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Materializing the Past among the Lokono (Arawak) of the Berbice River, Guyana

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Resumen: Este artículo presenta conclusiones preliminares de un estudio piloto realizado en el año 2009 acerca de los llamados suelos de Tierra Negra Amazónica (ADE, en portugués brasileño *terra preta*) y sitios en el Río Berbice, Guyana. La cerámica y los materiales orgánicos fueron recuperados y datados a través de radiocarbono en fechas de ca. 5,000 BP (3,000 BCE). El significado de estas fechas, entre las más antiguas en toda la región gran Amazónica para un contexto agrícola poblado, así como la gran escala del sitio de establecimiento, hasta 15ha, constituyen entonces el contexto para futuras discusiones en arqueología, historia y etnografía con referencia particular a los pueblos Arawak y a los procesos de la sinergia humana ambiental a largo plazo en el oriente de Sudamérica.

Palabras clave: Aruacas, Guyana, agricultura, arqueología, etnografía, historia, paisaje, ADE suelos.

Abstract: This article presents preliminary findings from a 2009 pilot study of Amazonian Dark Earth (ADE, in Brazilian portuguese *terra preta*) sites and agricultural earthworks in the Berbice River, Guyana. Ceramics and organic materials were recovered and the latter yielded two radiocarbon dates of ca. 5,000 BP (3,000 BCE). The significance of these dates, among the oldest in all of the greater Amazonian region from a settled agricultural context, and the large scale of the settlement site, up to 15ha, are then the context for future discussions of archaeology, history and ethnography with particular reference to Arawakan peoples and processes of long term human-environmental synergy in eastern South America.

Key words: Arawak, Guyana, agriculture, archaeology, ethnography, history, landscape, ADE soils.

Materializar el pasado entre los Lokono (arawak) del río Berbice, Guyana

Introduction

In contrast to earlier models and methods of Amazonian archaeology which emphasized such issues as the agricultural origins of plants, or the analyses of ceramic series as ciphers for population dispersion, more recent research has begun to attend to historical and ethnographic populations, the spatial patterning of settlements and landscapes, and

the process of cultural diaspora, long-distance trade and forms of agricultural intensification. In particular work over the last decade has focused on the Arawakan linguistic and cultural family and the cause and consequences of its dispersion over lowland South America in the last millennium (Hill and Santos-Granero 2002). Some of this research has already produced quite stunning results (see Erickson, Heckenberger discussed below) The current project in Guyana, along the Berbice River, shares both personnel and intellectual frameworks with earlier work by both the authors and others in Guyana, Brazil and Bolivia. The purpose of this article is to outline this archaeological and ethnographic research and to explain the context for current research in the Berbice River.

Figure 1
Guyana Study Area.

The Berbice River project was initiated only in 2009, although its origins stretch back to work by George Simon and Neil Whitehead first done seventeen years ago. So the "discovery" of vast networks of cultural remains along the Berbice River was not unexpected or fortuitous, rather it has been a question of collecting relevant evidence and, more

importantly, being able to establish relevant archeometric measures – as a result of which new theoretical issues and possibilities arise. For this reason the older paradigms of archaeology would never have been able to identify what is now becoming apparent, that complex dense populations, subsisting on the basis of intensified agricultural systems were present along the Berbice River for at least several millennia. One of the key advances has been a better appreciation of the connection between Arawakan language groups and particular archaeological site features which, in both contemporary and past socio-cultural contexts, exhibit distinct material signatures in the landscape and associated artifact assemblages. For example, in contrast to neighboring groups, as elsewhere in Amazonia, Arawakans tend to exhibit large-scale ceremonial gatherings, clan based marriage exchange systems, elaborate, far-flung trading activities and high degrees of formal social hierarchy. The material expressions of this style of Arawakan regional integration and developed hierarchies can often be accessed archeologically because of the nature of its material traces. For example, in Bolivia the work of Clark Erickson in the Mojos savannas has documented vast anthropogenic landscapes consisting of terraces and canals, connecting plaza-village sites with straight raised roads, interspersed with "forest islands" and complexes of agricultural fields and mounds (Erickson, 1995, 2003, 2006, 2008). Equally Michael Heckenberger (2205, 2006, 2007, 2008) has recently made further important contributions to this recovery of Arawakan long-term history through studies on the Xingu River in Brazil that combine the approaches of archaeology, culture history, and ethnology. Heckenberger rejects the old models of environmental scarcity or overpopulation as mechanism for migration of both artifacts and persons, and suggests instead a "social logic" that centered on institutional social hierarchy, hereditary "chiefs", and long-distance trade. Such chiefs led institutionalized intercommunity rituals, including rites of passage, and funerals. They were also capable of enforcing forms of social prohibition on endemic warfare, perhaps through the formalized "witch-hunts" which still characterize Xinguano leadership today.

Indeed, we think that Arawakan social dispersal and the influence of associated cultural patterns, with common ancestral features, may represent a kind of colonialism or socio-political hegemony over extant populations in a given region. But this need not have occurred through collective warfare and forceful conquest in the manner of the European colonial regimes. Heckenberger's research in the Upper Xingu River basin has uncovered important physical evidence of large communities that featured earthworks, ditches, reservoirs, and broad roads that connected urban scale settlements into regional political systems. At the same time, we know ethnographically and historically that in the Upper Xingu

various native societies representing the Arawak, Tupi-Guarani, and Carib language families have influenced one another and ultimately formed the relatively homogeneous Xinguano cultures seen today. In the past they also formed macro-polities and this ethnographic and historical phenomena becomes a model for interpretation of the archaeology, history and ethnography of Arawaks elsewhere, as in Guyana

Our current goals are to counter the perception that Amazonian societies, in this case as evinced by Arawakan peoples, are necessarily based on small and autonomous villages with simple technologies and egalitarian social structures. This was the old framework of the 'Tropical Forest' culture type articulated in by Julian Steward in the HSAI over 60 years ago but still tending to be accepted as a standard model for Amazonia due to the professional influence of an older generation of archaeologists, such as Betty Meggers. The Xinguano cultures seen today are encapsulated within the Brazilian state and national society, but such poly-ethnic though politically and economically inter-connected populations were those that would have formed macro-polities in the past. This regional pattern was largely derived from Arawak traditions that were also adopted by many non-Arawak populations. Among these traditions are large settlements, economies based on manioc cultivation and fishing, circular villages with plazas, ranked social systems, and hereditary chiefs. So it is important to note that Arawak is the largest and most widely distributed language family in Amazonia. Although these Arawak macro-polities were not necessarily militarily expansive, placing more emphasis on political accommodation, and economic influence through the organization of agriculture and trade. Palisades and earthworks were nonetheless part of a defensive strategy against more overtly-predatory cultural traditions such as those practiced by the Carib or Tupi-Guarani societies who were at the political and social peripheries of the Arawakan macro-polities. This also helps us understand the way in which one of the noted features of the collapse of these macro-polities soon after colonial invasions was the sudden rise of Carib and Tupi traders and war-lords to regional significance. They could occupy a power vacuum left by the collapse of the macro-polities and their military and trading orientations were perfectly suited to an emergent historical role during the colonial era

This was pre-eminently as a plantation police and colonial militia, but also as trading intermediaries for European manufactures, such as machetes, glass beads and guns. Thus the Amazon landscape is not simply an ecological artifact but a built environment. The ritual and symbolic importance of central plazas, for example, is even ethnographically evident today in the way in which such plaza-villages embody and reproduce concepts of person-hood, power, social ranking, and hereditary chieftainship.

Past emphases on environmental limiting factors in archeological thinking have produced biases that work against the appreciation of cultural and social complexity in Amazonia.

