

Linguistics, archaeology, and the histories of language spread: the case of the Southern Jê languages, Brazil

In this paper I discuss the relationship between archaeology and historical linguistics, and present a case study from my own research on the diffusion of the Southern Jê languages. For a long time, archaeologists were not aware of the fact that the Kaingang and Xokleng languages were related to the Jê languages of Central Brazil, and proposed an autochthonous origin for those southern groups. A new generation of archaeologists, aware of the relationship between Kaingang and Xokleng and the Jê language family, focused on the identification of their migration. The emergence of the so called Taquara-Itararé archaeological tradition around AD 220 was thought to signal the arrival of Jê speakers to the south. In my research I analyzed assemblages of Taquara-Itararé pottery from different areas of Southern Brazil, combined with the available radio-carbon dates, and with the most recent data on subsistence. The chronological and cultural frame resulting from these data corroborates previous hypotheses that the appearance of pottery coincides with a process of population growth fostered by intensive *Araucaria* pine nut exploitation and maize-tuber agriculture, which rapidly led to the filling up of the landscape by these new settlers and to territorial circumscription—the formation of more restricted and territorial social boundaries, *sensu* Carneiro (1970). Such circumscription is best evidenced by the development of local pottery styles, as I could identify. This economic and demographic process is in agreement with the “wave of advance” model for linguistic change: a population, bringing a new subsistence technology, grows to the point of displacing the previous inhabitants of a region. On the other hand, the yet few known cases of local adoption of agriculture and pottery by pre-existing inhabitants of Southern Brazil can be explained by evoking social and ideological factors possibly linked to the spread of a ritual complex typical of Jê societies, manifest in the construction of ceremonial centers with earthworks and burial mounds. This is in agreement with the “recruitment” model, according to which a language perceived as more prestigious spreads through language shift together with certain social and ideological features of its speakers. To explain the separation between the Southern and Northern/Central branches of the Jê family, similar archaeological studies and syntheses must be conducted in Central Brazil.

by *Jonas Gregorio de Souza*¹

1. Correlating historical linguistics and archaeology

Historical linguistics and archaeology are very close fields: both may deal with the reconstruction of a past for which no written records are available. The difference is one of subject: while the linguist compares languages in order to establish the origins, development, movements, and contacts between different communities in the past, the archaeologist does the same by using material remains. As a matter of fact, both

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reconstruct “sequences of events, the one linguistic and the other material-cultural” (Spriggs and Blench 1998:29).

The hypotheses of historical linguistics can be tested through archaeological research, and archaeologists often look towards historical linguistics in order to make sense of their data. An example is the use of radio-carbon dating, which linguists now prefer instead of the glottochronological methods to date particular events in the past (Blench 2004). However, this relationship may turn to circularity, with archaeologists using linguistic models to explain their data, not knowing that these models were actually based on archaeology in the first place (Spriggs and Blench 1998). The best example is that of the Indo-European expansion, linked to the emergence, in Europe, of the Corded Ware and Beaker cultures, as well as the Kurgan mounds of the Russian steppes, an association frequently repeated by both linguists and archaeologists. In his classic study of the problem, Renfrew (1987) demonstrates that the archaeological cultures commonly associated with the Indo-European migration—especially the Beaker culture—are actually the result of local processes of cultural change. Archaeologists are now much less confident in associating one particular artifact assemblage with one specific ethnic or linguistic group. That does not mean that we cannot correlate archaeological and linguistic data. Renfrew (1987) suggests that we should think of the processes by which a language family spreads, and then try to identify the material correlates of these processes in the archaeological record. Although he associates the spread of Indo-European languages with the diffusion of agriculture—a solution that is not accepted by most archaeologists or linguists—Renfrew makes the important point that linguistic diffusion is often linked to social, demographic, and economic processes that can be identified by archaeologists (1987:272).

2. Archaeological data on the origin and spread of the Jê linguistic family

The first attempt to correlate language families of the South American lowlands with archaeological cultures was that of Brochado (1984). He was particularly interested in the histories of migration and diffusion of these languages, and with the identification of these histories through archaeology. Although there has recently been a renewal of interest in his models for the expansion of the Tupi and Arawak languages, mainly motivated by new research in the Amazon basin, the same cannot be said of his models for the expansion of the Macro-Jê languages. It has become necessary, however, to pay attention to the latter models, because now we have much more archaeological data, and the linguistic classifications are more accurate. For instance, Brochado (1984) does not consider Kaingang a member of the Jê language family, although he includes it in the Macro-Jê stock; he also doubts the Macro-Jê affiliation of Maxacali and Puri, labeling them “Ancient East Brazilian” languages.

In spite of these inaccuracies, most of the correlations proposed by Brochado still hold true. Figure 1 shows the distribution and available radio-carbon dates for sites of two archaeological cultures that I would like to use as examples: Aratu-Sapucaí and Taquara-Itararé. The distribution of Aratu-Sapucaí sites in part coincides with the territory of modern Northern and Central Jê speakers. These sites are identified by their characteristic pottery style² and settlement layout. Settlements of the Aratu-Sapucaí

² Modern Jê speakers have abandoned pottery manufacture, leading Lowie (1946) to state that the pottery sherds found throughout Jê territory were evidence of prior occupation by a different people. This position is no longer held, since there is now evidence that Jê speakers prior to European colonization not only made pottery but also lived in permanent farming villages (Wüst and Barreto 1999).

culture present a number of pottery sherd concentrations, probable remnants of house floors or trash middens, arranged in a circle around an empty space (Wüst 1983; Prous 1992; Wüst and Barreto 1999). This pattern clearly resembles the ethnographic Northern and Central Jê villages, with their houses placed in circle around a ceremonial plaza. Some of the archaeological villages, however, are much larger than their ethnographic counterparts, with up to 90 houses arranged in two concentric circles around a plaza 400 m. wide (Wüst 1983), reminding of 19th century accounts of large Kayapó villages (Turner 1979:149).

