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**More details/abstract:** Drawing on the recent identification of anthropogenic dark earths (ADEs) in West Africa's Upper Guinea forest region, this article engages with Amazonian debates concerning whether such enriched soils were produced intentionally or not. We present a case study of a Loma settlement in Northwest Liberia in which ethnography, oral history, and landscape mapping reveal subsistence practices and habitus that lead African dark earths (AfDEs) to form inevitably around settlements and farm camps. To consider the question of intentionality and how the inevitability of AfDE is experienced, we combine historical and political ecology with elements of nonrepresentational theory. The former show how the spatial configuration of AfDEs in the landscape reflect shifting settlement patterns shaped by (1) political and economic transformations, mediated by (2) enduring ritual practices and social relations between first-coming and late-coming social groups that are symbolically related as uncles and nephews. We use nonrepresentational theory to show how the Loma phenomenological experience of these soils and their origins is better conceptualized in terms of sensual objects, the formation of which is inflected by these social and political processes. We thus reframe the debate away from intentionality, to theorize enriched anthropogenic soils and landscapes in terms of shifting sociocultural, political, and historical factors interplaying with the practical, sensually experienced, and inevitable effects of everyday life.

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# **Anthropogenic dark earths in the landscapes of Upper Guinea, West Africa: Intentional or Inevitable?**

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Drawing on the recent identification of ‘Anthropogenic Dark Earths’ (ADE) in West Africa’s Upper Guinea forest region, this paper engages with Amazonian debates concerning whether such enriched soils were produced ‘intentionally’ or not. We present a case study of a Loma settlement in North West Liberia in which ethnography, oral history and landscape mapping reveal subsistence practices and habitus that lead African Dark Earths (AfDE) to form ‘inevitably’ around settlements and farm camps. To consider the question of intentionality and how the inevitability of AfDE is experienced, we combine historical and political ecology with elements of non-representational theory. The former show how the spatial configuration of AfDE in the landscape reflect shifting settlement patterns shaped by (a) political and economic transformations, mediated by (b) enduring ritual practices and social relations between ‘firstcoming’ and ‘latecoming’ social groups that are symbolically related as ‘uncles’ and ‘nephews.’ We use non-representational theory to show how the Loma phenomenological experience of these soils and their origins is better conceptualized in terms of ‘sensual objects’ whose formation is inflected by these social and political processes. We thus reframe the debate away from intentionality, to theorize enriched anthropogenic soils and landscapes in terms of shifting socio-cultural, political and historical factors interplaying with the practical, sensually experienced and ‘inevitable’ effects of everyday life.

**Keywords:** Political Ecology; Historical Ecology; Non-Representational Theory; Phenomenology; Speculative Realism

## **Introduction: Towards a historical-political ecology of anthropogenic landscape formation**

The study of anthropogenic landscape features such as soils and vegetation and the practices associated with their formation has animated far-reaching debates in both historical ecology (HE) (Heckenberger et al. 2003; Balée 2006; Erickson 2010) and political ecology (PE) (Crifasi 2005; Dull 2008; Sletto 2010). Central questions include the extent that landscapes are 'pristine' or 'domesticated,' and the associated questions of the time-depth and magnitude of human environmental impact (whether 'degrading' or 'enriching') – which, when scaled up, resonate with central questions in the burgeoning field of research surrounding the new concept of the Anthropocene (Ellis et al. 2013; Erlandson 2014). One unresolved debate concerns whether or not anthropogenic dark earths (ADE) - fertile human-made soils best known as a legacy of Native Amazonian settlements of the late pre-Columbian period (Heckenberger and Neves 2009:9) - were made 'intentionally' for the purposes of farming, and which socio-historical patterns shaped their formation (see Woods and McCann 1999; Arroyo-Kalin 2011; Schmidt et al. 2014). This debate speaks to wider questions in HE and PE. The biophysical processes leading to the formation of these soils are largely known. They form through high-intensity depositions of organic and inorganic matter including biomass wastes, manure, bones, ash, charcoal and ceramics (Glaser and Birk 2012). They are enduringly fertile also in part due to their historical enrichment in highly stable black carbon, which has a half-life in the order of 1000 years (Kuzyakov et al. 2009), and they exhibit much higher levels of chemical elements essential for plant growth, such as phosphorous, calcium, magnesium, zinc and manganese, than the weathered and infertile soils in which they were formed. Yet we know little of the social context of ADE formation because this was mostly obliterated by the arrival of Europeans (and their diseases) and the consequent

decimation of Native Amazonian peoples. It is therefore very difficult<sup>1</sup> to find a context in which to examine the social processes behind ADE as a form of landscape domestication or human environmental impact in Amazonia today. However, the recent identification of analogous anthropogenic dark earths in West Africa - that are still forming - (Solomon et al. n.d.) reopens the possibility of exploring the role of intentionality, politics and social institutions in shaping anthropogenic landscape formation, and that is the purpose of this paper. We now briefly outline HE and PE, their similarities, differences, and scope for integration, before moving on to the rather thornier question of intentionality.

The study of Amazonian ADE and other anthropogenic landscape features in the region has been central to the development of HE<sup>2</sup>; the study of human-environmental relations and landscapes from a diachronic perspective amongst archaeologists, anthropologists and geographers (Crumley 1994; Balée 1998). The field of PE has also contributed research useful for the study of these soils. PE focuses on environmental issues as arenas for political struggle - how the agency of individual actors and social relations has shaped environmental practices at local, regional, and global scales (Blaikie and Brookfield 1987; Robbins 2012). The integration of historical and political ecology has often been implicit in works in both paradigms (e.g. Fairhead and Leach 1996; Carney and Rosomoff 2009). The field of environmental history has also long combined historical and political analyses (Grove 1997; Mann 2011; McNeill 2010), while some geographers have explicitly called for a historical-political ecology (Brannstrom 2004; Davis 2008). Historical political ecology has been defined as a “field-informed interpretation of society-nature relations in the

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<sup>1</sup> With the notable and important exception of extant ADE formation in Amazonia amongst the Kuikuru on the Upper Xingu River, Brazil (Schmidt 2013).

<sup>2</sup> Here we refer to the research program of historical ecology among anthropologists, archaeologists and geographers, whose most well known exponents include William Balée, Clark Erickson, Carol Crumley etc. We recognise that there is a separate strand of historical ecology emanating from ecology as a science-based framework for conservation and restoration (e.g. Szabó and Hédi 2011)

past...how and why those relations have changed (or not changed) over time and space.” (Offen 2004:21). These kinds of history often run counter to dominant colonial/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 (Fairhead and Leach 1996; Davis 2008:286).

There are important differences between PE and HE however. PE tends to privilege the preferences, motivations and social relations of people and groups over the historical–geographical contexts that shape these (Agnew 2011:322), and has been criticized for ignoring ecology (Walker 2005). HE, conversely, gives primacy to historical/geographic contexts by way of its central concern with anthropogenic landscapes. Anthropogenic landscapes are seen as complex *palimpsests* that make manifest the ongoing outcomes of long-term ecological interactions between human and non-human agencies - “a vertical or horizontal layering or stratigraphy of [anthropogenic] signatures and patterning etched on the surface of the earth, deep into the soil...or above the surface fixed in the layers of vegetation” (Erickson and Balee 2006:187). HE tends to neglect the effects of politics on the landscape, and typically represents anthropogenic landscapes somewhat teleologically: as the result of the intentional application of practices or technologies (Erickson 2003; Erickson 2008; Oliver 2008) without considering both the contingent effects of struggles between social actors, and the effects of ecosystem engineers such as ants, termites and worms, in shaping ‘anthropogenic’ landscapes (McKey et al. 2010). Combining PE and HE overcomes the weaknesses associated with each (lack of ecology in the former, lack of politics in the latter).

**Exploring intentionality: non-representational theory, phenomenology, and ADE as a sensual object**

A central question in the study of ADE soils in the Amazon concerns whether they were created *intentionally* by pre-Columbian farmers (Erickson 2003; Erickson 2008; Oliver 2008), or exist as a ‘fortuitous consequence’ or simply an ‘artefact’ of settlement patterns (c.f. Schmidt et al. 2014), now being misinterpreted as intentional pre-Columbian Native Amazonian agro-ecological practices. This debate concerning intentionality has been predicated on an epistemological and ontological position which, although important to both PE and HE, has its limitations. How are ADE perceived if they are an inevitable corollary of a particular way of life?

