplies of foreign and domestic palm oils in Bahia.

Nineteenth century place names featuring dendezeiros signal their distribution and naturalization in and around Salvador’s urban landscape. In 1864, journalists with the O Alabama newspaper denounced an Angola-Bantu Candomblé terreiro “in the place called Dendezeiro,” on the Itapagipe peninsula in Salvador’s Penha parish (quoted in Parés 2013, p. 113). That area features the Dendezeiros Avenue, first paved in the early nineteenth century, that leads to the foot of Bahia’s most iconic Catholic church, Basílica do Senhor do Bonfim, named for Salvador’s patron saint (Figure 74). Nineteenth-century documents refer to a public square known as Praça dos Dendezeiros along the

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278 060 Diretoria das Rendas, SA, APB, 060.10, Mapa de Importação e Exportação, 1880-1881.

279 Now known as Avenida Dendezeiros do Bonfim, that thoroughfare was formerly known officially as Calçada do Bonfim, but the latter never held sway in the popular parlance (Dórea 2006); for an example of such usage, see “Parte Oficial,” O Monitor, 2 October 1878, 2. For more on the Avenida and its Praça dos Dendezeiros, as well as Basílica do Senhor do Bonfim and its annual ceremonial washing and festival, see Reis (2003, 2012). On the paving of Avenida Dendezeiros to the Ladeira do Bonfim, see Falla recitada na abertura da Assembleia Legislativa da Bahia pelo 1.o vice-presidente da provincia, o dezembargador Manoel Messias de Leão em 15 de setembro de 1858.
Figure 74: A Baiana sells acarajê in front of Salvador’s iconic Basílica do Senhor do Bonfim, named for the city’s patron saint (2012).

Salvador, Typographia. de Antonio Olavo de França Guerra, 1858, available online at: http://brazil.crl.edu/bsd/bsd/121/ (last accessed 15 January 2015).
Avenue, an area called “Dendezeiros do Canela” near the upscale neighborhood Vitória, and a Dendezeiro “Valley,” “River,” and “Bridge” along the Estrada das Boiadas (Cattle-Drive Road) that linked the city to livestock markets in Feira de Santana and the arid backlands of the sertão (see map of Salvador, Figure 67).

Removed from the gaze of urban authorities, exurban areas such as the Dendezeiro Valley became formative sites of Afro-Brazilian resistance (Santos 2005; Reis 2012, 2013). As police continued to repress urban gatherings, Afro-descendants free and enslaved congregated on Salvador’s outskirts to worship and recreate. Seeking respite from the rigors of slavery and cultural repression, they met at small farming villages and temporary encampments to indulge in traditional lifestyles including drumming (batuques etc.), dance (samba de roda etc.), physical training (capoeira), and worship (candomblés etc.) (Nishida 2003; Assunção 2005; Reis 2012, 2013; Parés 2013). Aside from the relative security remote locations could provide, rural areas gave worshipers access to lush socioecological landscapes and liturgical species fundamental to western African cosmologies and religious practices (Voeks 1997; Graden 2006).

Exurban Salvador became a spiritual retreat for many Afro-Brazilian urbanites.

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Nineteenth-century maps situate the Dendezeiro valley and nearby areas within such spaces of Afro-Brazilian resistance. A hydrographic map from 1803 places the Dendezeiro River north of the city and discharging into Itapagipe Cove. 281 Another from 1823 labels a small village in the area as “Dendezeiro.” 282 A detailed topographic map drawn in the 1840s situates the Dendezeiro Valley along the Estrada das Boiadas and nestled between the timeworn sugar engenhos at Campinas and Pirajá. 283 On that map the headwaters of the Dendezeiro River edge Urubú Lake where soldiers and militia violently repressed an African religious community of the same name in 1826 (Parés and Sansi-Roca 2011; Reis 2012). 284 Despite the attack, most of the congregants managed to escape into the surrounding woods, and the rural areas north of Salvador remained an axis of Afro-Brazilian spirituality and resistance through the turn of the twentieth century. A map of military positions during the Sabinada insurgency of 1837 identified a site near that lake as “Candomblé.” 285 A denouncement in the Diário da Bahia from 1898


284 Urubús (vultures) carry spiritual significance in West Africa, see Chapter 4.

285 Henrique de Beaurepere Rohan. Planta do accampamento de Pirajá e Itapaoan: e mais pontos ocupados tanto pelo Exercito Imperial como pelas forças rebeldes desde o dia 13 de novembro de 1837 [...]. Rio de Janeiro: Lithograph from Arquivo Militar, 1839. 1
complained of a “terrible candomblé on the Estrada das Boiadas” that “continues to perturb the public peace” (quoted in Rodrigues 1932, p. 268). Seven years later, a report in the Diário de Notícias placed no less than three candomblés on the Estrada (Rodrigues 1932, p. 270). Named for a sacred African palm thriving in diaspora, the Dendezeiro Valley was a safe harbor of communal and spiritual significance for many Afro-descendants.

Maintaining profound connections with flora, fauna, and cultural landscapes, many Afro-Brazilian spiritual traditions blurred urban and rural contexts. In 1871 O Alabama described the New Yam harvest festival at the Moinho Terreiro near the suburban fishing village of Rio Vermelho. There devotees, farmers, fishers, and general revelers gathered to honor their ancestors with offerings of the staple West African cultivar (Parés 2013, p. 282). Derived of Yoruba, Igbo, and other traditions, the annual celebration commemorated western African agroecological and spiritual knowledges in urban and semi-urban terreiros in and around the city (Graden 1998, 2006). Derisive nineteenth century accounts of the festival were nevertheless detailed, yet none mentions dendê. As we have seen, palm oil was already indispensable in many Afro-Brazilian rituals at that time, but the New Yam festival, also known as the Pilão de Oxalá, may have been an exception. Oxalá, the deity at the heart of the celebration, does not accept

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mapa, 40 x 51 cm. Available online at: http://objdigital.bn.br/objdigital2/acervo.digital/div_cartografia/cart17056/cart17056.jpg (last accessed 3 February 2015). Smaller watercourses are unnamed in that map. It lists names for only two larger rivers, the “Camurugipe” and “Vermelho.”
dendê, preferring instead shea butter (*limo da costa*) to season his ritual offerings (Querino [1938] 2010).\textsuperscript{286}

Notwithstanding that rare proscription, the rural and semi-rural areas around Salvador helped supply urban demands for palm oil. Probate inventories and other nineteenth century documents reveal a number of commercial orchards on the urban periphery by the early nineteenth century. An advertisement of sale for a property near the Bonfim Port in 1817 featured “a large backyard with its own dendeleiros.”\textsuperscript{287} A farm owned by the wealthy slaver Manoel Francisco Moreira in the 1830s listed, along with 34 enslaved workers, an unspecified quantity of African oil palms “mixed up in the woods” in the *Fazenda Grande do Retiro* just north of Salvador. That extraordinary inventory suggests that probate officers sometimes recognized subspontaneous oil palms as valuable property in the wooded areas surrounding the city.\textsuperscript{288} An announcement of sale for a *fazenda* in the Brotas district in 1839 lists a handful of dendeleiros among other fruit trees on the property, and a similar inventory from 1874 lists an orchard on the

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\textsuperscript{286} Bascom (1969, p. 96, 98) nonetheless recorded offerings of new yams sprinkled with palm oil in Yoruba West Africa, and agroecological systems connecting yams and oil palms within western African landscapes are pervasive (Chapter 3). See also Chinua Achebe’s allusion to the eco-spiritual relationship in *Things fall apart* (1959, p. 39): “As he offered a sacrifice of new yam and palm-oil to his ancestors he asked them to protect him, his children and their mothers in the new year.” The apparent aversion to palm oil in the New Yam festival is merely an idiosyncratic proscription of palm oil by the *funfun* family of Yoruba orixás, which includes Oxalá, Obatalá, Orixalá, and Orixa-Nlá; interview with a Candomblé initiate of 9 December 2012 in Salvador; interview with a babalorixá of 10 December 2012 in Salvador.

\textsuperscript{287} “Avisos,” *Idade d’Ouro do Brazil*, 14 November 1817, 4.

\textsuperscript{288} Inventory of Manoel Francisco Moreira, Salvador, 1836, APB, SJ, 05/1959/2431/04. His inventory lists orange trees, coffee trees, and African oil palms “*metidos no mato e cheios de erva de passarinho* (i.e. hemiparasitic plants, or what are sometimes referred to as mistletoe in English).”
Estrada das Boiadas growing manioc as well as “mangos, cashews, breadfruit, jackfruit, dendê, and other fruit trees.”

A bill of sale for a small farm near the Bonfim church in Salvador’s Penha district in 1838 and disputed in 1847 listed a field, slave quarters (senzalas), and a small fruit orchard (arvoredos); among them five young dendezeiros and one already bearing fruit. The cultivation of African oil palms there in the 1840s foretold its designation as “the place called Dendezeiro” two decades later (quoted in Parés 2013, p. 113). When the original owner, José Joaquim da Silva Ferraz, died in 1846 his inventory counted seven enslaved laborers, including two African women and their Bahian-born children. Officers listed both African women as skilled in cooking; Sophia as a member of the Tapa nation, and later as Nagô, and Cristianna as a Jeje. Each of those West African cultures were intimately associated with African oil palm cultures and landscapes, therefore the women most likely arrived in Bahia with ecological and culinary knowledge of the palm and its products. While merely suggestive, that inventory documents African women with cultural and historical connections to the African oil palm, and ready access to it, demanding value for their culinary skills in Salvador. Taken together, those extant customs, treasury, and probate records hint that Salvador’s urban and peri-urban residents

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291 Inventory of José Joaquim da Silva Ferraz, Salvador, 1846, APB, SJ, 03/977/1446/05. “Tapa” is a Yoruba exonym for the primarily Muslim Nupe peoples from the savanna-rainforest ecotone in modern Nigeria (Reis 2014).
sometimes pressed palm oil for household use in supplement to the more expensive imported African oil.

Even as some city residents produced small amounts of palm oil in the nineteenth century, documents suggest that elite proprietors attached only minimal value to African oil palms growing in Salvador, similar to their counterparts elsewhere in Bahia (Chapter 4). When wealthy landowner Jacintha Lisboa died in 1861, she left 12 enslaved workers (six Africans and six creoles), three sobrados (or townhouses—one with a senzala), an assortment of expensive wooden furniture, an orchard with a large farmhouse, and a seaside lot to her husband Ignacio Gomes Lisboa and their four children. When Ignacio, a politically connected clerk at Salvador’s customs house (Masson 1860), died 19 years later the daily O Monitor advertised what remained of the estate for public auction. The first of three lots was a hilly field near a large catchment basin known as the Dique do Tororó valued at that time mainly for its prominent location along a railroad line. There among secondary forest were “various fruit trees” including ten dendeeiros. The Fazenda Cruz held two lots, one along the oceanfront in Paripe parish, “sandy and marshy during the rainy season, having only two mango trees and eight dendeeiros, two of which are threatening to collapse,” and another larger one farther inland with only “a ruinous tract of woods, and practically no valuable trees for timber or construction, only an immensity of dendeeiros, nicoriseiros, and wild cashew trees.” The African oil palms found on the lots apparently added little to the value of the properties, and in one case represented evidence of sullied land. It is unclear just how the enslaved Afro-descendants may have related to the African oil palms on those lots, but they nonetheless had easy

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292 Inventory of Jacintha Lisboa, Salvador, 1861, APB, SJ, 04/1393/1862/18.
access to them, and could have worked with and benefitted from them. Of the five listed with specific skillsets, two Nago men, captured from West Africa’s Yorubaland, worked in the fields among the dendezeiros, and a male creole worked as a cook.293

While elite landowners showed little concern for dendezeiros, some Afro-descendants in Salvador were integrating them into growing Afro-Brazilian religious movements. In the wooded Matatu district, founders of the now renowned Alaketu Terreiro cultivated dendezeiros along with many other fruit trees on their property in the 1860s (Castillo 2011b). Oral histories of the Bogum terreiro in the Engenho Velho da Federação neighborhood hold that one of its early leaders, Manuel da Silva, “made his living cutting palms to make oil” in the late-nineteenth century (Duarte quoted in Parés 2013, p. 173). Thus Afro-Brazilian spiritual connections to Bahian dendezeiros were unmistakable, even within urban landscapes (Figure 75). At a time when Afro-Brazilian religious leaders and adherents prized goods from the African coasts as authentic materialities of ritual, they also recognized the inherent Africanness of the dendezeiros growing in Bahia, and embraced them in their emerging religious movements.

Over much of the nineteenth century, palm oil production in the rural Recôncavo and Southern Coast served local consumption needs with occasional surpluses supplying regional markets. There is some evidence, however, that rural production on the Southern Coast also contributed to urban supplies. Vilhena ([1802] 1969) as well as Spix and Martius ([1823] 1938, 1824) connected palm oil production and use in Bahia with

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293 “Declarações,” O Monitor, 1 October 1880, 2. “Nocoriseiros” likely meant licuri palms (Syagrus coronata), notable for a “vanilla” (baunilha de nicuri) used in Afro-Brazilian rituals; see Pessoa de Barros and Napoleão (1999). Yorubaland extends across southeastern portions of present-day Benin and southwestern portions of present-day Nigeria.
enslaved Africans and creoles in both rural and urban contexts (see also Chapter 3). Travelling through the rural manioc-producing region of Jaguaripe during Holy Week of 1817, German naturalist Prince Maximilian (Wied 1940, pp. 443-444) reported the cultivation of “coco-dendê,” and listed it among weekly shipments of produce to the capital, indicating an urban market for domestic palm oil produced on the Southern Coast in the early nineteenth century. The manufacture of palm oil there appears to have continued through the century. A municipal report from Jaguaripe submitted in 1881 lists

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294 Afro-Brazilian religious traditions link both of those deities with foods cooked in azeite-de-dendê. The placement of that dendezeiro, one of only two growing on the shores of the lake, is therefore provocative.
The historical record places Salvador at the center of a dynamic Atlantic palm oil market in the eighteenth and nineteenth centuries. Originally an accessory in the transatlantic slave trade, African palm oil later became a supplement to and finally a proposed replacement for human traffic in Atlantic Africa. While imports of the oil fueled industry in Great Britain and Europe, in the South Atlantic it became prominent in a trade for African goods that reconnected displaced Afro-descendants with familiar botanical, culinary, and religious materials. The Bahia-Africa trade helped to integrate the early

295 “Descrição do município de Jaguaripe, comarca de Nazaré (Bahia)... 7 de maio de 1881,” BN, SM, I-31, 18, 30. By “export,” the report likely referred to shipments to Salvador and not foreign markets.


modern Atlantic world, connecting Africa’s oil palm groves with tobacco farms and cane fields in the Recôncavo, industry in Britain and Europe, and emerging Afro-Brazilian communities and cultures in Salvador, Rio de Janeiro, Pernambuco, Maranhão, and throughout Brazil.

African palm oil was an important transatlantic economic resource in the eighteenth and nineteenth centuries. Elite merchants and industrialists cornered the market for the “legitimate” trade in Bahia, but a class of Afro-Brazilian returnees, many of them formerly enslaved, repatriated to western Africa to broker the transatlantic trade in palm oil and other African goods. While merchants sold much of the imported oil to Afro-descendant vendors and consumers in Bahia, they re-exported a considerable proportion to ports in Great Britain, Europe, and elsewhere in Brazil. As such Salvador became an international hub in the nineteenth-century Atlantic palm oil trade. By securing transatlantic routes and trade connections, the palm oil trade created space for broader Bahia-Africa exchanges that included the transatlantic journeys of countless men, women, and children, along with diverse African goods including kola nuts, peppers, *panos da costa*, and other spiritually-charged and preferred produce and materials of great economic and cultural worth.

Afro-descendant merchants and vendors in Bahia, particularly women, used the South Atlantic trade to build lucrative businesses, create and perform transatlantic cultures, and purchase manumission for themselves and others. Supplying African materialities of ritual and resistance, Afro-descendant vendors became prominent in the commercial-cultural-ecological networks that underwrote the growth of Afro-Brazilian economies, societies, and landscapes in Bahia and beyond. Importing and retailing
African goods, they generated considerable assets all the while contributing to the development of Afro-Brazilian culinary and religious expressions. Palm oil and the Afro-Brazilian cultures it helped materialize became integral components in the “chaotic kaleidoscope” of the Atlantic (Games 2006, p. 30).

African palm oil was prominent among a broader class of African products that reconnected Bahia’s Afro-descendant community with their ancestral lands. While an elite class in nineteenth-century Bahia enjoyed oils and textiles produced in Ouidah, Lagos, and elsewhere in western Africa, they remained expensive luxury goods beyond the grasp of most in Bahia. Some were willing and able to pay lofty amounts for authentic African palm oil, but the abundance of dendezeiros in and around Salvador meant that palm oil was available for anyone willing and able to process it. Nineteenth-century supplies of palm oil in Salvador were therefore quite diverse, comprised of imported African oils, oils homemade from palms scattered about the city, oils and fruits from commercial orchards on the city’s semi-rural periphery, and to a lesser but by then increasing extent, oils from the expanding palm groves on the Southern Coast. Those varied sources secured steady supplies of palm oil while reinforcing its culinary, spiritual, and medicinal uses and demands throughout Bahia, elsewhere in Brazil, and beyond.

While soap-making and other elite industries consumed an unknown portion of imported and domestic palm oil in Bahia, the preferences of Afro-descendants accounted for its alimentary and religious uses throughout the entire nineteenth century and into the twentieth. After Vilhena ([1802] 1969, p. 130) reproached azeite-de-dendê and its cuisine as “insignificant and vile,” a century of palm oil imports did little to moderate the contempt of the Euro-Brazilian establishment. Elite sugar planters and urban landowners
mostly avoided palm oil production and showed little or no interest in oil palms growing on their lands.

Afro-descendants in Bahia looked to Africa to supply their diaspora with authentic, ancestral palm oil in the nineteenth century. While generally associated with Atlantic commercial flows linking England and western Africa, the “legitimate” trade in palm oil and other West African goods helped integrate the South Atlantic and contributed to an expansion of domestic dendê production in Bahia. The rise and subsequent fall of South Atlantic trade helped maintain a vigorous demand for palm oil in urban Salvador, rural Bahia, and throughout Brazil. As the decline of the Bahia-Africa trade in the late-nineteenth century diminished supplies of imported oil, urban consumers and religious leaders turned increasingly to rural Bahia for their “African” produce. And perhaps increasing demand for domestic dendê further undermined the trade in expensive African oils. Therefore the import market for African palm oil and the production of domestic dendê complemented and reinforced one another, resulting in a robust socioecological palm oil economy in Bahia that helped drive an expansion of domestic dendê landscapes and production beginning in the nineteenth century.

The proliferation and resilience of those oil palm landscapes maintained the cultural and economic relevance of palm oil in Bahia after African trade could no longer sustain it. Those Bahian oil palm landscapes can therefore be considered transatlantic not merely because of the African origin of *Elaeis guineensis* but also because of the fluid, Atlantic commercial and cultural routes that, circulating between Bahia and western Africa, linked the two continents and sustained cultural and economic demands for palm oil on both sides. Assemblages of ships, sailors, passengers, and plants communicated
agroecological and manufactory processing knowledges across the Atlantic to affect cultures, economies, and landscapes on either side. By the mid-nineteenth century, an Afro-Brazilian agroecology was also apparent not only in Bahia (Chapter 4), but also in West Africa where travelers witnessed intercroppings of the African oil palm and the Brazilian staple manioc in Dahomey (Forbes 1851) and Porto Novo (Le Hérissé 1903).

Palm oil imports engaged with the colonial bureaucracy and generated revenue for traders, merchants, and governments across the Atlantic World. The paper trail left by that import / export economy has served to deemphasize the largely-undocumented production and marketing of domestic dendê in Bahia, relegating it to the margins of history. This chapter, however, demonstrates the complex interrelationships that enmeshed transatlantic shipments of African palm oils with domestic dendê production in Bahia into a far-reaching cultural-economic-ecological Atlantic network. Returning now to the Southern Coast, Chapter 6 analyzes how that network changed and expanded from the late-eighteenth to the early-twentieth centuries. The breakdown of Bahia-Africa trade networks combined with the end of Brazilian slavery to renew socioecological change on the Dendê Coast.
CHAPTER 6:
MODERNIZATION AND LEGIBILITY IN
AN AFRO-BRAZILIAN LANDSCAPE

38973. ELAEIS GUINEENSIS

Dendé palm.

(No. 39a. December 20, 1913.) Seeds of the Dendé or Guinea oil palm, from trees in the vicinity of Matatu, Bahia. The fleshy pericarp of the seeds furnishes an oil which is an important food product here, especially among the negroes, with whom the palm is said to have come over from Africa. It now grows in an apparently naturalized state on the hillsides about Bahia and in many places is one of the most conspicuous features of the landscape. It is a particularly handsome plant, with long, feathery leaves and a slender trunk sometimes 50 or 60 feet high. It is probably too tropical for California, but may succeed in southern Florida, where it should be given a thorough trial both as an oil producer and as an ornamental plant.

—P. H. Dorsett, A. D. Shamel, and W. Popenoe for the Office of Foreign Seed and Plant Introduction, United States Department of Agriculture (1917, p. 17).

Dendê was brought to Brazil in the cuisine of enslaved blacks, a yellow azeite indispensable in ritual dishes. […] Today the dendê fields are multiplying due to industrial uses. Before, its culinary uses demanded only small subsistence fields and a simple cottage industry. Today the dendê fields are expanding under the control of the large fazendeiros and modern factories are built to extract the oil. Dendê cultivation has gained a new momentum.

—Jorge Amado, Bahia Boa Terra Bahia (1967, p. 139)

Bahia’s Afro-Brazilian landscape and its domestic dendê economy developed in resistance to colonial and republican authority, counter to official designs, and with little elite intervention from the seventeenth through nineteenth centuries. Previous chapters detailed the early development of Bahia’s oil palm landscapes and cultures, analyzing the introduction(s) of the African oil palm to the New World (Chapter 3), the proliferation of African oil palm groves in Bahia (Chapter 4), and the transatlantic circulations of people and palm oil assembled in cultural-ecological-economic networks that helped transform and integrate the South Atlantic (Chapter 5). This chapter connects those fundamental
socioecological processes with attempts to modernize Bahia’s palm oil economy, local resistance, and the subsequent (re)creation of the Dendê Coast. Departing from the simultaneous breakdowns of Brazil’s slavery economy and the Bahia-Africa trade for palm oil, this chapter demonstrates how international geopolitical and internal cultural and economic pressures coalesced to stimulate a series of modernist development interventions in Bahia’s dendê economy throughout the twentieth century. Yet rather than simplified, modern monocultures and hierarchical economies of scale, Bahia’s dendê landscapes, cultures, and economies emerge as complex, contested, and fluid socioecological assemblages.

**Colonial landscape transformations and the (il)legibility of African oil palms in Bahia**

Old World colonization of the Americas affected profound transformations in landscapes and cultures across the Atlantic World and beyond (Crosby 1972; Carney and Rosomoff 2009). Transatlantic migrations mobilized flora and fauna, altered and removed forest cover, and constructed plantation monocultures, polycultural farms and swiddens, pastures, and urban areas. Despite authoritarian designs, colonial authorities found it difficult to exert and maintain control over those socioecological changes once the diverse and sometimes chaotic acts of colonization set them in motion. As part of that momentous exchange, Bahia’s Afro-Brazilian landscape and its dendê economy emerge from transatlantic (post)colonial processes of flux, reflux, and relation (Verger 1976; Cronon 1983; McNeill 1986, 2013; Blaut 1993; Sluyter 2002, 2012; Sweet 2003; Bailyn 2005; Carney and Rosomoff 2009; Mann 2011; Voeks 2012a, 2012b; Cole 2013; Watkins 2015).
James C. Scott (1998) has described the administrative struggle to control or order landscapes and those who inhabit them as “a state's attempt to make a society legible” (p. 2, emphasis added). Citing the development of scientific forestry in eighteenth-century Europe, he shows how authorities reduced biodiverse tracts of forests to a few commercially viable arboreal species, thus diminishing rich, locally useful landscapes into fiscal commodities of “natural resources” (pp. 12-13). Western agronomists trained in the reductive traditions, Scott argues, privilege the “immediate yield” and “visual orderliness” of monoculture over the “sustainability and thus long-term production” of polycultures and other agricultural systems developed in the tropics (pp. 279, 281). Demonstrating the ecological, social, and economic viability of traditional tropical agricultural practices, he casts Western agronomy and its dogma of legible monocultures as an ungrounded, counterproductive ideological crusade that impedes not only bio-, social, and agricultural diversity but also long-term yields, resilience, and sustainability. He roots the intellectual framework of the crusade firmly in colonial agronomy.

The high-modernist aesthetic and ideology of most colonial agronomists and their Western-trained successors foreclosed a dispassionate examination of local cultivation practices, which were regarded as deplorable customs for which modern, scientific farming was the corrective (p. 279).

To exemplify the efficacy of Indigenous agricultural expertise, he describes vibrant West African and Latin American polycultures constructed through “careful, local observation and the fine-grained knowledge of the locality that no research scientist can hope to duplicate for the same terrain” (p. 305). Such complex, dynamic landscapes remained nonetheless illegible to Western agronomists and managers beholden to austere monocultures.
The visual effect, to Western eyes, was one of sloppiness and disorder. Given their visual codification of modern agricultural practice, most specialists knew, without further empirical investigation, that the apparent disorder of the crops was a symptom of backward techniques; it failed the visual test of scientific agriculture. Campaigns to replace polyculture with pure-stand planting were pushed with equal fervor by colonial officials and, after independence, by their local successors (p. 273).

Scott’s concept of legibility thus exposes Western dismissals of traditional place-based knowledge as ideological and patently “unscientific” (p. 305). That modern episteme underpins an ongoing global proliferation of monocultures that seek to enclose and homogenize cultures and landscapes in the service of modernization and capital accumulation (Latour 1993; Shiva 1993; Sluyter 2002; Patel 2013; Hecht 2014; Khoury et al. 2014).

Monocultures and their ideologies are fundamental components of modernist orthodox agricultural development and its so-called Green Revolution (Shiva 1993; Graddy 2014). Recalling its discussion in Chapter 1, the Green Revolution has since the 1940s sought to develop and industrialize agricultural landscapes with high-yielding varieties, agro-chemicals, irrigation, fossil fuels, and most recently, genetic modification (Bayliss-Smith and Wanmali 1984; Bebbington and Thiele 1993; Yapa 1993; Watts 2009). While modernist agricultural development interventions increased monocultural yields in many places, early increases tend to taper off and their costly dependence on irrigation, agro-toxins, and seasonal labor ultimately exhaust soils, exacerbate urban poverty and inequality, and homogenize and pollute once agrobiodiverse landscapes (Paddock 1970; Sluyter 2002; Evenson and Gollin 2003; Watts 2009; Holt-Giménez and Altieri 2013).
As the birthplace of the Green Revolution, Mexico and its Rockefeller Foundation-backed agricultural modernization program (MAP) provide a telling exemplar of the program’s shortcomings. While Western science and funding planted the ideological and material seeds of modernization, the program relied on a network of Mexican agronomists and extension agents to proselytize and impose monoculture, irrigation, and high-yield varieties on the rural masses. Steeped in European and North American scientific literatures developed in foreign, temperate agroecologies, the local scientists were fundamental in Mexico’s twentieth-century agrarian modernization (Jennings 1988; Sluyter 2002; Cotter 2003). The early development of the Green Revolution was therefore a political appropriation affected by a dynamic assemblage of foreign philanthropists, international and local scientists, rural farmers, and various species of cultivars all intermingling within and connecting through agrarian and urban landscapes.

For their part, authorities in Bahia and throughout Brazil prioritized large-scale agricultural development as a colonial and later state and federal priority for economic growth (Schwartz 1985; Fischer 2007; Tavares [1959] 2009). A strong undercurrent of Comtean positivism and liberal economics characterized Brazil’s final emergence from monarchy and the slavery economy in the late 1880s, and the official credo of “order and progress” emblazoned on its national flag remains a powerful political philosophy in the country (Viotti da Costa 2000). As the Bahian agricultural economy stagnated in the late-nineteenth century, elites there founded a state agricultural academy (Escola Agrícola da Bahia, hereafter EAB) with the express purpose to modernize agriculture through Western scientific knowledge. A pet project of Brazil’s Imperial Government operating
through the Bahian Imperial Institute of Agriculture (IIBA)—a powerful association of planters, merchants, and ex-slave traffickers—they hoped to address the failures of Brazil’s slave-based agrarian economy with a class of agronomists culled from Bahia’s elite families and trained in generalized scientific principles (N. Araújo 2010, 2011). That devotion to Western agronomic dogma endures and Brazil’s leaders continue to rely on agricultural-economic development as a primary generator of public revenue (Prado Júnior 1969; Baletti 2014). From the Portuguese sugar barons of the sixteenth-century to modern soy magnates in the vast cerrado, Brazil’s elite planters enjoy profound influence in the nation’s political processes (Pahnke, Tarlau, and Wolford 2015). What then, do such asymmetrical power relations mean for Bahia’s Afro-Brazilian landscape?

Previous analyses have shown African oil palms to be invisible, or following Scott (1998) illegible, to colonial and provincial officers conducting probate inventories on farms in eighteenth- and nineteenth-century Bahia (Chapters 3-5). Distributed along the muddy mangal and within complex polycultures and secondary forests, Bahia’s subspontaneous groves of dendezeiros were legible only to the Afro-descendants and others that valued the trees as sources of oils, foods, wines, medicines, and axé. In Bahia as in western Africa, shifting swidden mosaics propagated African oil palms through clearings and secondary rainforests via complex socioecological processes (Watkins 2015; Chapter 4) (Figure 76). As “an exceptionally complex and hence quite illegible form of agriculture” (Scott 1998, p. 282), shifting cultivation continues to draw ire from many governments and academics, even as decades of research link variations of the

298 See for example the powerful “bancada ruralista” voting blocs in Brazil’s Congress that have successfully opposed agrarian reforms, conservation efforts, and regulation in the agricultural sector; see Ondetti (2008) and Leite (2015).

Figure 76: A subspontaneous grove of dendezeiros surrounds a swidden polyculture near the Laranjeiras quilombo community in Igrapiuna, Bahia (2012).299

Scott’s (1998) thesis of landscape legibility helps clarify the state’s interest in simplifying complex landscapes in order to control and commodify them. Yet his analysis frames traditional agriculturalists as perpetually weak reactionaries. Following de Certeau (1984) he conceives power as inherently oppositional, pitting a (nearly)

299 Manioc, pineapple, okra, and guaraná are visible in the swidden.
hegemonic state against weak but resistant working classes of rural peasants (see also Scott 1976, 1985). Conversely, post-structural and network thinking allow us to envision instead assemblages of relational or “associative power” that coalesce to co-constitute socioecological and economic agency and change. Replacing essentialist binaries of strength and weakness with diffusive concepts of power relations allows us to recognize the dynamic flows and fluctuations of power linking actors and communities with the state and other empowered networks (Foucault [1976] 1990; Rose 2002; Gibson-Graham 2008; Bennett 2010; Rocheleau 2011; Crane 2012; Philo 2012). Through this frame, we recognize flows of power as the connective tissues that link the constituents of Bahia’s dendê economy in a complex socioecological assemblage. Distinguishing the diversity of agencies and connections within the network facilitates deeper understandings of its composition and functionings, and thus provides insights that we can apply to improve development initiatives.

Using colonial and republican archives, ethnography, governmental reports, scientific literature, and landscape observations (with accompanying photographs), this chapter analyzes attempts to impose “order and progress” on Bahia’s palm oil economy from the abolition of slavery in the late-nineteenth century through a series of modernization efforts in the twentieth century. After centuries of socioecological development, Bahia’s African oil palm landscapes—especially their complex, subs spontaneous tracts—remained illegible to Brazilian elites as symptoms of underdevelopment rather than agents of economic development. But when international attention and internal demand amplified interest in palm oil, government agronomists and other officials imposed a top-down development program of modernization in an attempt
to order and legitimize—i.e. make legible—Bahia’s unruly Afro-Brazilian landscape. Emerging in resistance to colonial designs, how did Bahia’s Afro-Brazilian landscape and its dendê economy interact with and endure in spite of modernization efforts in the twentieth century?

**Transatlantic religions, landscapes, and economies on Itaparica**

Farms and landscapes on the island of Itaparica, by far the largest in the Bay of All Saints, played key roles in the early development and industrialization of Bahia’s palm oil economy (Figure 77). This section places that island at the center of an extraordinary network of people, places, plants, and animals that transformed the landscapes, cultures, and economies of the Recôncavo, Salvador, and the Southern Coast, as well as western Africa, further integrating the South Atlantic. As a point of departure, a single connective microhistory highlights many of the distinct components of the palm oil economy studied in previous chapters, linking them to one another and finally to the beginnings of agroindustrial development in Bahia’s oil palm economy. An analysis of documented and oral histories of three Bahian families, the Africans they enslaved, and their descendants and associates reveals intergenerational connections linking the transatlantic slave trade, African palm oil imports, the development of Afro-Brazilian religions, and eventually, the modernization of Bahia’s oil palm landscapes and economies.