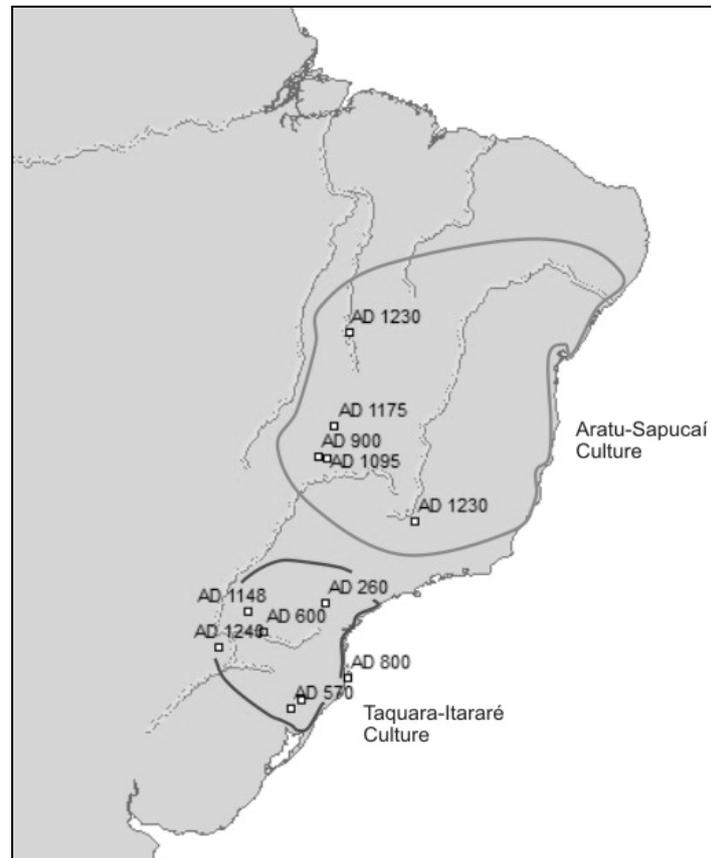


Figure 1. Aratu-Sapucaí and Taquara-Itararé archaeological traditions, with their territorial extension and some associated dates.

Brochado (1984:196) suggests that the large territory covered by the Aratu-Sapucaí culture and its general similarity throughout this territory point to its expansion through massive movements of migrants. Although some isolated very early dates exist for this archaeological culture, most of the sites are dated after AD 600, and the true expansion of this culture happens after AD 1,000, when it reaches its maximum territorial extent and number of sites (Brochado 1984:139-155; Prous 1992; Robrahn-González 1996:90-91; Oliveira and Viana 2000; Oliveira 2005:40-41; Morales 2008:35). According to Eduardo Ribeiro (pers. com.), such a recent and rapid spread would account for the high similarity among the Northern and Central Jê languages. However, if there is a straightforward correlation between Aratu-Sapucaí sites and pre-Columbian Jê speakers, this would leave unexplained the situation of Northeastern Brazil as well as the coast, where Tupí and Macro-Jê languages, but no Jê languages, have been recorded in spite of the many Aratu-Sapucaí sites found in these regions.

This lack of coincidence between archaeological and ethnohistorical records does not happen in the Taquara-Itararé area. This archaeological culture coincides so precisely with the territory of modern Kaingang and Xokleng that “Southern Jê” is often used instead of the label “Taquara-Itararé” (e.g. Noelli 1999). The most typical archaeological sites are pit house villages, burial mounds, and geometric earthworks where the diagnostic Taquara-Itararé pottery can be found (Prous 1992; Beber 2004). There is strong technological continuity between this archaeological pottery and the pottery of 19th and early 20th century Kaingang and Xokleng (Silva 1999; Miller Jr. *apud* Noelli 1999:294). The persistence of mound building for burial purposes (Métraux 1946) is another bond between pre-Columbian and modern Southern Jê groups, just as the ring village shape, which was retained among their northern and central Brazilian relatives.

3. The Southern Jê languages: linguistic and archaeological hypotheses for their diffusion

The relatively small area, and the well established continuity between an archaeological culture and a language family make the Southern Jê branch an ideal case study for the correlation between linguistic and archaeological data. Many earlier archaeologists had considered the Taquara-Itararé culture a local development. The archaeologist Oswald Menghin³, for instance, suggested that the appearance of pottery and polished stone tools associated with burial mounds and earthworks in the province of Misiones was the result of a process similar to the Neolithic of the Old World, a local evolution of the previous inhabitants of the region. He associated those archaeological remains with the Kaingang, who according to his vision would not have migrated to the region but rather evolved locally through the process of neolithization he described (Menghin 1957; see Noelli 1999 for a thorough survey of the history of research on the origins of the Southern Jê; also Araujo 2007).