The language of environmental social science has usually been premised on a dichotomous relation between ‘symbolic-like’ culture and a ‘thing-like’ nature (e.g. Moran 2010). A human political/social/cultural (and intentional) world interacts with an extant (unintentional) nature (albeit recursively or dialectically reshaped by and reshaping society) (Biersack 1999:9; see also Ingold 2000). It is Cartesian through and through, and unable to resolve how the inevitable corollaries of our modes of existence are experienced. Non-representational theory and associated theoretical perspectives can help (Thrift 2007). These accept that much of everyday life is experienced as a pre-reflexive, pre-cognitive ‘background’ that lies ‘beneath’ or ‘before’ cognition. Action and meaning come less from willpower, cognitive deliberation and positioning in a structuring symbolic order (as they must do in social constructionism) and more from their enactment in contingent practical contexts, via bodily and environmental affordances, dispositions and habits (Anderson and Harrison 2010:7). Such an approach has a deeper intellectual pedigree in phenomenology, which takes as its starting point the experience of ‘perceiving in all its richness and indeterminacy’ - not just that which is thought or spoken, but rather, *what comes before* (Kullman and Taylor 1958). Ideas such as ‘ourselves’ in relation to ‘nature’ are only a

secondary product of reflexive thinking (Csordas 1990; 1994). Non-representational theory focuses on how practices embedded in the background achieve stability and reproduce themselves over time through the establishment of corporeal routines. This is analogous with Bourdieu's (1990) notion of habitus, which "effectively historicizes and politicizes phenomenological accounts of the 'background'" (Anderson and Harrison 2010:10). But non-representational theory differs from phenomenology in that it displaces the human agent from the centre of analysis in favour of networks (Latour 2005); 'meshworks' (Morton 2010; Ingold 2011); entanglements (Barad 2007); or assemblages (DeLanda 2006) of humans and non-humans: putting all things or objects on an equal ontological footing. A new movement in philosophy called 'speculative realism' has recently pushed this kind of thinking even further. Speculative realism rejects the idea, known as 'correlationism,' that being exists only as a correlate between mind and world (e.g. if things exist, they do so only for us) (Meillassoux 2010). Correlationism is characteristic of the majority of post-Kantian thought, including both social constructionism *and* phenomenology. Speculative realism radicalizes Husserlian phenomenology by rejecting its anthropocentrism, anti-realism and privileging of single human actors (Sparrow 2014). In order to turn this analytical lens on the relationship of people to ADE and the question of intentionality, we draw on speculative philosopher Graham Harman's notion of the quadruple object. He replaces Husserl's correlationist "intentional object" (Husserl 1931), with a multiplicity of possible **sensual objects** constructed of **sensual qualities** (which change through time, or by movement of the perceiver or the object) that we perceive or experience. Behind many possible sensual objects lies, pragmatically, a **real object**. Such 'real objects' exist as physical entities but we can only construct a multitude of 'sensual' versions of them based on what our senses tell us. The real object has **real qualities** but examination of these can only ever be a **speculative** endeavour, as we can't directly access them (Harman 2011).

Our historical-political ecology of ADE is thus grounded in non-representational theory with attention to *i*) the non-discursive background of action, whilst *ii*) displacing the anthropocentric primacy of the mind-world relationship with a phenomenology of the sensual object, and *iii*) using the notion of habitus to scale-up the background of everyday life to longer term historical and political processes.

## **Methodology**

This article focuses on the social and political trajectories that shape anthropogenic landscape features among Gissima-Loma people in southern Lofa county, Liberia (Figure 1). Fraser built on the team's long experience researching the region's societies, histories and ecologies (Leach 1994; Fairhead et al. 2003; Fairhead and Leach 1996; 1998), conducting 9 months of fieldwork in Liberia between August 2010 and July 2011. In our initial survey in Bong, Lofa and Nimba counties in western Liberia we found widespread presence of fertile anthropogenic dark earths on upland areas associated with present or past human settlement, analogous to Amazonian *terra preta* (Glaser and Woods 2004; Lehmann et al. 2003; Woods et al. 2009). Unlike the Amazon, however, these 'African Dark Earths' (AfDE) are still forming today (Frausin et al. forthcoming). This preliminary survey was followed by five months residence in Wenwuta, a town of 250 people, approximately six kilometers southwest of the market town of Zolowo, in Zorzor district, Lofa County (Figure 1). In NW Liberia, "Town" refers not to size or number of inhabitants per se (although towns are generally larger), but rather to the number of social groups or "quarters" (see below). Towns always have more than one quarter, and are normally quite old (>100 years), which contrast with "villages" that are formed from only one social group, are generally newer, and control less farmland.

We recorded oral histories from the majority of resident elders; 37 in total. Whilst we present only four of the most illustrative oral histories, these were triangulated with the full oral history dataset and other qualitative evidence drawn from existing ethnographies, informal interviews and participant observation of daily activities such as rice farming, palm oil production, cooking, and drinking *Raffia vinifera* wine in the evenings. We also draw on data from transect walks and participatory GPS in collaboration with key informants in Wenwuta and other settlements in the region, who mapped the edges of AfDE sites (towns, old town spots, villages and farm camps) by walking round them. We obtained prior permission to conduct the research from all informants interviewed, regional leaders, and officials of the Government of Liberia.

We begin by introducing the significance of AfDE and related vegetation in the regional context of the Upper Guinea forests, and then in Wenwuta and its surrounding landscape. Next we address the political ecology of anthropogenic landscape formation, drawing on case study data from the Wenwuta landscape. Finding that a key driver in the formation of anthropogenic landscapes is population density within circumscribed areas over time, we explore how regionally significant social institutions interact with political processes to shape settlement patterns and cultural resilience. We draw on ethnography, participant observation and the oral accounts of local peoples in Wenwuta and surrounding towns and villages. To understand anthropogenic landscape formation and the question of intentionality we: (a) used open interviews to explore how social, political and historical relations shape the spatial distribution and temporality of the settlement and subsistence practices through which soil enrichment occurs. We then (b) examine the ways in which the Loma actually experience their role in anthropogenic landscape formation through a phenomenology of the everyday – the sensory world of growing and processing crops and their inflection by these structuring processes – the ‘goes without saying’ part of life itself – by way of participant and behavioral

observations, and then; c) discern the habitus that everyday sensory practice forms over time, drawing on oral histories. The final section elaborates key elements of continuity and change in this historical-political ecology during the last 15 – 20 years of the Liberian civil war and its aftermath, and we conclude by drawing out insights for Amazonia and political-historical ecology more generally.

### **Anthropogenic landscapes in the forests of Upper Guinea**

The western part of the Upper Guinea forest region is today settled by a range of speakers of Atlantic and south-west Mande languages (d'Azevedo 1962). Mande language speakers derived from the north (Dwyer 2006), an area today in the south of modern Mali, where local people have shaped a savannah landscape dotted with anthropogenic vegetation patches (Duvall 2011) similar to those of Guinea (Fairhead and Leach 1996), implying that anthropogenic landscapes emerge at different points on the forest-savannah continuum. From the 15<sup>th</sup> Century or before, and perhaps owing to a combination of climatic desiccation, the breakup of the Mali Empire, and European trading and slaving influences on the coast, Mande speakers settled in what is now the tropical forest belt in modern Sierra Leone, Liberia and Guinea (Brooks 1989). These areas were already inhabited by Kwa and Atlantic speaking peoples who either left or were incorporated into Mande groups. Some such as the Kissi and Gola, retained their languages and identities. Overlying a complex and shifting set of ethno-linguistic affiliations, the history of migration, settlement and political turbulence shaped the emergence of social and political institutions and practices that, as d'Azevedo (1962, 1989) has aptly argued, are better understood as regional phenomena than as associated with any particular 'culture' or ethno-linguistic group. These, as well as central dimensions of

subsistence technologies and labor patterns, are broadly shared - albeit with local variations – by other peoples, such as those speaking Kpelle and Mano in Liberia (Bledsoe 1980; Murphy and Bledsoe 1987) Kissi and Toma in Guinea (Fairhead and Leach 1996; Paulme 1954; Hojberg 2007), and Mende and Kono in Sierra Leone (Leach 1994; Ferme 2001; Bledsoe 1980; Bledsoe 1984; Hardin 1993; Richards 1996) whose histories of inhabitation shape similar anthropogenic landscapes (Fairhead and Leach 1996; 1998).

