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A new age to an old site: the earliest Tupiguarani settlement in Rio de Janeiro State?

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ABSTRACT

This paper presents unexpectedly early dates for a Tupiguarani settlement in Southeastern Brazil. One radiocarb dating of 1740 ± 90 yr BP (1820-1390 cal yr BP) was already available for the Morro Grande site (Araruama, sout eastern coast of Rio de Janeiro State). Two new dates, obtained from charcoal samples, are reported here. An age 2920 ± 70 yr BP (3220-2790 cal yr BP) was obtained from a specialized hearth, probably used for cooking ceramic a funerary hearth at the same archaeological locus was dated at 2600 ± 160 yr BP (3000-2150 cal yr BP). Bo measurements were made independently, in different laboratories, arguing for their validity. These results considerab age the arrival time of Tupiguarani populations to the coastal region of Southeastern Brazil. They may have importa implications to the hypotheses about the origin and dispersion of these populations from Amazonia, supporting t claim of recent authors who consider that their expansion must have begun well before 2000 yrs BP.

Key words: radiocarbon dating, prehistoric occupation, Archaeology, Tupiguarani, Brazil.

INTRODUCTION

Tupi agriculturalist and ceramist populations share a linguistic stock encompassing different related languages spread throughout the east of South America (Brazil, Peru, Bolivia, Paraguay, Argentina, and Uruguay). Tupinambá and Guarani are the better known of these groups, as they inhabited the Brazilian coast (at the Southeastern/Northeastern and in Southern Brazil, respectively) when Europeans arrived in the XVI century.

It is not trivial to establish direct relations between linguistic manifestations and the archaeological record,

that produced a typical polychromic ceramics to languages speakers (Prous 1992, Heckenberger This attribution is essentially based on historic d tions of the material culture and funerary ritual o nambá and Guarani populations, which are sin those found in prehistoric archaeological sites. ever, this attribution is not straightforward, so m searchers employ the term "Tupi-Guarani" to r historically known groups, and "Tupiguarani" t known only from archaeological records (Prous

Several hypotheses have already been prese explain the processes of origin and dispersion o

processes whilst keeping several common cultural features (Noelli 1998). Most authors agree in situating this center in Amazonia (Rodrigues 1964, 2000, Lathrap 1970, Brochado 1989, Scatamacchia 1990, Dias 1994/1995, Noelli 1998, Heckenberger et al. 1998), but there is no agreement regarding where it was located and the direction taken by the expansion routes (Brochado 1989, Fausto 1992, Dias 1994/1995, Urban 1996, Viveiros de Castro 1996, Noelli 1998, Heckenberger et al. 1998).

There are divergences concerning the chronology of the Tupian expansion as well. The history of this expansion has traditionally relied on linguistic, ethnographic (historical distribution of Tupian speakers), and archaeological evidence (pottery seriation, radioisotopic dating). Linguistic and ethnographic data are usually regarded as more accurate, due to the scarcity of archaeological research, especially in Amazonia (Heckenberger et al. 1998). The most widely accepted studies suggest that proto-Tupi (language in which the components of the Tupian stock originated) was formed around 5000 years BP, and the Tupi-Guarani family around 2500 years ago (Rodrigues 1964, 2000), even though some authors argue for a later time (e.g. Migliazza 1982, Urban 1996). Most researchers agree in that Tupi populations couldn't have left Amazonia before that time.

However, absolute dates do not support this hypothesis, as these now make clear that Tupiguarani populations were already settled in their historically known territories at least as early as 2000 years BP (Noelli 1998). In the last years, the multiplication of radiocarbon and thermoluminescence measurements is gradually pulling back the initial occupations. The earliest Guarani supposed ancestrals' occupation in Southern Brazil was dated at 2010 ± 75 yr BP (Noelli 1999/2000). The earliest known Tupinambá supposed ancestrals' settlements come from São Paulo State: a site from Tietê valley was dated at 2200 yr BP (TL), and sites from the Paranapanema valley were dated at 2030 ± 200, 1870 ± 100, and 1660 ± 170 yr BP (Moraes 2007). In the Northeast, an early age of 1690 ± 110 yr BP was presented for Piauí State (Maranca 1976).