Menghin’s model was later adapted to Brazilian archaeology. Schmitz (1988) proposed that agriculture and pottery had spread among hunter-gatherer groups by influence of Tupi-Guarani speakers, although he now believes the development of agriculture and pottery to be an autonomous process due to a disparity in dates between the first appearance of these traits in Southern Brazil and the first Tupi-Guarani migrations to the area (Schmitz and Becker 2006). Ribeiro (2000) presented a similar model, according to which pre-pottery populations adopted pottery and agriculture from an unknown source (possibly from the mound building cultures of the Uruguayan and Southern Brazilian plains), developing into the Taquara-Itararé culture. Thus, both Schmitz (1988) and Ribeiro (2000) initially followed Menghin’s conclusions, believing in an autochthonous origin for the Southern Jê speakers—that is, for those authors the modern Kaingang and Xokleng would be the descendents of the very first settlers to Southern Brazil, who locally evolved into potters and farmers due to some external influence. According to Noelli (1999), the autochthonous hypothesis is the result of the isolation of the archaeologists working during the 60s and 70s from the wider field of Amerind studies, including anthropology and linguistics.

In the field of linguistics, Davis (1966) demonstrated that the Kaingang language belongs to the Jê family, albeit a distant member, since it shares about 40% of cognates in the Swadesh list with the other branches, while Northern and Central Jê languages

³ Menghin was an Austrian archaeologist and member of the Nazi party. After the 2nd World War, he emigrated to Argentina where he resumed his career.

share over 60% of cognates among themselves. Urban (1992) later used these figures to estimate on glottochronological grounds that the Southern Jê separated from the other members of the family about 3,000 years BP. He also suggested that the headwaters of the São Francisco and Araguaia rivers were the family's probable place of origin. In anthropology, the study of Jê societies was brought into relief by the "Harvard Central Brazil Project", whose members invested in the analysis of some typical features of those groups, such as the division of the tribe in moieties and the village layout with a circle of houses around a ritual plaza (Maybury-Lewis 1979). Interestingly, the Kaingang were not included in those studies, because they were then considered completely acculturated. However, years before, Nimuendajú ([1913]1993) had already described a system of exogamic moieties for the Kaingang, connecting this and other characteristics to the Central Brazilian cultures. Anthropologists are now confident in correlating several features of Kaingang social and ritual organization with the Central and Northern Jê groups (e.g. Veiga 1994, 2000; Silva 2001).

The recognition of a Central Brazilian origin for the Southern Jê languages and cultures was taken into account by a new generation of archaeologists in the formulation of their models. Noelli (1996, 1999, 1999-2000) correctly criticizes the isolation that resulted in the archaeologists' interpretations of a local origin for the Taquara-Itararé culture. According to the author, an interdisciplinary approach that benefits from the amount of data now available makes it clear that "the general lines of the sequence of occupation of Southern Brazil by pottery-making cultures are no longer hypothetical" (Noelli 1999:291). Taking anthropological and linguistic data into account, Noelli attempts to update Brochado's model, proposing that the origin of the Taquara-Itararé culture must be sought outside Southern Brazil, since this archaeological culture is related to the Southern Jê speakers, whose language originated in Central Brazil—where a very similar and more ancient pottery, called Una, is found. Later, Araujo (2007) focused on São Paulo state, pointing to some early dates that would confirm this region's status as a migratory route. According to the author, there should be a continuity in material culture between southern Minas Gerais and Rio Grande do Sul states, confirming the relationship between Una and Taquara-Itararé cultures, a hypothesis to be tested as more research is done in São Paulo. These are examples of how archaeological data are being recently integrated to a wider linguistic and anthropological scenario.

But how can we truly integrate linguistic and archaeological data without falling into circular reasoning as mentioned earlier in this paper? Spriggs and Blench (1998) suggest that one must compare hypotheses or models arrived at through independent data, presenting each of these sets of data—linguistic and archaeological—separately. Moreover, any scientific research must be problem-oriented, and I believe in this case there are two fundamental questions to be posed: 1) *What are the different processes by which a language comes to be spoken in a place?* 2) *What are the archaeological correlates of these different processes?* As for the first question, Renfrew (1987) and later Blench (2004) present useful models for language spread. Of these, I would like to emphasize the following: initial colonization, demic diffusion, and elite dominance. During initial colonization, a group brings with it its language to a previously uninhabited region. After that, there are two possibilities: continuous development, i.e. the language first brought to the region continues to be spoken until the present; or language shift to another language. The first colonization of Southern Brazil dates to at least $11,555 \pm 230$ BP (cf. Dias 1994 for a discussion of dubious earlier dates), a date too early to coincide with the arrival of Jê speaking groups. Moreover, there is strong

evidence that this first wave of migrants came from the south, maybe from Patagonia, and not from Central Brazil, where Jê languages are thought to have originated. This southern origin for the first settlers is evidenced not only by the earlier dates found in Patagonia, but also by the continuity in the material culture as one progresses towards north, across Uruguay, finally reaching Southern Brazil where some typical “fishtail” and triangular lithic arrowheads of Patagonian style can still be found, at least in one case contextualized in the deepest level of a rockshelter with continuous later occupations (Dias 1994:149-150; Nami 2007).

The arrival of Jê-speaking populations (ancestors to the present-day Kaingang and Xokleng) to a previously-settled territory would have led to changes in the linguistic landscape as well. Such changes can happen in many ways, but the most likely scenarios tend to involve the elite dominance and demic diffusion models. The elite dominance model, as presented by Renfrew, presupposes language shift, with a small but well-organized external force dominating a local population and imposing its language. The diffusion of Latin by the Roman Empire and of Quechua by the Inca Empire are good examples of this process.