The anthropogenic landscapes in Wenwuta region, as throughout the Loma and adjacent regions, are characterized by central villages or towns surrounded by homegardens and agroforests (common species include plantain and banana - *Musa* spp., taro - *Colocasia esculenta*, manioc *Manihot esculenta* and cacao - *Theobroma cacao*), and anthropogenic forest islands (Common species include korina - *Terminalia superba* and the cotton tree - *Ceiba pentandra*) beyond which lie upland swidden-fallow mosaics of rice fields and fallows. These are bisected by streams and swamps used for rice and adjacent lowlands for cacao cultivation, and paths leading to fields, other villages and towns, and beyond. This landscape is punctuated by farm camps or “kitchens” (which are inhabited for certain parts of the year when farm work is intensive), and “old spots” – the sites of abandoned villages, towns and farm camps.

AfDE in this part of Liberia – in broad commonality with other parts of the region surveyed (Sierra Leone, Guinea and Ghana) - consist of rings of deep (up to 2 meters) black anthrosol replete with charcoal (Figure 2), surrounding currently occupied or abandoned towns (Solomon et al. n.d.). Villages and farm camps are also surrounded with rings of anthrosol, though typically less deep and less dark than larger settlements, the simple outcome of much lower population density and length of inhabitation. Current and abandoned towns and villages - most today with much lower population densities than in the past – are also associated with patches of anthropogenic forest (Fairhead and Leach 1996; Frausin et al.

forthcoming), which form outer rings surrounding inner rings of AfDE and associated homegardens.

AfDE form through additions of three primary forms of charred organic material: *i*) charred wood from fires lit for cooking, palm oil, soap, and potash production and blacksmiths' forges; *ii*) charred palm kernel from oil production, and *iii*) charred organic byproducts from the production of potash (usually from the seed pods of *Pentaclethra macrophylla*, kola, silk cotton trees, and palm fruit heads), together with diverse organic material (e.g. rice straw, old *Raphia* thatch and cooking waste) (Frausin et al. forthcoming). Homegardens are established on these soils by women, and sometimes later converted into agroforests by men. These grade into "islands" of anthropogenic forest which are established around settlements, providing private space for initiation society activities; a windbreak; useful tree species, and historically, defense (Fairhead and Leach 1996). "Old town spots," feature AfDE soils and typically support agroforests: locals have long recognized the suitability of these sites for cacao (*Theobroma cacao*) and kola (*Kola nitida*), combined with diverse tree species, wild and domesticated, forming the upper storey. This has also been noted in the county of Nimba for cacao (Westphal 1987:42), and kola (Ford 1992). They may also be considered as "sacred groves" (Chouin 2009), since their clearance for agriculture is not normally permitted owing to the presence of ancestors' graves and areas for secret society activities, although the cultivation of tree crops may make the phrase "sacred agroforest" more appropriate. The oldest "mature" trees in the landscape are found not in surviving patches of "original" forest, but growing on old town spots and along old roads, where they are protected by cultural laws. AfDE also begin to form around the farm camps where families sometimes spend days or weeks on end, and when enriched with useful trees, these farm kitchen gardens, too, become agroforests. Palm oil production pits are further loci for

AfDE formation as large amounts of charred and organic byproducts from oil production are deposited there.

These anthropogenic landscapes - patches of AfDE and anthropogenic vegetation - are permeated with symbolic significance since they are the ongoing outcome of inhabitation trajectories begun by ancestors, continuing to the present day. They are not simply areas of improved soils and anthropogenic- and agro- forests, but the relics of old towns, villages and kitchens, graveyards and initiation society areas, many of which were inhabited by direct ancestors of current inhabitants. Such ancestry is a critical component of contemporary land-tenure systems. It is through their claims to kinship ties with ancestors that those alive today claim rights. We now turn to the social institutions that underpin anthropogenic landscape formation.

### **A political ecology of Mande anthropogenic landscape formation**

Settlement and domestic and farming patterns are key to the formation of anthropogenic landscapes and these patterns are fundamentally intertwined with social institutions that have enabled continuity and resilience in the habitus of anthropogenic landscape formation. Two aspects of social and political life and institutions in the region are of particular importance in explaining the political history of the distribution of these anthropogenic landscapes: the relationship of kinship/residential groups to one another, especially how they have joined together as enduring towns, and the specific mechanism of their conjoining: the '*KEKE-daabe*' relationship. Loma society is partitioned into 'wife-giving' (*KEKE*) and 'wife-receiving' (*daabe*) groups. Wife-giver and wife-receiver categories also apply to perpetual

relationships between landowners and latecomers, political authorities and ritual specialists, and lineage groups allied through ritual collaboration (Leopold 1991; Hojberg 2007). It is through the *kEke-daabe* institution that immigrants settle and obtain land in new areas, by marrying daughters of existing landowners, and in the process becoming subordinate to them. This can be associated with matrilineal residence, since women stay with their families, although other factors including wealth and lineage status also shape residence. Marriages of men from contextual 'firstcomer' lineages, including chiefly and landowning lineages, are usually associated with virilocal residence, with the husband residing with his natal kin and a wife moving to join him. Polygyny is permitted and men whose families are able to pay the required brideprice may acquire several wives. It is through such marriages that 'latecomers' – immigrant stranger men - settle in their wife's community or locality and gain access to land, which is given to them so they can "make a farm to feed her." The immigrant man and his descendants come to constitute a new sub-lineage which may come to be associated with a new town quarter, or a new village in the locality. The social groups associated by this foundational marriage become structurally linked as maternal uncle (firstcomer/landowner) and nephew (latecomer/settler). The significance of such uncle-nephew kinship/residence ties extends throughout the region (Murphy and Bledsoe 1987). The social groups associated through these uncle-nephew ties are referred to by Loma people as "quarters" in Liberian English. This term does not just connote the residential area of a town associated with a particular group, but the group itself - with common origins, ancestry, kinship and tenurial links with certain areas of the land. Within a town, each quarter has its own chief, food taboo, and role within the town's political structure. The quarter that founded a town is the landowner, while other quarters may traditionally provide individuals for certain political roles, such as town chief, or different initiation society roles. Each quarter of a town normally has one or more old town spots where its ancestors used to reside. Tracing the history of

quarters, as we now go on to do, reveals how towns come together, how old town spots (abandoned towns, villages and farm camps) relate to existing quarters, and how land tenure in the areas surrounding modern towns reflects the historical claims of different quarters for their arrival in and movement through the landscape.

The town of Wenwuta (pop. ca.250) is formed by three quarters, Duala, Zelema and Delema (historically there was a fourth, now defunct quarter called Bekame, and possibly a fifth quarter, comprised of Belle slaves), each occupying a separate area of the town. Oral histories relate that Duala is the quarter that founded the town, and are thus the landholders. Exactly where Duala people moved from is unclear. While some claim that an old town spot close to Wenwuta is Duala's old spot, more claim it is an old spot of Wenwuta itself (Figure 3). In addition, Duala is said to have several old spots a few km south of the village of Beleziau. It is unclear from oral testimonies whether these were occupied before or after Wenwuta was founded, and by all or part of the Duala people. There are also two other old spots close to Wenwuta, each marked by a large cotton tree (one indicated as Duala old spot, the other known as Gbologizzima, Figure 3). According to the oral histories however, these are "hiding places" rather than settlement sites, which seems to be accurate, since these places lack AfDE, which characterizes all sites where settlements once existed. In addition, in the Duala farmland close to Wenwuta (Figure 3), a sacred forest marks the site of a historic "zoo graveyard," "zoo" referring to an important person in an initiation society (Murphy 1980). The Duala farmland itself, while the smallest area relative to that of the other quarters, is the best location for farming owing to its close proximity to Wenwuta, and because it encompasses the largest areas of fertile lowland soil.

Oral histories are suggestive of how the political history of Wenwuta's three quarters, and those of the towns of Tinsue, Fasewalezu and especially Zolowo, have shaped the current distribution of AfDE and current land tenure in the landscape surrounding Wenwuta. The

history of movement and settlement of these different groups created a series of abandoned AfDE sites at old town and village spots, located in areas of farmland associated with each group, dotted with much smaller-sized AfDE at farm camp-kitchen spots (Figure 3). The region had been occupied by other peoples (Barlain-Kpelle and Belle) before the Loma arrived and some accounts suggest that the landholding Duala quarter may have both Barlain-Kpelle and Loma origins. Wenwuta lands used to be inhabited by Barlain-Kpelle speakers, who now reside in territory to the south. Incoming Loma men married Barlain-Kpelle women and thus acquired a claim to land. A large old spot close to Wenwuta (called Famene, meaning “hear-hear” in Kpelle (Memene in Loma) (Figure 3) was also an old Barlain-Kpelle town – named as a place where people met and discussed issues. The fact that Duala have several old spots in ancestral Kpelle territory supports local people’s assertions that *i*) their presence in the region predates the other quarters and *ii*) they were somehow more autochthonous than the other quarters, since their quarter identifies with multiple old town and village spots in the region, whereas the other quarters each supposedly came from a single, identifiable old spot, *iii*) they have ancestry in Loma men and Kpelle women.