Isidoro Martins Braga captained at least 12 slave voyages between western Africa and Bahia during the period 1812-1830. By the 1830s, he was using the legitimate

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300 The Transatlantic Slave Trade database lists 11 slave voyages captained by Isidoro Martins Braga from 1812-1825, and British Parliamentary papers record another in 1830; see Emory University (2009b) and Great Britain. “No. 62. Mr. Consul Parkinson to the Earl of Aberdeen, British Consulate, Bahia, 13 October 1830.” In *Correspondence with
trade in African goods to either transition from, or more likely conceal, his involvement in the clandestine trade in human chattel. In 1837, he cleared customs in Salvador with the bulk of a shipment of palm oil and other African goods aboard the Brazilian brig *Feliz Constancia*, arriving from São Tomé. Isidoro was certainly involved in the clandestine trade, and that shipment may have included enslaved Africans withheld from the records. British authorities had previously charged both Isidoro and the ship’s captain, João

Figure 77: Map of Itaparica, ca. 1888, with places mentioned in text.


301 “*Feliz Constancia*” in 010 APB, SA, SM, 1837-1838.
Antonio Nogueira, with clandestine slaving on at least one occasion in 1830. On 3 March 1838 the same Feliz Constancia arrived in Havana with 444 enslaved Africans, and the next month left for Lagos, presumably to procure another clandestine load of captives. A letter confiscated the next year from the slave ship Augusto directly implicated Isidoro in a scheme to deliver the enslaved Africans captured in Lagos to Havana. Another series of letters, seized that same year from the US schooner Catherine, implicate Isidoro along with Domingo José Martins and Joaquim José Duarte Silva, consignee of the Feliz Constancia then based in Havana, in a clandestine human trafficking ring connecting that Caribbean port with Lagos, Bahia, and New York.


305 Great Britain. “Enclosure in No. 58. Abstract of the papers found on board the schooner ‘Catherine,’ Frederick Adolph Peterson, Master, sailing under American colours. Sierra Leone, 28 August 1839.” In Correspondence with the British
Finally in 1839, British cruisers detained the Brazilian brigantine *Pompeiro*, consigned to Isidoro Martins Braga and two partners, for illegally slaving at Lagos.\(^{306}\)

With its captain, consignee, and principal importer all embroiled in the clandestine trade during that period, it is highly likely that the *Feliz Constancia* delivered an illegal load of captives before it officially docked in Salvador in 1837. Perhaps the ship covertly unloaded its prisoners on the western counter coast of Itaparica, a regular port of disembarkation in the clandestine trade and the bay island Isidoro called home (Verger 1976; Eltis 1987). The ship arrived in Salvador on 9 November, just two days into the bloody Sabinada rebellion (Kraay 1992, 2001). With the city in chaos, its small load of palm oil and other African goods would have served as ample cover for human trafficking. One of Isidoro’s sons, Severo Martins Braga, signed for three barrels of palm oil and one *barrera* of *panos da costa* cleared through customs by his father, as well as a package containing three woven baskets, one *pano*, and one *cuia* cleared by Luís Crioulo (Creole), an Afro-Brazilian traveling or working aboard the ship. Luís and eight other men—most if not all of them Afro-descendant—declared small amounts of African goods, mostly *panos* and woven mats and baskets, and were all probably members of the

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sailing crew supplementing their incomes and enhancing their status by selling foreign
erchandise favored in Bahia.\textsuperscript{307}

The elder Martins Braga held several enslaved Afro-descendants at his \textit{fazenda} on Itaparica directly across the bay from Salvador’s harbor. He baptized eight captives in 1816, three in 1820, and five more the next year (Castellucci Junior 2014). By the time of his death in 1847, Isidoro claimed 31 enslaved workers among his property. He owned a multifunctional bayfront estate that included fruit orchards, two sailboats, two canoes, and a fully-outfitted distillery where he produced cane rum (\textit{aguardente}), a common trade currency used to procure human chattel on the African coast. His inventory lists 12 species of fruit trees, but no dendezeiros. Among the enslaved workers deeded to Isidoro’s heir Severo were a creole sailor named Luís, possibly the same man listed in the manifest of the \textit{Feliz Constancia} ten years earlier, and José, a Nagô field worker from Yorubaland in West Africa’s Bight of Benin.\textsuperscript{308}

When his son Severo died just four years later, his inventory listed a residence in town, the bayfront \textit{Fazenda Camondongo}, and three captives, but José was not among them.\textsuperscript{309} Born in West Africa and enslaved first to Isidoro, José took his legal name and somehow gained his freedom from Severo Martins Braga. As a freed man he entered the whaling business, a risky but lucrative industry long-established on the island

\textsuperscript{307} “\textit{Feliz Constancia}” in 010 APB, SA, SM, 1837-1838. The names of the men bringing in small amounts of African goods are listed at the end of the manifest and include: Agostinho Ferreira, Rofino João Forro (meaning freed), João Cadena, Luís Crioulo (meaning creole), Henrique Crioulo, Martinho, Manoel Cidade, fallecido (meaning deceased), Maquias, and José Fernandes.

\textsuperscript{308} Inventory of Isidoro Martins Braga, Itaparica, 1847, APB, SJ, 4/1807/2278/15.

\textsuperscript{309} Inventory of Severo Martins Braga, Itaparica, 1851, APB, SJ, 3/990/1539/14.
(Castellucci Junior 2008). By the time of his death in 1884, José Severo Martins Braga owned outright a whale oil (azeite de baleia) factory, a whaling ship, and two sailboats used to transport goods across the bay, along with six residences, two horses, a small amount of gold and silver, and assorted lands. He willed three houses to freed African women Maria and Emilia, the latter receiving two; one of which came with instructions to allow the elderly African Antonio to remain there through the end of his life. “If you do not comply,” he cautioned Emilia, “my soul will suffer” (fl. 9). To a godson Pedro, he left Rs. 400$000 to purchase his freedom. He willed 11 braças of farmland to his principal heir, another godson named Modesto Avelino de Jesus, located next to a fazenda José had earlier purchased for him. José left conditions that his “compadre” and third executor of his estate, Marcos Teodoro Pimentel, should retain a portion of those lands for his own fields. When Marcos died two years later, he owned four residences, his own whale oil factory and ship, two saveiros, and two draft donkeys. After gaining their freedom, compadres José and Marcos became partners in a successful whaling enterprise and ascended to privileged status among the sizeable Afro-descendant community on Itaparica. Both distributed their wealth, augmenting living conditions and purchasing freedom for relatives, friends, and loved ones (Castellucci

310 Inventory of José Severo Martins Braga, Itaparica, 1884, APB, SJ, 04/1544/2013/16. “Preto” Antonio could have been one of two captives from the Congo nation listed under that name in Isidoro’s inventory of 1847. José’s directive to allow Marcos space to cultivate fields shows, besides benevolence, that those Africans valued agriculture even after their experiences as enslaved field workers and when their material needs were being met through the whaling industry.

311 Inventory of Marcos Teodoro Pimentel, Itaparica, 1886, APB, SJ, 05/2066/2537/08; Testament of Marcos Theodoro Pimentel, 1881, Itaparica, Livro 5, 1884-1891, pp. 17-20. His last will lists José Severo as the third executor behind his eldest son Marcos and Rachel, freed African and mother of his other two children.
Junior 2008, 2014). Benefitting from his godfather’s benevolence, Modesto later rose to prominence as an elector for the municipal government in Itaparica, and city administrators later praised his son Teodoro’s mango orchards at *Manguinhos*—lands bequeathed by José—as some of Bahia’s best.\(^{312}\) After purchasing his own manumission from Teodoro Ferreira Pimentel in 1849, Marcos freed his oldest son, Marcos Teodoro Cardoso Pimentel, in 1853 (Castellucci Junior 2014).

The elder Marcos, remembered as “Marcos *o Velho* (the elder)” traveled with his freed son “Tio (Uncle) Marcos” to Lagos in 1881, five years before the former’s death.\(^{313}\) Oral histories hold that the two returned to Itaparica with a sacred shrine to *Babá Olukotun*, the renowned primordial ancestor of the Yoruba peoples, or *Nagô* nation (Luz 1993; Costa Lima 2004). With that shrine young Marcos founded the *Terreiro Tuntum Olukotun*, an *egum* or *egungum* temple dedicated to ancestor worship, on his *fazenda* near the villa of Itaparica.\(^{314}\) *Tio* Marcos died in 1937 at 103 years of age. When probate

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\(^{314}\) At the time of her death in 1922, Saturnina Valéria Pimentel, José Teodoro’s wife and daughter-in-law of Marcos *o Velho*, owned with her husband lands on the “*Fazenda Tuntum*,” bordering lands owned by her brother-in-law *Tio* Marcos Teodoro Pimentel and “without crops of any kind,” suggesting its use was other than agriculture; see Inventory of Saturnina Valéria Pimentel, Itaparica, 1922, APB, SJ, 02/616/1070/09. In 2014 IPAC, Bahia’s *Instituto do Patrimonio Artístico e Cultural* (Institute of Artistic and Cultural Patrimony) registered the *Terreiro Tuntum Olukotun*, granting it official recognition and protection as “intangible heritage.” See *Diario Oficial do Estado da Bahia*, vol. XCVIII,
officers inventoried *Fazenda Tuntum* following his wife Rufina’s death in 1945, they found “10 coconut palms, five orange trees, and some 20 dendeeiros more or less, with no other crops (*benfeitorias*)” bordering lands once owned by José Teodoro Pimentel and the heirs of Modesto Avelino de Jesus.\(^{315}\) *Tio* Marcos leveraged his father’s wisdom and support, transatlantic travels, and socioecological knowledge to help build an Afro-Brazilian spiritual community surrounded by African oil palms on the Isle of Itaparica.

The Pimentel family was fundamental in the integration of Bahian *Candomblé* in the late-nineteenth century. Another son, *Balé Xangô* José Teodoro Pimentel, and his daughter Ondina Valéria Pimentel were early initiates and leaders in the formative *Terreiro Ilê Axé Opó Afonjá* founded in Salvador by Eugenia Anna dos Santos, or Mãe Aninha, and later joined by Martiniano do Bonfim and others formerly of the *Casa Branca*. Members of that formative group traveled regularly between Salvador and Itaparica, sharing knowledge and worship services, and Martiniano later remembered *Tio* Marcos as a master of Yoruba oral traditions (Santos 1962; Capone 1999; Costa Lima 2004; Castillo 2011a; see also Chapter 5).

According to oral histories, the *Terreiro Tuntum Olukotun* was the second religious community founded by the Pimentels; Marcos *o Velho* founded the first on the island’s counter coast near a *fazenda* called Mocambo, the original term for maroon communities in Brazil (Schwartz [1973] 1996; Theodoro 1985; Luz 1993).\(^{316}\)

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\(^{315}\) Inventory of Marcos Theodoro Pimentel, Itaparica, 1945, APB, SJ, 02/796/1222/07.

\(^{316}\) As an appellation for a maroon community of runaway captives, the term “mucambo” or “mocambo” predates even the term “quilombo”; see Schwartz ([1973] 1996).
registry from 1858 lists José Pedro de Sousa Paraíso, nephew of notorious slave merchant João Francisco de Sousa Paraíso, as the owner of *Fazenda Mocambo*, a bayfront property “encircled by mangroves.”  

Like the Martins Bragas, the Sousa Paraísos dealt in human chattel. Family patriarchs Pedro and Francisco de Sousa Paraíso amassed fortunes in the transatlantic slave trade dating back to the 1780s. João Francisco imported palm oil and panos from the Mina Coast in 1838, possibly as a cover for humans, and faced charges for illegal slaving on at least two occasions in the 1840s. Owner of *Fazenda Mocambo* José Pedro advertised his sales of an enslaved cobbler and an African man in the commercial daily *Correio Mercantil* in 1840 and 1847, respectively, out of his haberdashery in Salvador.

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318 Pedro de Souza Paraíso owned two slaving vessels active in 1781 and 1782; Francisco de Souza Paraíso owned 12 ships active from 1788 to 1816; João de Souza Paraíso owned three from 1827-1845; see Emory University (2009b) and Great Britain. “First enclosure in no. 53, Bahia, 8 February 1830,” in *Correspondence with Foreign Powers relating to the Slave Trade, 1830 in Parliamentary Papers, House of Commons and Command*, Volume 19. London: Printed by R.G. Clarke, 1840, p. 91.


320 “Annuncios,” *Correio Mercantil*, 22 July 1840, 4; “Vendas,” *Correio Mercantil*, 20 July 1847, 4. José Pedro’s haberdashery was robbed in 1838 but was apparently still open for business two years later and as late as 1854; see Masson (1854, p. 270) and “Annuncios,” *Correio Mercantil*, 25 April 1838, 4. He also owned a *roça* on the city’s outskirts in Cabula; see *Novo e Completo Indice Chronologico da Historia do Brasil*, 26 January 1861, p. 197; available online at http://memoria.bn.br/DocReader/DocReader.aspx?bib=707619&PagFis=1203 (last accessed 3 March 2015).
The family of slavers likely procured the fazenda, not for agriculture, but as a clandestine harbor for African captives. The island’s counter coast was a principal clandestine depot in the 1830s and 40s (Verger 1976; Eltis 1987; Nishida 1993), and otherwise shrouded by mangal tidelands, Mocambo Point features a small sandy beach well-situated for covert landings. José Pedro lived, worked, and died in Salvador. His inventory lists nine enslaved people and several properties throughout the city, but no properties or other evidence of links to Itaparica, therefore the Fazenda Mocambo was likely unoccupied and all but forgotten after the definitive prohibition of the clandestine trade in 1850. Uninhabited and remote, the fazenda provided an opportune venue for unsanctioned Afro-Brazilian gatherings in the familiar shadows of mangroves and African oil palms.

Marcos’ former proprietor, Dona Rita Freire de Orleans Pimentel, owned a fazenda near the main village of Itaparica and three small lots (sítios) in the Misericórdia district on the counter coast very near Fazenda Mocambo. The lands of the Fazenda Mocambo lie approximately 3 kilometers from the community now known as

Tucked away on Itaparica’s counter coast, the remote beach at Ponta do Mocambo remains difficult to access and tourism officials promote it as an unofficial nude beach; see http://bahia.com.br/atracao/ atrativos-ecoturisticos-baia-de-todos-os-santos-1/ (last accessed 3 March 2015).

José Pedro died at his home on Laranjeiras Street in the upper city in 1874, and was therefore a neighbor of Candomblé clergy Marcelina da Silva, or Obatossi; see Testament of José Pedro de Sousa Paraíso, 1874, Salvador, Livro 49, 1874, pp. 171-174; Inventory of José Pedro de Souza Paraíso, Salvador, 1874, APB, SJ, 07/2897/03; and Castillo and Parés (2007). José Pedro’s uncle, Senator Francisco de Sousa Paraíso, was governor of Bahia from 1837-1837 and is notable for deporting the Africans and Creoles implicated in the Malê Revolt of 1835, including Obatossi’s two sons, and for his handling of the Sabinada insurgency that happened under his watch; see Graden (2014); Inventory of Ana de Sousa Paraíso, Salvador, 1877, APB, SJ, 04/1779/2249/13; and Chapter 5.

Evidence presented in the following section suggests that dendezeiros were an important part of the landscapes on Itaparica’s counter coast, including the mangrove-encircled Fazenda Mocambo.
Misericórdia and the area is easily reachable on foot or via small boats or canoes from ports at Misericórdia and the main village where Rita lived. For Marcos Fazenda Mocambo would have been close enough to easily access yet isolated enough to evade the surveillance of his proprietors and other local authorities.324

In 1936, nearly a century after oral histories claim Marcos Teodoro Pimentel founded his Yoruba-inspired house of worship there, the Bahian government, under Governor Juracy Magalhães, purchased the Fazenda Mocambo in an agricultural development initiative, converting it to a “Tropical Fruit Experimental Station” (Anonymous 1936) (Figure 78). Following some agronomic diplomacy (discussed later in this chapter), state agencies installed Brazil’s first motorized palm oil processing unit there, finally promoting the mechanization of palm oil production (Cardoso 1948). Thus the modernization of Bahia’s oil palm economy began on a fazenda named for a maroon community and the site of a formative Afro-Brazilian temple surrounded by subspontaneous dendezeiros.

That microhistory of three Bahian families and the Africans they enslaved lays bare the transatlantic networks and connections that linked the slave trade, the “legitimate” trade in palm oil, Afro-Brazilian resistance and religious expressions, and the modernization of oil palm agriculture in Bahia. The histories of the Fazendas Tuntum and Mocambo trace the economic appropriation and modern development of African oil palm landscapes and cultures in Bahia from eighteenth-century slavers to Afro-Brazilian

324 A Brazilian presidential decree from 15 June 1953 appropriated 185 contiguous hectares of land (or about 1.85 km$^2$) from the Fazendas Mocambo, Misericórdia, Piedade, and Engenho, suggesting that the lands shared boundaries within a relatively small space; see http://legis.senado.gov.br/legislacao/ListaPublicacoes.action?id=108987 (last accessed 20 March 2015).
religious expressions and modern development interventions that began in the early twentieth century. The next section takes a closer look at African oil palms on Itaparica, juxtaposing the island with the expansion of dendê landscapes on the Southern Coast to provide the socioecological context from which modern development emerged. Itaparica becomes a site of fundamental importance in the early development and later top-down attempts at the modernization of Bahia’s dendê landscapes there and on the Southern Coast.

Figure 78: “Mocambo Experimental Station, Island of Itaparica” (2012).

Dendê landscapes and the transition to free labor on Itaparica and the Southern Coast

For centuries African oil palms were important components in the landscapes and cultures of Itaparica and the Southern Coast, but illegible to probate officers and other authorities, they appear only sparingly in the documentation before the twentieth century (Chapters 4 and 5). The state and its officers deemed subspontaneous landscapes of oil
palms of little worth, therefore those trees and their human use leave only a fragmentary paper trail. This is just one way in which colonial history is tilted against Afro-Brazilians and others who managed and valued landscapes in ways other than row crops or monocultures (Sluyter 2002; Escobar 2008; Carney and Rosomoff 2009).

In the seventeenth and eighteenth centuries, the island of Itaparica was, like the continental Recôncavo that it flanked, dominated by sugar engenhos with vast cane fields and enslaved work forces numbering into the hundreds (Schwartz 1985). By the second half of the nineteenth century, however, sugar production had fallen into decline on the island and much smaller farms and fazendas with smaller enslaved work forces became the norm. Cultivating various fruits and food crops on small polycultural estates, agroecologies in nineteenth-century Itaparica had more in common with Bahia’s Southern Coast than the Recôncavo (Barickman 1998; Castellucci Junior 2008). Many of those small estates cultivated dendê, however only small amounts of African oil palms appear in a few inventories and other colonial documents, belying their prominence in subspontaneous groves throughout the island.

Announcements of the sale of two fazendas on the counter coast of Itaparica printed in Salvador’s Correio Mercantil in 1844 and 1848 list dendezeros on their lands, both cultivated and subspontaneous. A fazenda sold by José Carneiro Ribeiro located just north of one of Rita Freire de Orleans Pimentel’s sítios in Misericórdia counted 60 African oil palms among a fruit orchard of mangos, coconuts, and jackfruit, along with equipment for processing manioc flour.³²⁵ The Fazenda Mocujó listed “many coconut palms and dendezeros” (probably subspontaneous) surrounded by mangroves on

Itaparica’s southern counter coast. Those sale announcements called attention to any potentially valuable items and aspects of the properties, and are therefore exceptional documents of African oil palms on nineteenth-century Itaparica.

More than a decade later, Ignácia Maria de Jesus Costa donated a small *sítio* on the counter coast near *Fazenda Mocambo* to Josefa Maria de Santa Anna, one of her formerly enslaved domestic workers, in gratitude for years of faithful service. Public authorities estimated the value of the lands at only Rs. 150,000, due to “the lands’ poor state, its very old coconut palms and dendezeiros, and a lack of woods.” Aside from placing dendezeiros along the coastal mangal in close proximity to *Fazenda Mocambo* in the mid-nineteenth century, that transfer shows one way Afro-descendants gained possession of farms and landscapes of African oil palms. And despite its relatively low appraisal, the official title transfer suggests that the landscape held economic (and perhaps symbolic) value for Josefa.

An inventory of the *Fazenda Bom Despacho* in 1873 further confirms the cultivation of African oil palms along with other fruit trees on typical multifunctional *fazendas* on Itaparica (Castellucci Junior 2008), and demonstrates the minimal value of dendezeiros, relative to other common arboreal species. Officers valued 148 coconut palms at Rs. 4,000 each, two lime trees at Rs. 2,000 each, and 200 dendezeiros at just

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327 Inventory of Ignácia Maria de Jesus Costa, Itaparica, 1860, APB, SJ, 03/1024/1493/21. The inventory places that *sítio* proximate to *Fazenda Apicum*, which the ecclesiastical land registry lists as bordering *Fazendas Mocambo*, *Papa-peixe*, and *Piedade*; see “Registros eclesiásticos de terras da freguesia de Itaparica, 1857-1863” APB, SACP, maço 4718, registries 46, 71, and 78. The *sítio* is, however, named in the inventory as “*Ponta Grossa*,” and the area now commonly known as *Ponta Grossa* is farther from *Fazenda Mocambo* than the land registry suggests, about 15 kilometers coastwise.
Rs. 1$000 each, the same as two common almond trees (Terminalia catappa). Such fruit orchard fazendas sometimes employed slave and wage labor to process palm oil, such as the coastal farm in Aratuba owned by elite proprietor Captain Leovigildo de Azevedo Monteiro. Witnesses to a murder occurring there in 1886 described the palm oil processing unit where they worked as having a large tank for cooking the fruit and a small warehouse and staging area where workers swung axes to thresh fruits from the bunches. When the captain died 38 years later, his inventory listed “two sheds used to manufacture azeite de dendê,” but made no mention of African oil palms, only a vague reference to “árvores frutíferos (fruit trees),” a shorthand for minimally valuable trees.

Common in Bahian inventories, that abstraction obscures the prevalence of African oil palms in the nineteenth-century landscapes, cultures, and economies of Itaparica just as it does for the Southern Coast (Chapter 4). Thus colonial documentation veils the economic and cultural importance of African oil palms in nineteenth-century Bahia.

Recall from Chapter 4 that African oil palms had become increasingly integrated into polycultural farms on the Southern Coast in the late-nineteenth century, complementing complex formations of manioc, cacao, and other tree crops. Polycultural farms such as Fazenda Jordão in Taperoá, with its 500 cacao trees, 30 African oil palms, 18 jackfruit trees, four orange trees, two jabuticaba trees (Plinia cauliflora), and a few

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328 Inventory (partilha amigável) of Joaquim José de Brito and Tereza Jesuina de Cunha Bitencourt, Itaparica, 1873, APB, SJ, 05/2064/2535/35. According to a recent study (Góes and Alencar de Oliveira 2011), Terminalia catappa, commonly known as the Amoeira or Amoeira da praia is the most common arboreal species in Salvador.


330 Inventory of Leovigildo de Azevedo Monteiro, Itaparica, 1924, APB, SJ, 02/682/1142/13.
coffee trees, represent the archetypal agroecological composition of agricultural properties on the Southern Coast in the 1880s. It remains uncertain just how common ordered cultivation of African oil palms in farms on the Southern Coast had become during that period, but based on analyses in Chapters 4-6, explicit palm farming appears to have been relatively rare but nonetheless increasing on both the Southern Coast and Itaparica in the late-nineteenth century, just as Brazilian slavery was finally coming to a close. The scarcity of documentation for oil palm monocultures suggests that husbandry of subspontaneous groves was more common and was capable of meeting regional demands for palm oil.

The transition from enslaved to wage labor was a gradual process that began before the signing of the Golden Law that finally banned slavery in Brazil on May 13, 1888 (Fraga Filho 2006; Graden 2006). Scholars of abolition and its immediate aftermath in Bahia have characterized the transition to freedom as a continuation of many of the social norms and hierarchies present during the period of slavery (Scott 1988; Albuquerque 2009), particularly in rural Bahia, from the Recôncavo (Fraga Filho 2006; Graden 2006) to the Southern Coast around Valença (Dias 1978) and the cacao lands surrounding Ilhéus and Itabuna (Mahony 1996, 1997, 1998). Many formerly enslaved workers in Bahia remained on or in close proximity to the properties where they were once held captive, using their newly granted freedom to re-negotiate the terms of their mobility, land use and cultivation, and compensation (Fraga Filho 2006; Graden 2006).

Emancipation came against a backdrop of agricultural decay in Bahia, even as coffee farms in the Southeast were booming. Sugar and tobacco fell into decline and

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331 Inventory of José Gonçalves de Oliveira, Taperoá, 1883, 01/126/200/01.
manioc prices stagnated, precipitating shifts in agriculture and related settlement patterns. A three year drought beginning in 1887 only complicated matters, and enticed many of the formerly enslaved to cultivate food crops, especially manioc, and to diversify their output to enhance food security. While some Afro-Brazilians migrated to towns around the Recôncavo, others tested their luck on the emerging cacao frontier near Ilhéus. Still others moved onto the Southern Coast around Valença where land was relatively plentiful and less contested. There smallholders farmed polycultures that in good years produced surpluses for markets nearby and in Salvador. Formerly enslaved workers thus expanded Bahia’s existing peasantry of subsistence and small-scale commercial farmers, especially in the Recôncavo (including Itaporica) and on the Southern Coast (Dias 1978; Kraay 1998a; Fraga Filho 2006; Graden 2006).

Probate inventories from the Southern Coast around the turn of the twentieth century hint at an expansion of polycultures, occasionally including dendê, and increased palm oil production helped set the stage for the initial attempts at modernization beginning just a few decades later. In 1896, officers appraised a farm on the Isle of Furada in Santarém with an unknown amount of “cacao trees, coffee trees, and a few dendezeiros” along with a manioc flour mill and all its accoutrements. Six years later officers inventoried “coconut palms, dendezeiros, and other crops” at the Fazenda Barra

332 See for example a letter from the municipal chamber in Jaguaripe dated 1889 warned the provincial government that the drought had reduced entire families to beggars and some were dying of hunger; “Correspondência recebida da Câmara de Jaguaripe,” APB, SACP, maço 1335.

333 Inventory of Joaquim José de Castro e Januária Maria de Conceição, Ituberá, 1896, 04/1568/2037/07. Santarém is a former name of the município now known as Ituberá.
*dos Carvalhos* on the coast of present-day Nilo Peçanha.\textsuperscript{334} It is unclear if those oil palms were cultivated or if the management of subs spontaneous groves was becoming legible to inventory-takers. Those inventories nevertheless suggest that small-scale commercial palm oil production was slowly expanding.\textsuperscript{335}

The inventory of a farm in the Jordão district of Taperoá owned by Isidro de Araújo Ramos and his wife Gertrudes Maria do Desterro offers another instance of *dendê* cultivation or management within mixed polycultures. Constructed along the mangal where African oil palms proliferate subs spontaneously, the African oil palms could have been subs spontaneous and managed as part of a cacao agroforest, or *cabruca* (Chapter 4). Officers listed 50 *dendezeiros* at only Rs. $500$ milréis each, and appraised 623 cacao trees, 200 coffee trees, and 15 orange trees at twice that value. They priced four jackfruit trees at Rs. $5000$ each, while “110 clumps of bananas and as many young cacao seedlings” drew Rs. $300$ each.\textsuperscript{336} Such a low appraisal may have motivated farmers to forego ordered fields of oil palms, especially when productive trees were readily available along the mangal, managed in *cabruca*, and in secondary forests throughout the region. The abundance of the tree would have, in turn, diminished to some degree its economic value as a cultivar.

\textsuperscript{334} Inventory of Manoel José Leite, Ituberá, 1904, 01/288/569/04.

\textsuperscript{335} In those inventories and others for Bahian properties, probate officers generally described boundaries with landmarks and the names of bordering property owners. They only rarely recorded actual dimensions of land, thus making any analysis of property size difficult if not impossible.

\textsuperscript{336} Inventory of Joaquim Isidro de Araújo Ramos and Gertrudes Maria do Desterro, Taperoá, 1906, 01/124/194/12.
In any case, domestic palm oil was finding a retail market in the early twentieth century, not only in Salvador (Chapter 5), but on the Southern Coast as well. Inventories of two general stores in 1904, one in Valença and the other in Cairú, list palm oil among their wares at the time of their owners’ deaths. The store in Valença contained two *latas* of *azeite de dendê* for Rs. 10$000 each and a large tank (*depósito*) for storing the oil in bulk worth Rs. 2$000.\(^{337}\) That store owner probably poured oil from the large containers into small bottles for retail, and the tank indicates a high volume of domestic *azeite* moving through the store. The store in Cairú had only a half-bottle (1/2 *garrafa*) of *azeite de dendê* worth Rs. $300.\(^{338}\) Even that small amount confirms the ongoing commercial production of palm oil on the Southern Coast at the turn of the twentieth century.

There is also evidence that palm oil produced on Bahia’s coasts moved throughout the state. A railroad industry journal printed in London in 1905 touted palm oil along with export commodities cotton, tapioca (manioc flour), and sugar-based rum and molasses as the important goods of internal trade along Bahian railways (Martin 1905). The decline of African trade and the fall of slavery had converged to boost production of Bahian palm oil in the Brazilian market. Bahian palm oil producers and processors\(^{339}\) responded to rising demand with gradual changes in the commodity chain. Cut off from African palm oil, Salvador turned to its hinterland to supply the culinary and

\(^{337}\) Inventory of Euclides Ferreira de Sousa, Valença, 1904, 01/453/882/14. *Latas* remain a standard unit of palm oil and now vary between 17 and 18 liters (see Chapter 7).

\(^{338}\) Inventory of Laudelina Leonor do Rosário, Taperoá, 1904, 01/119/183/04.

\(^{339}\) Here and throughout this study, “producers” refer to those who cultivate oil palm fruit and “processors” refer to those who process oil from the fibrous mesocarp of fresh palm fruit. These categories are not mutually exclusive as many people on the Dendê Coast continue to both produce and process, however, most processors augment their supply with fruit purchased from other producers (see Chapter 7).
sacramental ingredient essential to Afro-Brazilian culture. The next section analyzes the emergence of Bahia’s post-abolition dendê economy.

Pre-industrial palm oil production and development in Bahia

While the processes of the African oil palm’s initial Atlantic transfer(s) remain unclear, Chapters 3-6 link the palm’s extraction, processing, and consumption in Bahia to African knowledges and traditions. The “floristic homogenization” of coastal landscapes in the South Atlantic meant that western African cultural-ecological knowledge remained particularly relevant in Bahia (Voeks 2012a). Africans, their descendants, and others in Bahia applied and adapted transatlantic knowledge to harness and develop the culturally- and economically-valuable oils of *Elaeis guineensis*.

Individuals in Bahia have long processed palm oil in small amounts by hand, just as they have in western Africa. For processing more than a single serving, a wooden mortar and pestle carved from hollowed-out hardwoods was the tool of choice (Figure 79). Known as the *pilão* in Brazil, the mortar and pestle were fundamental in the alimentary toolkits of both western Africans and Indigenous Brazilians who used them to process foods as varied as manioc, maize, coffee, rice, couscous, and palm oil on both sides of the Atlantic (Câmara Cascudo [1967] 2011). An inventory of a polycultural farm in the Jordão district of Taperoá, an early center of commercial dendê production, appraised a common *pilão* used to process coffee and palm oil at Rs. 1$000 in 1906.  

To harvest palms, Bahians first used climbing belts fashioned from vines or the fronds of the palms themselves to ascend trees and cut fruit bunches, similar to customary

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340 Inventory of Joaquim Isidro de Araújo Ramos and Gertrudes Maria do Desterro, Taperoá, 1906, 01/124/194/12.
Figure 79: (a.) A small-scale processor uses a mortar and pestle (pilão) to digest palm fruit in the Areal district of Taperoá (2012); (b.) A mortar and pestle in the Dendê quilombo community in the Iguape district of Cachoeira, Bahia (2012).

Later as commercial production grew, harvesters crafted more efficient climbing stirrups called *peias*, first from vines, and by the mid-twentieth century, from steel cables (Valeriano 1926; Cardoso 1948) (Figure 80). Those *peias* are similar to a Yoruba climbing apparatus described in Nigeria by British Assistant Colonial Secretary Alvan Millson in 1892 and one labelled “Ibibio rope” by Zeven (1967, p. 91; Mestdagh 1921).
Less commonly, harvesters in Bahia sometimes used ladders made from bamboo to reach fruit bunches.\textsuperscript{341}

![Figure 80: (a.) A palm harvester displays his climbing stirrups (peais), in the Biribeira district of Itaparica (2012); (b.) A palm harvester ascends with peias in Cairu on the Dendê Coast (2012).]