The remaining model, demic diffusion, might be the most appropriate to explain the spread of Jê languages to Southern Brazil. In this model, a new population arrives at an already inhabited region, but brings with it some new technology which allows it to grow and, eventually, displace the earlier inhabitants. This is an adaptation made by Renfrew of the “wave of advance” theory first proposed by Ammerman and Cavalli-Sforza (1971) to explain gene distribution patterns of Europe as a result of population displacement in the beginning of the Neolithic thanks to the new technology of farming introduced by Middle Eastern migrants. Farming allowed these migrants to maintain a higher population density than their forager predecessors, consequently leading to fissions and territorial expansion in pursuit of arable land.

Bearing in mind the different models for language change as well as the discussion about the origins of the Southern Jê peoples, I dedicated myself to the analysis of collections of Taquara-Itararé pottery in the following institutions: Universidade Federal do Rio Grande do Sul (UFRGS), Pontifícia Universidade Católica do Rio Grande do Sul (PUCRS), and Universidade Federal do Paraná (UFPR). I gave priority to collections which came from well-dated contexts in order to construct a chronological and spatial frame of reference for Southern Jê history, i.e. to present an archaeological sequence that can be compared to the linguistic data. I will now present and discuss the results of my research.

4. Reassessing the data

The result of the analysis of the pottery from the selected archaeological sites (RS-PE-12, RS-PE-22, RS-139, RS-UP-255, RS-UP-256, RS-AN-03, RS-A-2, T131, SC-AG-40, PR-FI-145, PR-SA-8, PR-MR-39, PR-UV-17, PR-CT-93, and PR-BS-2; see their location in Figure 3a) from the states of Paraná, Santa Catarina, and Rio Grande do Sul indicated strong technological similarities among the assemblages. These are related to the temper⁴, which is always sand; to the shaping by coiling⁵; and to the incomplete

⁴ The temper is the antiplastic component which is added to the clay before shaping the vessel. These components reduce the plasticity of the clay, preventing it from breaking while being shaped or burnt (Shepard 1956).

⁵ Coiling is the method by which the potter gives shape to a vessel by adding successive coils of clay (Shepard 1956).

oxidation⁶ during burning. I believe this points to a common technological source. However, when one considers the visible features of the pottery, it becomes clear that there are local styles. In Figure 2 these styles are exemplified by vessels from Paraná, Santa Catarina, and Rio Grande do Sul. The differences are clear at once.