Two other quarters, Zelema and Delema, each identifying with a single old spot (Figure 3) joined Duala to form Wenwuta. There is no agreement among Wenwuta people as to whether Zelema or Delema arrived first, but most elders agree that the cause was the “tribal war” an indistinct period in the 18<sup>th</sup> and 19<sup>th</sup> centuries characterized by endemic warfare (see Fairhead et al. 2003). Delema quarter has the biggest old spot that we visited in Liberia, some 5 hectares in size, most of which is covered in AfDE, suggesting that Delema must have been an important town. A higher level chief for the district (known as the General Town Chief) recalled that his ancestors had to speak to Delema chiefs in order to ask permission to settle in the region. According to him, Delema was one of the only towns in the region at that time and some claim that Delema is the rightful landholder for Wenwuta land.

Today Delema controls the “zóo business” [initiation society] in Wenwuta, and the leading zóo traditionally comes from this quarter. Zelema is the third, and largest Wenwuta quarter, whose old spot is located to the east. The town chief of Wenwuta traditionally comes from Zelema. Wenwuta is now surrounded by other Loma villages that all trace their origins to the Fisebu quarter of the market town of Zolowo six kilometres north-east of Wenwuta (Figure 3). Fisebu was a catch-all quarter for strangers arriving at Zolowo who, having problems finding land to farm, married daughters of Wenwuta and gained land there. This was the case for the founder of five villages (Beleziau, Bacurtazi, Gbokolomie, Dadazu, Dapada, Figure 3). Wenwuta chiefs welcomed strangers, attracting men for farming and defense and ensuring their loyalty through marriage and the *kEkE-daabe* relationship. Wenwuta [Duala quarter] remains the symbolic landowner.

Contemporary land tenure at Wenwuta is shaped by the history of each quarter. Today Delema people all farm in the same area of land, and control the old spots located within it (Famene and Bacurtazi) (Figure 3). As one elder stated: “Delema people farm together in that area of land since that is the direction that the town quarter faces. They make farms on Bacurtazi side because they and Bacurtazi were one people.” It is claimed that Bacurtazi was established when a woman from the Delema quarter married a man from Zolowo. Delema people had been farming in the Bacurtazi area before the town was established, and the man from Zolowo decided to found the village in this area. Bacurtazi was abandoned within living memory, and its inhabitants then moved to a new spot nearby which, after being a village for decades, is now reduced to four farm kitchens after being destroyed during the war. The other old spot located beside Bacurtazi, Famene, is a Kpelle old spot, and therefore so ancient as to have been long abandoned even in oral histories. The actual Delema old spot is not located in current Delema quarter farmland but is actually now under the authority of the chief of a nearby village, Karwalawuta (Figure 3) that was founded in 1963. The chief’s father, who

had been living in Monrovia, gained access to the old spot by marrying a woman from Wenwuta, and then sought permission to plant cacao, kola, coffee, banana and orange trees there. Zelema old spot similarly came to be controlled by an outsider who married a woman from Wenwuta, and lies beyond Zelema quarter's current farmland.

While most of the men claimed that the three quarters that make up Wenwuta today came together to defend themselves during the "tribal war," two elder women, independently of one another, claimed that Wenwuta came first, but people abandoned the town to establish the old spots to escape forced labor. Elders recall a period when soldiers with red hats and khaki trousers came and demanded that locals serve as porters for them. These were members of the Liberian Frontier Force that the Americo-Liberian state established to extract hut tax and labor from the Loma, which weighed especially heavily on Wenwuta as it was then on a main path to Monrovia. This exaction was greatly resented and people hid at old spots (or left the area entirely). So if these old spots did indeed predate Wenwuta, they were not totally abandoned even after its establishment, continuing as villages, farm camps, and places of refuge.

Hence, while broader political and economic forces and the conflicts associated with them have shaped and re-shaped the spatiality of anthropogenic landscape formation, the effects are generally configured by (and recalled within) underlying social institutions. The fundamental Loma settlement, domestic and farming patterns that shape anthropogenic landscape formation are thus robust and resilient in the face of change. As we have already seen, these patterns survived the 'tribal wars' of the 18<sup>th</sup>-19<sup>th</sup> centuries and attempts at forced labor by the Liberian state. They have also proved resilient in the face of more recent shifts in trade brought about by the formation of the Liberian state (which shaped politics, competition between settlements etc.) and the arrival of commercial coffee and cocoa farming in the 1940s and 1950s (when people began to use AfDE at old settlement sites for cocoa and coffee

when before they had been reserved for kola, as described below). The pulses of gold and diamond mining, urban development and conflicts between the 70s and today drew some young men away, affecting labor supply for farming. While such political-economic changes do affect social relations, labor availability, land use, and the power relations within and between settlements, their effects on the spatiality of land use have been refracted through the same social institutions and have thus not disrupted the essential habitus of AfDE formation. Historical political-ecology here is configured by social institutions which bind diverse groups of people together as kin and move them to different spots of the land for different amounts of time and at different densities. This determines the intensity and time-depth of anthropogenic landscape formation at different locales. Settlements can, however, also be abandoned for aesthetic and phenomenological reasons, such as when they become too ‘cold’ (e.g. trees get too big) – a process we examine further below. We now turn to examine people’s bodily, sensual and practical experiences of AfDE formation, and the habitus it forms over time.

### **How do people experience anthropogenic landscape formation?**

In this section we summarize experiential dimensions of anthrosol formation and use from participant observation, ethnography and open interviews with people in Wenwuta and surrounding communities – dimensions that are at once social and ecological, sensual and psychological. The Loma term for AfDE is *tulupole* (tulu - dumpsite, pole - soil) and Loma often say that “we woke up [we were born], we saw it” The fact that the Loma call AfDE “dumpsite soil” emphasizes that they associate its formation spatially with sites of food processing activity (towns, farm camps, palm oil pits) that produce significant amounts of

waste material, rather than in say, agricultural fields. Informants recalled seeing parents nurture spontaneous (i.e. not planted) crops in *tulupole* such as *batai* (*Alocasia macrorrhiza* – a kind of taro), which we observed growing in the *tulupole* around most towns and villages in the region. People remember more varieties existing in the past, but nobody recalls it being planted intentionally. Not usually eaten, this crop became very important during the war as all other kinds of food ran out, as did other common volunteer plants in *tulupole* such as *Boerhaavia diffusa* and *Piper umbellatum* whose leaves are eaten in soups. Gayflor Zee Pewee, the old chief at Beleziau, described how *tulupole* soils have a different texture, taste and smell compared to other kinds of soil, because, according to him, of the food that has decomposed there over time. Yassa Reed, of Wenwuta, noted the softness and richness of the soil through the sensation on her hands and hoe when planting taro. Wenwuta people note the vibrancy of the plantain growing in *tulupole*, and how for this reason visitors to the town often carry off plantain seedlings to plant where they live. Each morning we witnessed women's sweeping of the yard - the bending and back-and-forth and taken-for-granted part of daily bodily routines, including gathering children's, sheep's and chicken's feces and throwing them into the kitchen garden, along with ash and charcoal. When processing palm oil or potash, or after cooking in farm huts, we observed people dumping the charred wastes around the site as an extension of the activity itself; a convenient way to get materials out of the working area. In the language of Harman, experiences like these are the *sensual qualities* through which the Loma *sensual object* "tulupole" is created.

Relationships of individual people with specific AfDE sites and trees at them are made manifest in the practice, when a baby is born, of planting kola seeds wrapped with placental cords at a site which is of ancestral significance to them. The tree is then symbolically bound to that person (alive or dead), sharing the same age, and must therefore not be damaged lest the individual is hurt as a consequence. Similarly, mature cotton trees are

said to have been planted long ago to mark graves during the burial of ancestors. We observed how after dumping in one spot for a certain amount of time (>1 year), women burn the pile and spread the ashes and char out for planting. While this *action* is certainly “intentional,” the purpose, according to the women, is for crops to grow well, not to transform the soil per se, although this is a long term outcome that they are certainly aware of. Indeed, different naming and tenuring of land with AfDE, and trees planted with placentas and during burials are all intentional acts related to AfDE, but not directly related to AfDE formation itself. We now consider how these everyday, prereflexive practices over time form a habitus through which recognizable (though contingent and non-teleological) stages of anthropogenic landscape formation can be inferred.