When demand for domestically produced palm oil increased in the late-nineteenth century (Chapter 5), Bahian producers responded by constructing mills. Named for its

\textsuperscript{341} Interview with a small-scale palm oil processor of 22 March 2012; Observations in Nazaré das Farinhas of 7 November 2012.
large circular grinding stone, the *rodão*\textsuperscript{342} transformed palm oil production in Bahia, increasing output dramatically (Figure 81). The *rodão* digests approximately as much palm fruit in one hour as a single person working with a *pilão* can digest in a long, exhausting day.\textsuperscript{343} I have been unable to locate any reference to such an instrument in western Africa, and the Bahian mills appear to be related to similar machines used to press olive oils in Mediterranean Europe as early as the sixteenth century. An engraving circa 1590 by Flemish painter Joannes Stradanus then living in Florence shows an animal-powered olive oil mill almost identical to the Bahian palm oil mill, or *rodão* (Figure 82).

Commercial palm oil operations in nineteenth-century Bahia exploited Afro-Atlantic knowledge with slavery-based production (Chapters 4 and 5). During slavery, landowners forced captives to turn manual palm oil mills, similar in form and function to the small human-powered sugar mills known as *engenhocas* (Oliveira et al. 1984; Oliveira 2009) (Figure 83). Some Afro-Bahian farmers on the Dendê Coast recall the *rodão* emerging from the sugar slavery economy.

Those first *rodões* came from the planters (*comércios*) of dendê and sugar cane. They were powered by the slaves (*negros*). Later on the mills switched to the ox. Some of them still use oxen, but by now many have been motorized. During slavery it was the *negros* that pulled the *rodão*. The *negro* pulled the small sugar cane mills, called the *engenhoca de cana*. It was those *negros* that took a beating pulling that dendê, the dendê *rodão*. […] With the slave driver at his back, goading the nude slave, “go you disgrace! Go now!” That’s how it was [at the *rodão*] in the time of the Portuguese. […] You had to work like that just to eat. A man had to pull, grind that dendê by hand. Brazilian planters (*comércios*) were brutal. It

\textsuperscript{342} The term translates literally as “big wheel.” The plural is “*rodões*.” An alternative spelling is “roldão.”

\textsuperscript{343} Interviews of 16 February 2012 and 21 April 2012.
Figure 81: A Bahian palm oil mill, or *rodão de boi*, in the Garcia quilombo community in Camamú, Bahia (2012).

Figure 82: Mediterranean animal-powered olive press, circa 1590.344

344 *Oleum Olivarum*, engraving by Joannes Stradanus (Jan van der Straet), ca. 1590. Printed in *Nova Reperta* by Philips Galle and Jan Collaert in Florence; image courtesy
was the worst, too much suffering. If not for Princess Isabella, we’d still be caught up in that.³⁴⁵

Thus for some Afro-descendants in Bahia, the brutalities of slavery complicate the African legacies of palm oil as a symbol of survival or resistance. Like sugar, tobacco, and other commodities, dendê can symbolize brutal repression and toil. Following emancipation, palm oil producers transitioned to the post-slavery economy by employing draft animals—typically oxen or donkeys—to turn the mills, which Bahians now refer to as a rodão de boi (ox) or simply -de animal (Figure 84). That innovation expanded palm oil production in the region and created a class of small-scale processors known as donos de rodão (palm oil mill owners).

Curiously, there remains almost no documentation of the rodão in the probate inventories of the Southern Coast, leaving us to wonder just how common they became within the post-abolition palm oil economy.³⁴⁶ In contrast, small manioc mills housed in sheds known as flour houses (casas de farinha) were common in inventories throughout the Southern Coast, the Recôncavo, and beyond (Figure 85). Typically those sheds contained a host of equipment used to process manioc flour, and most probate officers lumped those tools together into one appraisal that included “diverse accessories,” such as the one for Fazenda Cachoeira Alta, a manioc, coffee, and livestock farm in Valença’s

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³⁴⁵ Interview with an Afro-Bahian farmer and community leader of 12 August 2014. As Princess-regent of Brazil, Isabella signed the Lei Áurea (Golden Law) of 1888 emancipating all enslaved people in Brazil.

³⁴⁶ Contrary to the records for Itaparica, where extant probate inventories are available through the 1940s, inventories for the munícipios of the Dendê Coast are sparse after the first decade of the twentieth century.
Figure 83: *Petit moulin a sucre portatif*, Jean Baptiste Debret, ca. 1839.\(^{347}\)

Figure 84: A Bahian palm oil mill (*rodão*) in disrepair near Velha Boipeba, Bahia (2012).

Serra Grande district left by Antonia Alexandrina de Jesus to her widower and their six children in 1905.\(^{348}\) Aside from the iron *alguidar*—the circular griddle used to toast out the final traces of prussic acid from the flour—that appraised with the mill, that inventory listed separately three large copper vats. Since officers list no other equipment that could have refined sugar, those vats could have been used to cook dendê fruit. Moreover, Bahian palm oil producers have long used manioc flour equipment, including the indispensable *alguidar*, to process dendê (Figure 86), and many manioc flour mills on the Dendê Coast continue to double as palm oil processing facilities (Figure 87). Thus the *casas de farinha* ubiquitous in inventories from Bahia’s coasts likely served to conceal many *rodões* and other palm oil processing equipment from apathetic probate officers who were generally willing to write them off as simple flour mills.

Another inventory from Valença in that same year curiously appraised a “*rodão* to grind coffee” owned by the elite merchant Lieutenant Coronel João Ferreira de Souza Figueiredo. Aside from his general store in town, Figueiredo owned a soap factory and a large boat—probably used to ferry his produce to the capital, as well as portions of nine farms (*sítios*) in neighboring Jequiriçá containing coffee trees and “other *arvoredos frutíferos*.\(^{349}\) The probate officer could have mistaken the Colonel’s “*rodão*” for a coffee grinding stone, typically referred to as a *moinho* and more common in Southeast Brazil than in Bahia. Alternatively, Figueiredo could have used his *rodão* to process palm oil for use in his soap factory. Nevertheless, several informants from the Dendê Coast and

\(^{348}\) Inventory of Antonia Alexandrina de Jesus, Valença, 1905, 02/453/881/12.

\(^{349}\) Inventory of João Ferreira de Souza Figueiredo, Valença, 1905, 02/453/881/13. Listed as a “*rodão para pilar café*,” the phrase invokes the *pilão* with its idiosyncratic verb *pilar*, meaning “to pillar.”
Figure 85: A flour mill, or *casa de farinha*, in the Tanques community, Taperoá, Bahia (2012).

Figure 86: Palm fruit digested with a pilão awaits processing on an *alguidar* inside a flour mill in the Barreiras district of Mata de São João, north of Salvador (2012).
Figure 87: The *alguidar* of a flour mill next to a palm fruit cooker (sterilizer) and mechanical digester (*rodão mecânico*) in a multi-use processing facility near the Laranjeiras quilombo community in Igrapiuna, Bahia (2012).

Environ were doubtful that Bahian farmers used *rodões* to process coffee. Even during slavery, coffee planters in Bahia forced captives to grind beans with shared mortars and pestles called *pilão de sete boca* (seven-mouthed pestle).\(^350\) Thus Figueiredo’s curious inventory shows how probate officers could misinterpret property with little consequence or input from the citizens involved, even those literate elites able to read and verify the document.

The lack of early documentation of palm oil mills suggests they developed with little input or attention from elites, echoing the long history of dendê in Bahia as a

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\(^{350}\) Interviews of 25 October 2012, 1 November 2012, 2 November 2012, and 12 August 2014; Egnaldo Rocha da Silva (2013) recorded a traditional work song that repeats the lyric “*pilão de sete boca*” in the Lagoa Santa quilombo community of Ituberá, Bahia, on the Dendê Coast. See also a list of historical references to equipment used to produce coffee and other goods in Bruno (2001); *moinho* is listed, *rodão* is not.
cultural and economic resistance strategy. Despite their illegibility, palm oil mills nonetheless became important economic engines in the coastal region. By the early-twentieth century they begin to appear in the written record. A rental contract from 1923 records a small palm oil processing house on the grounds of a fruit orchard in Brotas, just outside of Salvador. A commercial census in 1939 listed 25 types of manufactories, large and small, across 113 Bahian municipalities. These works included cigar factories, rum distilleries, pottery kilns, and a host of other activities, but dendê processing facilities lacked a designated column. Instead, buried in the margins in a generic “observations” column were 20 “fábricas de azeite dendê” (palm oil factories), scattered through the Recôncavo and down the Southern Coast. Of the 25 distinct categories, seven counted fewer facilities than the 20 found for dendê (Figure 88).

There was therefore no numerical reason to deny palm oil processors an official category. Palm oil processing, much like the landscapes of African oil palms that supported them, remained largely illegible to commercial and administrative authorities in Bahia well into the mid-twentieth century. Rural Bahians were nonetheless developing those landscapes and commercial facilities to service real cultural and economic demands. In the subsequent decades, however, government and commercial elites gradually stepped into Bahia’s palm oil economy to begin the processes of top-down modernization and development.


352 The palm oil mills listed in the industrial survey included three in São Felipe and two in Nazaré (near the Recôncavo), and on the Southern Coast, six in Taperóá, and nine in Valença. Other documented centers of early palm oil production, notably Camamú, Ituberá, and Jaguaripe, are unlisted; “Quadro demonstrativo das fábricas existentes na Bahia, 1939” APB, SR, Secretaria da Viação e Obras Públicas (SVOP), 2609, maço 190.
The struggle for legibility in Bahia’s dendê landscapes, cultures, and economies

If Bahia’s subspontaneous landscapes of *Elaeis guineensis* and their cottage industry of palm oil processors were illegible to Brazilian authorities in the early twentieth century, it was not because they failed to appreciate the economic promise offered by the species. At the end of the nineteenth century the dendezeiro represented a (largely untapped) economic resource and cultural curiosity for elites in Bahia and beyond. The African oil palm’s inclusion in national and international expositions suggests that elites saw some value in the tree. The Brazilian delegation to the 1862 Universal Exposition in London sent a display of *azeite de dendê* along with hundreds of other Brazilian products, and listed it as an ingredient in soap manufacture (Brazil 1862, p. 38). Four years later, regional delegations representing Pará and Amazonas; Rio Grande do Norte, Pernambuco, Alagoas, and Sergipe; Piauí; and Bahia all submitted

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353 Ibid.
azeite de dendê, and in the case of the latter, the dendezeiro, to the Brazilian National Exposition of 1866 in Rio de Janeiro (1866, section 2, p. 6; section 8, p. 8; section 9, pp. 14, 19; section 10, p. 3).

The next year, the Brazilian delegation to the 1867 Universal Exposition in Paris carried palm oil from five provinces in the country’s North and Northeast (Brazil 1867, pp. 161-162). The official catalog of Brazilian submissions listed the oil as “azeite de dendê,” but the delegation’s report, published the next year in Paris, listed palm oil with the Eurocentric moniker, “oleo de palma (dendê)”; its common Kimbundu-inspired Brazilian name included only parenthetically for clarity (Villeneuve 1868, p. 301). Elsewhere in that report, however, the commission openly boasts of Africa’s contributions to Brazil’s rich and useful flora, including the African oil palm, and hint at its inclusion in national agricultural and economic development.

Which of the world’s countries has a greater number of fruit-bearing trees than Brazil? [...] The palms of Africa, such as the dendê, the coconut palm, the date palm, etc., etc., occupy a vast zone of Brazilian territory. [...] Ultimately dozens of food plants, which constitute a large part of Brazil’s agricultural wealth, were brought from Asia, Africa, North America, the United States, Mexico, etc. These plants will not be passively admired, [...] but will come to play important roles in Brazilian industry (Villeneuve 1868, p. 250).

Those references suggest that some Brazilian elites were well aware of the economic utility of domestic palm oil as early as the mid-nineteenth century, and subsequent commissions continued to submit displays of azeite-de-dendê and narratives of the African oil palm in official publications accompanying their delegations to international expositions; in Philadelphia in 1876 (Brazil 1876, p. 49), Chicago in 1893

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354 Those provinces were Pará, Maranhão, Rio Grande do Norte, Paraíba, and Bahia.
355 Listed as “the coqueiro de dendê, a native of Africa.”
(Brazil 1893, p. 57), St. Louis in 1904 (Ramos and Cunha 1904, p. 32), and finally Brussels in 1912 (Brazil and Mendes de Almeida 1912, pp. 18-19).

Despite the willingness of national authorities to flaunt African oil palms on the global stage, Bahian elites showed only contempt for palm oil at the turn of the twentieth century. A stern and racist denouncement of Candomblé published in the Salvador daily *Diário de Notícias* in 1905 confirms the enduring connection between Afro-Brazilian spirituality and palm oil, as well as a general disdain for the oil and the Afro-Brazilian culture it had come to symbolize in Bahia (quoted in Rodrigues 1932).

Naturally, as the number of proselytes of this [Candomblé] fetishism continues to grow, so too will the number of houses of worship and their clerics—which is to say, those who would exploit the credulity of fools. While harmful to society, it enriches traders of the so-called *azeite de dendê* […] For this mob of ignorant cretins, there is no evil, moral or physical, that cannot be vanquished by certain herbs mixed with a little *azeite* (p. 270).

As Brazil emerged from its colonial slavery economy in the late-nineteenth and early twentieth centuries, Bahian leaders and intellectuals struggled to reconcile and reorganize post-abolition society (Albuquerque 2009). In that moment palm oil represented not an economic opportunity, but a symbol and a symptom of cultural deviance and underdevelopment.

In 1927 the Bahian Public Archive published the 14th volume of its Annals, the first and only volume dedicated completely to the history of agriculture in the region. Published in that tome is an excerpt of the letter from the Count of Atouguia, then the Governor of Brazil seated at Bahia, to the Portuguese Royal Court comparing the utility

356 From Pernambuco, Ceará, and Piauí states.

of palms in Goa and Brazil (discussed in Chapter 3). The passage printed in the annals (pp. 185-186) examines several Bahian palms, including the coconut, the piaçava, the imbira, and the imbiroba, but in a telling exclusion, omits altogether the governor’s discussion of the African oil palm. Just as the Count discounted the domestic dendê economy in the mid-eighteenth century, early twentieth century scholars attached little historical esteem to the palm.

Around the time of that volume, however, elite interest in Bahia’s African oil palms began to build. By 1923, an early scientific summary of Bahia’s dendê fields listed them as a valuable component within a complex system of coastal polycultures.

The creole cacao, the Robusta coffee, the coconut palm, and the dendezeiro—the fruit trees of the coastal forests that prosper admirably in fruit orchards—give to us incalculable wealth, such that in all the annual fields of manioc, tobacco, etc., farmers plant productive fruit trees well adapted to local lands, transport systems, and climate (Agollo Ferrão [1923] 2004, p. 98).

Yet earlier in that same account, agronomist Agollo Ferrão issued what is likely the first call to modernize Bahia’s oil palm landscapes as their teleological destiny. “We do not yet methodically cultivate nor do we industrially process the products of the African oil palm,” he lamented. “[The dendezeiro] is destined to be a great source of wealth for the state [of Bahia] just as soon as it is rationally cultivated and its products are processed by modern mechanical installations” (p. 94). Finally visible for Bahia’s agronomists, the Afro-Brazilian landscape of subspontaneous oil palms remained illegible and represented only crude and degraded lands desperately in need of modernization (Figure 89).

Just three years later Carlos Valeriano, an agronomist with the state’s Secretary of Agriculture, entered his report on the dendezeiro into the state government’s official daily
Figure 89: An illegible secondary forest of African oil palms and other botanical species in Bahia.\textsuperscript{358}

\textsuperscript{358} Source: Opalma private archive (no date; accessed 2012); location presumed to be near Taperoá, Bahia. Pruned crowns suggest a recent harvest.
record on 20 June 1926. The report situates its analysis along the Southern Coast from the municipalities of Valença south to Maraú, those corresponding to the present Dendê Coast. Valeriano (1926) delivers a comprehensive state of the art of dendê agriculture in Bahia, discussing edaphoclimatic conditions, differences among phenotypic varieties, the development of subspontaneous groves, and processing techniques. He marvels at the adaptability of African oil palms to Bahian landscapes, whose “conditions of vegetation [...] are the least demanding possible” (p. 8272). Yet he ridicules the traditional methods of husbandry widespread in Bahia. “The dendezeiro has not yet received from farmers the care it deserves as the most rewarding of all the palms,” his report laments, “a more rustic agriculture could not exist” (pp. 8271, 8271). Thus the agronomist compliments the biological dexterity of the palm while chastising the Bahian farmers who managed it.

Even when faced with evidence of differential or superior management, Valeriano emphasizes soil type rather than human agency to explain away higher yields. “The dendezeiro grows in all types of lands, as we have seen. But the lessons we learned in the area stretching from Valença to Maraú taught us that oil yield is higher there than in other soils” (p. 8272). He goes on to argue for the application of Western scientific principles to oil palm landscapes in Bahia. Yet despite his obvious disdain for traditional grove management, his recommended cultivation methods appear to draw from traditional palm-tuber agroecologies developed on Bahia’s Southern Coast (see Chapter 4).

The most practical and simple way to plant dendê is to first establish a manioc field, and on the occasion of the field’s first cleaning, among the manioc seedlings, plant dendê seedlings. Obtain the seedlings from beneath fruit-bearing palms, where seeds fall from mature clusters, or from seeds that fall from harvested bunches. Throughout the year, care for the palms just as you do the manioc; and after you harvest your tubers to make flour or to feed your animals, continue to clean your [dendê] field once per year until the palms form a canopy which suppresses weed
growth. There is no faster, simpler, more practical, or economical way. [...] The level of production, one can easily deduce, depends on the care and knowledge with which we cultivate the plant, closely followed by the variety cultivated (p. 8273).

Parsing the agronomist’s suggestions thus demonstrates a subtle willingness to reconcile traditional palm-tuber agroforestry techniques with contemporary Western scientific principles. His subsequent take on traditional processing, however, emphasizes Eurocentric biases embedded within his high-modernist ideology. After painstakingly describing the process of extracting palm oil using a pilão, Valeriano ends his piece with a sarcastic, transatlantic indictment of Bahia’s—and Africa’s—traditional palm oil economies.

In contrast to [the Bahian] experiential, ultra-colonial process of manufacturing palm oil, there are the more novel, efficient, and economical methods introduced by the Europeans to Africa […] But conveying this point does no good because it will take some 50 years before this modern manufacturing process will be introduced among us, when those machines are more refined (p. 8273).

Carlos Valeriano was educated and later taught as an agronomist at Bahia’s state agricultural academy (Escola Agrícola da Bahia or EAB). Since its founding in 1877 on the grounds of a sugar engenho in the Recôncavo, EAB solidified a profession and class of agronomic engineers in Bahia and many of its graduates went on to work in the state’s Secretariat of Agriculture and at other prominent bureaucratic and extension posts (Cunha 1977; N. Araújo 2010, 2011). The academy and its alumni stressed a Western scientific ideology and worked to modernize Bahian agriculture through ordered monocultures. To graduates of the EAB, Bahia’s complex, dynamic landscapes of

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subspontaneous African oil palms were anathema, and the state’s agricultural authorities, among them agronomist Carlos Valeriano, sought to bring them under modern, scientific control.

Agronomists disseminated modernist agricultural techniques and ideologies through the pages of agricultural journals and circulators published in Salvador. In 1933 an article in *Correio Agricola*, a publication of the Bahian Agricultural Society (*Sociedade Bahiana de Agricultura*), pointed out the growing industrial uses of palm and palm kernel oils in soaps, candles, lubricants, margarines, and tinplating, and described ordered monocultures in the Belgian Congo and Sumatra (*Uphof 1933*). Five years later in *Bahia Rural*, monthly journal of the Bahian Agronomy Association (*Associação Bahiana de Agronomia*), prominent agronomic engineer and secretary of the Bahian Agricultural Society Antonio Azevedo published notes on Bahia’s oil palm economy. He provided a photograph of ordered oil palm monocultures in Sumatra and juxtaposed it with one of a subspontaneous grove in Camamú (*Azevedo 1938, pp. 2143-2145*). Accompanying those stark images is text urging readers to “rationalize the cultivation of the dendezeiro, actively planting instead of trusting it to the vultures and rodents” (p. 2144). Azevedo admonished Bahia’s oil palm landscapes and those who managed them, associating them with poverty and rural neglect.

In our country the cultivation of the dendezeiro […] amounts to trees growing in clumps around the dwellings of poor people or run down houses. Even the few extensive palm farms in Camamú, Itaparica, etc., receive only limited treatment (p. 2145).

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360 Azevedo is listed as a secretary of that society in the front matter of *Correio Agricola*, vol. 11, nos. 4-5, April-May, 1933. His juxtaposition of a subspontaneous oil palm grove and a plantation monoculture recalls a similar comparison of a mixed temperate forest and a Tuscan poplar monoculture presented by Scott (1998, pp. 16-17) to exemplify his concept of legibility.
He contrasts that impression of misery with European modernization in far-flung colonies. “The situation is different in the European colonies of Africa and the Orient, especially Sumatra and Java, where they have already systematized the cultivation and harvesting of this useful palm” (p. 2145). He then advocates for an official analysis of the African oil palm in Bahia, which despite its “great quantity” at the state’s Tropical Fruit Experimental Station on *Fazenda Mocambo*, the federal Ministry of Agriculture had not included it in its initial studies of oleaginous plants. International development of the palm oil market had suddenly highlighted the state’s mostly subspontaneous landscapes of dendezeiros, tantalizing many elite Bahians with their economic potential.

International pressure on Bahia’s dende landscapes gradually ramped up over the first half of the twentieth century. US scientists first visited Bahia’s dende landscapes in 1913, when a group from the Office of Foreign Seed and Plant Introduction in the US Department of Agriculture retrieved African oil palm seeds from an orchard outside of Salvador (Dorsett, Shamel, and Popenoe 1917). Three decades later, in response to rising industrial demand and the disruption of trade during the Second World War, the US government sent a vegetable oils fact-finding mission to Brazil in 1941. A team of US scientists\(^\text{361}\) travelled for seven weeks throughout much of the country searching for new supplies of oils and providing technical recommendations. After touring the state research

\(^{361}\) The team included Mr. Charles E. Lund, Chief, Fats and Oils Staff, Consumption Goods and Materials Unit, Bureau of Foreign and Domestic Commerce, Department of Commerce; Dr. George S. Jamieson, Senior Chemist, Bureau of Agricultural Chemistry and Engineering, Agricultural Chemical Research Division, Department of Agriculture; James R. Mood, Economist, United States Tariff Commission; Mr. John B. Gordon, Secretary, Bureau of Raw Materials for American Vegetable Oils and Fats Industries; Mr. Marvin Wood, President, Marwood Company Inc; Dr. H. W. Vahleich, Technical Director, The Best Foods, Inc; see *Report of United States Vegetable Oil Mission to Brazil, March 9 to April 28, 1942* Washington: GPO, 1942, p. 1.
station at *Fazenda Mocambo*, the US scientists were astonished by the untapped economic potential of the African oil palm in Bahia. They counted 37,000 palms on the property alone, and estimated at least 300,000 on Itaparica and 1.5 million in Bahia overall. Their report recommended that the US work closely with Brazilian governments and corporations to create an export market of palm oil flows from South to North America.

Many dende (sic) palm trees grow in Bahia. They produce palm oil from the pulp or pericarp and palm kernel oil from the kernels. Those oils are needed in the United States to replace the rapidly diminishing supply formerly received from the Netherlands Indies and West Africa (p. 20). [...] Bahia obviously is well adapted to plantation development of this valuable variety of the palm tree, as its culture has been carried on as a backyard enterprise by the natives of Bahia over a period of many years. They have been accustomed to grow the palm, harvest the fruit and utilize the oil for home culinary usage. [...] It would appear to be definitely in the interest of the United States and Brazilian Governments to cooperate in the matter of developing a Brazilian source of supply of (sic) palm oil and palm kernels (p. 15).

The advisors became aware of the traditional Brazilian knowledges that had helped develop Bahia’s oil palm landscapes.

Went to say good-bye to the Secretary of Agriculture, Dr. Joaquim Medeiros, who gave some interesting information in regard to the palm oil industry of Bahia, during the stay at Bahia. He stated that it started as a back-yard industry—i.e., the caboclo would plant a few trees in his backyard and use the oil therefrom for home culinary uses. By this means, an untold number of dende (sic) palms (*Elaeis guineensis*) are widely distributed over Bahia. Birds and rodents carry fruit about and are thus responsible for the distribution of the tree over additional areas (p. 76).

Echoing earlier Brazilian positions, the US scientists discounted local knowledges as a cultural curiosity and instead sought to export a modernist agronomic ideology to Brazil. They hoped to convert Bahia’s traditional oil palm landscapes to plantation monocultures and mechanize production based on colonial models developed elsewhere.
in the tropics. They implied that only a North American scientist possessed the expertise required to oversee the conversion, despite centuries of local development in Bahia.

The State of Bahia contains many thousands of [African oil palms]. They can easily become a very profitable source of revenue to the State of Bahia and neighboring states, and they can be grown with the same facility on a plantation basis as in the Dutch East Indies (p. 20).

We recommend, therefore, that an earnest effort be made to find one or more technicians in the United States who are familiar with the plantation development of the palm oil industry in the Dutch East Indies and Malaya and in the Belgian Congo in order that these technicians may be dispatched to Brazil to work there with the Federal and the State Governments in ascertaining the localities where the dende palm will best flourish and will, therefore, be the most profitable when grown on plantations.

It is furthermore urged that the State of Bahia make every effort to see that the fruits of the palm trees which are now being produced in various parts of the State, are harvested and the palm oil extracted therefrom by the use of modern machinery not now in their possession. [...] The State Department of Agriculture at Bahia is at the present time experimenting with some rather limited equipment, which is totally inadequate for the purpose (pp. 15-16).

Elite disdain for traditional landscapes in Bahia recalled earlier British interpretations of West African agriculture as they escalated colonial efforts there in the late-nineteenth century. British officers regarded the Nigerian palm oil economy as an exceedingly small commerce compared to what might be the case were the enormous resources fully, or even moderately, utilised. For miles along the West Coast of Africa, extending between Cape Bianco and St. Paul di Loanda, there are vast forests of palms, the oleaginous fruit of which has, for centuries, rotted unused upon the ground.362

Smitten with Dutch and British colonial models, the US scientists worked to extract economic reward from foreign tropical landscapes through a distanced neo-colonial framework.

The State Government of Bahia is only just beginning to become interested in the plantation development of *Elaeis guineensis*, or the dende (sic) palm, as the Brazilians call it. Endeavored to encourage the Bahia State Government in every way possible in these efforts (p. 76).\(^{363}\)

The North American oils mission appears to have elicited an immediate reaction in Bahia, however dendê was overlooked in the initial response. An internal government document circulated in the Secretariat of Agriculture in June 1942 titled “WE NEED TO PRODUCE MORE VEGETABLE OILS” promoted the development of cottonseed, castor bean, *babaçu*, *ouricuri*, and peanut oils “to increase the economic potential of Bahia,” but made no mention of palm oil.\(^{364}\) Over the subsequent years, however, Bahian elites moved to capitalize on the region’s rich stands of African oil palms, at least 400 years following their introduction and initial stages of development. A coalition of technocrats, politicians, and industrialists set out to sterilize and reduce Bahia’s Afro-Brazilian landscape into a purely economic resource—to make it legible.

**Modernization and Bahia’s Afro-Brazilian landscape**

Six years after the US oils mission issued its report, Bahian chemist Aurino Cardoso published a brief monograph on the industrialization of Dendê in Bahia in 1948. It placed the “largest dendê fields (*dendezais*) of the Recôncavo” on Itaparica at the *Mocambo*, *Burgos*, *Aratuba*, and *Barra do Gil Fazendas*, and mentioned other expansive dendezeiro *fazendas* in Valença, Taperoá, and Santarém on the Southern Coast (p. 13). After detailing the traditional palm oil processes, complete with photos of a *pilão* and a *rodão*, Cardoso described the German equipment in use on *Fazenda Mocambo*, the original

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\(^{364}\) “PRECISAMOS PRODUZIR MAIS ÓLEOS VEGETAIS,” APB, SR, Secretaria da Agricultura (SA), 2377.148-1.450.
mechanized palm oil processing unit in Brazil (Figure 90). That unit produced palm oil that he and other chemists at Bahia’s Institute of Agricultural Chemistry and Technology separated into lucrative chemicals for industrial, culinary, pharmaceutical, and other uses. The push for modernization in Bahia’s palm oil economy had begun.

![Figure 90: An African oil palm emerges in front of ruins of Brazil’s first mechanized palm oil processing unit at the state-owned Tropical Fruit Experimental Station at Fazenda Mocambo on the Isle of Itaparica (2012).](image)

The US oils mission had earlier met with vegetable oil magnate Count Francisco Matarazzo and visited his company’s cottonseed, tung, orange, and castor fields and oil plants spread across Paraíba and São Paulo states. They impressed on him the lucrative potential of palm oil in Bahia, and by the next decade, Matarazzo had opened a plantation and palm oil processing plant in Ituberá, an early center of palm oil production (Chapters 4 and 5). When a subsequent French oils mission visited Bahia in 1959, they toured Matarazzo’s and two other corporate production facilities on the Southern Coast, a
plantation in Valença owned by the Odebrecht Corporation and a processing plant in Taperoá opened in 1956 by a group headed by Bahian agroindustrialist Euvaldo Luz (Ollagnier and Maria-Sube 1961; Homma and Furlan Júnior 2011). The first wave of industrialization came at a time when small mills were common on the Southern Coast. A small-scale palm oil processor recalled that many small farmers, or “everyone with five or six hectares of dendê had an [animal-powered] rodão” at the initial onset of industrialization (Figure 91).365 And according to one of its original employees, the Opalma group began its operation using animal-powered rodões before the first motorized equipment arrived in Taperoá from the Netherlands in the late 1950s.366

Figure 91: A small-scale animal-powered palm oil mill, or rodão de animal, constructed in the 1930s, on the Isle of Boipeba in Cairu, Bahia (2012).

365 Interview with small-scale processor (dono de rodão) of 28 March 2012.
366 Interview with retired Opalma employee of 23 February 2012.
The French scientists encouraged the Brazilians to continue to modernize landscapes and industrialize production through careful site selection, improved germplasm production, chemical fertilization, and demonstration plots. They were particularly uncompromising in their promotion of improved varieties. Much like landscapes in western Africa, Bahia’s subs spontaneous groves are dominated by the dura variety, whose thin mesocarp yields less oil when compared to the hybrid tenera variety (Poku 2002; Corley and Tinker 2003; Oliveira 2009). French officials agreed to supply Brazil with tenera genetic material developed at a French laboratory, Institut de Recherches pour les Huiles et Oléagineux (IRHO), in the Ivory Coast (Ollagnier and Maria-Sube 1961). Companies in Bahia as well as Northern Brazil planted monocultures derived from that French germplasm for the next three decades (CEPLAC and IICA 1975; Nascimento et al. 1982).

Delivered 20 years after the US mission, the French report also chided Bahia’s complex palm landscapes and were unimpressed with ongoing modernization efforts. “Current production in the state of Bahia comes from the irregular and often primitive extraction of subs spontaneous palm groves” (Ollagnier and Maria-Sube 1961, p. 6). The consultants connected the traditional palm oil economy with Afro-descendants.

There is a certain but difficult to measure quantity [of palm oil] that escapes the statistics, probably between 1,500 and 2,000 tons [per annum], produced by Blacks (negros) in Bahia for domestic culinary uses and to supply local markets (p. 6).

Later in their report the French scientists classify such “small-scale production” as “artisanal,” a designation that persists as a preferred way to describe, and ultimately

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367 Phenotypes of *Elaeis guineensis* are discussed in more detail in Chapter 7.
devalue, traditional or otherwise non-industrial producers (p. 18). The phrase denies the economic contributions of smaller-scale producers and processors, instead framing them as quant, anachronistic artisans. The scientists implied in their report that traditional dendê farmers should have only small supporting roles in the modernization and rational development of Bahia’s palm oil economy as supplemental suppliers of the capitalized industrial operations.