Certainly the environmental factors that led to agriculture, fishing, and the selection of settlement sites were part of past calculations but we are now more impressed by how the traditional tendencies of Arawakan societies imprint themselves massively on the landscape, drawing non-Arawak neighbors into their orbit. These emphases on historical experience and cultural values as important theoretically challenges the earlier relegation of Amazonian societies to the "Tropical Forest" culture type as more having resulted from intellectual biases about what constitutes "civilization" as well as the over-use of Old World archaeological criteria for measuring socio-cultural complexity through such traits as urban architectural forms, writing or glyphics. Instead, scholars are now developing a better appreciation of the alternative meanings of complexity in the Amazonian context.

Amazonian Dark Earth in the Berbice

Over the past several decades archaeological perspectives on the Amazonian tropical forests have changed dramatically. The region was long portrayed as relatively pristine tropical forest by scientists and popular media, peopled by small scale, isolated communities that had minimal impacts on the natural environment. Although much of the region's deep history is still poorly known, recent research in a variety of settings documents substantial ecological and cultural diversity. Settled agricultural occupations, including large occupations sites, agricultural and village earthworks, and substantially human-modified "Amazonian dark earths" (ADE) or "*terra preta*," had significant impacts on tropical forest ecologies, giving rise in many instances to large, regional polities in the late Holocene (Balée and Erickson 2006; Denevan 2001; Heckenberger and Neves 2009; McEwan *et al.* 2001). Nonetheless, the antiquity and development of agricultural occupations and their impact of tropical forest ecologies, in particular, are poorly known from most areas, including coastal hinterland and upland tropical forest and savannas of the northern Guayana plateau (Whitehead and Aleman 2009).

Future study to be intiated in 2011 builds on preliminary fieldwork conducted in the middle Berbice (NE Guyana) and the earlier work in the area by Whitehead and Simon (1991). In 2009, investigations were conducted at four occupation sites in a study area roughly 20 x 10 km along the middle Berbice River. Three major episodes in the culture history of the region have been identified: 1) an early occupation of settled agriculturalists, dated to ca. 5000 BP, based on preliminary excavations

at the Dubulay site; 2) a period of agricultural intensification, dated to ca. 1800 BP, associated with densely concentrated, small farming mounds; and 3) densely settled agricultural populations in early historic times (post-1540), associated with ancestors of the contemporary Lokono (Arawak) peoples, still present in the study area.

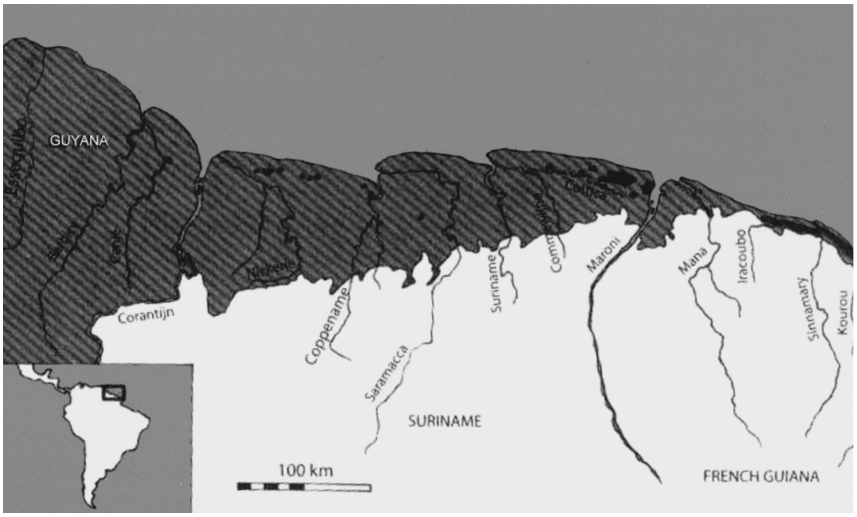

Figure 2
Regional Distributions of Mounds - Raised Fields (after S. Rostain).

It has often been remarked of Guyanese colonial history that the Caribs were the natural occupiers of the middle and upper reaches of the Atlantic coastal rivers. However, we know now that they were driven there by expansive Arawakan colonization along the Atlantic coast from the Amazon to the south. Some of the later stages of this expansion, such as into the Pomeroon river, and the southern channel of the Orinoco River, was militarily assisted by the Spanish. Together they raided Carib settlements as part of their continuing alliance with the Lokono and formulated their regional policies with that alliance very much in mind (Ojer 1966, Whitehead 1988, 1990, 1994, 1995, 1997, 1998, 2003). Also related to this significant Arawakan presence is the existence, as in Brazil and Bolivia, of large scale earthworks and associated large scale settlement. The archaeology, history and ethnography thus, for once, appear to be in a perfect harmony over the persistent significance of an Arawakan macro-polity centered on the Berbice River in Guyana

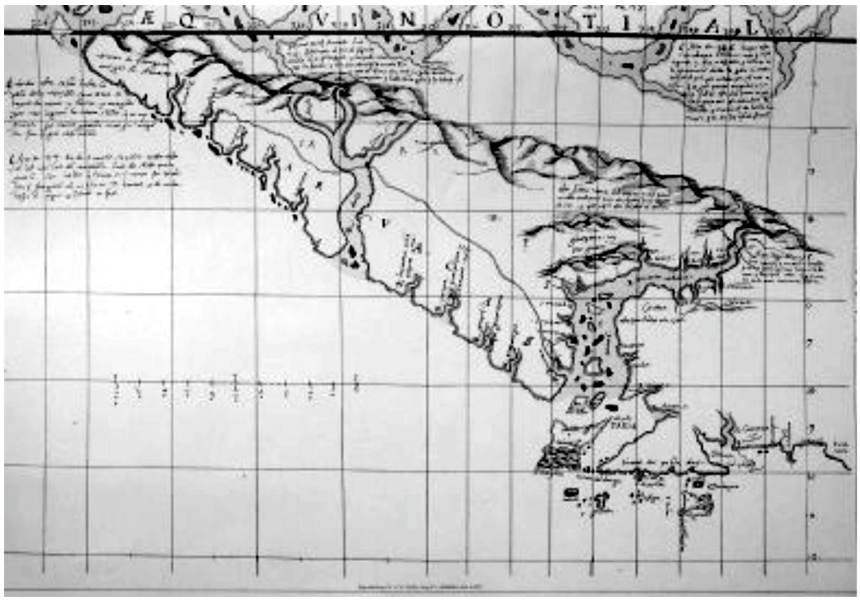

Figure 3
La Provincia de los Aruacas – Navarrete (1541).

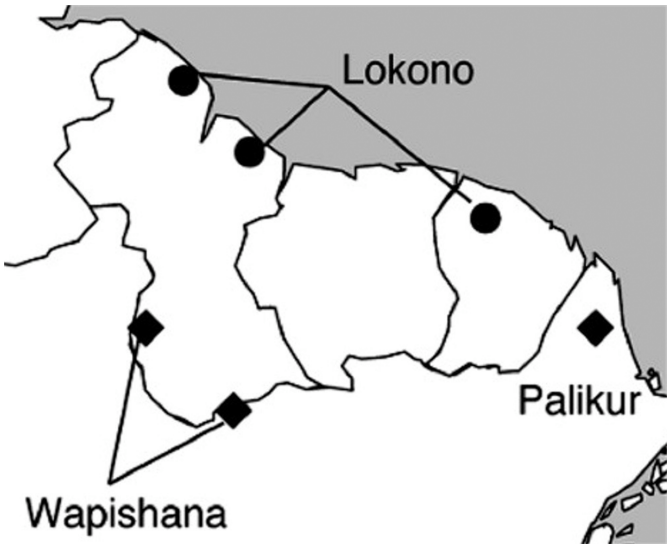

Figure 4
Contemporary Arawakan Peoples in Guayana.