### **Oral histories and the habitus of anthropogenic landscape formation**

Our first account comes from the ‘General Town Chief’ from the town of Fasawalezu and head of a confederation of settlements including Wenwuta. Now 74 years old, he is among the most important and respected elders in the region. When young, he recalls, towns and villages had black soils around them owing to the ‘dirt’ (e.g. fresh/burnt organic waste) people used to throw. They planted kola, orange and banana trees in these soils. Kola used to be the most important cash crop and Mandingo traders used to come to buy it. Plantain was not planted as much as it is today, since people never used to sell it, but now it is commercialized its production in AfDE has increased. Plantain, like bush yam, had been a hunger food when rice was short before the rice harvest. The chief described how he also grew more tobacco (*Nicotiana tabacum*) and cotton (*Gossypium hirsutum*) in AfDE in the past than today, before industrial cigarettes and clothes arrived. The cultivation of coffee became popular in 1950; then people started to plant cacao on the old spots in about 1955 because they found it grew well there. According to him, Fassewalezu was founded in the

eighteenth century, when people from seven old spots united, and this is why the soil around the current town is so rich, as people have lived there for hundreds of years.

Other narratives offer perspectives that complement this chief's account. For instance the oldest man in Wenwuta, Yarkpazu, is about 90 and was town chief of Wenwuta during the Tubman era (1944-1971). He described how the town has become small. Previously the whole town was walled and packed with houses and people. The wider landscape around the town was more populous. Yarkpazu claims that "god" made the *tulupole* around the town, but the people made it fertile by dumping there; a perspective held by most of the town's women too (Frausin et al. forthcoming). People used to dump trash outside the walls and established gardens there. When he was young, banana and plantain were grown in this AfDE surrounding the town, but when he was older, cacao and coffee became important. The plantain and banana provided a buffer in times of rice scarcity. Yarkpazu recalls how they planted cotton trees when people were buried. These trees have a long life span and people can thus identify old town spots from big old cotton trees growing on them. On Wenwuta old spot (Figure 3), he recalls, they planted cotton trees, cacao and kola - it is forbidden to burn these places today because kola and cotton trees are connected to the living and the dead, respectively, as noted above.

A third informant, born about 1930, is the elder chief Gayflor Zee Pewee of Beleziau (Figure 3), a village formed by people from the Fisebu quarter of Zolowo 'before Liberian independence' (e.g. pre-1847). He was born in Zolowo, and his father brought him to Beleziau in 1950. When people arrived to settle there was no black soil but when the town was established it began to form from the 'dirt' that people threw:

"This village has a large amount of black soil because it is very old. If you look at the black soil around a town, you can tell how old it is. If you dig a hole you can see how

far down the black soil goes, and this shows how old the town is. When we make a farm, black soil is on the surface, not underneath. The black soil in the old spot continues to form, leaves of trees fall and fertilize it.”

Cacao, kola, oranges, plantain and breadfruit used to be planted on AfDE.

“I brought cacao here in 1964... when we arrived we tried planting cacao everywhere but it did not grow. I planted cacao in the red soil, after 20 years it did not bear fruit. It only grows in the lowland, on old town spots, and around the town. These soils are fertile because of the dirt we throw, and the swamp is fertile because rain carries dirt there...Kola also needs good soils to produce well, so it is good to plant it in the old spot.”

A fourth elder is Yarkparwolu, the chief of New Gbokolomie village (Figure 3). He recalls when he was very young they decided to move to the current location as the old village had become ‘very cold’ with too many trees around it such as *Terminalia superba* that had once been planted as fences for goats. A ‘stranger’ had made a farm where the community is now located, and eventually they all ended up moving there. New villages often form as people move to spots where they have farms, and the village often takes the name of the founding man. The old spot called Gbokolomie split into three new villages (Yakata, Wozita and New Gbokolomie, see Figure 3). That New Gbokolomie was founded within living memory provides those who were among its founders with unique insight into AfDE formation: a soil pit dug there revealed AfDE to a depth of 80cm, suggesting its formation at 1cm a year, assuming elders being 80 years old. When he settled New Gbokolomie, he explained, the soil was not black like it is now. It became black from the thatch, sweeping, straw, and other things people threw away. The chief’s father told him that “when you plant banana you

should throw things under it.” According to him charcoal and ash by-products from potash<sup>3</sup> production are fertilizers. His father used to tell him that when they were re-thatching houses, he should throw all the old thatch over there because “it will rot and turn the soil black.” According to Yarkparwolu “we are the ones that are making the soil around the town black with all the things we are throwing ...[we’ve been] been dumping dirt, then it rots and becomes soil and becomes rich.”

Elders at four different settlements in the Wenwuta landscape thus all see AfDE formation as an inevitable consequence of settled life. This perception was also present in our full oral history dataset and was also expressed by informants during participant observation. Through their and other elders’ oral histories it is possible to read a habitus of anthropogenic landscape formation which begins with (1) the farm camp, which may remain just that, a seasonal encampment with almost continuous domestic activity for parts of the year where incipient AfDE form. Farm camps may continue to be just farm camps for decades, and even be abandoned for decades, before being cleared and occupied again. Farm camps may be permanently abandoned, though they may be planted with fruit and kola trees and become agroforests. But farm camps may eventually become permanent settlements; hamlets, and then villages. A hamlet /village (stage 2) may continue as such, be abandoned, or become a town. A town (stage 3) normally involves the incorporation of two or more “quarters” (social groups with distinct origins) linked through the *kEkE-daabe* relationship. A critical difference between town and village, at least in the past, is that towns command tenure over the surrounding area, and newcomers wanting to settle must either submit to the *kEkE-daabe* relationship, or take the area through warfare. Like villages, towns may persist thorough time,

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<sup>3</sup> “Potash” (potassium carbonate) production from drying and then burning tree and plant remains has ancient origins in the region, and prior to industrial salt production it was produced and traded in large quantities. Even though industrial salt and sodium bicarbonate are now widely available, potash production continues; people often lack the money to purchase salt and soda, and use potash to make soap; add to sauces that are consumed with every meal; to soften leaves; and to improve digestion. The most common materials used to make potash are the seed pods from *Pentaclethra macrophylla*, *Kola nitida*, *Ceiba Pentandra*, and *Elaeis guineensis* palm fruit heads after the fruits have been removed.

growing or shrinking, and in the end may be abandoned (stage 4). Stage 4, old town spots, can be conceived of as “sacred agroforests” (pre-1950s especially for kola, and since then for cocoa and sometimes coffee), as farmers produce domesticated tree crops and conserve wild tropical forest tree species in what become sacred groves where forest clearance and burning are forbidden. Tenure is normally held by one man through patrilineage, in contrast to that of homegardens on extant ADE which are controlled by women and children. After abandonment, the old town spot may combine stage four and stage one, as a farm camp is maintained at the site of the old town. While individual cases may deviate from this, most settlements develop along this four step evolution.

### **Recent transformations in anthropogenic landscape formation**

Liberia’s devastating war (1990-2003) led to profound social and political transformations. In rural areas like Wenwuta, the domestic, settlement and farming patterns changed, and so also the spatialities of AfDE formation but *not* its basic habitus. Despite all the disruption, the *kEke-daabe* and associated cultural institutions continue to operate in practice and as an explanatory framing. Oral histories indicate that until the latter part of the twentieth century most people lived and farmed in large extended family units. Parents and grandparents controlled young men’s labor and chose who they were to marry and when, with tough sanctions for disobedience. Each town quarter had one headman (*totuo*), each with many wives and children. Below him there were six or seven “sub” chiefs, with three wives each. Only the chiefs and their subs could make a farm or have wives. Therefore each town would have maximum of 10-15 farms, reflecting the 10-15 men who had productive household units. The town chief would make a huge farm with up to 100 men working for him. The

recent wars undermined such social norms, accelerating existing trends towards smaller residential and farm households centered on a more ‘nuclear’ family associated with new labor and income-earning opportunities for once-dependent women and youth. In some cases, smaller households centered on marriages that followed established kinship and socio-political relations, becoming a new lowest level in nested *kEkE-daabe* socio-political structures. In other instances, young people married outside such expectations (see Leach 1994; Bledsoe 1980, for discussions in neighboring Mende and Kpelle areas).