A year after the French scientists issued their report, Brazil’s National Steel Company (Companhia Siderúrgica Nacional) acquired the palm oil factory in Taperoá to supply oils and other products for its metallurgic facilities in Volta Redondo, Rio de Janeiro (Visão 1965) (Figure 92). Operating as Opalma, the corporation became a fixture in Brazil’s emergent palm oil industry. Federal and state authorities saw palm oil processing as a key cog in their broader developmentalist agenda of the 1950s and 60s (Sikkink 1991). Elites touted Opalma as a substantial first step in an ambitious industrial development strategy that they claimed would eventually industrialize the chronically underdeveloped Northeast, enhance social stability with increased rural jobs and incomes, and finally end palm oil imports used in metallurgy—thus reducing foreign dependence and the federal trade deficit (Visão 1965). The top-down venture never achieved its lofty goals. The modernization program did, however, stimulate other, unforeseen changes in the landscapes and cultures that supported Bahia’s palm oil economy.

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Industrialization introduced shocks in the local economy and the region’s landscapes corresponded. Matarazzo’s palm oil plant processed fruit of the region’s “palmetto natural” before constructing monocultures of *dura* under the direction of a Dutch agronomist beginning in 1955 (Ollagnier and Maria-Sube 1961, p. 169). The French mission nevertheless disapproved of the germplasm and soils of those early plantings, and urged Matarazzo to abandon more than 75 percent of those fields just four years later. A smaller plantation constructed by Odebrecht and an experimental plot, both

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in Valença, faced similar criticisms related to site selection and germination techniques (Ollagnier and Maria-Sube 1961, pp. 169-171; 174-176).

Opalma began planting tenera hybrids and applying chemical fertilizers as early as 1959 (Ollagnier and Maria-Sube 1961) (Figure 93 and Figure 94).\(^{370}\) The company’s approach was multi-faceted, however, and the group continued to rely on local suppliers for raw material, purchasing up to half of its fresh palm fruit from area farmers, even after their fields came into production.\(^{371}\) In partnership with the national Bank of Brazil (Banco do Brasil), Opalma used public funds to support farmers in a program of subspontaneous grove rehabilitation. They found that thinning overly-dense palm clusters and suppressing unwanted vegetation around their trunks could increase fruit production as much as double (Nascimento et al. 1982) (Figure 95).

Those lines of credit also spurred expansions of other exotic tree crops among the region’s smallholders, notably rubber (Hevea brasiliensis), clove (Syzygium aromaticum), and coconut palms, soon followed by the vine crops black pepper (Piper nigrum) and guaraná (Paullinia cupana), and later other exotic tree crops including mangosteen (Garcinia mangostana), cinnamon (Cinnamomum sp.), macadamia (Macadamia integrifolia), urucum (Bixa orellana) and pupunha (Bactris gasipaes, grown for its heart of palm) (Fischer 2007). Purchasing fresh fruit from small-scale producers, the early industrial operations amplified local production on small farms, where increased managing and planting of African oil palms began to spread. Increased production, in turn, spurred greater opportunity for industrial development and innovation.

\(^{370}\) Interview with an Opalma agronomist of 23 April 2012.

\(^{371}\) Interview with Opalma management of 13 March 2012.
Figure 93: An Opalma monoculture, planted in 1978, and still in production (2012).

Figure 94: An Opalma technician sprays tenera seedlings with chemical fertilizer.\textsuperscript{372}

\textsuperscript{372} Source: Opalma private archive, Taperoá, Bahia (no date; accessed 2012).
In the early 1960s Bahian entrepreneur Higino Estevan Santos founded Oldesa, initially as a palm kernel and oil logistics venture based out of Valença. He purchased palm oil and kernels from small-scale *rodões* and shipped them to corporate firms in Southeast Brazil before constructing his own palm oil and palm kernel oil processing plant in Valença in 1966. Four years later Oldesa installed an expansive industrial processing operation in Nazaré, chosen for its strategic location between suppliers in the Recôncavo and Itaparica to the north, and those of the traditional dendê landscapes on the Southern Coast. Small-scale processors on the Dendê Coast remember Oldesa as the first of the local *donos de rodão* to mechanize production.²⁷³

A former employee of Oldesa, Pedro Sarmento, mastered the plant’s machinery and adapted a smaller version of the industrial fruit digester for use by small-scale processors. He opened the Con-Tiki mechanical shop in Valença where he perfected small diesel and electrical digesters, selling many to small-scale processors along the coast. Not only did that innovative digester, or “mechanical rodão” as many still call it, increase the production capabilities of small-scale processors more than four-fold, it often sold for cheaper and required lower operating costs than the animals it replaced (Moraes 2000) (Figure 96).374

Sarmento’s connection to the machines at Oldesa helps explain the initial emergence of the mechanical rodão, but its rapid proliferation in the region draws on much older industrial traditions. Now the heart of small-scale mechanical palm oil processing, Valença was indeed Brazil’s first industrial center. The city officially earned the name “industrial city of Valença” in 1849 five years after textile factories opened on the banks of the Una River, spurred by foreign investment and powered by Bahian cotton and more than 300 enslaved workers (Stein 1957). That fundamental history of mechanized production stimulated a broader and ongoing culture of mechanical innovation, as locals continue to repair and resell those digesters, and now small mechanical presses, and the machines circulate second and third hand through Bahia’s palm oil economy (Figure 97).

374 Interview with small-scale processor of 28 March 2012; Interview with a former small-scale palm oil processor of 29 March 2012; Interview with a palm oil equipment mechanic of 29 March 2012; Interview with small-scale processor of 30 March 2012; Interview with Oldesa management of 5 April 2012; Interview with federal officials at Comissão Executiva do Plano da Lavoura Cacaueira (CEPLAC) of 13 April 2012; Interview with small-scale processor of 19 November 2012.
Figure 96: Small-scale digester, or mechanical rodão, the type first adapted by Pedro Sarmento, in the Areal district of Taperoá, Bahia (2015).

Figure 97: Workers recondition a used digester for resale in the Maricoabo district of Valença, Bahia (2012).
Azeite de pilão still circulates in Bahian markets and a few animal-powered mills still operate in the more remote areas of the Dendê Coast, but the vast majority of small-scale processing facilities are now mechanized (Figure 98). Many small-scale processors, still known as donos de rodão despite mechanization, now look back on the pilão and the rodão de animal with nostalgia, but recall mechanization as an inevitable teleological process from which they ascended. A small-scale processor in his early fifties explains.

In my grandfather’s day, it was the time of the pilão. A little while later, still in my grandfather’s time, they developed the rodão. […] Pulled by animals, that continued to the time of my father, he grew up doing it; then I came along to help him, I worked with my father, at these rodões. That was back in the 1950s and 60s. And that’s when Opalma entered the picture. Someone in the government noticed that the region badly needed to process and commercialize [the African oil palm]. These small, animal-powered rodões that we had were insufficient to process all the fruit that existed. So then came Opalma.  

He went on to explain the effects of public investment on local landscapes and in the lives of the local farmers.

Opalma came because there was more dendê than the farmers here could harvest. There were people here that had dendê fields that they didn’t harvest because they had no one to sell it to. Then Opalma came to the

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375 Interview with small-scale processor of 12 March 2012.
region and started buying dendê fruit; they built a factory with government funds. When Opalma showed up, farmers here felt like they should, maybe not plant dendê, but at the very least cultivate and care for what they already had. They went in and cleaned up their wooded fields and production here surged. Soon there was too much fruit for even Opalma to process, so other companies moved in.376

Industrialization thus stimulated a suite of changes in the dendê landscapes and cultures of the Southern Coast much more complex than the ordered modernization its central proponents anticipated. Farmers reacted in different ways to the new market. Before the 1950s, dendê landscapes were almost completely subspontaneous groves developed through processes of swidden-fallow agriculture, selection, and sparing (Chapter 4). A decline in regional manioc prices in the late 1950s corresponded with increased industrial demand for palm oil (Dias 1978). Many manioc farmers in the region responded by diversifying their production and encouraging dendê landscapes already in existence. When asked if his grandfather or father ever planted dendê, a small-scale processor on the Island of Boipeba replied with a story of manioc agriculture typical of many family histories in the region.

This dendê here is nativo (subspontaneous); it just grows, but we manage it, ok? It gets all tangled up, and we might cut one down, but leave 4 or 5; it always recoups. Here everyone planted manioc. […] I planted it, too. This whole field was manioc. Rural folks out here survive on that manioc. […] These days, besides a few coconut palms, that field’s all dendê. It used to be a whole lot of manioc. We had a motorized flour mill. Then some 70 years ago my father installed this rodão. […] Later I worked with the guy from Taperoá (Opalma). Sometimes I would process my own dendê, other times I would send it to the factory, to Opalma. […] Then I was a purchaser [of fresh dendê fruit on Boipeba] for Oldesa for 17 years. I sold lots of dendê.377

376 Ibid.
377 Interview with a former small-scale palm oil processor of 22 March 2012.
Some farmers simply allowed the dendê landscapes to overtake manioc fields, others optimized subspontaneous groves to increase production, others began actively planting dendê fields to sell to the factories, and industrial outfits constructed monocultures of improved varieties with strict regimens of chemical fertilizers and agro-toxins. Data from Opalma and Brazil’s agricultural censuses compiled by Dias (1978, p. 79) show a boom in palm oil production in Valença during the first decades of industrialization. In 1950 Brazil’s Census counted 62 metric tons of palm fruit processed by 79 establishments. Ten years later, as industrialization was just beginning in the region, the 1960 census counted 160 units processing 1,789 metric tons of fruit. Data for 1965 furnished by Opalma lists 1,435 production establishments producing 6,600 metric tons of dendê, an increase of more than ten orders of magnitude over just 15 years. While the censuses likely undercounted small-scale processing units and their production, the surge of Bahia’s palm oil sector over the 1950s and 60s is unmistakable.

The mechanization of palm oil processors over the second half of the twentieth century increased production thus generating income and creating rural jobs (Figure 99). Typical small-scale processors employed harvesters to climb trees and cut fresh fruit (cortadores), collectors (juntadores) to amass and transport the fruit—usually with the help of an animal (Figure 100), drivers to collect fruit from other farmers (Figure 101), and day laborers to process the oil (Figure 102). At the rodão, the job of separating digested fruit fiber (bombá) from oil was traditionally reserved for women. Each rodão would employ between 2 and 6 lavadoras de azeite to press the oil from fiber by hand in a large tank filled with water (Figure 103).³⁷⁸

³⁷⁸ Contemporary production networks are discussed in greater detail in Chapter 7.
Figure 99: A small scale, mechanized palm oil processing facility among a subspontaneous oil palm grove in the Orobó district of Valença, Bahia (2012).

Figure 100: A cortador (center) ascends a subspontaneous palm for harvesting, while collectors (juntadores) (left and right) and an ox gather fruit in Taperoá, Bahia (2012).
Figure 101: A truck delivers fresh dendê fruit to a mini-industrial processor, surrounded by cacao trees, banana plants, and dendezeiros in Maricoabo, Valença, Bahia (2012).

Figure 102: A day laborer cooks (sterilizes) a vat of fresh palm fruit in the Cajaiba district of Valença, Bahia (2012).
After planting the seeds of industrialization on the Southern Coast, Opalma set its sights on the fertile massapé clays of the Recôncavo. At the request of its owner Euvaldo Luz, the French oils mission visited his sugar engenho in the Iguape district of Cachoeira during its tour of 1959. The scientists were impressed by the lush growth and fruit production of several subspontaneous palms growing among the cane fields, and suggested an experimental plot to gauge the area’s potential to support monoculture (Ollagnier and Maria-Sube 1961, pp. 176, 181). Opalma soon began purchasing more of Iguape’s cane fields, reinvesting its profits to expand cultivation. In 1966 the corporation planted 1,600 hectares of tenera seedlings acquired through a 1964 agreement with French scientists at the IRHO in Ivory Coast (Nascimento et al. 1982). Bahia’s dendê landscapes had come full circle. On the grounds of the very sugar engenhos that once detained Benta and other enslaved workers (Chapter 4), subspontaneous dendezeiros like
the ones they harvested enticed government-backed industrialists to convert their cane fields to oil palm monocultures (Figure 104 and Figure 105). Opalma’s move into the elite sugar soils of the Recôncavo signaled the full integration of the African oil palm into Bahia’s modernist agroindustry in the mid-twentieth century.

Agroindustrial monocultures like those constructed in Iguape nevertheless failed to overtake the complex Afro-Brazilian landscape in the twentieth century. In 2001 subspontaneous groves accounted for 63 percent of Bahia’s African oil palm landscapes in active production, and small-scale processors, or rodões, produced an estimated 31 percent of the state’s palm oil production despite limited resources, credit, and support.\footnote{According to a study by Bahia’s Secretariat of Agriculture (SEAGRI) published by Mesquita (2002, p.25).} The fluid mix of subspontaneous groves, small polycultural farms, agroforests, and agroindustrial monocultures that emerged in the 1950s still characterizes the complex dendê landscapes of Bahia’s Southern Coast. Industrialization and public funds began a process of modernization in those landscapes, but the result was altogether more complicated than the intended substitution of monoculture. African oil palms grow in fields and gardens throughout Bahia but remain most concentrated and indeed most dynamic on the Dendê Coast where managed secondary (agro)forests and subspontaneous groves “planted by vultures” share space with cultivated polycultures and agroindustrial monocultures.

Bahia’s dendê landscapes followed a chaotic socioecological trajectory from sixteenth century colonialism and its slavery economy to top-down modern development in the twentieth century. Even as agroindustrial development pressured traditional
Figure 104: A subspontaneous dendezeiro spared in fields of sugar cane in the Iguape district of Cahoeira, Bahia; its pruned fronds indicating a recent fruit harvest (2012).

Figure 105: Legible landscapes of African oil palm seedlings prepared for planting in the former cane fields of Iguape, Cachoeira, Bahia (no date).\(^{380}\)

\(^{380}\) Source: Opalma private archive, Taperoá, Bahia (no date; accessed 2012). The year is likely 1966 when Opalma planted 1600 ha of tenera seedlings acquired from French scientists working at the IRHO in Ivory Coast (Nascimento et al. 1982).
landscapes and cultures, the Bahian palm oil economy remained connected to Afro-Brazilian cultural and economic resistance. A microhistory of three Bahian families, the Afro-descendants they enslaved, and their families connects the transatlantic trades in humans and palm oil with the development of Afro-Brazilian religions and the modernization of Bahian agriculture. It demonstrates how diverse people, plants, and products circulated in the Atlantic World, creating spaces of negotiation and expression and shaping landscapes, cultures, and economies throughout the basin. Brazil’s first experiments with palm oil mechanization took place in the subsppontaneous dendê fields at Fazenda Mocambo, an allusion to maroon communities and a formative site of Afro-Brazilian worship and kinship dating to the nineteenth century. Across the Bay of All Saints, the Opalma oil palm plantation in Iguape replaced the very sugar cane landscapes where, a century and a half earlier, an enslaved Afro-Brazilian woman named Benta resisted her plight by processing palm oil for use and sale (Chapter 4).

For the smallholders that lived, worked, and relied on the Dendê Coast, its complex landscapes provided economic, nutritional, and cultural resources. Yet, as Brazil finally emerged from the slavery economy in the late-nineteenth century, the African oil palm remained on the margins of national economic development projects. Brazilians elite and otherwise associated the dendzeiro with enslaved Africans, and its irregular socioecological configurations and connections to unwieldy mangrove and swidden landscapes made it only less appealing to authorities seeking to modernize Brazilian agriculture.

As Bahia’s coastal processors expanded production with animal-powered mills in the early-twentieth century, national and local political leaders and other elites continued
to perceive little worth in Bahia’s palm oil economy, framing it as an unfortunate and anachronistic consequence of the African diaspora. Bahian agronomists began promoting the economic potential for palm oil in the 1920s, and public officials and industrial tycoons gradually came to recognize Bahia’s dendê landscapes as potentially lucrative economic resources. By mid-century, post-war geopolitics and global trade networks finally galvanized the interest of Brazilian elites. Subspontaneous groves of dendêzeiros and traditional production techniques, however, obstructed “order and progress,” and scientists from the US and France as well as Brazil linked those complex landscapes with poverty and underdevelopment. Deploying a Green Revolution ideology, elites set out to modernize Bahia’s landscapes of African oil palms in a campaign against traditional management and cultivation techniques that persists today.

To distinguish and highlight agroindustrial production, scientists in the mid-twentieth century began designating traditional processors as “artisanal.” That rhetorical device transformed small-scale processors from economic entrepreneurs worthy of public and private support to quaint tourist attractions on the Dendê Coast. Yet despite those claims and the emergence of subsidized agroindustries, traditional processors from Valença to Camamú continue to innovate and compete, and remain prominent and preferred sources for cooking oil in Bahia. Whereas large-scale manufacturers such as Opalma supply domestic industrial demand as well as far flung culinary markets from

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381 See for example official state tourism promotional literature (Bahia 2001). It suggests visits to two artisanal palm oil processing units: one in Barra dos Carvalhos in Nilo Peçanha, and another in Valença’s Vila Velha de Jiquiriçá where tourists can take “a small trail (about 10 minutes by foot), to visit a flour mill and a ‘Rodão de Dendê”—a wooden press revolving on an iron lathe in the middle which spins by animal traction to produce the famous dendê, an important ingredient in flavorful Bahian cuisine” (p. 32).
São Paulo to Europe to the US, smaller-scale processors, many still using a *pilão* or *rodão*, supply the culinary and religious markets in Bahia, Pernambuco, Rio de Janeiro, and a few other regions where consumers relish handmade oil. Many of Bahia’s traditional vendors, the *Baianas de acarajé* ubiquitous throughout the state and common even in Rio de Janeiro and São Paulo, continue the transatlantic traditions of frying *acarajé* in palm oil sourced from the mills and pestles of Bahia’s small-scale processors (Figure 106 and Figure 107).

Elites sought to control the Dendê Coast through modernization, industrialization, and development beginning in the mid-twentieth century. While those interventions generated mixed, unexpected, and dynamic results, they ultimately failed to convert Bahia’s complex landscapes of dendezeiros into simple, legible parcels, and subs spontaneous groves continue to prevail on the Dendê Coast. Instead modernist schemes amounted to just another input in a complex system. Small-scale producers and processors colluded with vultures, germplasm, public funds, and industrialists to carry on the long and continual transformation of the Dendê Coast. Bahia’s Afro-Brazilian landscape came to support a fluid mosaic of polycultures, agroforests, subs spontaneous groves, and monocultures variously managed and exploited by humans and other beings.

The endurance and complexity of Bahia’s Afro-Brazilian landscape challenges the hegemonic view of power implicit in oppositional binaries of top-down and bottom-up forces. Power and resistance are instead networked and fluid contingences that flow through socioecological assemblages to materialize development. Bahia’s dendê economy attests to the diffusive structures of power and the messiness and multiplicity of development. The state’s inability to see, read, or appreciate Bahia’s Afro-Brazilian
Figure 106: A Baiana de acarajé in Salvador serves a black eyed pea dumpling (acarajé) fried in palm oil produced on the Dendê Coast (2014).

Figure 107: “Artisanal” palm oil and pepper sauce at market in Valença, Bahia (2012).
landscapes allowed family farmers and other small-scale entrepreneurs on the Dendê Coast to produce and reproduce a resilient economy, and indeed resist and redirect the imposition of modernity. Smallholders leveraged the illegibility of the landscape to resist modern appropriation of it. Officials and economic elites sought and seek to reign in and control a complex system developed and empowered by working class producers and processors.

Yet rather than weak underlings constantly reacting to state hegemony, small farmers and palm oil mill operators have elicited responses from the elites. Those official reactions have consistently fallen short of their goals to convert and control Bahia’s dendê economy. Smallholders have, in turn, successfully appropriated the agroindustrial initiatives into their traditional production schemes, and thus continue to exert power through the economy. On the Dendê Coast, subsidized monocultures served to proliferate complex, subspontaneous landscapes of transatlantic dendezeiros. The existence of networked power and the smallholders’ access to it does not, however, suggest self-determined outcomes, control, or the just or viable configuration of Bahia’s dendê economy. On the contrary, smallholders and small-scale processors continue to struggle for resources in that highly contentious system. The next chapter analyzes that contention and examines current development efforts being waged on the Dendê Coast.
Then let us consider this question, not in relation to [hu]man[s] only, but in relation to animals generally, and to plants, and to everything of which there is generation, and the proof will be easier.

—Plato, *Phaedo* ([360 BCE] 1900, p. 91)

It is scientists who ask the questions, and complexity arises when they have to accept that the categories of understanding that guided their explorations are in question, when the manner in which they pose their questions has itself become problematic.


Distinguished by polycultures and subspontaneous groves featuring African oil palms, Bahia’s Afro-Brazilian landscape emerges through iterations of transatlantic socioecological connections and relations over the course of the past five centuries. The resulting complex landscape is both a product of and a venue for power and resistance, perpetually transforming through more-than-human collaborations and contestations (Chapters 3-6). Beginning in the mid-twentieth century Brazilian and international elites sought to modernize the landscape with monocultures and industrial processing plants. Rather than simplifying the landscape and the broader palm oil economy, as intended, those development efforts managed to further complicate its already diverse and dynamic composition (Chapter 6). Officially designated the Dendê Coast in 1993, landscapes of dendezeiros had come to define the region (Bahia 1993). The littoral connecting the Jequiriçá Valley with the Maraú peninsula remains a complex, dynamic, and diverse zone distinguished by and derived from centuries of socioecological processes both historical and modern. In the twenty-first century, the Dendê Coast continues to grapple with
agricultural modernization, economic development, and attempts to homogenize its landscapes.

In 2004, Brazil’s center-left Lula administration implemented a federal biofuel program with mechanisms to support small and family farmers, including those producing palm oil in Bahia. Government agronomists and private agroindustrialists seized the opportunity to renew modernization efforts in Bahia’s palm oil economy, initiating a distribution program of subsidized hybrid *tenera* seedlings in an attempt to reduce Bahia’s complex dendê landscapes into oil palm monocultures. While those elites leveraged extraordinary power and resources to shape and promote the implementation of the federal program, coalitions of small-scale farmers and processors, palms, and other crops continue to resist, challenge, and re-direct official development interventions and socioecological change.

This chapter analyzes modern development in Bahia’s palm oil economy, particularly its connections to Brazil’s federal biofuel program and its distribution of improved hybrid seedlings. The analysis links sciences of complexity (e.g. Mitchell 2009), agroecology (Gliessman 2013), and interdisciplinary conceptions of “autonomy-respecting development” (Ellerman 2005) to frame agriculture and economic development as dynamic socioecological assemblages “shot through with power” (Rocheleau 2011, p. 225). The chapter maps those flows of power through networked assemblages to analyze and rethink palm oil development, in Brazil and beyond. The next section discusses the theoretical underpinnings for the chapter, followed by another that breaks down contemporary palm oil development and commodity chains in Brazil. The analysis begins by mapping the constituents and connections that comprise Bahia’s dendê
economy. Next is a treatment of contemporary development programs and their focus on improved hybrid germplasm. The following section uses commodities prices to follow flows of power through the dendê economy and its multiple scales. Finally the chapter concludes with recommendations for policies and practices that could create a more just and viable palm oil economy in Bahia and beyond.

**Complexity, reduction, and development in an Afro-Brazilian landscape**

Complex assemblages\(^{382}\) have only relatively recently begun to animate scientific investigation. From the Cartesian and Newtonian oeuvres of the seventeenth-century enlightenment through at least the mid-twentieth century, reductionism reigned almost uncontested over Western Science. That philosophical commitment encouraged academic specialization, delimiting isolated disciplinary camps that continue to shape scholarly research and its applications. While reduction and specialization helped produce tremendous scientific advances, especially in fundamental physics—i.e. our understandings of distinct constituents within physio-chemical processes, biological bodies, and on down to sub-atomic particles—the reductionist preoccupation with individuals and components is less useful as a framework for understanding complex relationships, interactions, and behaviors, and all too often precludes integrative research, conversation, and collaboration (Mitchell 2009; Sheppard et al. 2009).

Separate from and in supplement to reductionist breakdowns, sciences of complexity seek to understand complex, relational phenomena (Stengers 1997). The sciences and theories of complexities depart from “the anti-reductionist catchphrase, ‘the

\(^{382}\) See also the more detailed treatment of complexity in Chapter 1.
whole is more than the sum of its parts” (Mitchell 2009, p. x) to address complex
systems, their behavior, and their interactivity; for examples

The seemingly irreducible unpredictability of weather and climate; the
intricacies and [adaptations] of living organisms and the diseases that
threaten them; the economic, political, and cultural behavior of societies;
the growth and effects of modern technology and communications
networks; and the nature of intelligence (p. x).

Such broad networks and the challenges they create transcend academic
specializations and thus require robust multi- and interdisciplinary treatments. Complex
systems, scientists are finding, share several properties: 1) they operate without central
command, and are instead self-organizing systems; 2) the behavior of complex systems
emerges from connections and interactions, creating “orderly patterns from disorderly
elements,” or emergent properties (Goodwin 2007, p. 35); and 3) complex systems are
dynamic and adaptive, they learn from internal and external signals and stimuli and in
response “change their behavior to improve their chances of survival or success”
(Mitchell 2009, p. 13). How can the sciences of complexity inform understandings of
agriculture and development?

Missing from Mitchell’s (2009) list of exemplary complex systems, but
undoubtedly pertinent, are interconnected global and local networks of agriculture and
food production. Relying on the reductionist presuppositions underlying the modern
episteme, orthodox agricultural development and its Green Revolutions work to reduce
complex agroecosystems such as agroforests and polycultures to ordered monocultures
legible to state scientists and agroindustrialists, but often detrimental to food security and
cultural, agro-, and bio-diversity (Shiva 1993; Scott 1998; Sluyter 2002; Sheppard et al.
2009; Graddy 2014; Sampson 2015; Chapter 6). Since the early criticisms of Carl Sauer
(Chapter 1), researchers have increasingly questioned the homogenizing approach of Western agroindustry, and often juxtapose Indigenous and otherwise traditional agricultural systems as productive and sustainable alternatives (Geertz 1963; Schumacher 1973; Mathewson 1984; Pierce Colfer, Gill, and Agus 1988; Bebbington 1991; W. Jackson 1994; Altieri 1995, 1999; Denevan 1995; Steinberg 1998; Sluyter 2002; Moseley, Carney, and Becker 2010; Lin et al. 2011; Zimmerer, Carney, and Vanek 2015). The simplification of agricultural landscapes into monocrops sometimes leads to increased yields of a single species, yet such gains rely on costly inputs, lead to increased biological, social, and economic disruptions and vulnerabilities, and are often short-lived without areal expansion and/or intensifications of expensive inputs (Shiva 1991; Evenson and Gollin 2003; Watts 2009; Holt-Giménez and Altieri 2013; Graddy 2014; Sampson 2015).

Understanding agricultures as complex, networked systems provides an accommodating intellectual framework for perceiving, analyzing, and mobilizing the development of agricultural economies as they interact with socioecological change at multiple scales from farm to globe (Zimmerer 2014). Agro-ecosystems—like any system, eco- or otherwise—derive strength and resilience from the diversity of elements within the assemblage (Goodwin 2007; Keesing and Ostfeld 2015). The power of difference extends to humans and their varied knowledges and traditions (Sundberg 2014). “Cultural diversity,” Tsing (2005, p. ix-x) reminds us, “brings a creative friction to global connections.” In a review of complexity theory within geographical studies, Manson (2001) explains the structural weakness of simplified agricultural and otherwise socioecological systems.
A complex system can deal with truly novel situations because it has a wide array of internal components and sub-systems linked by complex relationships. [...] Concern for [...] system collapse lies in the drive to protect biodiversity. The destruction of complex, diverse internal relationships may lead to a lack of resilience and adaptability in ecosystems. When monocrops replace mixed agriculture or forest, for instance, the ecosystem is more susceptible to rapid and potentially adverse shifts in the environment, such as the introduction of foreign species or climate change (p. 410).

Thus by acknowledging and valorizing complexity within agriculture, we recognize the follies inherent in monocultures. Acknowledging agricultures and production economies as complex systems also creates valuable opportunities for interdisciplinary collaborations, particularly through the theoretical and practical principles of agroecology, as Miguel Altieri (2009, p. 103) advises,

The science of agroecology—the application of ecological concepts and principles to the design and management of sustainable agricultural ecosystems—provides a framework to assess the complexity of agroecosystems (emphasis added).

Framed holistically as the “ecology of the food system” (Francis et al. 2003; Gliessman 2013, 2014), agroecologists trace its roots to agroecología, a social-ecological movement that emerged on Mexican farms in resistance to the Green Revolution in the early 1970s. Agroecologies are symbiotic human-environmental support systems based on recycling nutrients and energy on the farm, rather than introducing external inputs; enhancing soil organic matter and soil biological activity; diversifying plant species and genetic resources in agroecosystems over time and space; integrating crops and livestock and optimizing interactions and productivity of the total farming system, rather than the yields of individual species (Altieri and Toledo 2011, p. 588; emphasis added).

While some researchers now focus solely on the technical configurations of agroecological farms and fields, stalwart proponents of the movement remind us that
agroecology was and remains a social and epistemological—as well as ecological—mobilization most effective as a fully-integrated, relational network. Echoing Carl Sauer, agroecologist and scholar Steve Gliessman (2012, p. 1) urges us to “respect the different systems of knowledge that have co-evolved for millennia under local ecologies and cultures.” Finding the roots of agroecological sciences in place-based knowledges, he argues that

Agroecology has become much more than a science for developing better, safer, and more environmentally sound food production technologies. Agroecology is more than a way to practice agriculture, such as organic or ecological production. Agroecology is also a social movement with a strong ecological grounding that fosters justice, relationship, access, resilience, resistance, and sustainability. Agroecology seeks to join together the ecological and social cultures that helped human society create agriculture in the first place (Gliessman 2013, p. 19).

As such, traditional agroecological production systems such as agroforests and other polycultures rooted in discrete places represent time-honored “emergent ecologies” that rely on the complexity and interactivity of their networks to mitigate social and ecological risk (Rocheleau 2011, p. 209; Denevan 1995; Steinburg 1998). Such complex agricultural systems—for example the maize-beans-squash milpas of Mesoamerica (Sauer [1959] 2009) and the tuber-oil palm polycultures flanking either side of the Atlantic (Chapter 4)—self-organize and adapt to procreate and (re)produce. Rather than imposing on or attempting to master those physio-socio-biotic agroecosystems, human farmers participate in the flat ontologies of the rhizomatic assemblages (Deleuze and Guattari 1987; Bennett 2010). Conversely, when humans replace interspecific interaction with rigid hierarchies—as in agroindustrial monocultures—the self-organization of the system disintegrates, thereby thwarting synergism and emergence, and exacerbating vulnerabilities (W. Jackson 1994). The added security of complex networks also extends
to the economics of production (Mutersbaugh 2002). Collectivist producer cooperatives provide one mechanism for scaling up complexity from single farms and families to relational collectives of polyculturalists. Viewing Bahia’s African oil palm landscapes, cultures, and economies as complex, self-organizing networks decenters humans—whether they be farmers or modern elites—within flat, interconnected “webs of relation” (Rocheleau and Roth 2007).

Mounting criticisms of modern agricultural development are part of a broader scholarly and practical movement questioning the philosophical and economic underpinnings of “high-modernist” development in general (Shiva 1993; Yapa 1993; Escobar 1995, 2008, 2010a; Scott 1998; Chapter 1). For a growing chorus of scholars and development agents, the tragic failures of agricultural and other economic development interventions, especially those designed and imposed by international groups interceding in the internal affairs of “developing” states in the Global South, has necessitated a fundamental retooling of development philosophies, one that moves away from external impositions in favor of participatory, grassroots, or otherwise bottom-up visions of development imbued with local knowledges and preferences (Sluyter 2002; Escobar 2008; Scott 1998; Sheppard et al. 2009; Ballard 2015). Insights from theories of complex systems therefore mesh with recent philosophical arguments for rethinking the theories and praxis of economic development. Models based on complex collaborations are emerging.