The purpose of the current project is to focus on one component of that macro-polity, in this case the town of Hitia and the linked towns of Dubalay and Takama. However, one of the reasons for an earlier inability to discern the character of Amerindian settlement in the region has been a lack of integration of the archaeological data sets stemming from ceramics and agricultural practices. For example, at the mouth of the Amazon, the existence of ceramic industries producing high-quality domestic ware and ritual vessels was undeniable, as was the practice of building large settlement mounds. However, archaeologists such as Betty Meggers could not envision how the large populations, that must have existed in order to produce these kinds of material remains, could have subsisted in a supposedly adverse tropical environment. The answer is the links between what have now been revealed as vast anthropogenic landscapes, the abundant existing evidence from the ceramics and the appreciation of the ecological signatures of human occupation, particularly *terra preta* or black soils. As a result, a very different view of Amazonia has emerged that can be given a fine grain focus through the lens of such particular case studies as the Berbice Project. In regional terms, French and Dutch archaeologists have already begun to identify the distribution of mounds complexes along the whole of the Atlantic coastal zone of Surinam and Guyane, as well as the examples from Guyana which show distinct characteristics.

Figure 5
Long ridged fields Ituni Creek, Guyana (photo George Simon).

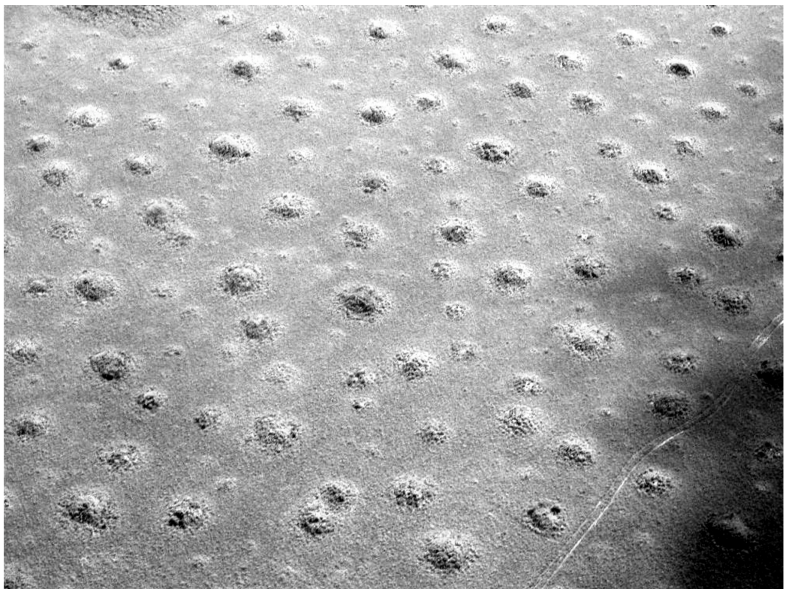

Figure 6
Circular raised fields Canje River, Guyana (photo Neil L. Whitehead).

Figure 7
Circular raised fields Canje River, Guyana (photo Neil L. Whitehead).

However, identifying the mound originators is of course complicated, and the cultural differences between such ancestral groups may only be partly expressed in the way the differing adaptations and associated earth forms were made, and reasons why they were made. In Berbice we are able to quite closely tie the Lokono, a still extant Arawakan group. With both the archaeological and historical use of vast complexes of agricultural mounds. The *Mapa de la Provincia de los Aruacas* made by the Spanish ca 1541 reflects not an abstract cartographic whim but the fact that the Lokono supplied immense quantities of manioc flour to feed both the nascent colonies and later the black slaves in the Dutch plantations. The Spanish even gave black slaves to the Lokono to set up large-scale tobacco plantations at the mouth of the Orinoco River. This makes the "lost" towns Hitia-Dubulay-Takama on the Berbice River an epicenter for the reexamination of the interactions of culture, history and environment in Amazonia.

Figure 8
Massive ADE deposits at Hitia, Berbice River (photos Neil L. Whitehead).

The next phase of archaeological research will focus on the early occupations identified at the Dubulay site, which based on preliminary investigations cover an area of 8-10 ha, including an extensive (≈200-300 x 50m) and deep (1-2 m) ADE midden that defines the eastern edge of the site along the river bluff margin. One test excavation in the ADE midden yielded a radiocarbon date of 5270-4710 BP (2 Sigma calibrated age

range) from a depth of 130-140 cm, associated with a distinctive appliqué ceramic style present throughout much of the midden (40-150 cm). This ceramic style is among the earliest from lowland South America, particularly from non-shell midden sites, but is poorly known in regional studies, although noted from early ADE deposits in adjacent portions of Suriname (100 km east) dating to ca. 4000-2500 BP (Versteeg 2003: 84). Of particular relevance, these deposits represent one of the earliest, if not the earliest, examples of heavily modified ADE soils (very dark brown to black and charcoal rich) from greater Amazonia, widely associated with settled agricultural occupations in the region (Arroyo-Kalin 2008; Glaser and Woods 2004, Lehmann *et al.* 2003; Petersen *et al.* 2001; Woods *et al.* 2009). An additional test excavation from the western margins of the site, roughly 300 m west of the bluff margin, returned a radiocarbon date of 4960-4820 BP (2 Sigma calibrated age range) from the deepest (60-70 cm) of three non-ADE components, which suggests a fairly large occupation area ca. 5000 BP. The primary objective of the proposed research is to better delineate the size and variability of deposits associated with the early ceramic occupations, particularly associated with the deep ADE midden.

Figure 9
ADE deposit stratigraphy at Hitia showing prevalence of ceramics
(photo Neil L. Whitehead).

The primary investigations at the Dubulay site will include mechanical trenching, hand-excavation, test-pitting, and soil sampling to better understand the age, composition and scale of these occupations. A further objective of the project is to refine the regional chronology of agricultural occupations. Specifically, the aim is to identify occupation deposits associated with the period of raised agricultural mound complex, dated by one radiocarbon date to ca. 1800 BP, and the large settled occupations reported in early historical documents. The two test excavations at the Dubulay site yielded evidence of these later occupations, including ceramics tentatively associated with the regional Mabaruma Phase, ca. 1800-1400 BP (Rostain 2008a), and late pre-Columbian to early historic age in site stratigraphy. These later occupations were also present at other sites identified in preliminary survey, including the Hitia site, which is referenced in early historical accounts and still occupied by Arawaks today. In addition to excavations at Dubulay, investigations will include limited subsurface testing (test pits and soil auger testing) at the three other occupation sites located in preliminary survey, testing of agricultural earthworks through trenching and soil sampling, and additional site survey in an expanded study area (30x10 km).

It is the intention that this project will provide an important case study for the transition to settled agricultural lifeways in Amazonia. Many regional specialists suggest that the period from 5,000 to 4,000 BP was critical to this transition, but it remains one of the most poorly understood periods in broad regional prehistory (Oliver 2008:208). It will contribute to understanding one of the earliest non-shell midden ceramic traditions and potentially the earliest example of ADE in greater Amazonia. The project will also refine the chronology of agricultural occupations in this little known portion of northern Amazonia, notably including periods of agricultural intensification associated with the construction of artificial farming mounds and the transitional period between late prehistoric and historic period occupations. Understanding the antiquity and change of occupations by tropical forest agriculturalists will provide important new data on long-term change in coupled human-natural systems, which has important implications for discussions of conservation and development and indigenous cultural rights in the region.