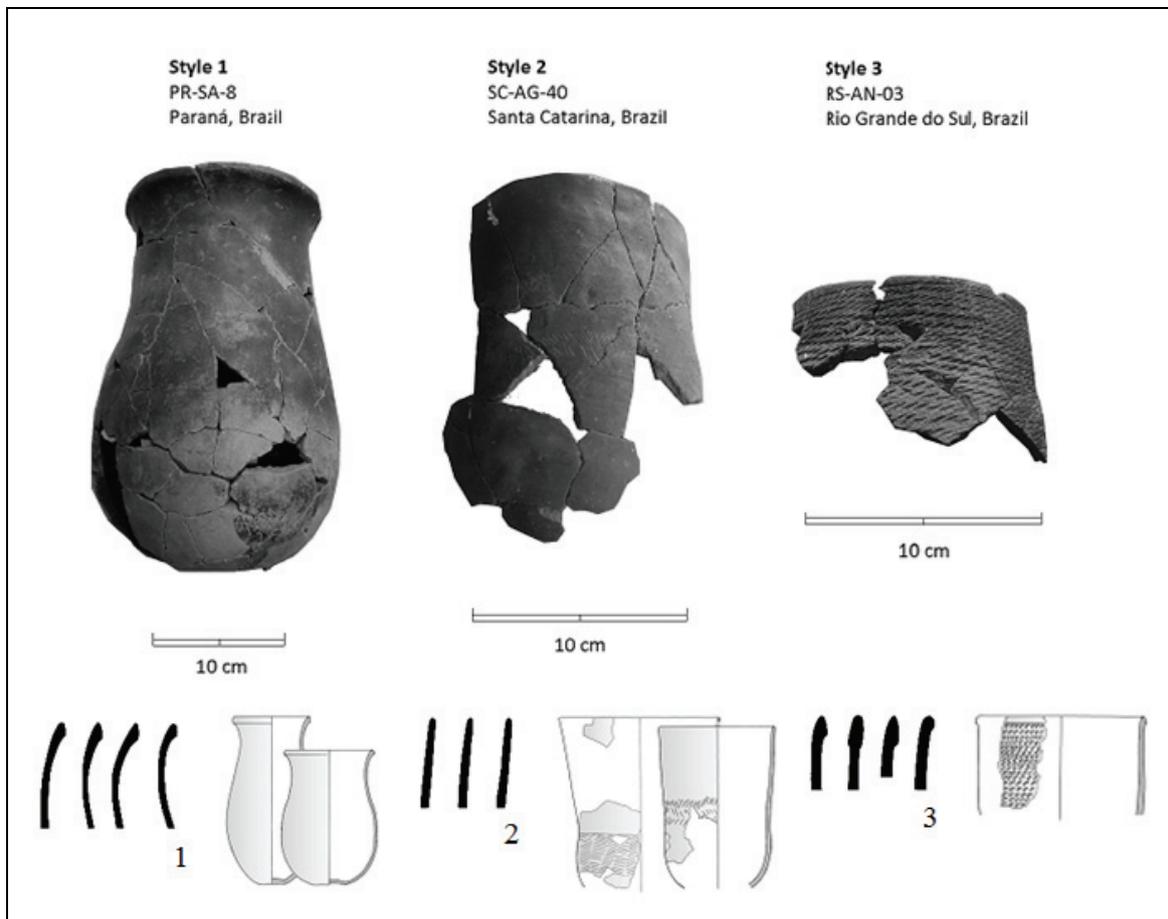


Figure 2. Reconstructed vessels that illustrate the main stylistic differences among Taquara-Itararé pottery assemblages, and some drawings of rim profiles and vessel reconstitutions distinctive of each style. All photos were taken by the author. The first vessel belongs to a collection hosted by the Centro de Pesquisas Arqueológicas, UFPR. The other two vessels belong to collections hosted by the Núcleo de Pesquisa Arqueológica, UFRGS. All drawings were made by the author.

The first style is defined by a large number of ovoid vessel shapes, with inflected contour, constricted, and with expanded rims. There is little or no plastic decoration. The earliest site with this pottery style is the Sengés rockshelter in northern Paraná, dated $1,790 \pm 210$ BP, cal. AD 2-530 (Parellada 2005:42). The second style presents a large number of cylindrical vessels, with slightly inflected contour, and non-constricted. Plastic decoration appears more frequently as zigzags or other forms of incisions. The earliest date for this style comes from a surface site in northeastern Rio Grande do Sul dated $1,810 \pm 85$ BP, cal. AD 90-330 (Beber 2004:51). The third style is defined by a large number of cylindrical vessels, with simple contour, non-constricted, and with

⁶ While the vessel is being burnt, the components of the clay react with the oxygen, giving the vessel a light color. When this reaction is incomplete (due to a short burning time or to the lack of oxygen available in the atmosphere), a dark core remains, visible in the sherd edges when the pottery is broken (Shepard 1956).

expanded rims. Plastic decoration reaches its peak, with cord and basketry impressions, punctations, and nail impressions. The earliest date for this style comes from a pit house in northeastern Rio Grande do Sul: $1,520 \pm 90$ BP, cal. AD 430-610 (Beber 2004:53).

The distribution of these styles, based on the assemblages that I analyzed and on published vessel reconstitutions, is plotted in Figure 3, as well as the earliest dates⁷ for the Taquara-Itararé culture in Southern Brazil. The boundaries of the three styles apparently coincide with marked differences in settlement patterns: style 1 is found in areas where surface sites dominate, with few or no pit houses, and cemeteries with many mounds; style 2 is found in a region with high density of sites, many pit house clusters, and large ceremonial centers composed of geometric earthworks, as well as individual enclosed mounds; style 3 is found in an area that encompasses both the highlands, where large, isolated, dispersed pit houses dominate, and the coast, where the pottery appears in small camps, suggesting seasonal movements (Souza 2009).

From the data presented so far, we may conclude that pottery-making experienced a rapid diffusion throughout Southern Brazil⁸, given the common technological traits of all assemblages and the fact that the earliest dates from both the northern and southern limits of the tradition are broadly contemporary, making it difficult to point to a single direction of diffusion. Not much later, a number of well defined local styles emerged. These geographically circumscribed styles point to reduced territories and networks of interaction among local groups, a situation that is expected after a population has grown and filled up most of the available land (Parkinson 2006; Aldenderfer 2008). The overall scenario is very similar to that predicted by Renfrew's demic diffusion model. Since his model is one that gives much weight to subsistence strategies, we should ask if there is any new subsistence technology that might have allowed for Taquara-Itararé population growth.

⁷ All the dates mentioned in this paper were calibrated using the software Calib 6.0.1. The original dates were compiled from the following sources: Beber (2004); Araujo (2007); Chmyz et al. (2003, 2009); Parellada (2005); DeMasi (2005); Müller (2007); Rogge (2004); Schmitz et al. (2002); Copé (2006).

⁸ The remote origins of Taquara-Itararé pottery are debated, but Brochado (1984) already suggested that it originated from the so called Una pottery of Central Brazil. Una pottery is technologically and stylistically very similar to Taquara-Itararé pottery, and it is also much older, appearing in sites dated to at least 410 BC (Prous 1992:333-345; Robrahn-González 1996; Oliveira and Viana 2000).