A radiocarbon measurement previously published even earlier dates for this site, pulling the initial occupation of the Brazilian coast yet further back.

MATERIALS AND METHODS

The studied area is located in the Araruama region, southeastern coast of Rio de Janeiro State (22°47'07"S, 42°21'49"W) (Fig. 1). Morro Grande site is placed in the homonym district, covering an area of about 90,000 m^2 that includes the local school patio and the church plaza.

Archaeological excavations, made along several stages of field work since 1993, identified five stratigraphic layers in different loci. The occupation level attains 0,60 m of thickness, within a sandy substratum. Most archaeological artefacts (ceremonial and daily-use bowls, upper portion of urns, and lids) occur between 0.20 m and 0.50 m of depth, in a grey layer with black lenses of charcoal originated from archaeological hearths. Below this depth (to 1,20 m), within clay and quartz beds, the vestiges are restricted to funerary urns, buried in pits and, generally, well preserved (Fig. 2). The lids are usually broken; their fragments are found interspersed with sediments inside the urns. Painted bowls usually surround the urns. Although the site surficial layer was partially destroyed by urbanization, many intact archaeological features and well preserved ceramics were found. All vestiges are unquestionably related to a Tupiguarani settlement (Buarque 1999).

The site was carefully excavated according to acknowledged archaeological methods. Charcoal from hearths was systematically collected and kept for anthracological analysis or radiocarbon dating. A large charcoal sampling of dispersed (in the sediments) and concentrated (in hearths and other features) material was performed during the 1995 fieldwork, aiming anthracological studies. For that, all the sediments removed from the excavation area were dry- or water-sieved and charcoal pieces were collected with supple tongs.

Two charcoal samples from the same archaeological locus, near to the school building, were dated. This locus presented an important funerary feature and several hearths (Fig. 3).

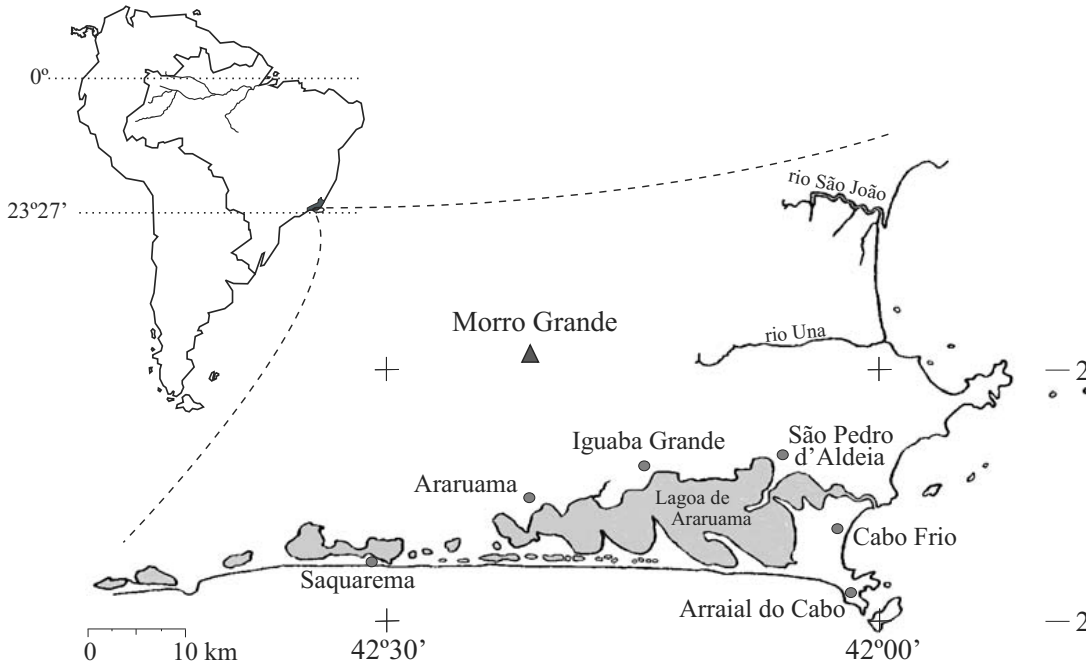

Fig. 1 – Geographical location of the study area.