In Wenwuta, people describe the war as significant to these trends in several particular ways. First, people “scattered”, fleeing to Guinea, to the Belle forest to the west, to camps in Totota town in Bong County, or to Monrovia. Many young men joined factions in the war – and many elders, especially men, were intentionally targeted and killed. In combination, the decimation of elders and the independence of youth meant that on their return to Wenwuta and other towns, young men lived and farmed independently of those to whom they would once have been subject. Second, as food in refugee camps was allocated per family, people used to form smaller groups to get more food, helping to create nuclear families. A net effect was to create an emboldened youth who “have less respect for the chiefs or elders.” This in turn had an effect on AfDE production, as several elders noted and explained. With more productive units, so there are more sites of production: more gardens are made, more farms are cleared, and there are more sites at which palm oil is produced. This reflects the new reality that each family unit is free to make its own garden, farm and oil, to meet its market and subsistence needs, whereas before each settlement only had a few productive units. This multiplied the number of places in the landscape at which charred and organic materials are dumped, and hence AfDE is now produced at many smaller sites, rather than a few larger ones. There may also be greater AfDE production overall now, both through greater productive activity relative to overall population size (elders emphasize that the old,

large farms rarely produced enough to feed their labor force), and through an increase in the sheer number of cooking and oil production fires.

Thirdly, the war contributed to the shifting of kitchens out of the town into the bush, and hence a spatial change in the production of AfDE. As one Wenwuta elder, Garmazumo explains:

“We put the kitchens out of the town after the war [began] because in the war soldiers came and forced people to beat rice, or burned it. Before the war all kitchens were in town, only those people who worked far away had kitchens there. Before the war most people used to cook in the town. Now it is more common for people to cook on the farm some days of the week. Some families never cook in town.”

Locating kitchens and rice stores out of town also makes sense for smaller households with less labor availability per farm to haul rice into town. The shift of kitchens, AfDE production, and homegardens into the bush is helpful since homegarden space in the town is increasingly circumscribed, by the expanding town on one hand, and the forest island around the town on the other, which contains sacred areas that cannot be felled. In the bush, families have more space for homegardens, and there are no goats and sheep, which nowadays makes the cultivation of vegetables in town difficult. In the modern period, families still access land through claims based on past land use by ancestors.

The recent war has thus affected AfDE formation, contributing to the reduction in size and therefore multiplication of farm-household units, and shifts in a significant proportion of the activities through which AfDE are produced out from the town into the bush. This implies that current and near-future trajectories of anthropogenic landscape formation will involve a decrease in AfDE formation around towns while AfDE formation in the bush is likely to increase. However, we saw no evidence that the war disrupted or dissolved the *kEke-daabe*

relationship; its practices seemed to be alive and well in Wenwuta, despite changes in household size, age and power.

## Discussion and Conclusions

We have shown that persistence and change in AfDE and anthropogenic landscape formation are experienced and explained by the Loma as the inevitable outcome of everyday life and political and social factors, rather than as intentional processes of soil enrichment. The patterning of AfDE and anthropogenic landscape formation is driven by political-economic factors mediated by social institutions of firstcomer-latecomer and *kEkE-daabe* which bind diverse groups of people together as kin, make them culturally resilient and move them to different spots of the land for different amounts of time and at different densities. We showed this by combining a HE account of the continuities and changes in anthropogenic landscape formation with a PE understanding of the institutions, social relations and politics shaping that history. We have used this to reveal the pre-reflexive background to the practices leading to anthropogenic landscape formation and have explored how people experience them, drawing on non-representational theory. We found that the distribution of anthropogenically-enriched soils and vegetation is less the summation of ‘past intentional investments’ than an inheritance; an outcome of the way ancestors lived (and their habitus), and reciprocally (dialectically) of the way their living shaped environmental affordances and economic opportunities (e.g. making infertile land suitable for homegardens and tree cropping). Drawing on Harman’s work we conceptualize AfDE as a Loma sensual object *tulupole* made up of the shifting sensual qualities that people experience vis-à-vis *dump-site-soil* from when they “wake up” (are born), and engage with it through daily activities

throughout their lives. The intensive deposition of waste material happens in places where waste is produced (e.g. in the town, at palm oil pits, and at farm kitchens) as an extension of activities or, over time, habitus, that produce waste (cooking, processing palm, etc.). *Tulupole* is located at current or abandoned dumpsites around domestic areas of settlements and farm camps but is *not* a practice the Loma intentionally go and perform in areas that they perceive to be lacking in fertility. While there may be individual choice and intent, and whilst there is certainly reflective knowledge about the processes, these are perceived within a wider set of social and cultural practices and institutions that shape the process. Given the temporal continuity in subsistence technologies that produce AfDE amongst Loma (Frausin et al. forthcoming), we can conclude that the spatial distribution and intensity of AfDE production at the landscape level are shaped by changes in political-economy which affect the size, duration and location of the domestic units that produce AfDE, rather than changes in technology and habitus *per se*.

The cumulative outcome of these settlement trajectories, which inevitably produce AfDE and suites of anthropogenic vegetation at loci of inhabitation, is a palimpsest landscape reflecting changes in inhabitation shaped by social and political processes. The importance of the *kEke-daabe* relationship to social organization in the region shows how a politics of kinship has shaped historical ecologies, i.e. dynamics of settlement processes have created AfDE and associated suites of vegetation, which encipher social relations in that they embody wife giver-receiver relationships that allowed strangers to settle land through creating kinship with those already there. These relationships mediate land tenure through time, and access to anthropogenic landscapes which contain assets that represent both symbolic (ancestors' personhood in graves, sacred spaces and trees) and economic (fertile soils, tree crops) capital. While political-ecological changes re-shape the spatialities of anthropogenic landscape formation and the specific power relations amongst people and groups the basic

characteristics of AfDE and anthropogenic forest formation itself have persisted, owing to the resilience of subsistence habitus and cultural institutions.

While the formation of anthropogenic landscapes involves both purposeful and unintentional human action, its distribution, intensity and duration are shaped by the effects of politics, warfare, and social transformation on population density and household units within the landscape. We conclude therefore that the formation of anthropogenic soils and vegetation in both West Africa and Amazonia, today and in the past, are not determined primarily by “intentional technologies” as some historical ecologists hold, but nor is it entirely ‘unintentional’. Rather it is shaped by settlement and mobility patterns that are driven by socio-cultural, political and historical processes. People experience AfDE not as the outcome of their intentions but rather as the sensual object *tulupole* which is the summation of sensual qualities they experienced through their interactions with these soils (and the activities that make them) throughout their lives. AfDE forms through practices that are therefore better thought of as a *pre-reflexive background* in terms of immediate experience and a *habitus* in terms of this experience over time. This article exemplifies the merit of a political-historical ecology combined with insights from elements of non-representational theory in revealing the factors which perpetuate anthropogenic landscape formation through time and space, contextualizing how the Loma experience this process and the habitus that emerges from it, and in questioning the extent of ‘intentionality’ in natural resource management.

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## References Cited

- Agnew, J. A. 2011. Space and Place. In *The SAGE Handbook of Geographical Knowledge*, eds. J. A. Agnew and D. N. Livingstone, 316-330. London: Sage Publications.
- Anderson, B., and P. Harrison. 2010. The Promise of Non-Representational Theories. In *Taking-Place. Non Representational Theories and Geography*, eds. B. Anderson and P. Harrison, 1-34. London: Ashgate.
- Arroyo-Kalin, M. 2011. Slash-burn-and-churn: Landscape history and crop cultivation in pre-Columbian Amazonia. *Quaternary International* 249:4-18.
- Balée, W. 2006. The Research Program of Historical Ecology. *Annual Review of Anthropology* 35:75-98.
- Balée, W. ed. 1998. *Advances in Historical Ecology*. New York: Columbia University Press.
- Barad, K. 2007. *Meeting the Universe Halfway: Quantum Physics and the Entanglement of Matter and Meaning*. Durham, NC: Duke University Press.
- Biersack, A. 1999. Introduction: From the "New Ecology" to the New Ecologies. *American Anthropologist* 101 (1):5-18.
- Blaikie, P., and H. Brookfield. 1987. *Land Degradation and Society*. London: Methuen.
- Bledsoe, C. 1984. The political use of Sande ideology and symbolism. *American Ethnologist* 11 (3):455-472.
- Bledsoe, C. H. 1980. *Women and Marriage in Kpelle Society*. Stanford, CA: Stanford University Press.
- Bourdieu, P. 1990. *The Logic of Practice*. Stanford, CA: Standford University Press.
- Brannstrom, C. 2004. What kind of history for what kind of political ecology? *Historical Geography* 32:71-87.
- Brooks, G. E. J. 1989. Ecological perspectives on Mande population movements, commercial networks, and settlement patterns from the Atlantic Wet Phase (ca. 5500-2500 B.C.) to the present. *History in Africa* 16:23-40.
- Carney, J. A., and R. N. Rosomoff. 2009. *In the Shadow of Slavery: Africa's Botanical Legacy in the Atlantic World*. Berkeley, California: University of California Press.
- Chouin, G. 2009. *Forests of Power and Memory: An Archaeology of Sacred groves in the Eguafu Polity, Southern Ghana (c. 500-1900 A.D.)*. PhD Dissertation, Anthropology, Syracuse University.