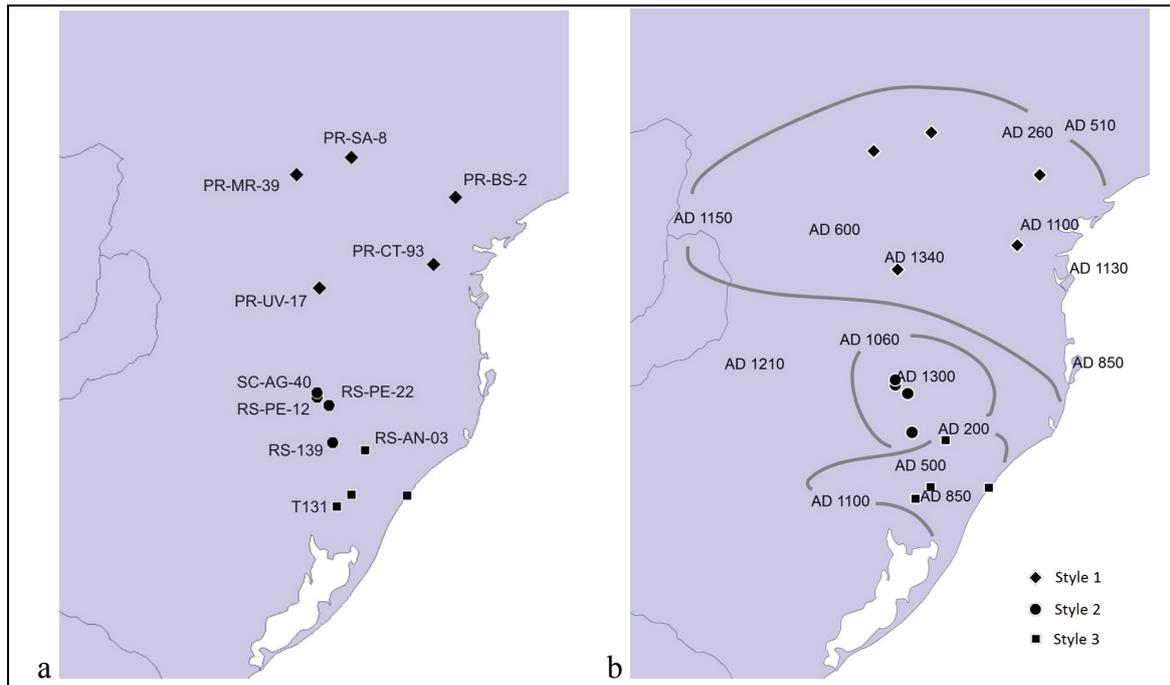


Figure 3. a) Location of the archaeological sites whose assemblages were analyzed. b) Distribution of the assemblages according to style, together with the approximate limits of each style and earliest dates for the Taquara-Itararé culture in different areas of Southern Brazil.

Agriculture has long been considered a recent acquisition for most of the Jê groups (e.g. Lowie 1946). Archaeology has proved this to be inaccurate. Ethno-historical accounts point to at least five Southern Jê cultigens: manioc, sweet potato, cará (*Dioscorea sp.*), peanuts, and five varieties of maize (Noelli 1996, 1999-2000). Of these, maize leaves the most distinguished archaeological signatures. The first evidence of maize in a Taquara-Itararé context came from the Matemático rockshelter, where maize, gourd, and cotton were found together with the burials of 65 individuals, as well as Taquara-Itararé pottery (Miller 1971). Because maize—first domesticated in Mexico—is a grass that originated in a dry neotropical environment it leaves a specific signature in the carbon content of the bone collagen of individuals who ate it along their lives⁹. This signature is present in the collagen of individuals buried in rockshelters of Santa Catarina between AD 720 and AD 835 (DeMasi 2007)¹⁰. Another important piece of evidence comes from burials in coastal shell mounds associated with Taquara-Itararé pottery. Burials from two sites dated between AD 485 and AD 745 presented, in their teeth, phytoliths¹¹ and starch grains of maize, sweet potato, and *Araucaria* pine nut (Wesolowski et al. 2010).

The archaeological sequence and data on subsistence lead to the conclusion that, by the first or second century AD, Taquara-Itararé pottery was being made in many different places of Southern Brazil. In a few centuries, it rapidly spread, covering most

⁹ This happens because the class of plants to which maize belongs produces four carbons during photosynthesis – they are called C⁴ plants. The consumption of these plants is reflected in the proportion of C¹³ to C¹² isotope in bone collagen, which varies, for maize eaters, between -16% and -9% (DeMasi 2007).

¹⁰ The C^{13/12} values are -10,766% and -15,149% (DeMasi 2007).

¹¹ Phytoliths are silicified particles produced by many species of plants. The different shapes of these particles allows the identification of plant genus and species (Piperno 1998).

of Southern Brazilian Highlands as well as the coast. There is increasing evidence that maize and tuber agriculture spread with it. Much weight has been given to *Araucaria* pine nuts, an abundant resource in the highlands, for the subsistence of these groups. Paleobotanical data point to an expansion of *Araucaria* forests after AD 1,000 throughout Southern Brazilian Highlands, coinciding with an exponential increase in the number of Taquara-Itararé settlements (Iriarte and Behling 2007). However, Taquara-Itararé pottery was already widespread by then. The combination of agriculture and intensive pine nuts exploitation fostered a population growth not seen before in this region. The increase in the number of sites after AD 1,000 is the peak of this process, related to the expansion of *Araucaria* forests both as consequence and cause, since these forests were intensely managed by humans (Noelli 1999-2000). As the landscape became filled up and territories became more circumscribed, local pottery styles developed. Circumscription is used here in the sense of Carneiro (1970) to describe the process by which the territories of the socio-political units of a region become increasingly reduced due to environmental or, in the case analyzed in this article, social reasons, such as population pressure which limits the amount of land available to each group.

Thus, the archaeological sequence for Southern Brazil shows similarities with Renfrew's "demic diffusion" or "wave of advance" model, with rapid population growth led by a new subsistence technology. Even if this economic and demographic process was an important vector for the spread of Southern Jê languages, there might be other causes as well. To argue for a single cause for the spread of agriculture and language seems now unrealistic, and the wave of advance model has been challenged in European archaeology by studies that emphasized the active role played by Mesolithic foragers in the diffusion of the "Neolithic package". The continuity in the lithic assemblages, the evidence for clearance and incipient agriculture already in the late Mesolithic, and the peculiarities of the many different "Neolithics" of Europe point to more complicated processes which might have involved both migrations and changes among indigenous foragers (Zvelebil 1998; Thorpe 1996; Whittle and Cummings 2007).