(France). Plid-0688 sample, collected from a hearth on the eastern side of the excavation area at 30-40 cm of depth, was prepared and dated at the PRIME Lab of Purdue University (United States). This hearth, along with six other hearths from the same locus, are concentrically distributed around the urn (Fig. 3). They are clearly associated to the funerary structure, the upper part of which is situated at a 30-35 cm depth.

Radiocarbon measurements were calibrated with OxCal version 3.10 code (Ramsey 1995), using the Southern Hemisphere samples calibration dataset (McCormac et al. 2004). Previous dating was also calibrated for comparison. All results are presented with 2 sigma confidence intervals (95.4% probability).

The remaining charcoal pieces were analyzed under a reflected light brightfield/darkfield microscope, along fresh hand-broken surfaces. Systematic determinations were helped by a computerized key for wood determination associated to a database of anatomical characters for

RESULTS AND DISCUSSION

Radiocarbon age for Gif-11045 sample, obtained in 1998, is 2920 ± 70 yr BP (3220-2790 cal yr B that of Plid-0688 sample, obtained in 2002, is 2 160 yr BP (3000-2150 cal yr BP). These result initially considered suspicious, as they were mu old in regard to the previous dating of this site (I as well as to the currently assumed chronology Tupiguarani earlier occupations.

The fact that both measurements were ma dependently, in different laboratories, argues fo validity. Moreover, the anthracological analysis charcoal samples from this site revealed that Pli sample corresponded to a bark hearth undoubte anthropogenic origin, and that Gif-11045 samp contained a great proportion of bark, which canno tributed either to dispersed charcoal or to natural (M. Beauclair, unpublished data, R. Scheel-Ybe published data). The incidence of a few bark fra