Mathematician, economist, and social theorist David Ellerman, a former economic advisor at the World Bank, has developed an “autonomy-respecting” philosophy of development that empowers local communities and organizations, rather
than massive international aid institutions, to “help people help themselves” (Ellerman 2005). Related to but distinct from “participatory” and “grassroots” visions of development (Sheppard et al. 2009), Ellerman’s thinking draws on an extraordinarily wide range of insights—spanning religious philosophy (Kierkegaard 1946), community organizing (Alinsky 1971), rural education (Freire [1970] 2000), and pragmatist philosophies of education (Dewey [1916] 2013), among others—to bridge a “multidisciplinary triangulation” of development to empower rather than direct local communities. Without engaging complexity per se, Ellerman’s proposals harmonize with the concepts of self-organization and emergence. He calls for a radical decentralization of the most powerful development agencies, the World Bank and IMF, in favor of more localized, rooted, and self-organized approaches that would leave decision-making and fund-allocation processes to smaller groups within communities targeted by development programs. Rather than a hegemonic global hierarchy of dominant development institutions and authorities, local communities and their internal development initiatives could coalesce into a complex, polycentric global network, shifting power from “the would-be helpers to the doers of development” (Ellerman 2005, p. 248). To benefit from

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383 Ellerman (2005, pp. 23-24) lists eight thinkers as fundamental to his multidisciplinary “autonomy-respecting” model of development, presented here with the primary field of each thinker in brackets: “Albert Hirschman [economic development], on the relationship between a development advisor and a government; E. F. Schumacher [economic development], on the relationship between a development agency and a country; Saul Alinsky [community organizing] on the relationship between a community organizer and the community (or its peoples’ organization); Paulo Freire [community education] on the relationship between an educator and a peasant (or urban poor) community; John Dewey [philosophy], with regard to the relation between teachers and learners; Douglas McGregor [management theory] on the (Theory Y) relationship between a manger and workers; Carl Rogers [psychotherapy], on the relationship between a therapist and a client; and Søren Kierkegaard [religious philosophy], on the relationship between a spiritual teacher and a learner.”
and sustain development, he argues, initiatives should reflect the internal will of the communities, or essentially self-organize, around common goals emerging from local preferences, cultures, traditions, and aspirations. Rather than imposing rigid, centralized models reliant on (often postcolonial) power structures and perceptions of intellectual authority in bids to control local behavior, efficacious development assistance emerges from peer-to-peer initiatives that enhance, rather than limit, the autonomy of local communities.

Recognizing communities and organizations as local prompts theoretical and methodological challenges and opportunities. Following geographer and political ecologist Dianne Rocheleau (2011, 2015; Rocheleau and Roth 2007), social movements and other local groups “root” in and from place(s) to create and maintain vast networks across territories and scales. Her “rooted networks” place complex, polycentric assemblages within discrete territories “to identify instances of viability in actually existing human ecologies and to imagine and foster just and humane alternative futures” (p. 225).

Place thereby becomes both a prominent actor within assemblages and a context (often a series of contexts) through which assemblages emerge, connect, and relate. Self-organization happens in some place—a spatially as well as culturally and historically contingent territory—therefore place, both as a concept and a specific site, deserves attention in approaches to and the praxis of development (see also Chapter 2). Following Escobar (2008), local communities “produce their own knowledge about the situations they face, and furthermore this knowledge often constitutes sophisticated frameworks that can no longer be overlooked in any discussion of globalization” (p. 3). Development
and its agents must then recognize and account for place-based histories, cultures, and dynamism. Those local places and cultures are, Tsing (2005, p. x) reminds us, linked with the global via “creative friction[s].” Attending to both the “universal and the culturally specific […] offers us the chance to participate in the global stream of humanity” (p. 1). Empowering local communities within the spaces they inhabit and understand will in each case produce useful socioecological knowledges applicable to development initiatives and expand our collective understandings of particular knowledges and places as they relate to others in a globalizing world. Accordingly, global challenges are often best addressed with diverse place-based knowledges and epistemological generosity (Rocheleau 2011; DeLyser and Sui 2014; Sundberg 2014; Collard, Dempsey, and Sundberg 2015).

What happens, then, when we extend that concept of autonomy-respecting or self-organizing development beyond humans to the broader socioecological assemblages within which they relate? Recent studies from philosophy, geography, anthropology, and other social-theoretical schools are moving beyond anthropocentric models to identify, evaluate, and empower more-than-human agency (Haraway 1991a, 1991b, 2008; Ingold 1995, 2000; Demeritt 1996; Whatmore 2002b; Hinchliffe et al. 2005; Escobar 2008; Bennett 2010; Braun and Whatmore 2010; Goldman, Nadasdy, and Turner 2011; Descola 2013; Kohn 2013; see detailed discussion in Chapter 1). For these researchers and others, agency (or “behavior” in the parlance of complexity theorists) cannot arise from individual humans, but emerges instead from complex networks or assemblages of myriad beings and things that relate, interact, and create (Bennett 2010). Recognizing the agency of non-humans allows us to work with rather than against complex physio-biotic-
socio systems, making us more effective and worldly collaborators. Thus the central question for development becomes: how can humans most efficiently and effectively participate in complex socioecological assemblages—including agroecosystems, producer cooperatives, communities, markets, and economies at multiple spatial and temporal scales—to promote, enact, and enhance viable societies / ecologies? Here recent philosophies of development offered by Ellerman (2005), Rocheleau (2011), and Escobar (2008) meld with insights from complexity theory (Goodwin 2007; Mitchell 2009) and more-than-human assemblages (Whatmore 2002b; Bennett 2010) to recognize and valorize complex systems, empower local producers and communities, and decenter humans within approaches to and practices of development.

In the case of this study, traditional oil palm agroecologies offer an empirical example of a complex, more-than-human system rooted in a distinct transatlantic place and catalyzed by centuries of historical-geographical connections and interactivity. Bahia’s complex subspontaneous groves and dendê polycultures self-organize to create “spontaneous order” (Mitchell 2009, p. xii). Emerging from “diverse rooting strategies,” (Rocheleau 2001, p. 216) farms on Bahia’s Dendê Coast are networks of humans, knowledges, technologies, plants, territories, (micro)climates, soils, pollinating weevils, and various other micro- and macro-organisms and assemblages, to name only the most obvious constituents. The success of any farm depends on the cooperation, interaction, and adaptation of each of its components; meaning—i.e. produce and livelihoods in the case of farms—emerges from those complex interactions.

Such polycentric, relational networks operate as flat ontologies of intersubjective collaboration and therefore resist impositions and top-down hierarchies as functions of
the assemblage (see Chapter 6). Farmers have recognized and relied on the integrative agencies of plants, soils, climates, etc. for millennia. Agricultural development initiatives are therefore wise to respect the autonomy not only of small-scale and traditional farmers, but also that of the broader socioecological networks in which those farmers inhabit, work, and collaborate. This chapter draws on interviews, focus groups, participant observations, and other fieldwork, as well as government reports and data and public-private development programs, to construct an ethnography of Bahia’s palm oil economy in the twenty first century. It seeks to comprehend contemporary networks of agricultural development on the Dendê Coast and flows of power through them, and concludes with suggestions for enacting and participating in more effective and efficient development networks. Why have decades of public-private palm oil development efforts largely fallen short of their goals on the Dendê Coast?

**Placing palm oil development in Brazil**

Bahia’s palm oil economy roots in several socioecological and conceptual territories at multiple, overlapping, and interacting scales; it emerges from knowledges, practices, and places at once transatlantic and local (Marston 2000; Rocheleau 2011; Hecht 2014). Bahians have socially and ecologically constructed the Dendê Coast region over the past five centuries, delimited by political administrative borders surrounding an economy of palm oil production, and recognized since 1993 through a lens of state-led tourism marketing and development (Bahia 2001). At regional and national scales the Dendê Coast is embedded within the state of Bahia—recognized throughout the nation and the world as the cradle of Afro-Brazil (Kraay 1998b; Chapter 2), as well as Brazil’s broader Northeastern region, a territory measured and perceived as historically
underdeveloped when compared with the rest of the country (Furtado 1963; IBGE 2013b). Conceptually and at international scales, the Dendê Coast roots in formerly Portuguese South America, a transhistorical, (post)colonial designation and condition, along with modern academic geographical frameworks, most notably the Global South, the African diaspora, and the Atlantic World. Finally, as a prominent player in Brazil’s palm oil sector, the Dendê Coast relates to and interacts with the more extensive and fiscally productive oil palm monocultures constructed since the mid-twentieth century in the Brazilian Amazon, as well as the broader global palm oil economy stretching from Central and South America through western Africa and Southeast Asia. Each of those scales interact to help (re)construct the Dendê Coast and must be reconciled with development philosophies, initiatives, and expectations.

Since the 1992 United Nations Conference on Environment and Development (UNCED) held in Rio de Janeiro, and often remembered as the Rio Earth Summit, governments and development institutions have accepted and even promoted the roles of Traditional Ecological Knowledge (TEK) in more sustainable approaches to development, yet the actual integration of traditional knowledges into development initiatives remains hampered by hegemonic Western ideologies and postcolonial power structures (Sluyter 2002; Zimmerer 2010b; Ballard 2015; Collard, Dempsey, and Sundberg 2015). Despite growing academic and mainstream calls to heed and employ local knowledges in development interventions, their serious consideration remains uncommon in Brazil and elsewhere where reductionism and positivism undergird top-down development interventions, especially in the agricultural sector (Escobar 1995, 2008; Baletti 2012; Chapter 6). The earliest efforts to modernize palm oil production in
mid-twentieth-century Bahia yielded limited and unanticipated results, and as we have seen, its local palm oil economy and landscapes remain a complex mosaic of polycultures, agroforests, subspontaneous groves, and expanding but still relatively small smatterings of monocultures (Chapter 6).

The push to modernize Brazil’s palm oil economy extends beyond Bahia to Amazonian Brazil where historical and cultural patterns of land uses contrast sharply with Bahia’s Afro-Brazilian landscape. Contrary to Bahia’s long and complex history with dendê, African oil palm landscapes in Amazonian Brazil date only to the mid-twentieth century. In 1942 a Brazilian agronomist working for the Ministry of Agriculture, perhaps inspired by the US oils mission of the previous year (Chapter 6), introduced seeds from Bahia’s subspontaneous groves to the northern state of Pará (Homma and Furlan Júnior 2011). In the Amazon modern developers had no traditional palm oil economy to build on, or rather contend with, and thus faced far fewer impediments to monocultural and agroindustrial expansion. Following a coups d’état in 1964, Brazil’s military junta prioritized development in the Amazonian region, and palm oil agroindustry found immediate favor within the heavy-handed, authoritarian interventions that followed (Sikkink 1991; Homma and Furlan Júnior 2011). The federal Superintendency for the Development of the Amazon Region (SUDAM) partnered with

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Native to the Amazon basin, the American oil palm (*Elaeis oleifera*) is an oil-producing palm similar in form and function but genetically distinct from its African relative, *Elaeis guineensis* (Hartley 1988; Barcelos et al. 2002). The former species produces much less oil than the latter and has therefore drawn only limited interest from indigenous communities and modern developers alike. Interspecific hybrids of the American and African palms are, however, productive and fertile and scientists have long experimented with their unions in schemes to thwart botanical diseases in the Western Hemisphere (Hardon and Tan 1969; Nascimento et al. 1982; Ramos, Veiga, and Furlan Júnior 2006; Singh et al. 2013).
the French palm oil research institute IRHO\textsuperscript{385} to construct a monoculture plantation on 1,500 hectares of former Amazon rainforest located just outside of Belém, the capital city of Pará (Nascimento et al. 1982). That venture sparked rapid expansion in the region and according to official government statistics, agroindustrial monocultures in that state now account for 83.45\% percent of Brazil’s total palm oil output, measured in fresh fruit bunches (hereafter FFB) (Nascimento et al. 1982; Homma and Furlan Júnior 2011; IBGE 2014, 2015) (Figure 108).

Rather than the complex polycultures of western Africa or Bahia, monocultures constructed in Indonesia and Malaysia, the origin of 85.64\% of global palm oil production from 2014 to 2015, now serve as the models for development in the sector in Brazil and beyond (Müller 1980; Nascimento et al. 1982; Viégas and Müller 2000; FAS 2015b; Chapter 6). Brazil is not alone in its push to industrialize oil palm monocultures in Latin America. On the contrary, the United Fruit company began planting oil palm monocultures in Honduras in 1926 (Homma and Furlan Júnior 2011), and Brazil currently ranks just fifth among palm oil producers in the Western Hemisphere, following Colombia, Ecuador, Honduras, and Guatemala (FAS 2015b).\textsuperscript{386} Despite decades of social and ecological degradation and conflicts, along with common occurrences of devastating botanical diseases such as red ring and bud rot, development of agroindustrial palm oil continues at a rapid pace in Central and South America (Hartley 1965; Balick 1979; Hiraoka and Yamamoto 1980; Gomez et al. 1996; de Franqueville 2003; Oslender 2007; Escobar 2008; Gibbs et al. 2010; Borras, Jr. et al. 2012). Oil palm agroindustries often

\textsuperscript{385} Institut de Recherches pour les Huiles et Oléagineux (see also Chapter 6).

\textsuperscript{386} Other producers in the hemisphere include Costa Rica, Mexico, Venezuela, Dominican Republic, and Peru, listed in descending order of production (FAS 2015b).
<table>
<thead>
<tr>
<th>Year</th>
<th>Production (tons)</th>
<th>Harvested land (ha)</th>
<th>Yield (t/ha)</th>
<th>Production (tons)</th>
<th>Harvested land (ha)</th>
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% change 26.52% 40.51% -9.96% 228.30% 90.90% 71.97% 160.36% 62.12% 60.60%

Figure 108: Palm oil production in Brazil, 1990-2013.\(^{387}\)

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\(^{387}\) Source: IBGE (2014, 2015). “Production” measured in metric tons of FFB; “harvested land” in hectares; “yield” in tons divided by hectares; and % change from the years 1990 and 2013. Data for North (Amazon) Region aggregates that of Amazonas and Pará states. Pará accounted for 99.77% of Amazonian production in 2013.
generate enough short-term profits to persuade Latin American and other governments to overlook socioecological destruction (Rival and Levang 2014).

Since the 1930s, global agroindustrial oil palm development efforts have focused on a specific thin-shelled, highly-productive phenotype known as *tenera* (Figure 109).

![Figure 109: Hybrid *tenera* derived from crossing dura and pisifera varieties.](image)

Now shrouded in technical scientific jargon and laboratory processes as an improved hybrid variety, *tenera* genotypes derived from crosses of the more common *dura* and the rare and commonly sterile female *pisifera* varieties may appear to be a modern Western innovation. Yet the distinct *tenera* variety has long emerged in forests and fields in

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388 Source: Sande (2002). Note the much smaller kernel and greater amount of oil-rich pulp in the *tenera* variety.

389 Corley and Tinker (2003) insist that *dura*, *pisifera*, and *tenera* are “fruit forms” and not distinct botanical varieties. Because the fruit form is the central organizing trait that
both western Africa and Bahia and farmers in both regions have for centuries classified, managed, and harvested several phenotypic varieties (Ascenso 1966; Meunier 1968; Harlan, de Wet, and Stemler 1976; Chapter 3).

First published in 1680, an account of Portuguese soldier and historian Captain António Cadornega (1972, vol. 3, p. 360) references a specific type of oil palm fruit in Angola “without a kernel inside, here called sombo,” a special treat often enjoyed with clarified sugar or honey. Presently in Bahia, the vernacular for tenera remains “sombra,” a term for “shade” in Portuguese and only a slight departure from the original Bantu lexeme recorded by Cadornega. Western scientists appear to have discovered the thin-shelled variety only in 1902, when German botanists identified a phenotype in Cameroon known there as “lisombe” (Preuss 1902; Hartley 1988). Botanists at London’s Kew Royal Gardens (1909) published a compilation of Indigenous western African names and uses for at least three phenotypes identified by various ethnic groups from the Senegambia to Angola, including several from the Gold Coast, the Bight of Benin, the Niger Delta, and Cameroon. Five years later, another British botanist documented for Kew Gardens no less than 18 distinct varieties of African oil palm identified by his western African informants (Hutchinson 1914).

Colonial scientists began capitalizing on those Indigenous knowledges in the 1920s when colonial agronomists in the Belgian Congo isolated the three fruit forms still scientifically-recognized: dura, pisifera, and tenera. They constructed the first

distinguishes palm variation in Bahia and elsewhere, I continue to use “variety.” Other variations recognized in Elaeis guineensis are related to fruit color (the most common of which are nigrescens, virescens, and albescens) and leaf type (i.e. mantled and the more common idolatrica).
monocrops based exclusively on the latter, thin-shelled variety at Yangambi in 1922 (Corley and Tinker 2003). After confronting the limitations of *in situ* breeding, French scientists soon began deriving *tenera* in laboratories by crossing *dura* and *pisifera* phenotypes (Beirnaert and Vanderweyen 1941), and by 1953 *tenera* hybrids had crossed the Indian Ocean to become the genetic progenitor of industrial-scale monocrops on Sumatra in the former Dutch East Indies. Currently that island contributes to Indonesia’s vast national output as the world’s leading producer (Janssen 1959; FAS 2015b).

In one of the first scientific treatments of Bahia’s dendê economy, state agronomist Carlos Valeriano (1926; see Chapter 6) identified four varieties of African oil palm managed in traditional systems there: *roxa* (purple), *verde* (green), *vermelha* (red), and *amarela* (yellow). The agronomist reported that farmers also called the yellow variety “*sombra,*” in an allusion to the phenotype now deemed *tenera.* “It is a very productive variety. Of the four it has the smallest kernel; the pulp (mesocarp) is extremely rich in oil. In local cuisine, it is the preferred *azeite,* being the finest and most flavorful.” He went on to describe the more common red variety, now known as *dura,* as “the most widespread in Bahia” (p. 8272). A study of Bahia’s subspontaneous groves conducted almost half a century later recorded a composition of 87 percent *dura,* 12 percent *tenera,* and 1 percent *pisifera* phenotypes (Maia 1972). *Tenera* was therefore present in Bahia’s complex dendê landscapes and cultures long before the first efforts at scientific modernization.

Bahia’s original palm oil agroindustry Opalma initially planted monocultures of *tenera* seeds selected from Bahia’s subspontaneous groves, but following an insistent rebuke from a French oils mission, the corporation signed a seed procurement agreement
in 1964 with scientists at the IRHO research station in Ivory Coast, and the following year that laboratory began supplying agroindustrialists in both Bahia and Pará states with tenera germplasm derived from crosses of *dura* and *pisifera* (Ollagnier and Maria-Sube 1961; Nascimento et al. 1982; Chapter 6). In a bid to further enhance Bahia’s palm oil production in 1994, government scientists introduced *Elaeidobius kamerunicus*, a pollinating weevil native to western Africa, into experimental oil palm monocultures in Una, Bahia, from whence they displaced *E. subvittatus* to become the principal pollinator on the Dendê Coast (Moura et al. 2008).

During the second half of the twentieth century modern oil palm developers gradually shifted attention and resources from Bahia to the vast Amazon rainforest (Nascimento et al. 1982; Homma and Furlan Júnior 2011). While the Amazon remains Brazil’s oil palm frontier (Villela et al. 2014; Englund et al. 2015), modernization efforts continued in Bahia through the twentieth century, renewed by an ambitious public-private germplasm partnership authorized in 1999. On the eve of the twenty first century, Bahia’s Secretariat of Agriculture (SEAGRI) through its research, development, and extension service EBDA (*Empresa Baiana de Desenvolvimento Agrícola*), signed a “Dendê Protocol” with federal agronomic research and extension agency CEPLAC (*Comissão Executiva do Plano da Lavoura Cacaueira*),\(^\text{390}\) the public regional development bank

\(^{390}\) See SEAGRI (2002). Brazil’s federal Ministry of Agriculture created CEPLAC in 1957 to support the country’s cacao sector in six states: Bahia, Espírito Santo, Pará, Amazonas, Rondônia, and Mato Grosso. Financed through a direct tax on every bag of cacao exported from Brazil, elites saw CEPLAC as the key to technocratic transformation—or Green Revolution—of the nation’s cacao sector, especially in Bahia (Perfecto, Vandermeer, and Wright 2009). The agency has since expanded its activities to more generally “promote the vertical and horizontal diversification of agricultural activities, support the establishment of agroindustry and the planting and/or expansion of new crops; and in the implementation of actions aimed at environmental conservation
Banco do Nordeste, and Bahia’s four agroindustrial palm oil producers: Opalma, Oldesa, Mutupiranga Industrial (MIL), and the now defunct Jaguaripe Agroindustrial. The agreement allocated funds to CEPLAC for the development and distribution of 2.4 million hybrid tenera seedlings and for the creation of five seed nurseries (viveiros) capable of producing another 1.7 million seedlings located near the agroindustries on the Dendê Coast. Those agroindustries began receiving the seedlings in 2003 (Bahia 2002; Sande 2002).

The Dendê Protocol also promoted the modernization and development of family farmers engaged in dendê production. A 2002 diagnostic produced for Bahian state agencies by agronomists at CEPLAC provides the most direct statement of the official development plan for Bahia’s Dendê economy (Sande 2002). Divided into three major sections based on 1) the production of dendê fruit, 2) the processing of oils and other products, and 3) the consumption markets for palm oils, the report proposed a comprehensive plan to modernize Bahia’s dendê economy. Figure 110 and Figure 111 list translations of the “advantages (pontos fortes),” “restrictions (restrições),” and “additional necessary measures (medidas complementares necessárias)” for the first two sections on production and processing as listed in the document. These themes effectively summarize official and ongoing development strategies for Bahia’s dendê economy.

through partnerships with public and non-governmental organizations for the development of sustainable agroeconomic activities and the preservation of the remaining forest fragments in two of the strategic ecosystems of Brazil—the Atlantic Forest (mata atlântica) and the Amazon Forest.” The agency has promoted the modernization of dendê since at least the 1960s. See Moreau (1967) and CEPLAC’s webpage at http://www.ceplac.gov.br/paginas/ceplac/ceplac.asp (last accessed 21 May 2015).

391 Secretaria da Indústria, Comércio e Mineração da Bahia (converted in 2015 to the Secretaria de Desenvolvimento Econômico) and Instituto de Desenvolvimento Sustentável do Baixo Sul da Bahia; supported by the Dendê Protocol (Sande 2002).
Many of those objectives appear to offer great promise in improving conditions for family farmers and other small-scale producers and processors, particularly the fomenting and strengthening of producer cooperatives and expansions in lines of credit. Yet underpinning each of the production and processing goals was the dissemination of improved hybrid *tenera* seedlings.

<table>
<thead>
<tr>
<th>Advantages:</th>
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<tbody>
<tr>
<td>1. Agro-climatic potential.</td>
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<tr>
<td>2. Existence of local oil palm cultivation and the political will to foment it.</td>
</tr>
<tr>
<td>3. Availability of manual labor.</td>
</tr>
<tr>
<td>4. Availability of genetic material.</td>
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<tr>
<td>5. Availability of areas with subspontaneous African oil palms which can be converted to <em>tenera</em>.</td>
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<tr>
<td>6. Availability of financing for planting.</td>
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<tr>
<td>7. System of family farming.</td>
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<tr>
<th>Restrictions:</th>
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<tr>
<td>1. Managerial and technological deficiencies of the producers.</td>
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<tr>
<td>2. Lack of technical knowledge for cultivation.</td>
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<tr>
<td>3. Low levels of capital resources.</td>
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<td>4. Self-esteem and psychological effects of the changes in agriculture models.</td>
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<tr>
<td>5. Low level of awareness of social organization.</td>
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<tr>
<th>Additional Necessary Measures:</th>
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<tr>
<td>1. Promote the organization and strengthening of associations and cooperatives.</td>
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<td>2. Promote agricultural modernization programs and incentivize family farming.</td>
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<tr>
<td>3. Encourage the development of techno-scientific palm cultivation.</td>
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<tr>
<td>4. Promote management training in the sector.</td>
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<tr>
<td>5. Encourage the construction of an educational center for sustainable rural technologies.</td>
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<tr>
<td>6. Encourage the creation of small production groups and define effective strategies for product marketing.</td>
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Figure 110: Goal 1 of the Dendê Protocol: Foment development in the production of dendê fruit.

In 2004 Brazil’s center-left Lula government launched a federal biodiesel program (*Programa Nacional de Produção e Uso de Biodiesel*, hereafter PNPB) intended to foment the production of Brazilian biodiesel from feedstocks including soybean, cottonseed, sunflower seed, sesame, castor bean, peanut, and palm oils. While the program includes palm oil development in both the North and Northeast regions, most

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observers view the North or Amazon region as the primary target for development of that sector, and castor bean oil continues to dominate production in the Northeast (Filho et al. 2008; Wilkinson and Herrera 2010; Andrade and Miccolis 2011; Becker 2011; Walker 2011; César, Batalha, and Zopelari 2013; Englund et al. 2015).

<table>
<thead>
<tr>
<th>Advantages:</th>
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<tbody>
<tr>
<td>1. Availability of raw materials (FFB) in quantity and quality.</td>
</tr>
<tr>
<td>2. Availability of manual labor, albeit unskilled.</td>
</tr>
<tr>
<td>3. Proximity to major highway BR-101 and potential consumer markets in the state capital (Salvador).</td>
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<tr>
<td>4. Opportunities to sign agreements [with educational institutes] for the implementation of training courses.</td>
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<tr>
<td>5. Opportunities for installing a central warehousing, bottling and labeling facility.</td>
</tr>
<tr>
<td>6. Opportunities for environmental compliance and licensing.</td>
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<tr>
<td>7. Possibilities of forging agreements to modernize the primary sector, formalized in the Dendê Protocol.</td>
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<th>Restrictions:</th>
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<tr>
<td>1. Shortage of skilled manual labor.</td>
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<td>2. Lack of quality control and management systems.</td>
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<td>3. Inadequate collateral for loan approval.</td>
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<tr>
<td>4. Lack of planning for agreements to utilize existing finance and capacity building opportunities for the sector within the available network of public and private institutions.</td>
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<tr>
<td>5. Production standards below current health and environmental regulations.</td>
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<tr>
<th>Additional Necessary Measures:</th>
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<tbody>
<tr>
<td>1. Consider strategies for establishing partnerships to consolidate various links within the production chain in order to optimize the secondary sector.</td>
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<tr>
<td>2. Promote the modernization of rodões and processing associations.</td>
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<tr>
<td>3. Design and prepare a regional label and logo.</td>
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<tr>
<td>4. Establish an appropriate sales policy.</td>
</tr>
<tr>
<td>5. Provide labor training through partnerships with SENAR, SEBRAE, CEPLAC, IDES and other public agencies.</td>
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<tr>
<td>6. Set parameters of production to guarantee product quality.</td>
</tr>
<tr>
<td>7. Seek financing to implement the various technologic and managerial modernization strategies identified as key components in the development process.</td>
</tr>
<tr>
<td>8. Strengthen the structure of the production chain.</td>
</tr>
<tr>
<td>9. Standardization of consumer markets and establishment of operating hours.</td>
</tr>
<tr>
<td>10. Promote waste recycling and glass production shops.</td>
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Figure 111: Goal 2 of the Dendê Protocol: Foment development in the processing of dendê fruit.\(^{393}\)

Subsequent amendments to the PNPB included provisions to enhance “social inclusion” among rural smallholders, notably the *Selo Combustível Social* (Social Fuel

Stamp, hereafter SCS), a program of tax credits and subsidies for corporations purchasing feedstocks for biodiesel from family farmers and other small-scale producers (Lima 2005; Brazil, SFA/MDA 2011). The PNPB became the primary catalyst for development interventions in Bahia’s dendê sector. As of March, 2015, a plant owned and operated by Brazil’s semi-public energy corporation Petrobras, located in Candeias along the northern Recôncavo, remained Bahia’s sole biodiesel plant eligible under the SCS to receive tax credits for purchasing palm oil as a feedstock for biodiesel (Brazil, MDA 2015). Six years into the PNPB, reports by public and private agencies and academics have assessed the program, finding it only mildly successful in integrating family and other small farmers into Brazil’s biodiesel production chain. “Social integration” has yet to meet the government’s expectations, particularly in the Northeast region where inputs of castor bean and palm oil from family farmers have consistently fallen short of the program’s ambitious goals (Gomes et al. 2009; Andrade and Miccolis 2011; Kamimura, Oliveira, and Burani 2011; Nunes de Castro 2011; César and Batalha 2013; Costa et al. 2013).

The social-environmental watchdog group Repórter Brasil (Gomes et al. 2009) cited three principle reasons for the disappointing results: 1) The funding mechanisms of the PNPB privilege the biodiesel plants over the farmers; 2) small (but growing) programs for technical assistance and credit hamper the small farmer’s ability to produce volumes sufficient for annual contracts with large firms; and 3) the requirements codified in the SCS for purchasing feedstocks from small-scale producers reduce the profitability of large firms. Those firms respond with political and social capital to lobby for

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394 Bahia’s only other biodiesel plant certified under the SCS program is located in Iraquara (in the central Chapada Diamantina region), and processes oils from castor beans, soy, cottonseed, and sunflower, but not *Elaeis guineensis* (Brazil, MDA 2015).
amendments to biofuel policies that foment agroindustrial development. The long-term prospects of the PNPB to empower family and other small-scale farmers are therefore constantly in question.

While the Dendê Protocol focused specifically on the development and modernization of Bahía’s dendê economy, the subsequent PNPB and its SCS sought to more generally strengthen small-scale family farms. Yet, for farmers working with dendê, each of the initiatives predicate on the dissemination of hybrid *tenera* seedlings and the eventual conversion of Bahía’s subs spontaneous groves into legible monocultures. High-yielding *tenera* palms can produce, government agronomists claim, up to 30 tons per hectare per year, an increase of a full order of magnitude over the common *dura* (Sande 2002).\(^{395}\) Despite its goal to enhance small-scale production, PNPB promotes a modernist ideology that continues to frame polycultures, agroforests, and other traditional cultivation and management techniques as quant anachronisms desperately in need of teleological modernization (Chapter 6). To further the social goals of the PNPB and foment more small-scale production, government scientists at CEPLAC teamed with Bahía’s Secretariat of Agriculture in 2009 to begin distributing a forecasted 250,000 improved hybrid *tenera* seedlings to small-scale farmers on the Dendê Coast and in the Recôncavo.\(^{396}\)

\(^{395}\) Despite this claim, *tenera* monocultures in the Amazon region have reached yields of 20 tons per hectare only once, in 2010, averaging 19.15 since then (see Figure 108).

In 2012, Petrobras began purchasing palm oil produced by COOFAVA, a polycultural producer cooperative of mostly family and other small-scale farmers in Valença.\textsuperscript{397} The following year the cooperative and Petrobras declined to renew the program’s annual contract, citing disagreements over pricing and supply, and its renewal remains in doubt, though COOFAVA continues to work toward that goal.\textsuperscript{398} As government scientists draw on public funds to develop and distribute \textit{tenera} seedlings and semi-national energy giant Petrobras moves to purchase palm oil from small-scale farmers, palm oil producers and processors from family to industrial scales struggle to make sense of the changing economy and continue to vie for credit, capital, raw materials, logistical networks, market access, and other limited resources. In order to understand the changes circulating in the landscapes and cultures of Bahia’s dendê economy, we must first identify, map, and analyze the various actors within the complex system.

\textbf{Mapping and relating Bahia’s dendê economy}\textsuperscript{399}

Following Rocheleau (2011, p. 225), complex, rooted networks such as Bahia’s dendê economy are “all shot through with power, and linked to territories and larger

\textsuperscript{397} COOFAVA (\textit{Cooperativa de Fomento Agrícola Valença}) produces guaraná, clove, dendê, black pepper, cacao, \textit{urucum} (\textit{Bixa orellana}), rubber, and other agricultural products.

\textsuperscript{398} Interviews with leaders of COOFAVA, a cooperative of family and small-scale farmers in Valença, Bahia, of 1 February 2012 and 13 August 2014, and personal communication of 12 June 2015.

\textsuperscript{399} This section draws heavily on interviews, observations, and other qualitative and ethnographic methods initiated in the field (see Chapter 2). Some specific interviews and other sources are quoted and cited in the text, however, much of the information used to compile the section is pieced together from various interviews, observations, and other fieldwork from 2009-2015 and therefore precludes exclusive citations and specific dates.
systems”; therefore a careful mapping of a network can detail where power concentrates and how it flows through the system, yielding a greater understanding of both the system/network and the place(s) on and through which it roots.

The Dendê Protocol diagnostic of 2002 estimated that approximately 10,000 people worked in Bahia’s dendê economy, without accounting for the massive numbers of consumers throughout much of Brazil that drive demand. The agronomists estimate between 5,000 and 6,000 people produce dendê fruit in Bahia, the overwhelming majority of them small-scale producers and/or family farmers spread across approximately 3,000 small properties averaging 10.48 hectares (Sande 2002). Dendê farmers, according to a director of the local COOFAVA cooperative, “are among the region’s most modest and poorest family farmers.”