Renfrew's explanation for the spread of Indo-European languages has also been challenged by new data and new approaches presented by Anthony (2007). Anthony proposes a modified version of the elite dominance model, labeled "elite recruitment". According to it, in an environmental scenario of expansion of the steppes, the speakers of Proto-Indo-European, represented by several Bronze-Age cultures of the steppes, would have made small-scale incursions into Eastern Europe. The local late Neolithic inhabitants would have benefited from alliances with those invaders—whose advantages were not only technological (domesticated horses and wagons) but also social and ideological. The elite from the steppes might have established patron-client relationships with the late Neolithic farmers, adopting from them traits like pottery styles but also introducing in Europe the elaborate rituals of burial under mounds (*kurgans*) and the horse symbolism. Anthony suggests that in this moment of broad changes in Europe the language of the riders from the steppes, a form of Proto-Indo-European, would have been more prestigious and would have gradually been adopted throughout the continent. Thus, even if the emergence of the early Bronze Age cultures of Europe is in a large degree a local process, as Renfrew argued, this process has been triggered by contacts with foreigners and could correspond to a moment of language shift.

Bearing this discussion in mind, we should ask if there are any signs of continuity with previous forager populations in Southern Brazil, and if there are social

and ideological factors that could have played a role in the spread of Southern Jê languages together with the economic and demographic advantages of farming and intensive pine nut exploitation. Unlike the Mesolithic-Neolithic transition in Europe, the appearance of Taquara-Itararé pottery in most parts of Southern Brazil actually represents a rupture in settlement patterns and lithic assemblages (Dias 2003), making it difficult to argue for continuity in local traditions. There are, however, a few exceptions. Especially meaningful are the data from the coast, where a process very similar to that of Europe seems to have taken place: palaeogenetic analyses revealed that, while at some coastal sites the appearance of pottery coincides with population substitution, in other cases pottery was adopted by indigenous populations through diffusion (Neves 1988). New researches in the Southern Brazilian Highlands also complicated the scenario, with the discovery of a lithic assemblage typical of early hunter-gatherer groups in a pit house site in Santa Catarina, suggesting the incorporation of those early settlers into the recently arrived Jê communities (Schmitz et al. 2009). Although these are still isolated cases, future research may reveal this to be a more common pattern than previously thought.

These archaeological data corroborate previous hypotheses based on Kaingang mythology and social structure. A persistent feature of Central and Northern Jê groups, the dual organization, has been maintained among the Kaingang, whose communities are divided in two exogamic patrilineal moieties. Each moiety also has subgroups of primarily ritual function. According to Veiga (1994, 2000) and Silva (2001:130-141), this complex organization is the result of incorporation and establishment of alliances with the early inhabitants of Southern Brazil to the Jê communities as they expanded throughout the region, a story that is preserved in Kaingang creation myths. Assignment to one of the moieties or subgroups is most important during rituals, especially during the funerary ceremonies, and the “foreign” character of some subgroups is expressed by certain burial taboos (Veiga 1994, 2000; Silva 2001:130-141).

Is it possible that the complex social structure and the elaborate rituals typical of Jê groups helped those newcomers to Southern Brazil to incorporate previous inhabitants and build alliances with some of them, thus promoting the diffusion of a Jê language throughout the region? These could be the social and ideological motivations of language spread that were missing from my explanation (pages 6-10 above).

The archaeological expression of those motivations can be seen in the diffusion, together with Taquara-Itararé pottery, of an elaborate ritual architecture that includes geometric enclosures, avenues, and burial mounds. First noticed in the province of Misiones, Argentina, this kind of site was later identified also in the Brazilian states of Paraná, Santa Catarina, and Rio Grande do Sul (Iriarte et al. 2008; Chmyz 1968; Rohr 1971; Ribeiro and Ribeiro 1985). New research conducted at these sites has recovered evidence of ritual and feasting, such as ovens for cooking large amounts of meat, vessels for drinking maize beer, lip plugs, burials, and clay figurines (Iriarte et al. 2008; DeMasi 2005). In the city of Pinhal da Serra, state of Rio Grande do Sul, there is a profusion of such sites. The largest site (RS-PE-29-1) is a circular earthwork with 80 m. of diameter, surrounding an apparently leveled ceremonial ground (Figure 4a). There are also examples of isolated mounds, such as the 2 m. high “Chief’s Mound” (Figure 4b). Smaller mounds and enclosures are more common, such as the site RS-PE-29-3, composed of two circular earthworks, both with 20 m. diameter, each surrounding a burial mound (Figure 4c). In one of the excavated mounds we have uncovered two burials: one of them was a funeral pyre with large burnt logs and a few calcinated

bones, all surrounded by burnt earth; the other was a “bundle” of calcinated bones, the secondary burial of an individual cremated somewhere else (Figure 4d).