Researchers from varied disciplines agree that planning, conservation, and local, regional, and global ecological modeling must account for the human dimension of long term change. These findings will have critical implications for contemporary questions of long term change in coupled human-natural systems, which have bearing on contemporary questions of conservation, sustainable development, and

ecological integrity in the region (Glaser 2007; Lamb *et al.* 2005; Laurence *et al.* 2001). The project also hopes to strengthen international collaboration and provide diverse opportunities for local communities and Guyanese students. It is composed of a collaborative team that will integrate archaeology, historical anthropology, and ecology, creating research collaborations and opportunities for in-country governmental and non-governmental institutions, including local Guyanese and Amerindian groups typically underrepresented in scientific research initiatives.

Archaeology in Amazonia and the Significance of the Berbice

For several decades there has been lively debate over the culture history of the humid tropical forests of Amazonia. Traditional viewpoints portrayed most of the region as sparsely populated and, thus, tropical forests were seen as essentially "pristine" in 1492 (Meggers 1996). Beginning in the 1970s, regional specialists argued that several parts of Amazonia were densely settled by 1492, particularly floodplain areas along the Amazon River (Carneiro 1970; Denevan 1976; Lathrap 1970; Meggers 1996; Roosevelt 1980). Recent research suggests that contemporary forests in various parts of Amazonia represent complex mosaics of anthropogenic ("secondary") forests, the result of millennia of agricultural land-use by Amerindian peoples, including sophisticated and large-scale land management practices, and regional polities in late pre-Columbian times (e.g., Balée and Erickson 2006; Denevan 2001; McEwan *et al.* 2001; Posey and Balée 1989; Roosevelt 1991, 1999; Silverman and Isbell 2008; Stahl 1995). This is part of a growing realization that prehistoric peoples in many parts of the world were capable of having a major impact on plant and animal communities, hydrology, and even climate (Mason 2004; Redman 2005; Redman and Foster 2008; Ruddiman 2003). Thus, in many cases the question to be addressed is not whether neo-tropical forests are anthropogenic in origin, but instead when, how, and to what degree were these landscapes transformed.

In the Guianas, early semi-settled forager groups and substantial evidence of landscape modification, including raised fields and occupations mounds, have been identified in coastal areas (Rostain 2008b; Versteeg 2008; Williams 2003). The upland tropical forest and mosaic forest and savanna areas of coastal hinterlands are poorly understood throughout the Guianas. In Guyana, archaeological research in upland areas just south of the middle Berbice study area documents small-scale shifting horticultural occupations by 3500-3000 BP (Plew 2003, 2004, 2005). Research in adjacent upland areas (Suriname and French Guiana) also indicates larger, more densely settled occupations

(Duin 2009). Nonetheless, much of the region is commonly portrayed as little impacted by human groups, even by the Royal Geographic Society: "Guyana is home to some of the world's most pristine tropical rainforests, covering most of the interior of the country" (http://www.rgs.org/WhatsOn/Past+Events/Guyana/Guyana+ecology. htm; 12/15/09).

In the coastal hinterlands of the middle Berbice River, our preliminary research suggests significant anthropogenic influence, including evidence of early agricultural groups living in fairly large communities with extensive ADE deposits (ca. 5000 BP), agricultural intensification marked by artificial earthworks (ca. 1800 BP), and early historic accounts of fairly large regional populations. As noted in several parts of Amazonia, similar mosaic or transitional ecological areas are particularly sensitive to anthropogenic alteration (Denevan 2001; Erickson 2006, 2008; Posey 2001; Redmond and Spencer 2007).

Early Ceramic Occupations in Guyana

Late Pleistocene to Early Holocene foraging occupations from the Guiana highlands are known from surface finds of simple stone tools and projectile points (Plew 2004, 2005; Versteeg 2003; Williams 2003; see also Barse 1990 regarding excavated contexts in the upper Orinoco). In Guyana, subsequent Early to Mid-Holocene shell midden occupations, associated with the Alaka Phase, preserve evidence of early semi-sedentary foragers in the coastal plain of northwestern Guyana dating to 8000-3500 BP, with evidence of early ceramics by 4,000 BP, if not before (Plew 2005; Roosevelt 1997a; Williams 1997, 2003). Even earlier ceramic-bearing shell mounds are known from coastal and fluvial shell mounds along the Amazon, attesting to the potentially great antiquity of ceramics by the semi-sedentary foraging occupations (Roosevelt 1995; Roosevelt *et al.* 1991). Non-shell midden sites dating to 6,000-5,000 BP have also been identified for food foraging societies in interior northeastern Columbia (Oyuela-Caycedo and Bonzani 2005). Early evidence of domesticated lowlands plants suggest that these early ceramic using populations may have partially relied on cultivated plants (Clement *et al.* 2010, Mora *et al.* 1991; Piperno and Pearsall 1998).

In interior Guyana, early horticultural societies are reported for the period after ca. 3500 BP, although little research has been conducted in non-coastal settings (Plew 2003, 2004, 2005; Williams 2003). As Williams (2003:339) notes: "Although the prehistoric archaeology of the Guiana Coastal Plain has attracted sustained interest for well over the past hundred years ..., investigations in the adjacent Coastal Hinterland have

been sporadic" and much of the area "remains virtually a terra incognito." Systematic archaeological investigations in forested interior Guyana were first conducted by Evans and Meggers (1960). Of note, they identified three habitation sites along the Abary River, a small river immediately west of the Berbice River (ibid.: 154). Based on these investigations, they defined the Abary Phase, a regional variant of the Mabaruma Phase (ca. 1800-1400 BP), affiliated with the Saladoid-Barrancoid Tradition in the Guianas, which has been identified in various coastal and interior areas (1960:154-190; Williams 2003; Roosevelt 1997b; Rostain 2008). However, although early ceramic components attributed to horticultural traditions have been identified in many interior settings, dating to after 3500 BP, little research has been conducted in interior upland and coastal hinterland settings in Guyana (Plew 2003, 2004, 2005).

In adjacent Suriname, Versteeg (2003:62) suggests that "an empty archaeological data-base for the period from ca. 5000 – 2000 BC" indicates that "Suriname was unoccupied for some thousands of years after the hunters of the [upland Sipaliwini] savanna and the first farming groups." Based on excavations at the Kaurikreek site, on the eastern bank of the middle Corentyne River in Suriname, Versteeg (2003:84) recovered appliqué ceramics similar to those recovered from our test excavations at the Dubulay site ADE midden, described below. Two radiocarbon dates from the "thick black *terra preta* layer" associated with these ceramics at Kaurikreek yielded calibrated radiocarbon date ranges for two samples of 4200-3750 BP and 2800-2550 BP (Versteeg 2003:84). In the middle Orinoco River, Irving Rouse wrote in a letter to Versteeg (ibid.) that: "The potsherds with appliqué designs … [similar to those] for the Kaurikreek site … come from the very bottom of the [Ronquin] site" and may be associated with the earliest identified complex (La Gruta), which dates to ca. 4100-3600 BP (Roosevelt 1980:195; 1997b). Williams (2003: 340-341) also illustrates two similar "fretwork" appliqué ceramics from a broad assemblage of materials from excavations on the Corentyne River in Guyana. His association of these sherds to the late Hertenrits style (Arauquinoid Tradition), based on single date of 1080 ± 60 BP, is likely in error based on Versteeg's Kaurikreek excavations and our results from Dubulay.

Figure 10
Ceramics recovered at Dubulay site (photo Neil L. Whitehead).