The rhythm of Bahia’s dendezeiro harvest is every two weeks, or by quinzenal. There are three distinct oil palm harvest systems employed in Bahia (see also Chapter 6). The least common is the family harvest, wherein members of the landholding family cut the fruit and gather it for sale themselves. For previous generations in Northeast Brazil, cooperative harvests and other fieldwork known as mutirão were common occurrences in rural communities (Galvão 1959). That system still exists in various forms in some rural areas, but generally no longer applies to dendê harvesting. More common systems include day laborers, paid between Rs. $30 and Rs. $50 per day to harvest and amass fruit, and a particular form of sharecropping (meeiros). In the latter system, harvesters (cortadores) cut and amass the fruit for the landowners, and in return receive up to half of

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400 Interview with federal officials at CEPLAC of 12 April 2012. 10.48 hectares equates to 25.9 acres.
401 Interview with leaders of COOFAVA in Valença, Bahia, of 1 February 2012.
value of the fruit at its sale. While this is the preferred system for harvesters, landowners generally prefer day laborers. Harvesting African oil palms requires skilled labor to climb trees and cut fruit, usually with climbing stirrups (*peias*) and machetes (Chapter 6). Many *cortadores* recalled encountering snakes in the palm of the crown, and reports of brutal falls are common. Harvesting is dangerous, arduous work. Many landowners now find it difficult to retain reliable *cortadores*, and often complain of the high costs of contracting them. In areas where less dangerous or more lucrative opportunities are available for workers, such as the region’s popular tourist destinations, many landowners claim that availability of skilled dendê harvesters is severely diminished. For the *cortadores* that remain, work is now abundant and many are becoming better-positioned to negotiate wages or profit-sharing agreements.

Trucks and less commonly boats connect producers with processors. Transport logistics are crucial for the quality of the oil once processed. At harvesting, free fatty acid (FFA) levels begin to increase from a baseline of 0.5 percent. Once the fruit bunches are sterilized in boilers at the mills, the fermentation process ceases. Current guidelines suggest acid levels should remain below 5 percent, therefore fruit should be sterilized within 48-72 hours of harvesting (Corley and Tinker 2003). Consumers in Bahia, as in western Africa, are accustomed to elevated acid levels and “connoisseurs of good edible palm oil know that the increased FFA only adds ‘bite’ to the oil flavour” (Poku 2002, p. 11). Fermented fruit releases more easily from bunches, thus some processors have traditionally minimized manual labor by simply waiting 1-3 days before threshing the fruit (Figure 112). Nevertheless, Petrobras and other industrial outfits require FFA levels below 5 percent, thus modifying expectations within the dendê economy. Other than the
BA-001 highway that runs north and south along the Dendê Coast, most of the region’s roadways remain unpaved and many become impassable during especially rainy stretches, thereby complicating the timely transport of fruit from field to mill and contributing to elevated FFA levels. For producers on the many fluvial islands lining the Dendê Coast, maritime transport in canoes or diesel-powered boats is a necessity (Figure 113). Besides being more lucrative, value-added oil and other palm products weigh much less and are easier to transport than raw fruit. This underscores yet again the fundamental relationship linking dendê with coastal geographies and the traditional proliferation of small-scale processing units on islands and other remote locations where ground transportation remains unreliable.
The agroindustrial operations and many small- and medium-scale processors own trucks that make regular trips up and down the coast to procure, weigh, and purchase fresh fruit bunches collected along the region’s highways and unpaved roads, often with the help of pack animals (Figure 114). There is also a class of independent drivers (atavessadores) that purchase from producers and sell to processors, profiting from commodity price speculation. Processors build their clientele by offering favorable prices or through traditional and often-longstanding patronage or familial networks. These patronage networks allow small- and medium-scale processors to compete with the industrial plants for clients. A land owner of eight hectares of subspontaneous
dendezeiros in Taperoá explained why he sells to a local *dono de rodão* rather than the nearby agroindustrial firm Opalma.

Sure, Opalma is stronger. But during the harvest [season of highest production: approximately November-March], Opalma stops buying from [external farms]. [At that point] they process only the fruit they grow on their own lands. But during the rest of the year, they buy a lot [from other farmers]. During the harvest, their supply peaks, and they have trouble processing their own production. So then, they leave the local producers hanging, and just refuse to buy fruit. But with [my *dono*], his established clients can always sell to him, he never leaves us hanging. If I harvest ten tons, he’ll come to get it. If I cut two, he comes to get it. He never lets me down. We have a long relationship together; my father sold to him. If I need anything, he’s there to help me out. An animal, for example. My ox is sick, he’s right there [to help].

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402 Interview with a small-scale producer of 19 March 2012.
The producer-processor relationship is therefore a mutually dependent partnership that mediates land use, power, and production on the Dendê Coast, similar in some ways to the formative patronage networks between cane farmers and sugar mill (engenho) owners in colonial Bahia (Schwartz 1985; Barickman 1998). More than mere economic transactions, those relationships fuse networks built on long-term trust.

The 2002 diagnostic report counted 328 “artisanal and semi-artisanal processing units (rodões)” in the five most prolific palm oil-producing municipalities on the Dendê Coast: Valença, Taperoá, Igrapiuna, Ituberá, and Camamú (Sande 2002, pp. 20-21). Artisanal and semi-artisanal operations range from small-scale processors with motorized rodões but otherwise manual equipment and labor to “mini-industries” with fully-mechanized operations (see also Chapter 6). Processing facilities are spread throughout the Dendê Coast, and a few remain in parts of the Recôncavo, but their greatest concentration lies in the Cajaíba district along BA-001 between Valença and Taperoá (Figure 115).

Mechanization of the sector continues as a generally linear process. There remain many who process palm oil by pestle (pilão), sold at a premium, but most who process de pilão also process larger amounts with animal or mechanical power. Only a few animal-powered palm oil mills remain active in Bahia; six years of fieldwork led me to only seven, several others had recently mechanized or ceased operations. The mechanization process surged in the 1980s with the adoption of motorized digesters (macerador) (Oliveira 1984). In the early twenty first century small- to medium-scale processors with sufficient capital began installing mechanical oil presses (prensa), eliminating many positions for women day laborers (lavadoras) in the region (Chapter 6; Figure 103). Most
recently, capitalized *rodão* owners are installing mechanical thersers (*debulha*) to speed processing and further reduce their reliance on manual labor, again diminishing opportunities for the region’s agricultural workforce. All processors whether manual or mechanical require boilers (*tachos*) of some kind to heat and sterilize fruit before processing. Some are installing expensive versions with ventilators designed specifically to run on spent fibers (see below) (Figure 116). The pace of mechanization varies but in some cases unfolds rapidly. One prominent mini-industrial processor, now with a fully mechanized facility that serves as a de facto regional model, processed with animal traction in the late 1990s.404

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403 These include small-to-medium-scale commercial operations, from artisanal to mini-industrial, but not the three agroindustrial processors. Sources: fieldwork, 2009-2012.

404 Interview with a mini-industrial processor in the Cajaíba district of Valença of 19 March 2012.
As of 2015, just three large-scale industrial palm oil processing facilities remain in Bahia: Oldesa in Nazaré das Farinhas, Opalma in Taperoá, and Mutupiranga Industrial (MIL) in Nilo Peçanha. Palm oil processors thus range from manual or artisanal to various levels of mechanized operations from semi-artisanal to mini-industries to three agroindustrial firms. The scale of each processor’s operation influences the amount of fruit they can buy and at what price. Each step along the mechanization spectrum increases capacity and efficiency, and therefore profit, considerably (Figure 117).

After the production of palm oil and several by-products derived from palm fruit, processors sell their valued-added goods within regional and national markets. Trucks connect oil with markets. Some processors sell small amounts at their facility, but most seek long-term agreements with wholesale buyers who usually arrive on site and
purchase by the *lata* (Figure 118). Still others pay for freight and ship their oil directly to area markets. Traditional transatlantic Afro-Bahian culinary uses—notably *moquecas* and *acarajé*—remain strong drivers of palm oil production and consumption in Bahia.

As principal consumers of regional palm oil, *Baianas de acarajé* purchase bulk amounts produced on the Dendê Coast from open-air markets in Salvador (especially those at *Feira de São Joaquim* and *Sete Portas*) and elsewhere in Bahia, including Valença, Santo Antonio de Jesus, and Feira de Santana (Chapter 6). Culinary and spiritual demands for palm oil extend to far-flung cities across Brazil, and wholesale merchants continue to deliver Bahian palm oil to markets in Rio de Janeiro, São Paulo, Recife, and São Luis do Maranhão, to name only a few prominent examples (Figure 119). That national demand creates a market for several palm oil logistics companies, ranging

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405 A canister of 14 liquid kilograms, which depending on the temperature of the oil when the canister is filled, varies from 17-18 liters.
Figure 118: Empty canisters, or *latas*, used to package palm oil in the Boca da Mata district of Valença, Bahia (2012).

Figure 119: Baianas fry *acarajé* in Bahian *azeite-de-dendê* at the Hippie Market in Ipanema, Rio de Janeiro (2014).
in size from single truck operations to a few national fleets and connecting supplies in Bahia and Pará states with demand throughout the country, especially the population centers in Southeast Brazil.

Non-alimentary, industrial demand for palm oil and other products has amplified the market for palm fruit production and processing since the mid-twentieth century. Besides the traditional market for azeite de dendê, processors sell kernels (cocos or amêndoas) (Figure 120), empty fruit bunches (bucas), and post-processed fibers (bagace) and sludge (bombá) for a variety of uses. Chemically similar to coconut oil, palm kernel oil is a lucrative base for soaps, detergents, and cosmetics, and its residual kernel cake provides a base for high-protein animal feeds and activated carbon manufactured by area industries (Corley and Tinker 2003). Empty bunches provide fuel for boilers, reducing and in some cases eliminating the need for wood in palm oil.
processing and other industries—such as area pottery, brick, and tile kilns (Figure 55). Empty bunches also often return to the field as a fertilizing mulch for oil palms and other crops (Figure 121). Processors use or sell residual fibers and sludge as fuel for boilers or as animal feed, especially for the region’s pigs. Thus various palm products and byproducts help sustain a diverse range of markets in Bahia, extending well beyond the traditional and modern industrial demands for oil.

Figure 121: Empty fruit bunches fertilize bananas and manioc in the Sarapuí district of Valença, Bahia (2012).

Figure 122 depicts an idealized diagram of the Bahian dendê economy, rooted in the Dendê Coast. It presents the fluid connections linking networks of production, harvesting, transport, processing, distribution, and consumption, and illustrates the interactive co-production of a complex socioecological landscape and Afro-Brazilian culinary and spiritual cultures. A later section analyzes flows of power within that dendê economy, but next we return to the socioecological basis of palm oil development in
Bahia. The following section analyzes the improved hybrid *tenera*, its imposition, and its discontents in Bahia. Given the promises of dramatic increases in yield, why do area producers continue to resist *tenera*?

![Conceptual map of Bahia’s dendê economy.](image)

Figure 122: Conceptual map of Bahia’s dendê economy.\(^{406}\)

\(^{406}\) Arrows indicate chronological sequence. Individual illustrations and italicized labels represent generalized categories within the six major economic functions signified by capitalized titles. The figure and each of its illustrations are idealized; reality is messy.
Resisting *tenera* on the Dendê Coast

*tenera* is well-suited for agroindustrial monocultures focused on oil production. Its thin shell produces anywhere from 20 to 60 percent more pulp, and therefore oil, than the fruit of the more common *dura* variety, yet to achieve its potentially higher productivity, *tenera* requires much higher levels of labor and chemical inputs (Corley and Tinker 2003). *tenera* thus represents not a passive botanical substitute, but the basis for a socioecological restructuring on the Dendê Coast. Only farmers with formally-titled land are eligible to receive the subsidized *tenera* seedlings, and the land must be cleared and prepared for planting before the agencies release the plants. The countless small-scale farmers with informal land tenure or those that prefer more traditional polycultural cultivation or management techniques therefore remain ineligible to the program and are excluded from that and other public development projects.407 Moreover, many farmers potentially eligible for the program choose not to participate, preferring instead to manage *dura* palms within traditional management systems.

State agronomists recognize the botanical adaptability and resilience of the common *dura* variety within Bahian landscapes, yet they fixate on its lower yields of fruit (tons per hectare) and oil (per fruit weight) compared to *tenera*.

The *dura* variety offers great ability to adapt to regional agro-climatic conditions, with high resistance to pests, diseases, and weeds and traditional agricultural practices. Besides these characteristics, the *dura* variety remains in production beyond 40 years of age. […] Its kernel is larger, which increases yields of palm kernel oil. However, this variety has low productivity per hectare and low oil yields, compared to other varieties like *tenera* (Sande 2002, p. 14).

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407 Interview with leaders of COOFAVA in Valença, Bahia, of 1 February 2012.
Such a preoccupation with yields of a single species within the landscape leads to a single-minded interpretation of the values and motivations of agriculture, one blind to food security, food sovereignty, and long-term economic and ecological sustainability (Altieri 1999; Perfecto, Vandermeer, and Wright 2009; Zimmerer 2010a; Altieri and Toledo 2011; Gliessman 2013). Thus, for modern agronomists, the potential for higher yields of the *tenera* variety trump concerns related to increased inputs and management.

Requirements for *tenera* cultivation, they concede, are substantial. These include regular manual labors such as weeding, crowning, pruning, and fertilizing, as well as “delicate” and time-consuming harvesting practices (Sande 2002, p. 15). Empty fruit bunches serve as an effective organic fertilizer, but the vast majority of producers who sell their fruit rather than process it must purchase fertilizers and regularly apply them. And those inputs are non-negotiable. Studies from West Africa demonstrated that under-fertilized *tenera* produced yields lower than those from *dura* (Segalla 1999). Costly chemical inputs are only just the beginning. Researchers with the Center for International Forestry Research (CIFOR) provide a litany of conditions influencing yields, many outside of the control of farmers.

Low yields are also attributable to labour shortages, limited mechanisation, low-grade planting material, palms that are too old or too tall, poor crop management, changes in oil prices, inadequate fertiliser use, economic instability, increased production costs, pests and serious droughts (Sheil et al. 2009, p. 8).

To many small-scale producers these conditions are non-starters. A small-scale producer and processor in the Maricoabo district of Valença explained his choice to continue planting *dura*.

I’m of the mind to plant [*dura*], the common variety you find growing all around here. It’s just so much better to work with. It’s easy to find, too. It
grows all around. Tenera you have to buy. Tenera only grows in fertilized land. If you don’t fertilize it, if you don’t help it along, it doesn’t last. But the common (dura), just plant it, weed around it once a year or so, and it produces. Tenera is different. With tenera, you have to take care of it, weed it, and fertilize it. If you don’t, it won’t grow at all!

An executive at one of the agroindustries wondered aloud how area smallholders could justify planting dendê at all, regardless of the variety.

Here in this area [the Dendê Coast] we have people planting guaraná, clove trees, some piassava fiber palms, and other crops with quicker return on investment. So now those investing in new crops are planting things with more immediate production. This undermines oil palm because it takes six years to come into production, right? This issue [of relatively delayed production] is one of the factors that greatly affects the incentive to plant oil palms [for smallholders].

Thus many continue to manage and harvest subspontaneous oil palms, relying on socioecological processes including vultures to plant dendê. Planting oil palms has always been a costly and risky proposition. The conversion to tenera increases the already substantial risk and uncertainty.

For producers located very near the coast, at the base of the mangroves where the subspontaneous dendezeiros spread along a traditional socioecological conduit (Chapter 4), sandy and acidic soils only increase the levels of inputs needed to cultivate the hybrid variety. A farmer near the mangroves south of Cairu scoffed at the possibility of planting tenera.

Tenera just dies right here, in this land here. [It’s] suited only for the terra firma. There’s a guy who has a farm there on the other side of Cairu, he

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408 Besides the subsidized distribution program, which has formal requirements that many find unattainable, tenera seedlings are available to purchase from private breeders and nurseries in the area.

409 Interview with a small-scale producer and dono de rodão in the Maricoabo district of Valença, Bahia, of 9 March 2012.

410 Interview with an agroindustrial executive of 13 March 2012.
planted [tenera] and it all died. He had it all planted beautifully, everything was arranged just so, but it all died. [...] It must have been the soil. [...] There’s no massapê clays here. It’s all just sand.\footnote{Interview with a small-scale producer in Cairu of 28 February 2012.}

Besides historical geographical patterning, traditional husbandry of the oil palm fields are also at odds with the hybrid variety. Field management of oil palm-tuber swidden-fallows and other polycultures have long relied on fire for clearing and field management (Chapter 4). The more fragile tenera variety, many producers claim, is not as fire-resistant as the more common dura, once again amplifying labor needs beyond those traditionally required. For many, the decision to avoid tenera is a rational economic calculation based on place-based knowledges and experiences. A small-scale producer recounted in a focus group discussion his perspective of a public meeting held in Valença where he declined subsidized tenera seedlings.

I have more than thirty hectares of dendê dura that my late father left me. Not too long ago, I went to a meeting up in Valença. Groups of people from all over showed up, some representing the federal government, the state government, several mayors, various entities, all there chatting. I’m there, I’m quiet, just listening. “You all need to go down to Taperoá and get some of those beautiful seedlings they’re giving out,” [the official said]. Then he grabbed three seedlings from his car to show us. We were just standing there. Then I asked, “Well then, how much to plant just one hectare of this coco mole [tenera]?\footnote{First documented by a Belgian scientist working in the Portuguese Congo and Cabinda in 1927, “dura,” a Portuguese term for “hard” or “tough,” became the global term for the common African oil palm variety (Janssens 1927). Since the shell of the kernel (endocarp) of the dura variety is in fact generally larger and denser than that of the tenera variety, Bahians commonly refer to the latter as “soft,” i.e. “mole” or “coco mole.” This pejorative descriptor is a powerful metaphor for tenera plants and their socioecologies, since many Bahian farmers regard the variety as less resistant, or indeed more fragile than the common “hard (dura)” variety.}” He answered, “around Rs. $6,000 to Rs. $7,000.” “Alright,” I say. “And to cultivate a hectare of dura palms?” “From around Rs. $1,000 to $1,600.” So I said, “That won’t cut it!” “Why?” [The official] asked. [...] Because I have several colleagues here, people who live here, who planted coco mole [tenera], Rodolfo up there, and I see palms not six years old, five years on, beginning to die off.
This is tenera right here in our fields! I don’t know about over there [in Valença], but here [tenera] just dies. We harvest it just as required, with cuts at all the correct angles and such, but it always seems to die off; am I right fellows? [Three men nod in agreement]. But the hard coconut (coco dura) holds on. As you can see over there [pointing to a tall dura palm across the road], it’s so old, but it’s still growing. Our colleague planted those palms up on that farm over there. […] Right next to there is a field belonging to another of our colleagues. He planted a hell of a lot of tenera, but it’s all dead now.413

For that producer the prospect of increased yields cannot justify the capital expenditures necessary to cultivate tenera, especially when his experiences have shown that variety to be a risky proposition. His concerns are shared by many smallholders on the Dendê Coast. Government programs do provide lines of credit available to smallholders who plant tenera seedlings, providing a potential source of funds for chemical inputs, labor costs, and other needs. These loans, of course, must be repaid and therefore come at great risk to family and other small-scale farmers on the Dendê Coast.

Committing to planting and managing fields of tenera requires not only recurring capital expenditures, but also precious time that could otherwise be spent managing other plants and pursuits. Converting to tenera is labor-intensive in both the short- and long-terms and diminishes the smallholder’s ability to work with diverse polycultures and other complex agroecologies, systems offering many ecological, social, and economic benefits (Hartley 2002; Altieri 2004; Khoury et al. 2014). Farmers on Bahia’s Southern Coast have long managed African oil palms within polycultural arrangements, especially as part of manioc swidden-fallow and cacao cabruca agroforests (Dias 1978; Fischer 2007; Chapter 4). By monopolizing the time of smallholders, the high yield variety often

413 Focus group with five small-scale producers, one of which also processed in his family rodão, in the Garcia quilombo community in Camamú of 4 March 2012.
leads farmers to simply their complex systems. As polycultures diminish toward monoculture, social, economic, and ecological vulnerabilities increase. *Tenera* therefore threatens the self-organizing power of complex polycultures that farmers on the Dendê Coast have long relied on. When asked to explain the value of polyculture, one small-scale producer and *dono de rodão* emphasized the economic and food security of diverse cultures on his farm.

Here we say [it’s important] to not be attached to a single crop. Take for example cacao. They set the price of cacao down in Ilhéus and Itabuna, where the greatest production comes from. So when the price for cacao drops, or during the offseason (*paradeiro*) when production ceases, [...] the dendê is still producing. Then by the end of the year the clove is ready to harvest, so now you’ve got cloves. Then in the middle of the year we’ve got oranges. Now even though we don’t produce many oranges here to sell, they’re just for consumption, but they’re a great help. Also mangos, lots of other fruit trees, *cajá*, *jenipapo*, bananas, [...] okra, carrots, beans, beets, squash; understand?414

Another small-scale producer argued for the utility of polycultures in the small fields typical of the region.

We grow our crops all together, you know, rather than placing each in their own fields, because the area that we have is small. Right here then a guy has his field, it has clove trees, it’s got *guaraná*, it’s got some rubber trees, it has cacao. So in this case, for this field, [polyculture (*culturas emboladas*)] is preferred because of its [seasonal and successive] qualities. When any one thing isn’t producing, another is. When you lack cacao, you’ve got clove. When you lack cloves, you’ve got *guaraná*. So then, a landowner with a [polycultural] field such as this is always better off.415

The small-scale family farmers that predominate on the Dendê Coast therefore trust complex polycultures as secure systems of production and livelihood.

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414 Interview with a small-scale producer and *dono de rodão* in the Graciosa quilombo community in Taperoá, Bahia, of 26 March 2012.

415 Interview with a small-scale producer in the Garcia quilombo community in Camamú, Bahia, of 10 March 2012.
Promoting the subsidized seedling distribution program, agronomists with CEPLAC and leaders of the COOFAVA cooperative insist that *tenera* can be successfully produced among polycultures, and indeed, the cooperative advocates for intercropping of manioc, beans, and other cultivars while the oil palm seedlings are still very young and not yet productive.

*We do not want monoculture. Following the by-laws of the cooperative, we do not work with monoculture. Whenever possible we work with two or three possibilities. With the oil palm, at first, you can plant beans, corn, manioc. And then when it grows tall enough, and livestock can’t harm the plant, we advocate cattle raising, or smaller-sized animals like goat and sheep.*

Agronomists at CEPLAC also argue for the feasibility of polycultures featuring *tenera*. They have for years conducted experiments on intercroppings of a variety of crops, including manioc, passion fruit trees, pineapples, and *urucum* trees within fields of African oil palms of the *tenera* variety at an experimental station in Una, Bahia. Their pairings of oil palm and manioc demonstrate the most symbiotic relationship, providing a tacit scientific endorsement of the traditional tuber-oil palm swiddens that emerged on either side of the Atlantic (Chapter 4). One of the scientists explained their unpublished findings.

*There is a real synergy between manioc and palm trees—the oil palm as well as the coconut palm. Manioc develops a root system that creates fissures in the soil. These fissures allow the exchange of oxygen, and palms demand a great deal of oxygen in the soil. The palms have an intense photosynthetic capacity and therefore generate a great demand for water and nutrients. [In this region] there’s a great quantity of available water […] so palms generally respond very favorably to the aeration of soils.*

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416 Interview with leaders of COOFAVA in Valença, Bahia, of 1 February 2012.
417 Farmers cultivate *Bixa orellana* for the red annatto dye extracted from its seed pods.
418 Interview with federal agronomists at CEPLAC of 12 April 2012.
While intercroppings and other polycultures involving tenera oil palms remain possible, at least ecologically, time and labor requirements and constraints burden small-scale producers and therefore limit the feasibility of diverse agroecologies on small farms. Tenera oil palms require regular attention and therefore distract from other pursuits. Thus the long-term success of polycultures featuring tenera on family farms in Bahia remains dubious.

Despite these concerns, some small-scale producers are eager to receive and plant subsidized tenera seedlings. Farmers willing to accept the hybrid seedlings must have enough available land to dedicate to tenera, invariably leaving dura fields and other polycultures in production while waiting for the hybrid seedlings to come online. This condition means that only producers with extraneous arable land can afford to risk their fields in the public program, thereby excluding a great portion of the family and small-scale producers that operate at or near a subsistence level.

Small-scale processors remain divided on their evaluation of tenera. Some relish the variety, which generates more oil from less fruit. Since processors purchase raw fruit by weight, the more prolific fruit type means more oil per unit. That increase in fruit pulp however comes at the expense of kernel size.\textsuperscript{419} Kernels are a lucrative by-product of palm oil processing, and the reduction of kernel weight is an important concern. Kernels of the dura variety are larger and heavier than those of tenera. Though tenera fruit

\textsuperscript{419} Following Corley and Tinker (2003, p. 28) “In botanical terms the kernel is the seed, but in common parlance the word ‘seed’ is used for the nut, comprising shell and kernel, since it is the nut that is stored, germinated and planted.” Here and elsewhere in this study, I use ‘kernel’ to refer to the whole nut, which includes both shell and kernel, and corresponds to what Bahians refer to as the “coco.”
produces 22 percent more oil per unit of weight, its kernel weight is often less than half of the same amount of *dura* fruit (Corley and Tinker 2003). *Dura* kernels are also denser than the hybrid variety, thus when processors mix kernels from the two varieties in their mechanical presses, the former variety often breaks the softer *tenera* kernels, lowering the quality of the oil and diminishing yet again the marketable kernel weight. A prominent “mini-industrial” processor explained his reliance on the secondary palm kernel economy.

Here we get about 35 percent in kernels (*cocos*). For every 100 tons of dendê fruit, we get 35 tons of kernels. And the price of kernels is very important for us. Right now it’s around Rs. $250 per ton. That’s a higher price [per weight] than the fruit itself! It so happens that the by-product is what makes us whole. Our profits don’t come from the oil, our profits come from the kernels. Palm oil is no longer profitable here, the money lies in the kernel. Without the kernels, we would be unable to recoup our expenses.

Bahia’s dendê economy therefore relies on more than the production of palm oil. Other palm products, especially kernels, provide additional value-added products and are vital sources of revenue and commerce in the region.

The smaller *tenera* kernels thus cut into the profit margins of oil processors who rely on the by-products to remain viable. In much of 2012, *donos de rodão* paid Rs. $230 for per ton of dendê fruit, the *dura* of which produced on average 7 *latas* of oil worth Rs. $35 each, for a total of Rs. $245. After accounting for labor and transport, oil alone, based on the metrics of the *dura* variety, was not profitable. Yet that same ton of fruit also produced at least 21 *latas* of kernels worth Rs. $2.50 per kilogram or Rs. $892.50. Processors claim that the very best fertilized *tenera* can produce 12 *latas*, worth Rs. $420 total, per ton of fruit. That increase in oil decreases the kernel size and weight by half, amounting to a loss of Rs. $446.25 in kernels, and most significantly, a net loss of Rs.
$271.25 per ton of fruit. Changes in real profitability between dendê varieties therefore rest on the varying and volatile costs of its products. Based on the current prices for oil and kernels, a full conversion to tenera would only increase supplies of the less-profitable oil at the expense of the more lucrative kernels. In 2012, the price for kernels had recently increased considerably due to added competition from a new buyer entering the local market and have continued to oscillate since then. These pricing data demonstrate not just the pivotal roles of individual commodities prices within Bahia’s dendê economy, but also the more reliable and flexible economic advantages of processing palm oil over simply producing dendê fruit.\footnote{Based on prices for oils and kernels in Bahia during most of 2012 and the calculations of several dendê processors there, ranging in scales from family to mini-industrial.}

Oil generated by tenera palms is also slightly different from that of dura palms, thereby affecting the market for the various oils. There is some scientific evidence that the chemical compositions of oils processed from the two varieties are in fact distinct, with tenera oils often rating higher in saturated fats, however, those studies show a broad variation in oil composition, and differences in industrial and more traditional processing methods were not tested (Ekpa, Fubara, and Morah 1994; Akpanabiatu et al. 2001; Corley and Tinker 2003). The Bahian market for palm oil has long-recognized the variation among oils. Merchants imported specially filtered palm oils from West Africa in the mid-to-late nineteenth century (Chapter 5). Agronomist Carlos Valeriano claimed in 1926 that Bahian consumers preferred oils made from the variety now known as tenera. Many processors on the Dendê Coast now claim, however, that consumers prefer oil made from the more common dura variety. The higher proportion of saturated fats
(bombá), or stearin, in tenera-based oil makes for a lower proportion of the finer liquid olein, treasured in Bahia as flor do dendê—i.e. the oil’s “flower.” That is, many contemporary consumers in Bahia value the fine oil over the thicker, semi-solid pulp (Figure 123).

This distinction introduces rifts in the alimentary market. A small-scale processor in Valença explained her preference for oil extracted from the common dura variety. [Our four hectare field] is all dura (comum). I don’t like tenera very much at all. Tenera produces more oil, but it goes dormant; it goes to sleep. So it gives a bit more oil, but it is a much harder oil. It’s difficult to sell tenera oils for the price we can get for the common azeite. Especially when we
bottle it to sell. Nobody wants it. [Tenera] gives less oil (olein) [and more solid stearin] in the bottle.421

Higher levels of the semi-solid saturated fats can cause the oil to congeal, a chemical process traditionally referred to as “sleeping.” West Africans also use that very term to describe palm oil made from the tenera variety, and similar complaints remain common there. Like their counterparts in Bahia, West African consumers prefer oils processed from the more common variety, and regard those made from tenera palms as inferior and unfit for customary culinary and spiritual uses (Bishop 2015). A focus group of small-scale producers and processors in Camamú claimed their clientele preferred dura-based palm oil, and as other processors shift to tenera, their community’s commitment to the common variety is stimulating greater demand in the region.

It’s just that there are people who do not like tenera very much. [At the rodão] when we must use tenera, we have to mix some of the common (dura) with it, because processing tenera only makes for bad oil. The tenera oil congeals, but with dura it’s always good. So then, when you have to use tenera, you have to mix some of the common dura in there to raise the quality of the oil. With dura, we fill a canister [lata] and it’s divided through the middle. The fine oil (olein) sits on top and the thick fat (stearin) settles on the bottom. With tenera, it’s congealed or thick all the way through. […] So why do people come all the way down here to buy our oil? I say it’s because the dendê dura we make, when you bring it to a boil, it doesn’t harden. […] But the mole (tenera), it always congeals when you boil it. Only if it’s refined in a factory, does it [retain its liquidity], but that’s not the case when we produce it here.422

Bahia’s culinary traditions require standards for palm oil different than globalized industrial uses, therefore many producers and processors oriented toward the traditional alimentary markets find dura more economically secure. While agroindustries are able to

421 Interview with a small-scale processor in the Cajaíba district of Valença, Bahia, of 3 April 2012.

422 Focus group with five small-scale producers, one of which also processed in his family rodão, in the Garcia quilombo community in Camamú, Bahia, of 4 March 2012.
extract the fine olein through fractionation, filtration, and other industrial refining processes (Corley and Tinker 2003), smallholders lack the resources and equipment to produce acceptable oils from tenera; thus conversion to the improved hybrid variety would further advantage agroindustries at the expense of small-scale processors.

There is no consensus on tenera among small-scale processors. While some processors on the Dendê Coast advocate for the full conversion to tenera, others prefer to focus on the dendê already in place, particularly since much of the region’s fruit goes unharvested (Figure 124). Still other processors prefer to mix tenera and dura

![Figure 124: A subspontaneous grove of African oil palms along the Canal de Itiúca in Cairu, Bahia (2012).](image)

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423 Many people in the region point out that an enormous amount of dendê fruit goes unharvested. My own observations lead me to the same conclusion.

424 The abundance of grey-colored, dead fronds indicates a lack of harvesting.
varieties; some claim to have found a balance that provides them just the right amount of 
tenera-based oil and dura kernels, all while satisfying the expectations of the traditional 
alimentary market. For their part, agroindustrial outfits see the complete shift to tenera as 
 imperative. Executives at one firm estimated their rates of palm oil extraction at 10% of 
the weight of dura FFB and 18% from tenera. Capable of fractioning, filtering, and 
otherwise refining crude palm and palm kernel oils, those large firms have much higher 
profit margins than smaller-scale operations that can process only crude palm oil and sell 
the byproducts.

While public agencies and a few producer cooperatives continue to advocate for 
the broad-scale conversion of Bahia’s dendê landscapes to the improved hybrid variety 
tenera, many famers, particularly those with the smallest landholdings and capital 
resources to draw on, resist. Public interventions in the dendê economy amount to more 
than attempts at botanical restructuring, but also include the strengthening of cooperative 
production and vending and subsidies for the industrialization of processing among 
small-scale producers. These interventions and changes shoot power through Bahia’s 
palm oil network thereby influencing its arrangements and relationships. The following 
section analyzes the multiscalar connections and flows of power within the palm oil 
economy rooted in and emerging from Bahia’s Dendê Coast.

**Flows of power in a multi-scalar palm oil market**

This section analyzes and maps the flows of power through the Bahian dendê 
economy. Prices of fruit, oils, kernels, and other palm products are fundamental media of

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425 Interviews with Opalma management of 13 March 2012 and 5 April 2012.