- Crifasi, R. 2005. Reflections in a Stock Pond: Are Anthropogenically Derived Freshwater Ecosystems Natural, Artificial, or Something Else? *Environmental Management* 36 (5):625-639.
- Crumley, C. L. ed. 1994. *Historical Ecology. Cultural knowledge and changing landscapes*. Santa Fe, NM: School of American Research Press.
- Csordas, T. 1994. The Body as Representation and Being-in-the-World. In *Embodiment and Experience: The Existential Ground of Culture and Self*, ed. T. Csordas, 1-23. Cambridge: Cambridge University Press.
- Csordas, T. J. 1990. Embodiment as a Paradigm for Anthropology. *Ethos* 18 (1):5-47.
- d'Azevedo, W. L. 1962. Some Historical Problems in the Delineation of a Central West Atlantic Region. *Annals of the New York Academy of Sciences* 96 (2):512-538 + Discussion 574-80.
- . 1989. Tribe and Chiefdom on the Windward Coast. *Liberian Studies Journal* 14 (2):90-116.
- Davis, D. K. 2008. Historical political ecology: On the importance of looking back to move forward. *Geoforum* 40 (3):285-286.
- DeLanda, M. 2006. *A New Philosophy of Society: Assemblage Theory and Social Complexity*. London: Continuum.
- Dull, R. A. 2008. Unpacking El Salvador's ecological predicament: Theoretical templates and "long-view" ecologies. *Global Environmental Change* 18 (2):319-329.
- Duvall, C. S. 2011. Biocomplexity from the ground up: Vegetation patterns in a West African savanna landscape. *Annals of the Association of American Geographers* 101 (3):497-522.
- Dwyer, D. 2006. Mande Languages. In *Encyclopedia of Language & Linguistics (Second Edition)* ed. K. Brown, 477-482: Elsevier Science.
- Ellis, E. C., J. O. Kaplan, D. Q. Fuller, S. Vavrus, K. Klein Goldewijk, and P. H. Verburg. 2013. Used planet: A global history. *Proceedings of the National Academy of Sciences* 10.1073/pnas.1217241110.
- Erickson, C. 2003. Historical Ecology and Future Explorations. In *Amazonian Dark Earths. Origins, Properties and Management*, eds. J. Lehmann, D. Kern, B. Glaser and W. Woods, 455-500. Dordrecht: Kluwer Press.
- Erickson, C. L. 2008. Amazonia: The Historical Ecology of a Domesticated Landscape. In *The Handbook of South American Archaeology*, eds. H. Silverman and W. H. Isbell, 157-183. New York: Springer.
- Erickson, C. L. 2010. The Transformation of Environment into Landscape: The Historical Ecology of Monumental Earthwork Construction in the Bolivian Amazon. *Diversity* 2 (4):618-652.
- Erickson, C. L., and W. Balee. 2006. The Historical Ecology of a Complex Landscape in Bolivia. In *Time and Complexity in Historical Ecology*, eds. W. Balee and C. L. Erickson, 187-233.
- Erlandson, J. M. 2014. Shell middens and other anthropogenic soils as global stratigraphic signatures of the Anthropocene. *Anthropocene* 10.1016/j.ancene.2013.12.001.
- Fairhead, J., T. Geysbeek, S. E. Holsoe, and M. Leach. 2003. *African-American Exploration in West Africa: Four Nineteenth-Century Diaries*. Bloomington, IN: Indiana University Press.
- Fairhead, J., and M. Leach. 1996. *Misreading the African Landscape: Society and Ecology in a Forest-Savanna Mosaic*. Cambridge: Cambridge University Press.
- Fairhead, J., and M. Leach. 1998. *Reframing Deforestation: Global analyses and local realities: Studies in West Africa*. London: Routledge.
- Ferme, M. 2001. *The Underneath of Things: Violence, history and the everyday in Sierra Leone*. Berkeley: University of California Press.
- Ford, M. 1992. Kola Production and Settlement Mobility among the Dan of Nimba, Liberia. *African Economic History* 20:51-63.
- Frausin, V., J. Fraser, W. Narmah, M. Lahai, T. Winnebah, J. Fairhead, and M. Leach. forthcoming. "God made the soil, but we made it fertile": Gender and knowledge, production and use of Anthropogenic Dark Earths in West Africa. *Human Ecology*.

- Glaser, B., and J. J. Birk. 2012. State of the scientific knowledge on properties and genesis of Anthropogenic Dark Earths in Central Amazonia (terra preta de Indio). *Geochimica Et Cosmochimica Acta* 82:39-51.
- Glaser, B., and W. I. Woods eds. 2004. *Amazonian Dark Earths: Explorations in Space and Time*. Berlin: Springer.
- Grove, R. H. 1997. *Ecology, climate and empire: colonialism and global environmental history, 1400-1940*. Cambridge: White Horse Press.
- Hardin, K. L. 1993. *The Aesthetics of Action: Continuity and Change in a West African Town*. Washington, DC: Smithsonian Institution Press.
- Harman, G. 2011. *The Quadruple Object*. London: Zero Books.
- Heckenberger, M., and E. G. Neves. 2009. Amazonian archaeology. *Annual Review of Anthropology* 38:251-266.
- Heckenberger, M. J., A. Kuikuro, U. T. Kuikuro, J. C. Russell, M. Schmidt, C. Fausto, and B. Franchetto. 2003. Amazonia 1492: Pristine forest or cultural parkland? *Science* 301 (5640):1710-1714.
- Hojberg, C. 2007. *Resisting State Iconoclasm Among the Loma of Guinea*. Durham, NC: Carolina Academic Press.
- Husserl, E. 1931. *Ideas: General Introduction to Pure Phenomenology*. Translated by W. R. Boyce Gibson. London: George Allen & Unwin Ltd.
- Ingold, T. 2000. *The Perception of the Environment: essays on livelihood, dwelling and skill*. London & New York: Routledge.
- . 2011. *Being Alive: Essays on Movement, Knowledge and Description*. Abingdon and New York: Routledge.
- Kullman, M., and C. Taylor. 1958. The Pre-Objective World. *The Review of Metaphysics* 12 (1):108-132.
- Kuzyakov, Y., I. Subbotina, I. Bogomolova, and X. L. Xu. 2009. Black carbon decomposition and incorporation into soil microbial biomass estimated by <sup>14</sup>C labeling. *Soil Biology & Biochemistry* 41:210-219.
- Latour, B. 2005. *Reassembling the social: an introduction to actor-network-theory*. Oxford: Oxford University Press.
- Leach, M. 1994. *Rainforest Relations: Gender and Resource use among the Mende of Gola, Sierra Leone*. Edinburgh: Edinburgh University Press.
- Lehmann, J., D. C. Kern, B. Glaser, and W. I. Woods eds. 2003. *Amazonian Dark Earths. Origins, Properties and Management*. Dordrecht: Kluwer Press.
- Leopold, R. S. 1991. Prescriptive Alliance and Ritual Collaboration in Loma Society. Unpublished PhD Dissertation, Indiana University, Bloomington.
- Mann, C. 2011. *1493: Uncovering the New World Columbus Created*. New York: Alfred A. Knopf.
- McKey, D., S. Rostain, J. Iriarte, B. Glaser, J. J. Birk, I. Holst, and D. Renard. 2010. Pre-Columbian agricultural landscapes, ecosystem engineers, and self-organized patchiness in Amazonia. *PNAS* 107 (17):7823-2828.
- McNeill, J. R. 2010. *Mosquito Empires: Ecology and War in the Greater Caribbean, 1620-1914*. Cambridge: Cambridge University Press.
- Meillassoux, Q. 2010. *After Finitude: An Essay on the Necessity of Contingency*: Continuum.
- Moran, E. 2010. *Environmental Social Science: Human - Environment interactions and Sustainability*. Hoboken, NJ: Wiley-Blackwell.
- Morton, T. 2010. *The Ecological Thought*. Cambridge, MA: Harvard University Press.
- Murphy, W. P. 1980. Secret Knowledge as Property and power in Kpelle society: Elders versus youth. *Africa* 50 (2):193-207.
- Murphy, W. P., and C. H. Bledsoe. 1987. Kinship and Territory in the History of a Kpelle Chiefdom (Liberia). In *The African Frontier: The Reproduction of Traditional African Societies.*, ed. I. Kopytoff Bloomington: Indiana Bloomington University Press.
- Offen, K. H. 2004. Historical Political Ecology: An Introduction. *Historical Geography* 32:19-42.