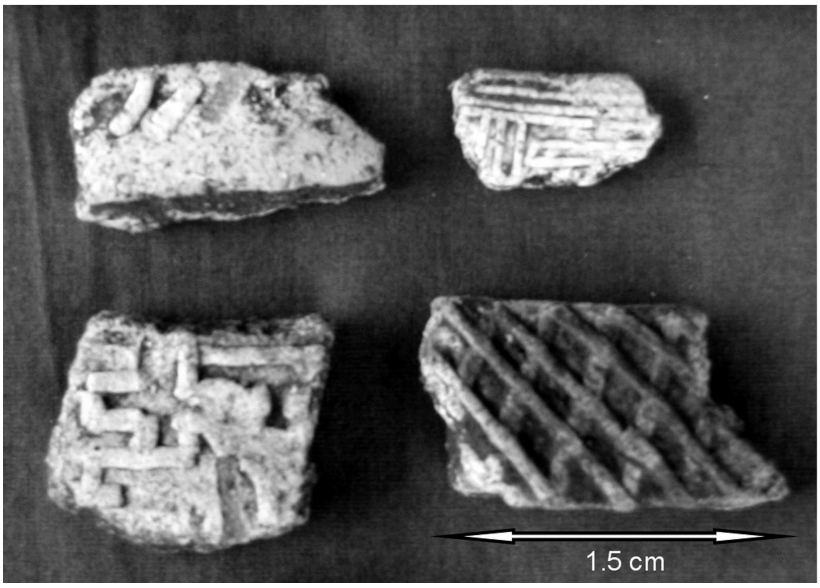

Figure 11
Detail of ceramics at Dubulay to show appliqué fretwork (photo Neil L. Whitehead).

In preliminary fieldwork, the fretwork appliqué design ceramics were well represented in stratified deposits of a thick ADE midden (>1.8 m) at the Dubulay site (40-150 cm), which are dated to 5270-4710 calibrated rcybp (130-140 cmbgs). Evidence from the Dubulay site provides the earliest evidence to date of an early non-shell midden ceramic complex in greater Amazonia, with the possible exception of early dates from the Agüerito site in the middle Orinoco.

Figure 12

Example of quantity of Dubulay ceramics recovered from single 10cm layer (photo Neil L. Whitehead).

Of particular importance in broad regional contexts, the deep ADE middens of the middle Berbice are among the earliest *terra preta* from across the broad Amazon, which suggests that these occupations may have already shifted from incipient food-production to more intensified, settled agro-economies.

Early Agriculture and Terra Preta

The transition from early cultivation to the emergence of settled agricultural populations is poorly known from across the lowlands. Inspired by Carl Sauer (1952), Donald Lathrap (1970, 1977) was among the first proponents of early agricultural practices in Amazonia. He suggested that by at least 6-7,000 BP manioc and other root crops were an important staple in the tropical forest cultures, based on house garden agriculture, and a shift (ca. 4000 BP) to a "developed tropical forest economy," heralded by the shift to systematic cultivation of high-yield domesticated crops and slash-and-burn agriculture, a view supported by later studies (see Oliver 2001, 2008). However, despite widespread evidence of the early domestication of a variety of lowland plants species, notably including manioc (*Manihot esculenta* spp.), sweet potato (*Ipomoea batatas*), and other cultigens, and suggestive evidence of forest clearing by ca. 5000 BP (Mora 2003; Mora *et al.* 1991; Morcote-Ríos 2008; Piperno and Pearsall 1998), there is little evidence of the shift from itinerant gardening to early agriculture from across greater Amazonia.

In his overview article on Amazonian agriculture, Oliver (2008:209, see also 2001) notes that "between 4500-3500 BP sites with elaborate ceramic assemblages are found widespread throughout the greater Amazonian lowlands, especially along river bluffs adjacent floodplains." These sites are typically associated with early agricultural occupations, supporting the general "bluff model" proposed by Denevan (1996) for settled agricultural occupations in Amazonia. Early dates from the Agüerito site in the middle Orinoco, ca. 5300-4000 BP, have been reported, associated with "abundant clay griddles" (Oliver 2008:209; Zucchi *et al.* 1984). Early ceramic occupations (4500-3500 BP) associated with presumed agricultural groups have also been suggested for the Upper Amazon (Lathrap 1970; Myers 2004) and, notably, for the earlier components of the La Gruta-Ronquin (Saladoid Tradition) sequence dating to 4500-3000 BP, also associated with griddles (Roosevelt 1980, 1997b). However, sites unequivocally dated to this early period of presumed transition from itinerant cultivation to agricultural economies are rare, and many of the earlier dates are debated (Barse 2000). Indeed, Oliver (2008:208) notes that: "the period from ca. 4500-2000 BP, the so-called Formative, witnessed the emergence of settled village farmers and nascent complex polities ... [but] it is precisely during the Formative that data on economy ... is very scarce. The lack of knowledge about the critical shift from incipient to intensified agro-economy is one of the big 'unknowns' in Amazonian prehistory."

One widely noted indicator of settled agricultural occupations is substantially altered anthropogenic Amazonian dark earth soils (ADE) or

terra preta. ADE vary considerably in color, texture, and chemical and physical composition, and have been identified in diverse settings and provide evidence of extensive settlement size, larger than 10 ha and sometimes ranging up to > 50 ha, dense regional settlement distributions, and substantial transformations of local ecologies by large, settled agricultural populations (Glaser and Woods 2004; Erickson 2003; Kern *et al.* 2004; Lehmann *et al.* 2003; Myers *et al.* 2003; Petersen *et al.* 2001; Smith 1980; Woods *et al.* 2009). In some cases, small and thin ADE deposits are not, in and of themselves, direct evidence of settled occupations or agro-economies, but most specialists agree that the extremely altered (very dark brown to black) ADE that form extensive deposits across archaeological sites, represent evidence of settled occupations and agricultural economies and, in some cases, of agricultural intensification within semi-intensive agricultural systems (Arroyo-Kalin 2008; Denevan 2001; Mora *et al.* 1991; Myers 2004; Neves *et al.* 2003, 2004; Oliver 2008; Petersen *et al.* 2001). ADE sites along the middle Orinoco, the upper, central, and lower Amazon, and elsewhere generally date no earlier that ca. 3500-3000 BP, and examples as substantially altered as the ADE recorded at the Dubulay site generally date to much later occupations, ca. 2000-1800 or later (Arroyo-Kalin 2008; Mora *et al.* 1991; Neves *et al.* 2003, 2004). Slightly modified pre-ceramic ADE deposits (pre-4000 BP) have been reported on the Caqueta River, Columbia and upper Madeira River, southern Brazil, in Amazonia (Miller 1992; Mora *et al.*1991; Eduardo Neves, personal communication). Although analyses have not yet been conducted on archaeological sediments from preliminary investigations on the middle Berbice, the thick (~2 m) midden at Dubulay shows the characteristics of substantially modified ADE soils seen as typical of later agricultural populations (based on Heckenberger's personal experience excavating numerous ADE sites in the central and lower Amazon River and southern Amazonia). The ADE midden associated with appliqué ceramics at Dubulay represents the earliest dated example of extensive (>1 ha), thick (>1.8 m), and highly altered ADE sediments, referring to deposits with extensive charcoal, very dark color (Munsell very dark brown to black), and with an "oily" texture, in greater Amazonia. It is worth mentioning that Vertseeg (2003) reports a "thick black *terra preta* layer" associated with the appliqué ceramics similar to the Dubulay complex and C14 dated to 4200-2500 BP. Radiocarbon dated deposits of virtually identical age in non-ADE portions of the site attest to the potentially large size of the settlement, minimally extending over an area 300 x 300 m.

These sites support Denevan's "bluff model" of agricultural settlement in Amazonia, but potentially add significant time depth to such adaptations in the Guianas region. Also, the general assumption in

Amazonian studies is that the bigger the river, the bigger the associated Amerindian occupations. However, river bluff settlements along the middle Berbice are not only extremely old, in fact among the oldest major ceramic bearing midden of highly altered (black) ADE in greater Amazonia, but are equal in size (up to 10 ha) to the majority of large ADE sites along the Amazon and Orinoco Rivers.