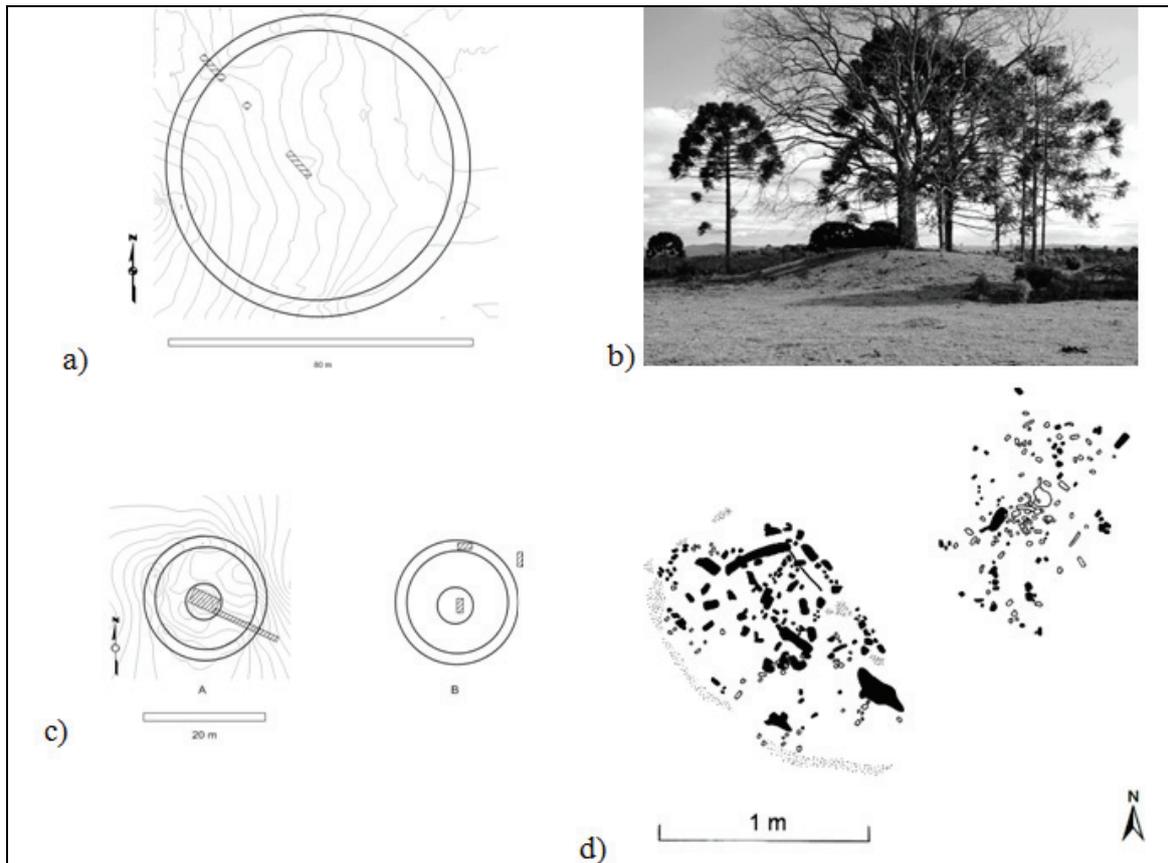


Figure 4. Ritual sites of the Taquara-Itararé culture in Pinhal da Serra, RS. a) Major ceremonial enclosure, site RS-PE-29-1; b) The “Chief’s Mound”; c) Small mounds and enclosures, site RS-PE-29-3; d) Plan of the excavation in the mound of the site RS-PE-29-3, showing the funeral pile (left) and the bundle of calcinated bones (right). Photo b taken by J. Christopher Gillam. All topographies, plans, and drawings made by the author. Figures a, c, and d reproduced from Souza and Copé (2010:110-111).

As mentioned earlier in this paper, the burial under mounds is a practice that was maintained among historical Kaingang and Xokleng groups, although only the latter practiced cremation (Métraux 1946). There are no historical parallels for geometric earthwork construction, although the historical Xokleng still cleared large ceremonial grounds for their initiation ritual, a major ceremony for which all the dispersed bands gathered. Analogy with this ritual, which involved the piercing of the boys’ lips in order to insert a plug, was used by DeMasi (2005) to interpret the large enclosures. The effort dispensed in the construction of such large earthworks, together with the many residues of feasting in their interior, all suggest that they were regional ceremonial centers where a large but dispersed population might have periodically aggregated to perform collective rituals (DeMasi 2005; Iriarte et al. 2008; Souza and Copé 2010).

Thus, agriculture and intensive pine nut exploitation might have fostered the population growth which led to the first spread of the Southern Jê languages, in a way similar to Renfrew’s demic diffusion model. On the other hand, we must acknowledge that the ritual complex that spread with the Jê-speakers might have been an attraction to the previous inhabitants of Southern Brazil, and might have made possible their incorporation into the typically Jê moiety and subgroup social structure, in a process of

recruitment similar to that proposed by Anthony (2007). This whole process, rather than only pottery as an ethnic or chronological marker, is what must be taken into account to explain the spread of the Southern Jê languages. The dates for the beginning of this process are later than Urban's estimate of 3,000 years BP, but we are dating the spread of Southern Jê languages throughout Southern Brazil, not their separation from the Northern and Central branches, which, to be understood, demands a similar attempt to correlate linguistic and archaeological data in Central Brazil. This case study is one example of how archaeological and linguistic data can be compared to construct a synthesis. It is my belief that archaeologists and linguists working on other branches of the Jê language family or Macro-Jê stock should work together in order to produce more accurate reconstructions of past social and linguistic trajectories.

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