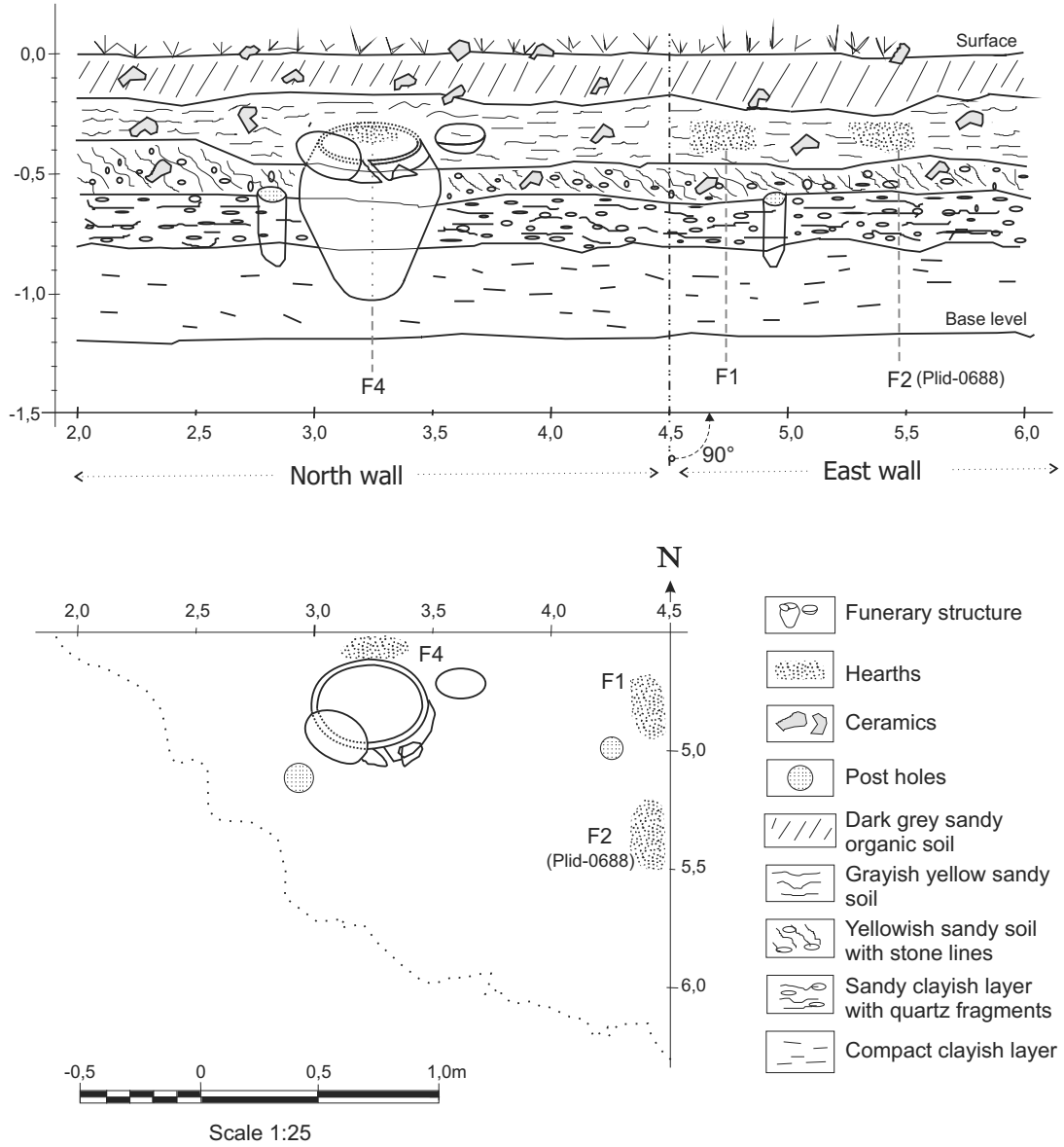

Fig. 2 – Schematic stratigraphic profile of north and east walls from Sector 2, Morro Grande archaeological site, and partial surface plan of the same area.

bark, however, cannot occur in natural contexts, because plants always consist of much more wood than bark. It is clear, in the present case, that bark itself was burnt, and that this material has been intentionally selected as fuel.

Wood *taxa* identified in Plid-0688 attain only 15% sample, wood *taxa* represent less than 40% of the fragments, with an extremely high proportion of *Copaifera* sp. Minor *taxa* also identified were: Anacardiaceae/Burseraceae, Chrysobalanaceae, *Croton* sp, *Bauhinia* sp, *Cassia* sp, *Dalbergia* sp, *Machaerium* sp, *Myrcaylon* sp,