Agricultural Intensification: Raised Fields

Another critical shift in intensified agro-economic systems in Amazonia relates to the appearance of complexes of raised agricultural fields in several areas, ca. 2,000 BP, which provide testimony of large-scale transformations of landscape or "landscape domestication." (Erickson 2006, 2008). Nonetheless, sites which pertain to this early period are rare across the broad region, with most dating to later periods, particularly after ca. 1000 BP (Erickson 2006, 2008; Oliver 2008; Rostain 2008; Walker 2004). Such archaeological complexes have been identified in the southern Amazon (Erickson 2006, 2008; Walker 2004, 2008), in the western llanos of Venezuela (Gasson 2003; Spencer and Redmond 2006), and in coastal areas of Suriname (Versteeg 2008) and French Guiana (Rostain 2008a). Agricultural earthworks, in particular, are often located in areas of mosaic tropical forest ecologies, characterized by patches of tropical forest, savanna areas, and river floodplains.

In coastal Guianas, most agricultural mounds are associated with late prehistoric Arauquinoid sites in coastal areas of the Guianas, dating to ca. 600-1300 BP (Rostain 2008:231). Earlier coastal square raised fields, in low-lying coastal marshes, have been identified in association with the early Mabaruma phase (Barrancoid Tradition) habitation mounds of the Buckleburg complex in northeastern Suriname, dated to 1845 ± 45 BP (Versteeg 2003; 2008:307). In the middle Berbice River study area, small circular to oval raised fields are densely distributed in savanna areas along small drainages away from the main drainages. Based on preliminary investigations described below (see METHODS) in areas immediately adjacent to the study area, basal portions of one mound yielded a radiocarbon date of 1860 ± 90 (WISC-2350). These represent the earliest expression of the small circular and oval mounds, generally considered characteristic of Arauquin Tradition sites in coastal settings of French Guiana and Suriname.

In the Amazon, the distinctive modeled-incised and decoratively slipped ceramics of the Mabaruma ceramic complex are associated with the broader Saladoid-Barrancoid traditions, typically associated with colonization of the region by speakers of the northern Arawak language sub-family (Aikhenvald 1999; Lathrap 1970, 1977; Oliver 1989; Payne

1992; Rostain 2008a, b; Rouse 1986, 1992; Versteeg 2003; Williams 2003; Zucchi 2002). Although no diagnostic artifacts have been associated with the mounds in the middle Berbice study area, ceramics tentatively associated with the Mabaruma phase were identified in surface collection at one site (Red Hill) and one adorno from a test pit at the Dubulay site in a discrete component (35-40 cm) above an earlier component dated to ca. 5000 BP. As noted above, Meggers and Evans found ample evidence of the Abary Phase, affiliated with Mabaruma, just west of the middle Berbice study area. The attribution of the mound-building occupations, tentatively associated with Mabaruma-related ceramics, to the Arawak is provisional, but the coastal hinterlands, including the middle Berbice were dominated by Arawak speaking Lokono peoples during historic times. Regardless of linguistic affiliation, the mounds suggest agricultural intensification and an even more dramatic impact on local environments than earlier ceramic (fretwork) groups. In several areas, including the Atlantic coast of the Guianas, the descendants of these northern Arawak peoples developed into regional polities in late prehistoric (Arauquin) times (Gásson 2002; Heckenberger 2002; Rostain 2008a, b; Versteeg 2008), which are likewise suggested for the settled Arawak speaking Lokono peoples reported in early historical documents from the middle Berbice and other parts of the coastal hinterlands of Guyana, where coastal areas were dominated by non-Arawak (Warao) peoples.

Late Prehistoric and Historic Period Occupations: The "Arawak."

Early sixteenth century Spanish accounts describe fairly dense occupations relating to the ancestors of the Lokono (Arawak) peoples across the coastal hinterland areas, who still occupy the region. In the 1530s, Spanish from Margarita Island first registered the Berbice-Corentyn River area as the *Provincia de los Aruacas*, referring to the people with whom they traded manioc (arua) as "arua-cas". Lokono trade canoes were recorded by the vecinos of Margarita as capable of carrying thousands of tons of manioc flour (Ojer 1966). Over the subsequent centuries, Spanish, Dutch, and English sources provide ample evidence of large, settled populations along the Berbice River (Whitehead 1997). The study area is also adjacent to the national historical site of Fort Nassau, scene of the Berbice Slave Rebellion, a critical and iconic moment in Guyanese history. The siting of Fort Nassau, just across the Berbice River from Hitia in itself indicates that there was significant interaction between the Lokono and the Dutch and English colonial administrations as does the presence of Dutch artifacts in the top layers of archaeological middens at Dubulay and Hitia.. The contemporary communities of Hitia,

Dubulay and Takama all contain the contemporary (Lokono) descendants of these early historic Arawak populations.

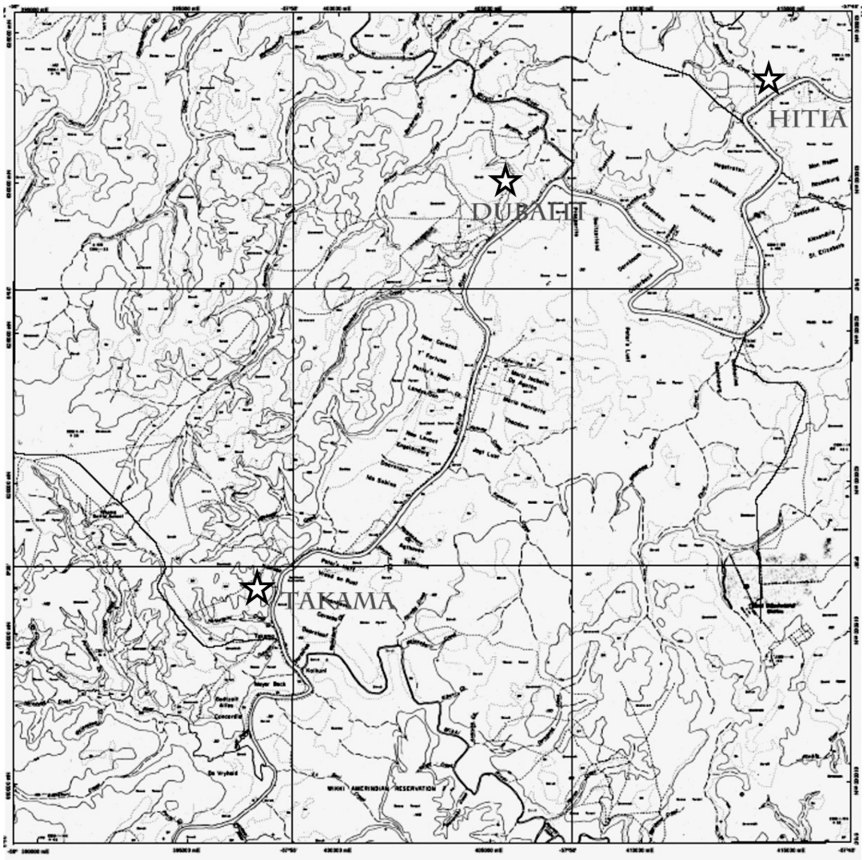

Figure 13
Map of Hitia, Dubulay and Takama – epicenter of Lokono settlement on the Berbice.

The rich ethnohistoric record of the middle Berbice provides a critical resource for understanding the late pre-Columbian and historic period record. The proposed collaboration will therefore be an opportunity to address wider themes as to the cultural and social meaning of the archaeological activity, as well as to develop for the future the possibility of combining historical materials on the colonial occupation of Guyana with oral accounts of slavery, maroonage and the archaeological context.