426 According to an analysis by an economist with COOFAVA, the fractioning of crude 
palm oil allows for a 45% growth in profit margin.
power through that network. Following the control and volatility of those prices can thus materialize the flows of power and provide insights. Historical records of palm oil prices in Bahia are scarce, but the available data suggest stability in the early twentieth century. State commodity registers priced Bahian palm oil at Rs. 1$000 per liter in 1896. Subsequent weekly price indexes show that price remained steady for the years 1901-1903, 1907-1909, 1912-1913, and 1917. After two decades without pricing data, indexes published by the Ministry of Agriculture over 28 months in the 1940s show seasonal fluctuations in dendê prices, likely linked to elevated inflation during that period (Figure 125). Nevertheless, that price volatility continues in twenty-first century Bahia, plaguing producers and processors who struggle to plan and invest (Figure 126).

![Figure 125: Prices for palm oil in Salvador, 1941-1942.](image)

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427 “Bolsa de mercadorias e Valores da Bahia, 1940-1942,” APB, SR, SA, 2377.148-1.450. No data for January 1943. In November 1942, amid soaring rates of inflation, Brazil reformed its monetary currency, replacing the real (plural reis) with the cruzado at a rate of 1,000 to 1 (Dulles 1967). The figure uses thousands of reis, and is thus equivalent to the cruzado. Changes in palm oil prices therefore reflect those high rates of inflation. “Caixa” translates to “box” or “case,” but its equivalence is unspecified.
Figure 126: Monthly average prices for dendê, or palm FFB, in Valença, Bahia, December 2001-June 2015.\footnote{Source: Monthly averages of dendê prices in metric tons of fresh fruit bunches (FFB) from Bahia’s Secretariat of Agriculture (Bahia, SEAGRI 2015), at http://www4.seagri.ba.gov.br (last accessed 1 July 2015). Prices reflect average price paid by processors at their properties, and do not include freight charges or transport expenditures borne by producers.}
The oscillation of prices in Bahia’s dendê economy reflects a complex multiscalar market and many individual calculations of the supply and demand for palm oil. Centuries of cultural demand for palm oil created and sustained Bahia’s dendê economy (Chapters 3-5), but since the twentieth century, subsidized agroindustry has wielded powerful influence on the resulting Dendê Coast (Chapter 6). Those forces work within Brazil’s current neoliberal regulatory environment to depress and destabilize palm oil prices until they became, according to the leader of a prominent producer cooperative, “the most devalued of all prices of products produced by family farms.”

There are no state regulations regarding prices, such as the minimums calculated for other commodities including cacao. The region’s diverse class of palm oil processors—from family-scale to agroindustrial—are free to pay any amount for dendê fruit. Due to their disproportionate purchasing power, a few agroindustrial and wholesale firms have immense power over prices in the region. While agroindustrialists claim they are simply reacting to international commodities exchanges and global markets for palm oil, small- and medium-scale producers and processors all agree that the agroindustries set the baseline price, and other, smaller consumers of raw fruit are forced then to compete. A small-scale producer explained:

The agro-businesses are dominant here; they do as they please. Just about the time the price [of dendê fruit] gets a bit better, the harvest season hits, and they drop the price. They like to buy cheap and stock up on oil. This is a total exploitation of farmers. That’s what happens here in this region. I saw where a rodão not far from here was paying up to Rs. $300 not long ago, and then [an agroindustrial executive] drops his price to Rs. $230. Not long thereafter he lowered again to Rs. $187.50. There’s no more room to drop it any lower. That’s the absolute bottom! Whatever. This is what we have to deal with here, understand? This is the reality with these

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429 Interview with leaders of COOFAVA in Valença, Bahia, of 1 February 2012.
430 cf. Demeter (1997) and Brazil’s National Agricultural Plan (Brazil MAPA 2014).
industries. By my calculations, dendê fruit today is worth at least Rs. $500R, based on what [the industries] get out of it, and the work we put into it. Just like you see here [motioning to dendê workers]. You have to climb, cut, load; it’s all a part [of the final product].

That producer, like practically everyone else in the region, save for the agroindustrialists and a few wholesalers, places the responsibility for price setting firmly on agroindustrial executives, who are free to set their own prices for raw palm fruit (FFB). Two of the three agroindustrial processing firms, Opalma and Oldesa, have vast monocultures of African oil palms that supply an estimated 50 percent of the FFB processed in their respective plants. This option gives the firms powerful leverage in negotiating prices, as they can rely on their own production to augment supply while reducing their price for external fruit purchases.

Pricing data for palm FFBs on the Dendê Coast from 2000-2015 (Figure 126) demonstrate seasonal variation in prices paid for dendê fruit. The fluctuations in price reflect a traditional cultural and seasonal rhythm within the production and consumption of palm oil in Bahia. Thus the seasonality of palm fruit prices anticipates a customary demand for palm oil—i.e. a futures market based in tradition. A small-scale producer in Camamú reflected on the low prices and tepid sales activity at the palm oil market one Saturday in March, 2012, just before the onset of the austral autumn.

During this wintry time, palm oil prices always fall because demand drops off. The market for palm oil is best when the tourists are around, boosting local consumption. In this winter weather, folks around here tend to

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431 Interview with a small-scale producer in the Graciosa quilombo community of Taperoá, Bahia, of 9 March 2012.

432 Opalma maintains several monocultures in Taperoá and Nilo Peçanha totaling 3,500 hectares. Oldesa recently sold its plantation of 5,000 hectares to a German firm but maintains an exclusive contract for purchasing FFB produced in those monocultures. Interview with Opalma management of 13 March 2012; interview with Oldesa management of 5 April 2012.
stockpile oil. The baianas don’t sell much acarajé because folks don’t go out much in this cold weather, people prefer to stay at home; it rains a lot. So the price for palm oil drops for lack of demand. Every year after Carnival, a month or two later, there’s just not much demand. All the stores are overstocked.\textsuperscript{433}

Easter remains a momentous occasion in the annual palm oil cycle. Small-scale processors see the week leading up to the traditional feast day as the peak of demand for the whole year and the end point of the harvest season (safra), after which demand and price fall into decline, often steep.

\textbf{On occasion, prices get bad.} After holy week (\textit{semana santa}) it’s the worst. The bottom falls out of the price. But there’s a little stretch right now, the week before and the week of Easter itself, when everybody wants to make a moqueca, so they come looking for azeite. But just as soon as it’s over, things get difficult again, and the price drops and then drops some more.\textsuperscript{434}

Bahian producers and processors have thus come to expect seasonal fluctuations in demand and therefore try to plan accordingly. No one, however, can plan for market crashes such as the plunge of Rs. $285 to Rs. $160 from March to May 2013. Such precipitous drops in price make it especially difficult for producers to recoup expenses related to labor, maintenance, and harvesting, and cause some to halt production of dendê altogether, focusing their efforts on other crops and pursuits. Thus the agroecological flexibility afforded by complex polycultures is an economic necessity on the Dendê Coast.

Small- and medium-scale processors, the class of donos de rodão, must also set prices for FFB. To set their price for fruit, processors must assess their prospects of

\textsuperscript{433} Interview with a small-scale producer at the port of Camamú, on \textit{Rua Dendê de Baixo}\ at the mouth of the \textit{Rio Orojó} of 10 March 2012.

\textsuperscript{434} Interview with a mini-industrial processor in the Cajaíba district of Valença of 19 March 2012.
selling oil and other palm products and at what price, while staying competitive with other processors, including the mini-industrial, and large-scale agroindustrial processors whose larger capacities and efficiencies provide relative increases in profit margins. A small-scale processor explained the process succinctly.

Here, the price is more or less set by [the region’s largest agroindustrial firms] Opalma and Oldesa. Once those firms set their price, everybody else just falls into rhythm. Those of us with a rodão have to pay a little bit more than they do [to attract and maintain clients].

Market instability helps justify the networks of patronage and clientelism maintained by many small-scale processors. Reliable clients may in some cases accept a lower price to remain a part of the network and thus can mitigate the insecurities of volatile prices. For their part many small-scale processors own trucks they use to retrieve FFB throughout the Dendê Cost, providing valuable outlets for harvested fruit, especially for small-scale producers in remote or otherwise difficult to reach locations.

Despite the traditional, cultural, and seasonal rhythm to price fluctuations in Bahia, its regional market for edible palm oil relates to and is conditioned by markets at broader national and international scales. An industrial-scale processor who also purchases and wholesales palm oil from many other donos de rodão to markets in Rio de Janeiro and São Paulo laid out the multiscalar connections and hinted how a network of prominent wholesale buyers could collaborate to influence regional prices for oil.

In our market here in Bahia, that of the rodão, fixed prices [for oil and fruit] simply do not exist. Sure, there’s an oil market with fixed prices, more or less fixed, which is the Pará market. Two brokerage agencies operating out of São Paulo set the prices for that market. […Those groups] follow the national and international markets for palm oil and various fats. So based on their market analysis they can price palm oil roughly

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435 Interview with a small-scale processor in the Lamego quilombo community in Taperoá, Bahia, of 20 March 2012.
equivalent to the global market. But the rodão, that’s a local market. When supply is great, we the buyers, we discuss, we keep in touch… So we just got through Holy Week, you were here in the region. It’s a week of tremendous palm oil consumption because of the traditions of eating fish prepared with dendê, so historically, sales are way up. So the very next day after Holy Week some of my competitors and some of my friends, they called me up. They want to know how we’re going to keep buying oil at the current price; they say “this price has to come down!” They’re pressing me to drop the price because in fact we buy in larger volumes than the rodões. Why? Because at this point (just after Easter) the local consumer demand in Salvador decreases, and the supply of the rodões increases because the harvest begins; the palms start producing more. Supply increases. So we the buyers, we discuss this huge supply. At this point, I’m buying oil just to stock, to sell in the future. Because sales fall, and we’re selling only very little oil. So we take advantage of this situation, the rodão processors have to sell, so we lower the prices because of it. […]

Three or four years ago, oil that was once Rs. $12 climbed to Rs. $70 for a canister of 18 liters [lata]; unprecedented in the history of palm oil! […] Then I started bringing oil from Pará. I brought oil to sell here in Bahia, my competitors and I would buy it together. I carried on average four tanker truckloads per week. And this oil got here for Rs. $30 [per lata]. This while the regional price was Rs. $70. It was the harvest season up in Pará and that market was weak. The market here soon shifted, supply here started to swell, and the price started to come down. Falling, falling: Rs. $60, Rs. $40, gets to Rs. $50, back to Rs. $40, finally settled on Rs. $45 or Rs. $40. This was an offseason, so when the price got that high, every farmer and every processor were producing at the highest possible capacity. At that price they couldn’t afford to hold back any stock or wait to sell. […] Since then we’ve been able to maintain the price around Rs. $40 for a long while. But my competitors always wanted to drop the price. But I didn’t. I kept it right there because I have markets in other states that allow me to maintain a better price, just as I can now.436

The wholesaler’s candid explanation demonstrates how those with disproportionate buying power can influence the prices for oil with obvious effects for the fruit producers down the line. Of course, end consumers also wield considerable power in price setting; their choices of whether and in which amounts to purchase palm oil can have significant implications for market dynamics.

436 Interview with an executive of an industrial processing, wholesale, and logistical facility of 23 April 2012.
oil sets the baseline for the market value of dendê fruit. Large-scale purchasers of fruit and oil, however, command a privileged status unmatched within the economy. Their connections to external supplies in Pará and external demands in Southeast Brazil grant them powerful leverage to manipulate Bahia’s market. When prices exceed their preferences, wholesale purchasers can flood the Bahian market with palm oil from Pará. When the price settles to a point they consider optimal, they can maintain that price by leveraging sales outside of Bahia in markets less influenced by local supplies, demands, and traditional consumption patterns.

Each of the three major agroindustrial processors relies on markets outside of Bahia to purchase the bulk of their oils. São Paulo, Rio de Janeiro, Minas Gerais, and a few other states consume much of the palm oil generated by Opalma, Oldesa, and MIL, both as a food condiment and as an industrial input. Two brokerage firms, Aboissa and Uniamérica, both based in São Paulo, dominate industrial palm oil commerce in Brazil by purchasing and eventually selling bulk amounts of oils from agroindustrial processors in Bahia, Pará, and international markets (Figure 127). Those oil brokers and other firms can choose to purchase palm oils from Bahian sources or from foreign suppliers in Malaysia, Indonesia, Colombia, and elsewhere. The Brazilian national market requires Bahia’s agroindustrial firms to monitor global commodities prices and currency exchange rates that can influence the price of oils when setting their internal prices for fruit. Therefore prices of dendê fruit paid to small-scale and family farmers in Bahia are beholden to an international market for oils dominated by publically subsidized agroindustrial monocultures in Southeast Asia as well as volatile international currency
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**Figure 127:** Imports of crude and refined palm oils to Brazil, 2000-May 2015, in US dollars and metric tons. \(^{437}\)

Quantitative analysis of prices for palm oil on the global market (in Brazilian Reis) and dendê fruit prices in Bahia demonstrates the complexity of the local dendê economy (Figure 128). The volatility of global markets emerges as just one important driver of local fruit prices, but far from the sole influence, as some maintain. A bivariate regression indicates that the global price of palm oil, when expressed in Brazilian Reis, accounts for just 36 percent of the variation in the price of FFB in Bahia (Figure 129). That measure suggests international forces are less important than the combination of other factors such as seasonality, local consumption patterns, and market manipulations in the fundamental shaping of Bahia’s dendê economy. Claims by Bahia’s agroindustrial processors that the international market alone sets the price for fruit in Bahia appear inadequate. While such interplay with multiscalar markets can destabilize prices for dendê fruit, it also creates economic space and market share for smaller-scale processors. With agroindustrial firms oriented toward bulk sales of oils to national markets in the Southeast, smaller-scale donos de rodão can focus on supplying the traditional and multi-faceted culinary and spiritual markets in Bahia.

Perennially plagued by the annual drops in price and the machinations of powerful fruit and oil buyers, farmers on the Dendê Coast are beginning to organize. Cooperatives of small-scale dendê producers have recently emerged in Nazaré, Valença, Ituberá, and Camamú, with COOFAVA in Valença becoming the first to sell palm oil to

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438 Interview with Opalma management of 13 March 2012; interview with Oldesa management of 5 April 2012; interview with MIL management of 23 April 2012; Interview with an executive of an industrial processing, wholesale, and logistical facility of 23 April 2012.
energy giant Petrobras. A leader of that cooperative explained the group’s strategy for dealing with the inevitable seasonal drops in price.

From May through June or July, the *rodões* tend to get over-stocked. Every year after holy week, after Easter, there is a considerable reduction in demand for oil. At that point, we’ll start buying up oil from the *rodões* and sell it to Petrobras [for biodiesel production]. This is to make sure their inventories don’t get so high that it would depress the price of oil. Petrobras is there and ready to buy. Petrobras needs oil. Dendê is a biodiesel, an ecologically-sound energy product.\textsuperscript{439}

Thus the cooperative intended to use Petrobras not only as an outlet for their own products, but as a means to manipulate the market for oil and control the price. This is possible because Petrobras signed an annual contract with the cooperative to purchase oils at a set price of Rs. $2 per liter during 2012. By organizing into producer cooperatives, small-scale farmers access power to manipulate the local dendê economy in ways similar to the wholesalers and speculators. The cooperative is currently working to fund and construct three mini-industrial processing facilities on the Dendê Coast, which would increase the viability of the cooperative, allowing it to further augment the price for dendê fruit paid to its members. The current system relies on a contract with a mini-industrial *rodão* in Valença. The cooperative sells its fresh fruit to the processor who in turn processes the oil for delivery to Petrobras. In return the processor keeps the kernels which he then sells at profit. Once the cooperative constructs its own processing facilities, it can process and sell its own value-added products, and its profits should soar.

Nevertheless, the current scheme, though limited by the cooperative’s relatively low production, processing, and purchasing capacities, demonstrates how cooperation among small-scale producers can rival agroindustrial processors and manipulate the market.

\textsuperscript{439} Interview with leaders of COOFAVA in Valença, Bahia, of 27 March 2012.
Figure 128: Trend analysis of monthly average prices for dendê FFB in Bahia, and international prices for palm oil, December 2001-June 2015.\textsuperscript{440}

\textsuperscript{440} Source: Monthly averages of dendê prices in metric tons of fresh fruit bunches (FFB) from Bahia’s Secretariat of Agriculture (Bahia, SEAGRI 2015) (see also Figure 126), International price data from the Global Economic Monitor (GEM) Commodities database published by World Bank (2015) and listed in metric tons of crude palm oil. Monthly exchange rates used to calculate palm oil prices in Brazilian Reis (BRL) from Monthly Monetary and Financial Statistics (MEI) published by Organisation for Economic Co-operation and Development (OECD 2015).
The cooperative’s scheme to control price is only possible via its annual agreement with Petrobras. In turn, purchasing palm oil as a feedstock for biodiesel is viable only through the subsidies of the Social Fuel Stamp (SFS) program. In 2012, the graph and supplemental analyses were created using Stata 14. The r-squared value of 0.361 represents the proportion of variation in Bahia prices explained by international averages of palm oil prices alone. While the two factors are positively correlated, international prices cannot fully account for the monthly prices in Bahia, as international prices do not account for nearly 64% of the variation in local prices. Sources: FFB prices Bahia (Bahia, SEAGRI 2015); International price data from Global Economic Monitor (GEM) Commodities database, (World Bank 2015) and listed in metric tons of crude palm oil. Monthly exchange rates used to calculate palm oil prices in Brazilian Reis (BRL) from Monthly Monetary and Financial Statistics (MEI) published by Organisation for Economic Co-operation and Development (OECD 2015).
average price for diesel fuel in Brazil was Rs. $2.087 per liter, of which 5 percent comprised biodiesel. As that percentage is set by Brazilian law to incrementally increase over time, Petrobras will come under increasing pressure to lower the price it pays for palm oil. That pressure creates a fundamental contradiction between the local dendê economy and the federal biodiesel program. While Petrobras will want to steadily decrease—or at least stagnate real growth—in bulk palm oil prices, the regional and national alimentary markets can offer much higher prices for smaller amounts of the traditional culinary necessity. Moreover, federal subsidies are subject to change with shifts in politics and priorities. As of this writing, the PNPB and its Social Fuel Seal subsidies appear safe under the current Workers’ Party administration, but economic conditions and democratic elections can rapidly shift political landscapes. Thus the prospects of the program are perpetually uncertain, and many producers and processors understandably remain wary.

While some producers see the program as a de facto minimum price for dendê fruit, some small-scale processors worry that agroindustrial processors would undermine the program by increasing prices. One mini-industrial processor explained his suspicions.

There’s now a cooperative around here buying palm fruit to make biodiesel. But it’s not economically viable to make biodiesel with palm oil. One liter of biodiesel oil costs Rs. $1.89. A liter of palm oil [on the alimentary market] costs Rs. $3. How is it possible to sell that oil without the public subsidies? What happens when they stop subsidizing it? How would we sell our dendê? They wanted the donos de rodão to sign a contract with Petrobras. A contract during the harvest season requiring us to deliver palm oil at a low price. [An agroindustrial executive] would just undermine us. As soon as we sign that contract [an agroindustrial executive] would raise his price for dendê fruit. He has a plant where he

442 Figure averaged from monthly averages for 2012 published online by Brazil’s national fuel agency, Agência Nacional do Petróleo, Gás Natural e Biocombustíveis, at http://www.anp.gov.br/ (last accessed 29 June 2015).
can fractionate palm oil. He can deodorize and hydrogenate it to his own specifications. He separates the carotene and the fats and can thus sell the constituent parts down in São Paulo at great profit. They buy it to make [potato] chips. His profit margins are high enough to allow him great leverage in his pricing. So if we signed a deal with Petrobras, he would just undercut us. What are the little guys to do?

Some processors therefore see the status quo as preferable to dealing with Petrobras which could destabilize their market. Buying power and economies of scale provide tremendous leverage, but even Brazil’s national biodiesel program and giant energy conglomerate Petrobras are unable to exercise hegemony over the complex network of Bahia’s dendê economy. Agroindustrial firms and other large-scale purchasers could, and have, countered Petrobras by raising their price for fruit in a bid to attract raw material from local producers. Such moves limit supplies of fruit for the smaller processors unable to compete with high fruit prices. Without their own economies of scale, small-scale processors are unable to negotiate higher oil prices paid by wholesalers, markets, and other consumers. Moreover, as small-scale producers move to increase their fruit production, agroindustrialists can react by lowering prices below a reasonable level and focus on processing fruit from their monocultures. Prices of fruit, oils, and other palm products, and the power to fix them, therefore represent the fulcrum on which Bahia’s dendê economy hinges.

After its first and only year in circulation, the Petrobras contract with the producer cooperative lapsed in late 2012 and the parties have been unable to agree on terms for a new agreement in the three years since then. COOFAVA and Petrobras continue to negotiate, but as of June 2015 those plans remain on hold, and a weak national economy and retracting public budgets cast doubt on the prospects for a new contract. The cooperative is instead focused on expanding production and constructing processing
facilities. Rather than dominating, reducing, or redirecting Bahia’s dendê economy, Petrobras and the PNPB represent the latest inputs in the complex system. While the corporation and its public-private development intervention wield great influence, once input, such power flows through the assemblage to permeate each node and actor. Mapping the nodes and flows of power through the dendê economy allows us to visualize the relational composition of the network and provides insights applicable to development initiatives.

Figure 130 depicts Bahia’s dendê economy as a socioecological rhizome mapped onto a series of landscapes and places both conceptual and real. It uses prices and price fixing to illustrate the flows of power through the assemblage. It maps a generalized web of multiscalar relations through which actors, their arrangements, associations, and access to power may be followed. The economy roots horizontally in the Dendê Coast and laterally in the African Diaspora and the global palm oil economy (among other places unspecified in the map). The figure attests to the economy’s complexity; Bahia’s contemporary network of dendê production, processing, and consumption reflects its extensive transatlantic history of cultural-ecological-economic circulations and transactions. Despite centuries of administrative development initiatives ranging from colonial mandates for manioc production in the seventeenth century (Chapter 4) to subsidized biofuel production in the twenty-first century, Bahia’s complex dendê economy continues to proliferate in defiance of programs intended to simplify, i.e. make legible, its landscapes and cultures. Rather than fundamental transformations, attempts at

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443 Personal communication with leaders of COOFAVA in Valença, Bahia, of 12 June 2015.
simplifying the system, such as monocultures and agroindustrial processing, became novel socioecological inputs that altered and further complicated the system.

The compounding complexity of the dendê economy has thus rebuffed those who have sought to control or overwhelm the system, and consequently, the PNPB has yet to attain its lofty goals of social inclusion and regional development on the Dendê Coast. A

Figure 130: Relational map of Bahia’s dendê economy, rooted in places and shot through with power.\textsuperscript{444}

The compounding complexity of the dendê economy has thus rebuffed those who have sought to control or overwhelm the system, and consequently, the PNPB has yet to attain its lofty goals of social inclusion and regional development on the Dendê Coast. A

\textsuperscript{444} Placement, direction, and weight of arrows indicate relative power to fix price dendê fruit. Roots depict those of \textit{Elaeis guineensis}, drawn from Jourdan and Rey (1997, fig. 3, p. 39). On power in rooted networks, see Rocheleau (2011).
concept of development that embraces rather than antagonizes complexity could, however, invigorate Bahia’s dendê economy, improve livelihoods on the Dendê Coast, and contribute to more viable forms of land use, agriculture, and development throughout the global tropics.

Respecting the autonomy of farmers and palms, or decolonizing an Afro-Brazilian landscape

Development is always an assembled, rooted, and more-than-human endeavor. Our failure to recognize such complexities has produced great social and ecological calamities (Sluyter 2002; Whatmore 2002b; Escobar 2008; Bennet 2010; Rocheleau 2011; Mansfield et al. 2015). The adaptability and durability of Bahia’s traditional dendê economy attests to its resilience, yet for decades public and private agents have worked to reduce centuries of place-based wisdom to modern monocultures. In Bahia, a network of traditional producers, processors, and consumers resist the socioecological conversion to improved hybrid monocultures, advancing a transhistorical, transatlantic commitment to traditional production systems and related foodways (Escobar 2008; Carney and Rosomoff 2009; Segalla 1999; Watkins 2011; Bishop 2015).

Development agents rely on government statistics to justify, fund, and measure modernization programs. Packaged as objective counts, those numbers paint a ghastly image of Bahia’s dendê economy at first glance. Figure 108 shows a decline of almost 10 percent in Bahia’s oil palm fruit yield when measured as tons per hectare. Yet those numbers are generated through social networks that favor agroindustrialists and ignore the heretofore illegible small-scale producers and processors that make up the vast majority of the regional dendê economy. According to local employees with IBGE, the agency responsible for Brazil’s population and agrarian censuses, agents compile oil
palm production data in Bahia from totals submitted by the agroindustries, and scant public resources prevent any attempt to procure production totals from small-scale processors. Bahia’s vast tracts of subsponsive groves are, however, included in the harvested land category; therefore yield calculations are skewed low for Bahia. This simple undercount has vast social, cultural, and political implications as it obscures the economic contributions of small-scale workers and entrepreneurs and renders them invisible within the very data used to support public development projects and funding priorities. The problem is not mathematical, but rather ideological. A high-modernist episteme fails to find the real social, ecological, cultural, and political value within Afro-Brazilian landscapes, and it discounts the durable wisdom generated in Bahia’s complex dendê economy.

To encourage the wise development of Bahia’s dendê landscapes and the small-scale and family farmers that work within them, officials must design the regulatory environment in a way that allows producers greater access to power in the local economy. Global pressures, especially commodity pricing and exchange rates, weigh on the local markets for oil and kernels; however, local agroindustrial and wholesale buyers wield tremendous influence over prices and use outdated interpretations of seasonal consumption patterns to manipulate the markets in their favor. Implementing a minimum pricing policy for dendê fruit would alter flows of power within the network. It would protect producers from volatile markets and exploitation while boosting production, reinvestment, and planning. As a small-scale producer and processor suggested,

I think dendê deserves a sufficient price, a guaranteed price, a price that we can trust from the harvest to the off season. Because that would give us

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445 Interview with local IBGE employees in Valença, Bahia, of 20 April 2012.
a future to look forward to, it would make us stronger and more resistant. It all depends on the price because the land here supports dendê. It gives us all we need for now.446

Brazil’s Ministry of Agriculture has since 1966 administered a system of minimum commodities prices through its national Policy of Guaranteed Minimum Prices (Política de Garantia de Preços Mínimos). The 2014-2015 installment of that program regulated prices for 34 different agricultural commodities including six specific to Bahia or the Northeast region to which it belongs, but raw dendê fruit was not yet included (Brazil MAPA 2014). Besides creating a more just and productive market, minimum prices would prevent detrimental price undercutting and could lead to the formation of new and strengthening of existing cooperatives, a laudable goal of the agronomic development program (Sande 2002) (Figure 110).

Practically everyone working in Bahia’s dendê economy, producers and processors alike, agrees that more cooperation would improve conditions and prospects for everyone. Cooperatives in Bahia find roots and strength in mutirão, the Northeast’s traditional cooperative harvest system. Stronger cooperatives could foment other important agronomic development goals in the region, namely the construction and operation of in situ processing facilities (Sande 2002) (Figure 110). As a primary development goal, cooperative palm oil mills represent vital hubs of community development that would reconnect small-scale producers with lucrative value-added products. While cooperative processing would improve economic conditions for small-scale producers, the transition must be handled carefully, in ways that ease shocks for

446 Interview with a small-scale producer and processor on the island of Andará in the Rio da Serra, Camamú of 26 October 2012.
Bahia’s class of small-scale processors, the *donos de rodões*, especially those that lack access to large or productive tracts of land.

Development plans for Bahia’s *dendê* economy must respect the autonomy, effectiveness, and security of the region’s traditional polycultures. Reducing these systems to monocultures only disrupts their complex self-organizing processes, leading to increases in ecological, social, and political vulnerabilities. Government scientists recognize Bahia’s *dendê* economy as a complex, polycultural, and more-than-human socioecological system.

There is no significant variation among production systems observed in the *Baixo Sul* (*Dendê Coast*). The production units are small and the harvesting system is extractivist. The predominant variety among oil palms is *dura*, intercropped with other arboreal cultivars such as cocoa, clove trees, and coconut palms, as well as pastures, etc., with only rare agricultural practices such as pruning and rational harvesting or even occasional weeding. The expansion of cultivation areas has occurred more by the natural action of small rodents and birds, rather than relying on the direct intervention of humans (Sande 2002, pp. 13-14).

Yet focused solely on monocultural yield, many officials continue to perceive Bahia’s complex *dendê* landscapes merely as quaint anachronisms desperately in need of modernization. Rather than working *with* that complex, time-honored, more-than-human system, they seek to reduce it, and consequently, to weaken it. Their programs pressure farmers to replace polycultures and subspontaneous groves with monocultures in the image of (post)colonial Southeast Asian plantations, even as criticism of those agroindustrial systems continues to mount (Wilcove and Koh 2010; Pye and Bhattacharya 2013; Rival and Levang 2014).

Instead of reducing Bahia’s complex landscapes to monoculture and discounting centuries of agroecological knowledge developed there, effective development initiatives
would account for the autonomy and value of small-scale producers and processors and the more-than-human networks they participate in. Those seeking to foment development should combine the wisdom of local farmers and landscapes with other empirically-tested agroecological principles. Development practices that respect the autonomy of the small-scale producers would attend to their concerns related to polyculture as well as high levels of labor and chemical inputs. While some producers are willing and able to gradually convert to tenera, others prefer to continue cultivating or managing the dura variety. Public programs have restricted financing to farms willing to convert to tenera leaving those who wish to improve on the traditional systems without vital access to credit. While it remains unclear if a development program based on the dura variety could prove worthwhile, it is clear that a program of tenera monoculture is unsuited for most smallholders.

Just and effective development programs must respect the differences, and indeed autonomy, among the various palm varieties and allow farmers flexibility in cultivation and management options. Bahia’s small-scale farmers and processors respect the agency and autonomy of the various varieties of African oil palms and collaborate with them in complex, more-than-human, and polycultural assemblages. Recognizing the palms as autonomous actors, small-scale producers and processors continue to resist the social and ecological restructuring that a conversion to tenera would entail. Moreover, resistance to tenera among small-scale producers is not unique to Bahia, but also occurs in parts of western Africa where farmers prefer to maintain more traditional forms of oil palm polyculture and management (Segalla 1999; Kiki 2000; Bishop 2015). Invoked as a modern and novel techno-scientific advancement, tenera is instead an ancient variety
with a long transatlantic history in African and Bahian landscapes (Chapters 3-6).

Producers on either side of the Atlantic have recognized and understood it for centuries. They choose to employ the variety, or not, based on complex economic and socioecological calculations that transcend monocultural yield.

Over the past several centuries, a variety of prolific agroforestry systems embracing African oil palms emerged on the Dendê Coast, including biodiverse subs spontaneous groves, oil palm-manioc swidden-fallows, and cacao cabrucas. These complex systems combine export or commercial crops with food crops; they benefit from and proliferate social, biological, and economic diversity. Rather than vestigial antecedents, these systems are forward-looking prototypes. As time-honored production systems, Bahia’s oil palm agroforests represent fonts of socio ecological knowledge that could inform agricultural development not just on the Dendê Coast, but throughout the humid tropics (Watkins 2011) (Figure 131).

There is already some momentum in that direction. Recent studies in the Amazon conducted by agronomists with EMBRAPA have shown economic and ecological benefits of intercropping manioc, beans, and fruit trees with African oil palms, recalling the traditional systems first developed in Bahia (Rocha et al. 2007; Teixeira et al. 2011; Chapter 4). Ongoing experiments led by researchers with the World Agroforestry Centre, also based in the Amazon, are demonstrating economic, social, and ecological value in oil palm agroforestry systems that integrate up to 17 other species (Andrade and Miccolis 2010; Miccolis and Andrade 2012; Carvalho et al. 2014; Miccolis et al. 2014).

Unfortunately, despite centuries of bottom-up development and resistance, as well as the encouraging experiences of contemporary producer cooperatives and agronomists,
African oil palm landscapes in Bahia have received only limited scholarly, scientific, or practical attention. Recent studies in the Amazon nevertheless suggest Bahia’s traditional knowledges may offer useful insights for resolving socioecological conflict in the rapidly expanding and contentious global palm oil economy. In that way, Bahia’s Afro-Brazilian landscape offers not only a window into our diverse and collective past, but quite possibly a path to a more viable future.
CONCLUSIONS:
THE POTENTIAL OF AN AFRO-BRAZILIAN LANDSCAPE

The other is the future. The very relationship with the other is the relationship with the future.

—Emmanuel Levinas, *Time and the other* ([1947] 1987, p. 77)

[Social] alienation derives from the weakness of individuals, those able to identify only with what separates us, rather than with what unites us.


The exciting and challenging task ahead involves walking and talking the world into being as pluriversal. A world in which the multiplicity of living beings and objects are addressed as peers in constituting knowledges and worlds.