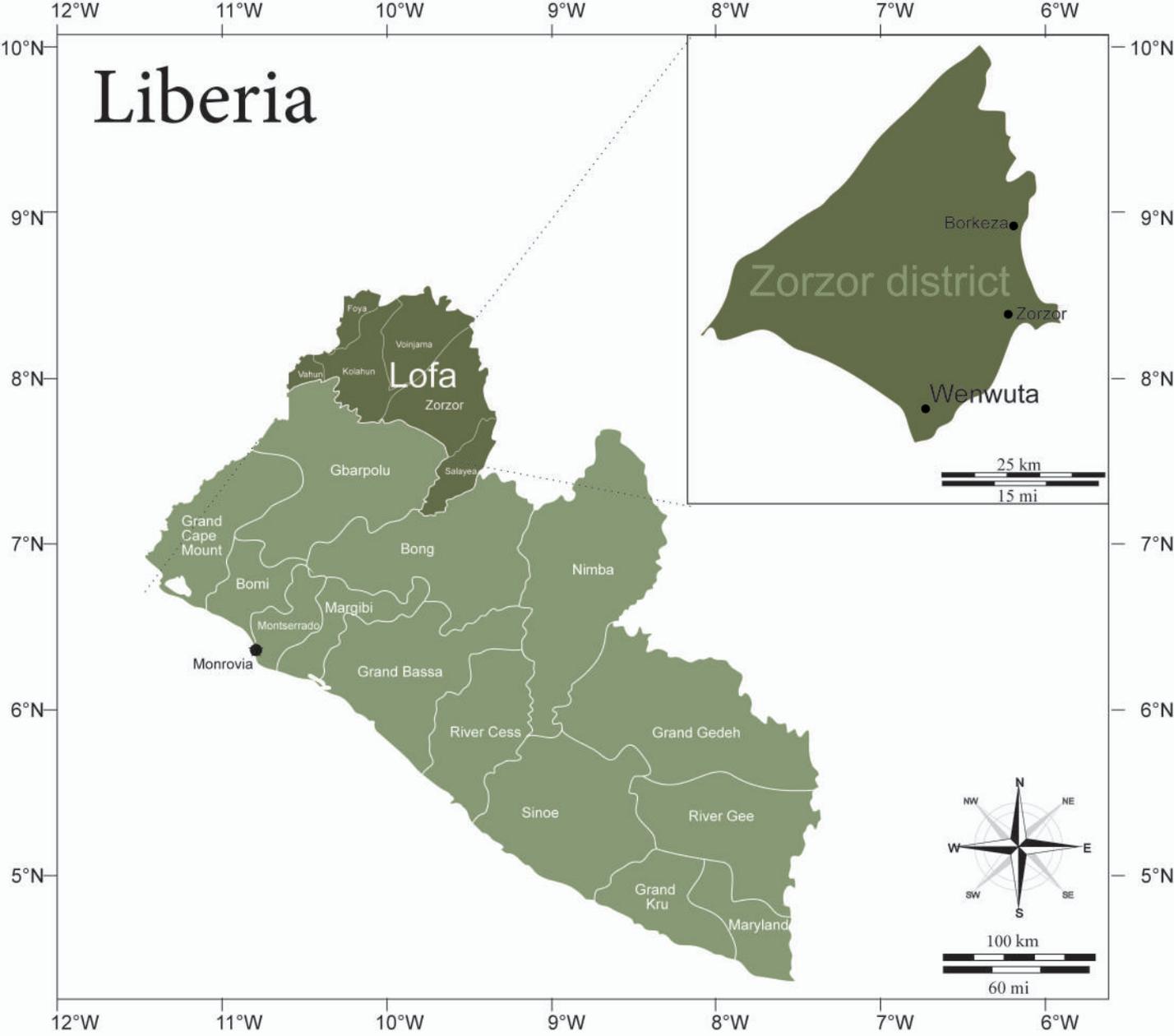
- Oliver, J. R. 2008. The Archaeology of Agriculture in Ancient Amazonia. In *Handbook of South American Archaeology*, eds. H. Silverman and W. H. Isbell, 185-216. New York: Springer.
- Paulme, D. 1954. *Les Gens du Riz*. Paris: Librairie Plon.
- Richards, P. 1996. *Fighting for the Rainforest: War, Youth & Resources in Sierra Leone*. Oxford: James Currey.
- Robbins, P. 2012. *Political Ecology: A Critical Introduction*. Oxford & Malden: Wiley.
- Schmidt, M. 2013. Amazonian Dark Earths: pathways to sustainable development in tropical rainforests? *Boletim do Museu Paraense Emílio Goeldi. Ciências Humanas* 8:11-38.
- Schmidt, M. J., A. Rapp Py-Daniel, C. de Paula Moraes, R. B. M. Valle, C. F. Caromano, W. G. Teixeira, C. A. Barbosa, J. A. Fonseca, M. P. Magalhães, D. Silva do Carmo Santos, R. da Silva e Silva, V. L. Guapindaia, B. Moraes, H. P. Lima, E. G. Neves, and M. J. Heckenberger. 2014. Dark earths and the human built landscape in Amazonia: a widespread pattern of anthrosol formation. *Journal of Archaeological Science* 42 (0):152-165.
- Sletto, B. 2010. The mythical forest, the becoming-desert: environmental knowledge production and the iconography of destruction in the Gran Sabana, Venezuela. *Environment and Planning D: Society and Space* 28 (4):672-690.
- Solomon, D., J. Lehmann, J. A. Fraser, M. Leach, K. Amanor, V. Frausin, S. Kristiansen, D. Millimouno, and J. Fairhead. n.d. Ancient climate-smart soil management discovered in contemporary indigenous agriculture in Africa. *Manuscript*.
- Sparrow, T. 2014. *The End of Phenomenology: Metaphysics and the New Realism*. Edinburgh: Edinburgh University Press.
- Szabó, P., and R. Hédi. 2011. Advancing the Integration of History and Ecology for Conservation. *Conservation Biology* 25 (4):680-687.
- Thrift, N. 2007. *Non-Representational Theory: Space, Politics, Affect*. London: Routledge.
- Walker, P. 2005. Political ecology: where is the ecology? *Progress in Human Geography* 29 (1):73-82.
- Westphal, U., Clemens, M., Gaesing, K., Grossmann, U., Kunze, D. & Weiskopf, D. ed. 1987. *Baseline survey on smallholders in Nimba County: to facilitate decision taking in project planning*. Seminar für Landwirtschaftliche Entwicklung (SLE) Publication No. 109. ed. Berlin: Fachbereich Internationale Agrarentwicklung, Technische Universität Berlin.
- Woods, W. I., and J. M. McCann. 1999. The anthropogenic origin and persistence of Amazonian dark earths. *Yearbook, Conference of Latin Americanist Geographers* 25:7-14.
- Woods, W. I., W. G. Teixeira, J. Lehmann, C. Steiner, A. M. G. A. WinklerPrins, and L. Rebellato eds. 2009. *Amazonian Dark Earths: Wim Sombroek's Vision*. Berlin: Springer.

**Figure Captions:**

**Figure 1 Map of Liberia.** Showing the position of Lofa county, its districts, and location of Wenwuta. Map by Victoria Frausin

**Figure 2: Wenwuta Soil Profile Pits. 2A Oxisol:** Typical of the uplands of this region and the tropics in general, Oxisols are highly weathered and very infertile soils. **2B Anthrosol:** Apart from the lack of ceramics, the profile (1m80cm deep) is analogous to Amazonian *terra preta*.

**Figure 3. The Wenwuta Landscape.** This figure was generated from GPS data from participatory mapping, field observations and oral histories. Colored sites with black outlines represent current towns or old town spots (indicated with labels), while smaller colored dots without outlines are kitchen sites. The shapes were generated from GPS tracks made by locals walking around the edges of the AfDE at each site. Different colors show the sites associated with different towns or town quarters. Colored backgrounds are the estimated extent of town or town quarter farmland, extrapolated from mapping of kitchen sites and boundary waypoints.

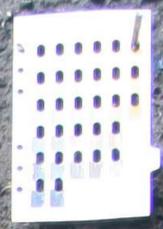






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Tinsue



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