Current perspectives in Amazonian anthropology repeatedly emphasize a need for the better integration of ethnographic, historical and archeological materials to offset the relative lack of active researchers in a region known for the physical challenges of field research; the development of a collaborative program involving local institutions, communities and researchers would be an exemplary way to achieve this. The ethnographic aspects of the Berbice project will now be considered.

Ethnography, Ecology and Landscape

Many anthropologists can agree that that the idea of a "landscape" as a set of spatial relationships can have great utility and relevance across sub-disciplines for the way in which it directs our attention to the ways in which both the past and present are embedded not only in ecological practices and processes, but also the cultural classification and interpretation of the environment, which itself is partly created by those cultural informed practices (Feld & Basso 1996, Bender 1993). The landscape is also more than a natural physical environment, it contains the immanent presence of the biota and topography, as well as reflecting the dynamic activities of humans, fauna, flora, and even the spirit world. In turn historical consciousness can also be embedded in a landscape and become overt though the recounting of specific memories of the way that those interrelationships have developed through time (Whitehead 2003).

For these reasons recent research in anthropology, both ethnographic and archaeological, has gone beyond issues of the measurement of material remains or investigation of native classifications of flora and fauna, to also take account of the way in which ecological practice is governed by mythic and ritual understanding, itself historically changing. This needs emphasis since earlier anthropological analyses have certainly made much of the way in which ritual might govern ecological practice, as with Roy Rappaport=s (1968) classic discussion of the Tsembaga in New Guinea. However, these analyses did not address the fact that mythic and ritual practice itself is not unchanging, anymore than is the environment in which it is practiced.

In Amazonia the tendency to emphasize synchronic adaptation over historical >involution= (Geertz 1963) was present also in Gerardo Reichel-Dolmatoff=s (1985) pioneering discussion of cosmology as ecological analysis, and lingers on in Philippe Descola's (1994) discussion of the homeostatic nature of Shuar subsistence practice, as well as Viveiros de Castro's "perspectivism" (2000). All these analyses certainly do justice to the intricacy of native thought and complexity of social practice but both archeological time depth and historical change remain difficult to reconcile with these views. More recently research has begun to give greater emphasis to indigenous "historicity" - defined as consciousness

about the past, as well as how it is recounted and made relevant to the present – in order to make good this kind of unhistorical oversight (Fausto & Heckenberger 2007, Whitehead 2005, Salomon & Schwartz 1999).

In a similar manner Betty Meggers (1971) projected modern ethnographic adaptations back into the past, thereby suggesting a very constrained and limited agricultural and developmental sequence in Amazonia. However, work by a variety of scholars, such as the geographer William Denevan (1992, a, b, c) with regard to the colonial transformation of Amazonia, are reinforced by archaeological studies by Erickson (1995, 2006, 2008), Heckenberger (2005: Heckenberger *et al.* 2003, 2008), Roosevelt (1991, 1992, 1993, 1994, Roosevelt *et al.*, 1991, 1996) and Neves (2008: Neves *et al.* 2003, 2004) among others, which show the deep antiquity of substantive human impacts in Amazonia. A line of research which is part of the archaeological project with which this proposal is linked. Although William Balée and Clark Erickson (Balée and Erickson 2006) and Darrell Posey (2002) have pioneered linguistic and historical ecological approaches to the time depth of ecological understanding, in general the archaeological work has yet to be properly complemented by ethnographic studies which unravel the cultural complexity of both ecological understanding and historical memory (Hill and Santos-Granero 2002, Hill and Hornborg, in press).

Nonetheless these studies all show how Amazonia should really be considered a cultural artifact, as much as an natural environment; a managed garden, not a pristine wilderness (Zent & Zent 2004). Consequently, the concept of landscape is appropriate for integrating this kind of data from anthropology's sub-disciplines–ethnography, ethnohistory and archaeo-logy. As a result we need to see that it is not sufficient merely to examine ecological process diachronically, as a succession of changing interac-tions driven by such factors as environmental constraints, expanding population, or a cultural incapacity for surplus production or accumu-lative economics. Rather those changing ecological and economic process are embedded in historical consciousness and socio-political choices. Thus it is human history and decision making with regard to a complex mix of factors, such as political and economic interactions, ritual requirements and mythic understanding, and which only partly includes ecologically significant practice, that must be analyzed before the meaning of ecological technique can be properly understood. The anthropological landscape focuses on the synergy of people and their habitats in culturally producing a physical and intellectual context for the nourishment and subsistence of both bodies and minds.

Lokono History and Ecology

Lokono history and culture as far as it is currently known perfectly evinces such processes and shows an intimate connection between ethnic identity, landscape and an active engagement with the past. In the history of the Berbice River under colonial rule, first by the Dutch and later by the British, it became an important sugar planting colony from the 1630s on. Although often subject to depredation by both sea-borne pirates and the vagaries of inter-colonial wars, the longevity of plantation society here is notable. Moreover, that longevity was foreshadowed by sustained trading and alliance between the Lokono (Arawak) and the Spanish starting in the 1540s. Thus, through nearly 500 years of colonial presence, the Lokono have continued to occupy strategic points along the Berbice River. This presents a unique opportunity to match European records to oral history and cultural memory, and through the archaeological activities, to also understand how the encounter with ancient material remains, as well as the textual record, impacts Lokono self-fashioning in the present. Lokono historicity, how the past becomes meaningful, is therefore at the heart of the project which aims to bring these three lines of evidence, archaeological, archival and ethnographic, to the task of illuminating unfolding historical and cultural practices among the Lokono.

Notably it is possible to infer through archival records quite dramatic changes in indigenous agricultural and ecological practices. Beginning with the Lokono trade with the Spanish which involved very substantial quantities manioc flour (quite literally hundreds of tons), the production of surplus on this scale and as part of a economic strategy to capture trade with the Europeans was followed by dramatic changes in the 17th century as the Dutch laid out sugar plantations and employed the Lokono to supply manioc flour, fish to the plantations and forest products for trade back to Europe. The Lokono were also employed as a plantation police force and militia for the colony. Only with the end of plantation slavery and the advent of British rule in the early 19th century did this favored position of the Lokono within the colonial political economy decline.

From the mid-nineteenth century through to the present day the Lokono have become ever more marginal to the national economy of Guyana, which became independent in the 1960s. However, recent political and economic developments have re-focused attention on the Amerindian population and, in particular, the current government gives great emphasis to ecological preservation and to low-carbon development strategies. This has made the history of agricultural practice in Guyana of great current relevance and the recuperation of past systems of

agricultural practice is already evident in the in the small-scale production of Lokono farmers for national markets and in the rhetoric of Amerindian political leaders. The sustainable nature of past indigenous practice is therefore highlighted in Guyanese media as of direct relevance to the search for new strategies of sustainable development at the national level.

Figure 14
Giant manioc tubers grown on archaeological mounds in the Berbice (photo Neil L. Whitehead).

In this context the on-going archeology in the Berbice River speaks directly to these concerns since it looks to uncover in a rigorous fashion the ways in which vastly more dense populations once inhabited the region. Moreover, and well known to the Lokono who live there, the Berbice savannas contain thousands of man-made mounds, called horoman by the Lokono, that are direct landscape markers of this past productivity.