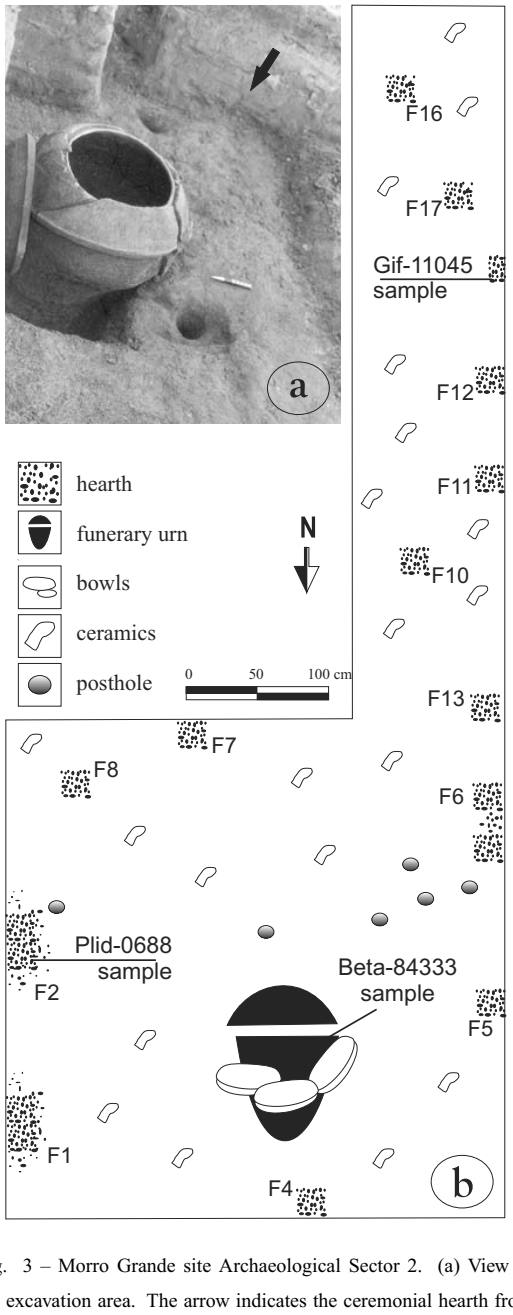

Fig. 3 – Morro Grande site Archaeological Sector 2. (a) View of the excavation area. The arrow indicates the ceremonial hearth from which sample Plid-0688 was taken; (b) Excavation plan situating the excavated hearths, the samples dated in this work (Gif-11045, Plid-0688), and a previously dated sample (Beta-84333, Buarque 1995). Hearths F1 to F8, containing high proportions of bark, are interpreted

hearths were thoroughly discussed considering th
onomic composition, archaeological contextuali
and ethnographic analogies (M. Beauclair, unpu
data). A ceremonial function was proposed to Pli
hearth, as well as to the other hearths concentrica
tributed around the urn (Fig. 3), all of them con
a very high proportion of bark. Gif-11045 sampl
ever, is not associated with the funerary structure.
ethnographic and ethnologic analogy, it was sug
as a probable specialized feature for firing ceram

The archaeological contextualization of bot
samples, and their unequivocally association w
man activities imposes that such an early period
Tupiguarani occupation in this region be conside

Radiocarbon calibrated ages of 3220-2790
BP (Gif-11045) and 3000-2150 cal yr BP (Plid
could possibly be contemporaneous, but we do
lieve they represent precisely the same moment i
The age of 3220-2790 cal yr BP is associated to
tarian feature, probably for ceramics cooking, wh
age of 3000-2150 cal yrs BP is clearly related
funerary ritual. Their spatial proximity suggests
mer event is somewhat older than the latter. Pr
ity distributions for the calibrated ages corrobor
idea. Despite the intersection in the calibration in
the two samples are most likely not contempor
(Fig. 4).

The age previously presented for this site, c
$\pm$ 90 yr BP (1820-1390 cal yr BP), was obtained
Beta Analytic Laboratory (United States) from ch
collected inside a funerary urn at the same archa
cal locus. This age was considered representative
mortuary ritual (Buarque 1995). However, the
2600 ± 160 yr BP (3000-2150 cal yr BP) from a fu
hearth associated to this urn contradicts such hy
sis, demonstrating that the mortuary ritual itself
reality much older.

In fact, charcoal retrieved inside a urn can
contemporaneous of the burying. This charcoal ce
came with the sediments deposed subsequently,
fell into the urn at a later time, after its lid was br

Anthracological analysis of charcoal collec

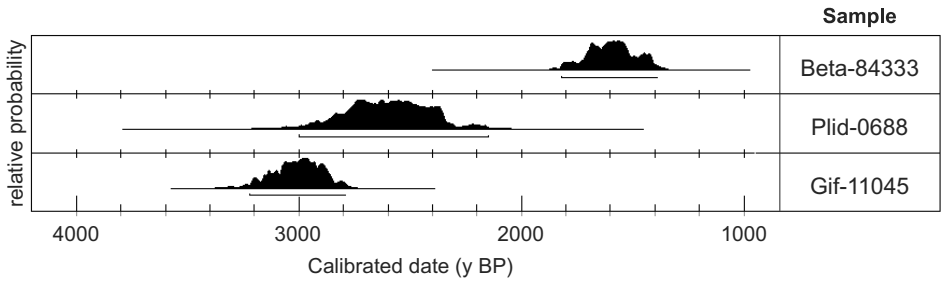

Fig. 4 – Probability distributions of calibration intervals (OxCal v3.10, Ramsey 1995) for the samples dated in this work (Gif-11045, Plid-0688) and a previously dated sample (Beta-84333, Buarque 1995). The total area under each curve is normalized to one (100% probability).