Humans and African oil palms have lived and traveled together, collaborated, and bolstered each other’s chances of survival for at least six millennia. Native to West Africa, the palm has long provided humans with vitamin-rich oils, an intoxicating wine, and a variety of useful domestic materials in return for preservation and cohabitation. During colonial overseas expansion, the African oil palm traversed the Atlantic to South America and the circum-Caribbean as a transformative but underappreciated African contribution to the Columbian Exchange. On arrival in the Americas, the African oil palm and its products played complicated roles in the slavery-based societies constructed there, offering familiar nutritional, spiritual, and medicinal nourishment to enslaved Afro-descendants while also helping to facilitate the brutal trade that oppressed them. In Brazil, the palm colonized a variety of landscapes from the fringes of the Amazon at Maranhão to the Guanabara Bay that frames Rio de Janeiro, yet dense and productive landscapes of African oil palms emerged only along Bahia’s coasts.
Drawing on fieldwork, ethnography, archives, GIScience, quantitative analysis, and travelers’, rare, and secondary accounts, this study reconstructs and analyzes, for the first time, the origins, historical development, and contemporary functioning of Bahia’s palm oil cultures, landscapes, and economies. In compiling the transatlantic voyages of *Elaeis guineensis* and the subsequent development of its subs spontaneous landscapes in Bahia, the study demonstrates how Afro-descendant agroecological knowledge and transatlantic exchanges influenced socioecological transformations in the landscapes and cultures of Northeast Brazil, and helped to integrate an Atlantic World. The study culminates with an ethnography of Bahia’s contemporary palm oil economy, mapping and analyzing the socioecological networks that link and sustain Afro-Brazilian cultures and landscapes. At its broadest, this dissertation contributes in three overarching ways:

1) The study revises and explicates the historical development of the Americas with a historical geography of African oil palms and their transatlantic diffusion and expansion in colonial Latin America over seven centuries. It connects interdisciplinary Atlantic studies with hybrid geographies and political ecologies to expound on the cognitive and socioecological contributions of Afro-descendants in the transformation and development of New World landscapes and cultures. While filling gaps in the academic literature, the project works to amplify social awareness by stimulating increased reflection and instruction on the obscured diversity of the greater American experience.

2) Building on insights from the natural sciences and humanities, the project contributes to social science literatures with advancements in relational political ecology and networked theoretical and methodological approaches. Its hybrid approach to
research design advances an interactive and adaptive methodological philosophy. It links people, palms, discourses, and multiscalar power relationships to analyze how localized human-environmental interactions converge with international politics and economics to construct and reproduce Bahia’s oil palm landscapes and networked commodities markets. Rather than simply alluding to abstract network models, the study maps, conceptually and graphically, the complex assemblage of actors and processes that comprise a local socioecological economy, and links them through real flows of power. The study roots human-environmental interactions and cultural-ecological-economic production simultaneously within the real and conceptual territories of Bahia’s Dendê Coast, the African diaspora, and the global palm oil economy.

3) Finally, the project contributes to theories and practices of development by challenging top-down models and offering viable alternatives within the contentious and rapidly expanding global palm oil industry. The study demonstrates how traditional diasporic knowledges co-constitute and collaborate with modern development initiatives rather than succumb to their designs, as authorities intended. Bahia’s smallholders and maroon communities have long resisted monocultures, relying instead on complex agroecologies to produce, process, and distribute palm oil. Small-scale producers and processors continue to resist mounting development pressures from agroindustry and public development agencies seeking to modernize landscapes and expand the use of palm oil in Brazil’s national biofuel programs. This study integrates agroecological principles with theories of development and complexity to underscore the urgent need for more diverse sources of development knowledges and practices. It contextualizes failings of current development interventions within an uncritical acceptance of Western
agroindustrial models beginning in the mid-twentieth century and highlights traditional, place-based agroecologies as potential paths forward. In so doing, it works toward decolonizing modern development by advancing diasporic epistemes as sources of viable production initiatives.

After situating the research questions within a historical but recurrent trajectory of ecological, cultural, and postcolonial research in US geography in Chapter 1, the study builds on previous methodological innovations, treatments, and arguments to conceptualize and deploy an explicitly hybrid methodology in Chapter 2. Based in the inclusion and interaction of diverse methods, sources, and approaches, the methodological hybridity developed here encourages flexible and inter-subjective research designs responsive to the ever-shifting realities of the field and other collaborators. Thus the study contributes to social science methodologies and literatures by framing and applying hybrid research designs as dynamic, reactive, and interconnective.

Centuries of inputs, processes, and relations complicate the reconstruction of (post)colonial Atlantic landscapes such as Bahia’s Dendê Coast. Inclusive, plural, or hybrid methods help fill gaps in the historical record where textual sources remain only tenuous. The probate inventories studied here and elsewhere are extraordinary fonts of historical data; yet dedicated to formal property ownership, those documents privilege European and elite presence and perspectives. This study demonstrates some of the ways ethnography and geographic analysis can enrich, triangulate, and decolonize the historical record by revealing Afro-Brazilian agency within the transformation of New World landscapes. This project demonstrates how an interaction of diverse voices, sources, and
methods can produce rich and novel accounts that work to counteract Eurocentrism and elite privilege in colonial documentation, consequently illuminating the diversity of New World development. Reconstructing the diverse agents, networks, and processes involved in the colonial transformation of Bahia’s Atlantic coast, we can grasp and appreciate the historical formation and ongoing reproduction of an Afro-Brazilian landscape.

Chapter 3 integrates archives, travelers’ accounts, and rare and early works to track the diffusion of traditional African oil palm landscapes and related knowledges through western Africa and across the Atlantic to the early colonial Americas. Reconstructing a socioecological history of African oil palm-human collaboration in western Africa, the subspontaneous diffusion of the palms and related knowledges throughout the continent, and finally their circulation through the Atlantic Basin via the transatlantic trade in enslaved humans, that chapter sets historical precedents for each of the dissertation’s subsequent treatments. Each of those analyses in turn contribute to an empirically-rich interdisciplinary corpus reinterpreting and amplifying the Columbian Exchange with contributions from Afro-descendant peoples and biota.

Mundane and ambiguous transatlantic circulations introduced the African oil palm to Bahia and greater Brazil in the early the seventeenth century—if not before. The mechanical transfer of botanical diaspores, however, provided only tenuous ecological beginnings. Diasporic knowledges and values associated with the plant and its products proved decisive in the palm’s establishment and dispersal in Bahia where *Elaeis guineensis* became the dendezeiro, a Brazilian hybrid of Kimbundu and Portuguese linguistic elements that transformed New World cultures and landscapes. Combining fundamental insights from historical-geographical renderings of the Atlantic World with
hybrid, or more-than-human, geographies and political ecologies, the chapter presents the Atlantic Basin as a dynamic, interconnected, and hybrid space of flows and assemblages. By meshing theoretical constructs from Atlantic Studies and relational political ecologies, it advances both approaches, and stakes out intellectual space for future interdisciplinary collaborations.

Once established in Bahia, the palm, its products, and their associated cultures collaborated in various socioecological processes to disseminate throughout the diverse landscapes of the region’s Atlantic Forest biome. Drawing on an interaction of various textual, ethnographic, and geographical analyses, Chapter 4 reconstructs the fundamental cultural-ecological development of Bahia’s Afro-Brazilian landscape. The chapter places the dendezeiro within the geographical and agroecological contexts of coastal Bahia, demonstrating how the region’s mangal socioecosystems, manioc farms, cacao agroforests, and maroon communities accommodated and empowered African oil palms. Historical analysis suggests that the distinctive vegetative and edaphoclimatic conditions of mangrove forests provided a welcoming foothold for the salt-tolerant palm throughout much of Brazil. Yet mangal and humid climates extend throughout much of the Neotropics, and African oil palms concentrate only in a relatively small stretch of Bahia’s littoral. Therefore human intervention, this study demonstrates, was fundamental in the formation of the dense dendezeiros landscapes emerging from the Dendê Coast.

Small-scale farmers on the Southern Coast, most of them Afro-descendant, collaborated within ecological, cultural, and legal processes and networks to draw African oil palms from the coastal mangal and onto upland polycultural farms. Just as farmers in western Africa had relied on swiddens of yams and other herbaceous crops to
propagate subspontaneous groves of African oil palms, an eighteenth-century Afro-
Brazilian peasantry mobilized analogous swiddens based on the Indigenous Brazilian
staple—manioc—to proliferate African oil palms within Bahia’s Atlantic forest biome.
Later, as cacao *cabruca* agroforests expanded along Bahian coasts in the nineteenth
century, subspontaneous dendezeiros contributed to the secondary canopies that
incubated the squatty cacao groves, all the while yielding a supplementary production of
nourishing oils and other products. Thus enslaved, freed, and free Afro-descendants in
Bahia drew on socioecological traditions from their ancestral and diasporic environments
to forge a transatlantic agro-ecosystem distinguished by mosaics of manioc, cacao
agroforests, subspontaneous dendezeiros, and secondary forests, along with countless
other food and export crops growing in complex polycultures.

Along with those empirical analyses of agroecological patterning and
socioecological cooperation, Chapter 4 contributes theoretical nuance to colonial and
environmental historiographies by scrutinizing and amplifying the concept of resistance.
It reconstructs colonial processes of cultural and ecological integration to demonstrate the
efficacy and endurance of Afro-Brazilian agency within Bahia’s cultures and landscapes,
despite the brutalities of the slave system. The chapter analyzes the socioecological
contexts of maroon community (*quilombo*) formation and retention and demonstrates
how conflict, negotiation, and the production and processing of palm oil combined to
resist Luso-Brazilian designs on Bahia’s colonial landscapes. Colonial Portuguese
officials mandated Bahia’s Southern Coast as a vast manioc monoculture. Yet Afro-
descendants used overt and subtle resistance strategies to subvert European intentions,
creating instead complex cultures and landscapes of resistance. Despite the considerable
economic value of palm and kernel oils, Luso-Brazilian colonial elites showed little interest in the African oil palms growing in Brazil, and their endurance within Bahia’s landscapes and cultures reflects the collective knowledges, preferences, and resilience of Afro-Brazilians. Thus Bahia’s Dendê Coast emerges as a landscape of resistance where Afro-Brazilians and others collaborated to adapt and reproduce cultural-ecological knowledge in the African diaspora. Together those analyses demonstrate how Bahia’s Afro-Brazilian landscape arose from deliberate socioecological collaborations rather than purely natural processes, and place Afro-descendant peoples, cultures, biota, and products at the core of a transatlantic palm oil economy rooted in Bahia since the seventeenth century.

For Afro-descendants such as Benta, Gaudencia Martins, and countless others, palm oil was a vital material resource used to augment precarious nutritional and economic conditions. Palm oil was also an important cultural resource used to create and reproduce the symbolic, spiritual, and material expressions of the African diaspora and helped to situate Bahia as a formative outpost in the Black Atlantic. Though rooted in Brazil’s Atlantic seaboard, Bahia’s Dendê Coast emerges from transatlantic circulations, at once cultural, ecological, and economic. Chapter 5 details those transatlantic exchanges by analyzing the Bahia-Africa trades from the eighteenth to the early twentieth centuries. Among the first to analyze systematically the section of customs records held at Bahia’s public archive (Seção Alfândega), the chapter combines those and other archives with rare trade records and travelers’ accounts to materialize many of the transoceanic flows that transformed and integrated an Atlantic World.
That chapter contributes to Atlantic and environmental histories and historiographies by analyzing the “clandestine” and “legitimate” trades from a transatlantic perspective; one linking cultural, ecological, and economic change in both Bahia and western Africa. The chapter places the Bahian capital of Salvador at the center of an Atlantic palm oil economy that initially helped to mask surreptitious human trafficking before fueling the final transition away from the Transatlantic Slave Trade in the nineteenth century. In so doing, the chapter details the cultural, economic, and ecological effects of the clandestine and legitimate trades across the Atlantic Basin, and relates those transatlantic circulations to the growth of domestic palm oil production in and around Salvador and along what would become the Dendê Coast.

Transatlantic shipping routes and their diverse cargoes transformed the Atlantic Ocean from a watery barrier into a complex web of relation linking Europe and Africa with the New World. Beyond the control of Europeans and everyone else, Atlantic networks became chaotic conduits for diverse beings, cultures, and economies in ways unforeseen by colonizers or metropolitan authorities. Along with millions of beings, biota, and other actors, the African oil palm and its products collaborated in those networks to affect cultural, economic, and ecological change throughout the Atlantic World. Initially employed as an essential accessory on the Middle Passage, African palm oil emerged as a prominent transatlantic commodity in its own right by the late-eighteenth century. While British agents imported the oil mainly as an industrial ingredient, a diverse class of merchants in Bahia supplied palm products and other African goods to burgeoning spiritual and culinary markets throughout the Atlantic World. Chapter 5 demonstrates how Afro-Brazilians, many of them women, leveraged
transatlantic trades to improve economic, legal, and social conditions for themselves and their associates while sustaining diasporic cultures and otherwise contributing to economic and ecological development in and around Salvador, coastal Bahia, and in far-flung places across Brazil and the Atlantic World. As European colonization of western Africa and other pressures combined to stifle the Bahia-Africa trade beginning in the late-nineteenth century, Brazil turned to Bahia’s Afro-Brazilian landscape for the lifeblood of its Afro-Atlantic culture.

Chapter 6 begins with a microhistory of three Bahian families, the Afro-descendants they enslaved, and their families to connect transatlantic trades in humans and palm oil with the development of Afro-Brazilian religions and finally the modernization of Bahian agriculture. That treatment reveals how freed Afro-descendants emerged from the slavery economy and traversed the Atlantic to affect spiritual, ecological, and economic change across the Atlantic World and how those circulations helped stimulate the early industrialization of Bahia’s palm oil economy. The decline of the Bahia-Africa trade at the end of the nineteenth century coincided with the final abolition of slavery in Brazil in 1888. Limited supplies of imported African palm oil in Bahia bolstered demand for locally-produced oil and producers on Bahia’s Dendê Coast responded with innovative animal-powered mills. A newly freed class of Afro-descendants contributed to the expansion of Bahia’s dendê economy and domestic palm oil production surged.

Bahia’s Afro-Brazilian landscape and its palm oil economy continued to operate with little to no intervention from elites in government and the agricultural bureaucracy through the first half of the twentieth century. At mid-century, however, decades of
agronomic diplomacy from the US and France finally culminated with a public-private partnership of elite Brazilians that set out to modernize Bahia’s dendê economy through top-down agroindustrial interventions. Chapter 6 thus analyzes the cultural and economic politics of modernization imposed on the Dendê Coast beginning in the mid-twentieth century.

The modernizers intended to transform Bahia’s complex dendê landscapes into capitalized monocultures legible to public and private elites, and in so doing, to disconnect the Afro-Brazilian landscape from its own history. Subspontaneous groves and traditional polycultures nevertheless proved resilient and continue to comprise the majority of oil palm landscapes growing on the Dendê Coast. While domestic industrial consumption expanded the market for Bahian palm oil, Afro-Brazilian culinary and spiritual cultures remain the primary economic drivers of Bahia’s Dendê Coast.

The analysis integrates the concepts of illegible landscapes and diffusive power relations to interrogate the perceived hegemony of modernity. Bahia’s traditional dendê commodity chain emerges as an exemplary cultural-ecological economy operating alongside modern development interventions to co-condition more dominant economic-ecological agents and structures driven by capital and the state. The chapter recounts how a top-down imposition of modern development strategies only complicated the cultures and ecologies of the Dendê Coast, rather than simplify them into austere monocultures, as intended. It demonstrates how assemblages of small-scale farmers, oil processors, and various varieties of palms continue to transform cultures and landscapes through processes of more-than-human resistance and change. Never a settled entity, Bahia’s
dynamic Afro-Brazilian landscape emerges through political and socioecological contention.

Chapter 7 provides an ethnography of the people, palms, places, and flows of power that comprise Bahia’s contemporary dendê economy. It scrutinizes current development politics and their discontents, analyzes and maps the multiscalar social, ecological, and economic networks rooted in Bahia’s Afro-Brazilian landscape, and suggests strategies for enacting a more socially and ecologically just palm oil economy in Bahia and elsewhere. The analysis advances relational political ecology by connecting agroecological principles with complexity sciences and development theories to comprehend the ecological, theoretical, and economic values of polycultures and associated agricultural development strategies. It points out the general vulnerabilities and failings of agroindustrial monocultures, and presents Bahia’s subspontaneous groves and polycultures as complex and resilient strategies suited for agricultural development schemes. The chapter contributes to social science literatures more broadly by examining and relating the constituents of Bahia’s contemporary palm oil economy. Rather than merely framing the economy through abstract network metaphors, the chapter graphically and conceptually maps Bahia’s dendê economy as a complex socioecological assemblage and uses commodity pricing to trace flows of power through the system. The resulting maps and analysis advance Social Sciences and network studies by demonstrating how power flows through commodity chains and how economies root into various discrete, real, and conceptual places. The network map and analyses then generate policy recommendations that, the chapter argues, would help create a more just and viable palm
oil economy for the people, palms, landscapes, and livelihoods that rely on Bahia’s Dendê Coast.

Bahia’s Afro-Brazilian landscape and its diverse constituents continue to resist modernity. They remain linked in complex assemblages and rooted in hybrid geographies. As the culinary and spiritual headquarters of Brazilian palm oil, Bahia continues to radiate cultural and economic resources throughout the country where they interact with other hybrid traditions in Rio de Janeiro, Maranhão, Pernambuco, and elsewhere to help meld and nationalize Afro-Brazilian cultures. Indeed palm oil remains the flavor of Afro-Brazil. *Moqueca*, the iconic Afro-Brazilian dish of fish or seafood stewed in palm oil, emerged from a brackish confluence of shellfish and African oil palms along the tidewater mangal (Figure 132). From upland swidden-fallow farms came *pirão*, a hardy porridge based in manioc flour and tinged with palm oil (Figure 133).

Rather than unilateral Africanizations of Brazilian foods, these cultural and culinary expressions emerge as innovative Atlantic hybrids rooted in coastal Bahia and the African diaspora. The *Candomblé* ritual offering of *padê* offers a particularly illustrative example of such hybrid socioecological forms. To initiate a worship service, female adherents prepare a mixture of *cachaça*—a firewater by-product developed on Portuguese sugar *engenhos*; manioc flour—the Indigenous South American staple; and palm oil—the ancient African refinement—in a ceremony to placate the gatekeeper deity *Exú* (Omari-Tunkara 2002; Lody 2008). While reinforcing the importance of palm oil in Afro-Brazilian cosmologies, that ritual symbolizes diasporic spiritual meaning constructed through centuries of iterative circulations and interactions. Fusing cultures,
Figure 132: Seafood moqueca in Moreré on the Isle of Boipeba, Bahia (2012).

Figure 133: Pirão (porridge of manioc flour and palm oil) in Estancia Azul, Valença, Bahia (2012).
landscapes, and economies, the *padê* represents a network of collaboration and resistance at once Afro-descendant and Brazilian, steeped in diasporic cultural-environmental knowledge and practice. And it is unthinkable without the transatlantic cultural hybrid, *azeite-de-dendê*.

Like the hybrid Afro-Brazilian cultures to which it relates, Bahia’s complex dendê economy continues to proliferate. Decades of attempts to simplify the socioecological system have only complicated the network. The introduction of agroindustrial firms and monocultures provided steady outlets for fruit produced on small-scale farms and thus amplified subspontaneous and polycultural production. Those agroindustries nonetheless wield disproportionate and unjust levels of power within the dendê economy. The power to set the baseline price of fresh palm fruit affords corporate elites the leverage necessary to control fruit producers and undermine smaller-scale processors. A minimum pricing scheme set by public authorities, already in place for many other commodities, would improve conditions and prospects for producers and processors of all scales within Bahia’s dendê economy and perhaps strengthen cooperative production.

Despite the cultural, historical, and ecological resilience of Bahia’s Afro-Brazilian landscape, public and private agents continue to push for monocultures of the improved hybrid *tenera*. The agronomic obsession with short-term monocultural yield is indoctrinated in Brazil, much as it is in the United States and among elite international development institutions worldwide. Polycultures and other traditional agroecological landscapes remain illegible to public development agents in Brazil. The island of Itaparica provides a telling example of the coloniality that remains entrenched in Bahia’s dendê economy and within Brazilian development efforts more generally.
Notwithstanding that island’s fundamental roles in the initial modernization of Bahia’s palm oil economy, the enduring abundance of dendezeiros throughout its landscapes, and persistent palm production, Itaparica does not appear in official government statistics as a producer of dendê. Despite complex, diverse, and ongoing palm production—from manual oil processing to weekly sales of fresh fruit—officially, Itaparica produces no palm fruit or oil; officially, palm production on Itaparica remains illegible, thereby isolating the untold hundreds of producers there from public resources and recognition (Figure 3, Figure 11, and Figure 53).

The economic and political tensions that characterize Bahia’s palm oil economy and its development interventions rest on a particularly modern politics of knowledge that privileges certain strands of state-sponsored science at the expense of traditional, place-based knowledges. Colonial epistemologies associate Afro-descendant knowledges and socioecological traditions with an utterly undeveloped past. Modernity and its orthodox practices of development frame traditional agricultural systems as unfortunate and embarrassing consequences of the slavery economy, rather than resilient cultural and ecological projects constructed in resistance to or in spite of colonial oppression and impositions. Modernization implies a rejection of the past, and in the case of agriculture, a future built on place-less monocultures.

Some modernists do, however, recognize value in Afro-Brazilian knowledge, but only as a window into the past or as a commodifiable source of entertainment; those knowledges and traditions that can be sterilized as Afro-Brazilian culture and sold to tourists in the colonial present. While modern coloniality helps create, support, and isolate Afro-Brazilian cultural forms, it undermines the promise of Afro-Brazilian
knowledge as a source of power and development. While the recognition, analysis, and
curation of Afro-Brazilian cultures remains imperative, we should work to decolonize the
full range of Afro-Brazilian knowledges and practices, respect their autonomy, and
consult them for applications to ways of living, producing, and affecting economic
development. Isolating Afro-Brazilian knowledges and epistememes within a realm of
cultural history diminishes their contemporary economic power and application (beyond
appropriated commodification). Decolonizing Afro-Brazilian and other traditional, non-
Western epistememes means listening to and thinking with them; it means “walking and
talking the world into being as pluriversal” (Sundberg 2014, p. 42; Da Costa 2014).
Diversifying the epistemologies of development is urgent precisely because modern
orthodox development is failing, especially in its goals of improving livelihoods in the
Global South. We must reimagine development as “sustainable” precisely because
modernity is unsustainable. “Other worlds” are not only possible, they already operate all
around us; encouraging, enacting, and decolonizing those diverse ecologies and
economies is essential for the abundant survival of Earth and its beings (Gibson-Graham

In an effort to mitigate the social and environmental failures of global palm oil
development, scientists working separately in Bahia and the Amazon are crafting and
measuring polycultural assemblages featuring African oil palms. By demonstrating the
social, economic, and ecological efficacy of such polycultures, their work appears to at
least partially vindicate Bahia’s traditional agricultural systems and knowledges. So far,
however, scientists have framed those experiments and their results as cutting-edge
scientific discoveries rather than empirical justifications of traditional knowledge. So far there has been no interaction between Brazil’s oil palm frontier in the Amazon and its transatlantic laboratory in Bahia, between modern science and diasporic knowledges.

Despite evidence of their ingenuity and wide applicability, the knowledges underpinning Bahia’s Afro-Brazilian landscape remain illegible to policymakers, development agents, and most scientists. As diasporic epistemes rooted in transatlantic exchange, Afro-Brazilian knowledges such as those emerging from the Dendê Coast remain obscured by modern coloniality. Entrenched anti-African assumptions dismiss the prospect of value in knowledges emanating from, rather than flowing to, the African continent. Compounding that condition, traditional Afro-Brazilian knowledge is by definition diasporic and therefore unqualifiable as Indigenous. Decades of geographical, anthropological, and other research has distinguished and promoted various Indigenous knowledges, especially those recognized as ecological (TEK), as fonts for responsible and viable development initiatives. Yet similar research analyzing and promoting diasporic knowledges and traditions is only nascent. Extending epistemological generosity to diasporic as well as Indigenous communities would only amplify and diversify the pluriverse of development theories and practices, and perhaps generate viable and portable knowledges and economies (Figure 134).

This study offers the example of Bahia’s palm oil economy as a vibrant achievement of diasporic knowledges and practices; it argues that Bahia’s dendê economy and its Afro-Brazilian landscape are models worth examining. A program that tests, measures, and adapts the viabilities of traditional management systems while respecting the autonomy of Bahia’s small-scale dendê producers and processors—as well
as the myriad species, features, and conditions that interact to create spontaneous order within those systems—could begin to decolonize Bahia’s Afro-Brazilian landscape and the economy it sustains. Such a program would create and root into a middle ground where scientists and farmers could collaborate to adapt traditional Afro-Brazilian knowledges to local development objectives. Perhaps then farmers and landscapes in the Amazon, Southeast Asia, and beyond could adapt those Afro-Brazilian knowledges to their own economies, not as place-less replicas but rather as accommodating models of

![Figure 134: A modern politics of knowledge.](image)

447 Direction and relative weight of arrows indicate potential for exerting power across knowledge systems and levels of political power associated with each form of knowledge, before and after confronting modernity / coloniality, respectively.
decolonized place-based collaborations. Five centuries of migration, adaptation, and interaction that reinforce Bahia’s transatlantic Afro-Brazilian landscape all attest to its complexity, resilience, and flexibility. In that way, Bahia’s dendê economy could contribute to the “abundant socioecological futures” so desperately needed in the age of the Anthropocene (Collard, Dempsey, and Sundberg 2015).

The promises of collective and complex power extend beyond the polycultures of agroecological farms. They synergize the more-than-human assemblages and economies that support socioecological production and abundance. Producer cooperatives offer the small-scale famers and processors of the Dendê Coast an opportunity for collaboration and perhaps increased economic security. Just as complex polycultures strengthen the productive capacity and resilience of farming systems, socioeconomic cooperation increases farmers’ bargaining power while empowering social networks that can mitigate individual vulnerabilities.

This study is thus a socioecological, cultural, and political project. It argues for an inclusive, socioecological model of development that uses complexity, interaction, and solidarity to emphasize and enhance autonomy and viability in Bahian farms, fields, and markets. It contributes to the decolonization of world history by reconstructing a colonial landscape transformation developed through interactive and transatlantic Afro-Brazilian epistememes. It frames Afro-descendants enslaved and free as cultural and economic actors critical in the development of Bahia and the Americas writ large. It presents an Afro-Brazilian landscape as a socioecological materialization of knowledges and struggles, both diasporic and local, forged in colonialism and resistance, as well as industrialization and modernization, and rooted in Bahia, the African diaspora, and the Atlantic World.
The *long durée* of Bahia’s dendê economy reveals a complex, socioecological, and transatlantic network in constant negotiation and reproduction. Learning to respect rather than caricature the epistemes and autonomies generated in that and other complex collectives would help to unravel the violence of modernity / coloniality and enact a more just, viable, and prosperous world.
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References to unpublished archives and select bound primary works (most of them anonymous) are listed in footnotes. In this reference list and in footnotes, web addresses (URLs) are modified to fit margins by inserting spaces so that the text continues on the following line; those spaces should be removed before navigating to web addresses listed across multiple lines. In the text, names are spelled using modern conventions, however, citations to archived documents always reflect spellings as listed at the archives. Specific archives and their sectors are listed in their earliest citations, abbreviations are used thereafter. For selected editions written or printed before the twentieth century, year of publication is preceded by year of first edition or year of manuscript completion, in brackets, to signal the age of the work.

Abbreviations of archives:

AHU: Arquivo Histórico Ultramarino (Lisbon)
AN: Arquivo Nacional (Rio de Janeiro)
ANTT: Arquivo Nacional da Torre do Tombo (Lisbon)
APB: Arquivo Público do Estado da Bahia (Salvador)
BN: Biblioteca Nacional (Rio de Janeiro)

Abbreviations of sections within archives:

APB: Arquivo Público do Estado da Bahia
SACP: Seção de Arquivos Colônias e Províncias
SJ: Seção Judiciária
SR: Seção Republicano
SA: Seção Alfândega
SM: Série Manifesto
ESM: Entrada e Saída de Mercadorias

BN: Biblioteca Nacional, Rio de Janeiro
SM: Seção de Manuscritos


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APPENDIX A:
IRB EXEMPTION

Application for Exemption from Institutional Oversight

Unless qualified as meeting the specific criteria for exemption from Institutional Review Board (IRB) oversight, ALL LSU research/projects using living humans as subjects, or samples, or data obtained from humans, directly or indirectly, with or without their consent, must be approved or exempted in advance by the LSU IRB. This form helps the PI determine if a project may be exempted, and is used to request an exemption.

- Applicant: Please fill out the application in its entirety and include the completed application as well as parts A-E, listed below, when submitting to the IRB. Once the application is completed, please submit two copies of the completed application to the IRB Office or to a member of the Human Subjects Screening Committee. Members of this committee can be found at http://www.lsu.edu/screeningmembers.shtml

- A Complete Application Includes All of the Following:
  (A) Two copies of this completed form and two copies of part B thru E.
  (B) A brief project description (adequate to evaluate risks to subjects and to explain your responses to Parts 1&2)
  (C) Copies of all instruments to be used.
  *If this proposal is part of a grant proposal, include a copy of the proposal and all recruitment material.
  (D) The consent form that you will use in the study (see part 3 for more information.)
  (E) Certificate of Completion of Human Subjects Protection Training for all personnel involved in the project, including students who are involved with testing or handling data, unless already on file with the IRB. Training link: http://php.nlm.nih.gov/users/login.php
  (F) IRB Security of Data Agreement: http://www.lsu.edu/irb/hh/%20security%20of%20data.pdf

1) Principal Investigator: Case Watkins
   Rank: PhD Candidate in Geography
   Dept: Geography & Anthropology
   Ph: 225-200-5162
   E-mail: jwatkins@lsu.edu

2) Co Investigator(s): please include department, rank, phone and e-mail for each

3) Project Title:
   Dendzejcika: The Atlantic voyage of the African oil palm and its socioecological networks in Baha, Brazil (Dissertation working title)

4) Proposal? (yes or no) no
   If Yes, LSU Proposal Number
   Also, if YES, either
   ☐ This application completely matches the scope of work in the grant
   ☐ More IRB Applications will be filed later

5) Subject pool (e.g. Psychology students)
   Adults involved in the production and trade of palm oil in Baha, Brazil.
   *Circle any "vulnerable populations" to be used: [children <18], the mentally impaired, pregnant women, the ages, other, Projects with incarcerated persons cannot be exempted.

6) PI Signature
   Date 8-31-14
   (no per signatures)

** I certify my responses are accurate and complete. If the project scope or design is later changed, I will resubmit for review. I will obtain written approval from the Authorized Representative of all non-LSU institutions in which the study is conducted. I also understand that it is my responsibility to maintain copies of all consent forms at LSU for three years after completion of the study. If I leave LSU before that time the consent forms should be preserved in the Departmental Office.

Screening Committee Action: Exempted ✓ Not Exempted Category/Paragraph 2

Reviewer Matthew Signature Joel McLeod Date 9/11/11
APPENDIX B:
PERMISSION TO PRINT PREVIOUSLY PUBLISHED MATERIAL

The White Horse Press
The Old Vicarage, Main Street, Winwick, Cambridgeshire PE28 5PN
Partners: Andrew Johnson, Alison Johnson, Sarah Johnson www.wbpress.co.uk

12 October 2015

To Whom it May Concern:
This is to confirm that Case Watkins has our formal permission to republish material that first appeared in the form of an article published in Environment and History. The article in question is:


This citation should be indicated as the first place of publication.

Yours faithfully,

Sarah Johnson (Partner, The White Horse Press)
VITA

A native of Louisiana, Case Watkins earned his Bachelor’s degree at Louisiana State University in 2002, a Master’s of Science in Geography from Texas State University in 2008, and is a candidate to receive a Ph.D. in Geography and Anthropology from LSU in 2015. He currently teaches in the Geographic Science, Political Science, and Africana Studies programs at James Madison University in Harrisonburg, Virginia. His research has analyzed the relationships of race and class with the inundation caused by Hurricane Katrina in New Orleans, mapped and analyzed historical and contemporary geographies of Hispanics and Latinos in New Orleans, examined African contributions to colonial transformations of landscapes and cultures in Brazil, and promoted traditional agricultural methods as viable forms of development. Previous work appears in *Southeastern Geographer, Journal of Latin American Geography, Environment and History*, and he is a co-author of *Hispanic and Latino New Orleans: Immigration and Identity since the Eighteenth Century*, published in 2015 by LSU Press.