Preliminary investigation in 2009 confirmed data first gathered in 1992 as to the antiquity and continuing productivity of these landscape features. Contemporary Lokono (and non-Lokono) farmers in the Berbice give ample testimony to the marked differences between planting crops in newly cleared forest gardens and directly in these archaeological mounds, while agricultural techniques that mimic these archaeological mounds are also found to be more productive than the forms of swidden agriculture more usually practiced by other Amerindian peoples in the region. If the Lokono are not currently intensifying their agricultural practice to produce an abundance of food this is at least partly due to the absence of infrastructure to ship their produce to market, not because there is some "environmental limit" to the sustainability and productivity of tropical farming, as their history shows.

For the Lokono the earliest trade and political contacts were with the Spanish enclave of Margarita in the Caribbean during the 1540s, and, significantly, arose as a result of direct overtures from the Lokono to the Spanish. Although the Spanish never settled this region the production of manioc flour for the nascent Spanish colonies of the Caribbean and Venezuela was critical to their survival. In return the Spanish assisted the Lokono militarily in conflicts with the other widespread indigenous group of this region, the Caribs.

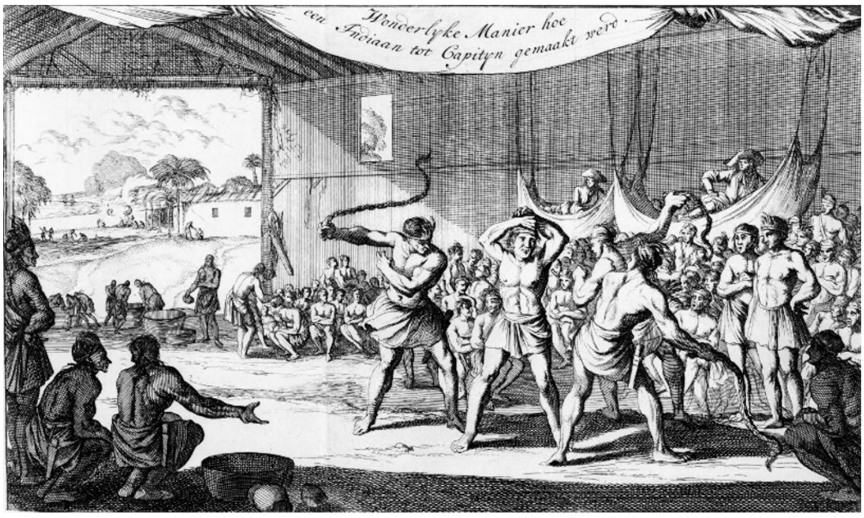

Figure 15
Lokono maquary dance 17th century – Van Berkel.

Arawakan landscapes and geographies

Recent work on Arawakan societies more broadly adds a more ancient dimension to this history, stemming in particular from the work of Heckenberger (2005) on the historicity of plaza-style village layout among Arawakan peoples, a site feature already evident from the Berbice. Taken together this wider research on the Arawak will directly inform and guide initial ethnographic and archaeological investigations so that a simultaneous ethnography and archaeology in situ may speak powerfully to the nature of Lokono historical consciousness in the present, its relation to a culturally constructed past which itself is changed and elaborated by contemporary encounters with historical and archaeological materials and the direct experience of archaeological excavation.

In this way the unfolding landscape of past villages and now abandoned agricultural earthworks and allied subsistence sites such as fish-ponds, also offers a series of mnemonics for the recall of historical events, just as subsistence practices and resource management become tokens of Lokono identity and use-rights in that environment. The repeated intrusions of planters, ranchers, dye-collectors and, most recently, eco-tourists, have therefore presented a number of challenges to Lokono understanding of themselves, others and their past. Similarly, fragments of Lokono oral history of their aboriginal occupation of this region are structured around their own intrusion from the west and encounters with the Caribs who a originally occupied the region This historiographical motif then provides the context for narrative of the origins and purposes of a distinctly "Lokono-way" in which well organized, commercial manioc agriculture is strongly contrasted to Carib predation as slavers and incapacity for collectively organized agriculture. The relation between the historical identity of the Lokono and the deep antiquity of occupations along the Berbice will therefore be an important focus for the project since it is not clear how these historical sequences may be related, if at all. Ethnographically this makes contemporary Lokono attitudes to the deep archaeology as well as post-Columbian history all the more significant in understanding the overall production of Lokono identity within Guyana.

This way of being Lokono is also now directly threatened by forms of economic development which have vastly increased the mobility of Lokono individuals and their engagement with the global economy. Nonetheless this active engagement with outsiders is also seen by some Lokono as fundamental to their historical experience and it is precisely these kinds of issue that are then mediated in and through the forms of historicity that are the focus of the project, particularly the unfolding of an indigenous historiography that constantly re-negotiates the representation of the "first-time" or originary condition of Lokono society.

The Anthropology of Archaeology

Alongside this recuperation of Lokono history and ecology the project also aims to use the ethnographic materials as a means to culturally situate the practice of archaeology. In fact this question, how is archaeology understood amongst local populations?, is already part of the design of the linked archaeological project and of the original Collaboration project that gave rise to theses specific project proposals. The appropriateness of non-Guyanese excavating Guyanese national patrimony, as well as the highly capitalized techniques necessary to produce the data for current professional archaeology, which are therefore beyond the financial reach of local archeologists, have both been factors in the gestation of the current proposal and the archaeology project to which it links. Although an insistence on the credible and direct participation of both Guyanese and more specifically Lokono people is certainly a pre-requisite which it is easy enough to appreciate, less clear is how the experience of "materializing the past" as part of an archaeological excavation team, or the contextualization of Lokono past in a wider Amazonian, even global, archaeological picture of socio-cultural development, affects Lokono, and also Guyanese, self-fashioning. The project will therefore pay close ethnographic attention to such issues and make these questions a core part of the inquiry.

This is distinct from "ethno-archaeology", understood as a methodology: relevant to the interpretation of archaeological finds or recording the types of data regarding living peoples that can be used as comparative material by archaeologists. Rather the project focuses on what happens when the ethnographic gaze is turned back onto archaeological practices themselves and is informed by questions that are important to the Lokono. This project therefore aims to contribute to the growing literature on this theme of postcolonial archaeology and that of heritage management more broadly. The method here is not an epistemological approach to the issue of observation but rather is interested in the manner of participation in situ, including the archaeological site itself. These are places which exist in an already social world so among the salient issues to be addressed will be the impact which the meaning of a material object (or its place of discovery) has on the process of recovery, and how the values that underlie that process (archeological ethics) interact with local attitudes (see also Schmidt 2009, Meskell 2009, Heckenberger 2007). For example, how might the archeological discovery of "chiefdoms" or highly stratified settlement patterns impact social and political issues among Lokono in the present? I have dealt with some of those consequences as described in an earlier ethnographic work elsewhere in Guyana (Whitehead 2002) but the

importance of the topic requires a more systematic approach which this project is intended to realize. Certainly archaeological ethics has already broached some of these issues but this has largely been with regard to Europe. In general then we have yet to appreciate the interests of stakeholders cross culturally and whether archeological practitioners (should) know or care about these consequences of recovery, of materializing the past. Do the representations of the past by outsiders to a given cultural tradition become an epistemological zombie, a ghost that haunts the present?

With such questions in mind, archaeologically, historically and ethnographically, we hope to initiate a long term project that not only speaks to wider anthropological concerns throughout Amazonia but also exemplifies possible new directions in archaeology and cultural anthropology as part of the unending construction of ethnicity and nationhood through the management of cultural heritage. Unlike in older paradigms, heritage is to be seen first and foremost as the property of Guyana and its native peoples rather than as intellectually owned by a semi-industrial, globalized "science" of anthropology. Perhaps the key lesson from this project has already been learned, that anthropology without connection to and in service of local and regional understandings and purposes is not only problematic professionally, but is likely to be unsuccessful in revealing a past occluded by the imperialisms of earlier times.

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