sp, *Tabebuia* sp, Bombacaceae, *Maytenus* sp, Chrysobalanaceae, Euphorbiaceae, Lauraceae, Lecythidaceae, *Cassia* sp1, *Cassia* sp2, *Copaifera* sp, *Myroxylon* sp, *Poecilanthe* sp, *Acacia* sp, *Inga* sp, *Piptadenia* sp, Leguminosae, Melastomataceae, *Trichilia* sp, Myrtaceae, Sapotaceae, and *Vochysia* sp), and five *taxa* remained indeterminate. The sample contained only 1,6% of bark. Either the taxonomic diversity as the bark content are compatible with what is commonly found in dispersed charcoal at archaeological sediments, distinguishing it from usual hearth samples (for an in-depth discussion of these anthracological theoretical principles, see Scheel-Ybert 2004a, b).

This intrusive material is not related to natural events, such as a possible natural fire occurring over the abandoned site. Natural fire samples are taxonomically muchless diverse than archaeological ones (Scheel-Ybert et al. 2003a, Scheel-Ybert 2004a). The charcoal retrieved inside this urn is undoubtedly of anthropogenic origin, suggesting the site reoccupation along the time.

Recent archaeological data support this hypothesis, as there is evidence of modification in the material culture, especially in ceramics morphology, for Morro Grande site (A. Buarque, unpublished data). Archaeological researches in other regions also suggest that the same sites may have been reoccupied after centuries of abandon (Prous 1992). In Southern Brazil, there is evidence of reoccupation of the same regions along more

CONCLUSION

The age measurements reported for Morro Grande site considerably age the arrival of Tupian populations to the coastal region of Rio de Janeiro State. It is now certain that these populations entered the coast when it was yet heavily occupied by *sambaqui* moundbuilders, supporting the hypothesis that the structural changes observed in the social organization of the latter, and the consequent disruption of their sociocultural system, might be directly related to the arrival of ceramists (Buarque 1999, Scheel-Ybert et al. 2003b, Gaspar et al. 2004, Barbosa-Guimarães 2007).

The occurrence of such an ancient dating in Southeastern Brazil may have important implications for the hypotheses about the origin and dispersion of Tupian populations from Amazonia. It supports the claim of recent authors who consider that the Tupian expansion must have begun well before 2000 yrs BP (Noelli 1998). However, the amount of age measurements for Tupiguarani sites is still insufficient to adequately give account of such an extensive expansion as the Tupian one. Currently, less than 250 dates are available for the entire Brazilian territory (Corrêa and Samia 2006). We believe the scarceness of research surely explains the lack of more ancient ages nearer to the origin of this dispersion, particularly in Amazonia. Over and above attesting of the earliest known Tupiguarani occupation

It is highly important that the present data be considered in discussions about the Brazilian coastal occupation, but further research is still needed to bring up new data in order to validate or even dismiss the proposed hypotheses, either concerning the ancientness of the Tupiguarani occupation as the possibility of site reoccupation.

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RESUMO

Este artigo apresenta datações inesperadamente antigas para um assentamento Tupiguarani no sudeste do Brasil. Uma datação radiocarbono de 1740 ± 90 anos AP (1820-1390 cal anos AP) já existia para o sítio de Morro Grande, situado no município de Araruama, na costa sudeste do Estado do Rio de Janeiro. Duas novas datações, obtidas de amostras de carvão, são apresentadas neste trabalho. A data de 2920 ± 70 anos AP (3220-2790 cal anos AP) foi obtida a partir de uma fogueira de uso específico, provavelmente destinada a queimar cerâmica; uma outra provém de uma fogueira funerária do mesmo setor arqueológico, datada em 2600 ± 160 anos AP (3000-2150 cal anos AP). As duas medidas foram feitas independentemente, em laboratórios diferentes, o que reforça sua validade. Estas datações mostram que o momento de chegada de populações Tupiguarani à costa brasileira ocorreu muito antes do que se imaginava. Elas podem ter importantes implicações para as hipóteses sobre a origem e a dispersão dessas populações a partir da Amazônia, corroborando a hipótese de autores recentes que consideram que a expansão Tupi deve ter começado bem antes de 2000 anos AP.

Palavras-chave: datação radiocarbono, ocupação pré-histórica, Arqueologia, Tupiguarani, Brasil.

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