



# Language Classification, Language Contact, and Amazonian Prehistory

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## Abstract

The linguistic map of Amazonia presents a startling jumble of languages and language families. While some families – most notably Carib, Arawak, Macro-Jê, and Tupí – are distributed widely throughout the region, their spread is interspersed with many dozens of tiny, localized families and language isolates, particularly in the Amazonian periphery. At the same time, distributions of lexical, grammatical, and phonological features suggest that this linguistic patchwork is overlaid in places by contact regions, where multilingualism has fostered lexical and/or structural resemblances among languages. This complex distribution of languages and linguistic features presents many challenges to our understanding of Amazonian prehistory. How did Amazonia's language families arrive at their present distribution? Why did some families spread over huge distances, while others came to occupy only tiny geographical pockets or are limited to a single language? What kinds of interactions among peoples led to the formation of contact zones, and how are these regions defined? Complicating these questions further is the fact that very little is known about many Amazonian languages, and relationships among them are in many cases a matter of conjecture. This article surveys our current understanding of language classification and language contact in Amazonia, and addresses various perspectives concerning the implications of these relationships for Amazonian prehistory.

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## 1. *The Amazonian Puzzle*

A glance at the language map of Amazonia<sup>1</sup> yields a striking impression of diverse and fragmented language families. With as many as 52 distinct linguistic groupings – each with no clearly demonstrated relationship to any other – Amazonia's overall diversity is unmatched by any other region in the world except New Guinea (see Rodrigues 2000b: 20). Superimposed across this linguistic patchwork are regions of relative typological homogeneity, in which languages from distinct families have developed similar grammatical profiles through prolonged contact. In the face of this bewildering complexity, our current understanding of Amazonian languages and their interrelationships represents little more than a single step into this 'last frontier' of linguistic discovery. Yet recent years have

seen an exponential increase in descriptive and historical work involving these languages, heralding the opening of new vistas on this previously uncharted territory.

Closely intertwined with the question of language relationship in Amazonia is the question of the prehistory of the native Amazonians who spoke these languages. Our understanding of how Amazonian languages diversified, spread were maintained, and influenced each other over time – and likewise how these kinds of dynamics may affect language in general – hinges on our understanding of how their speakers moved, stayed put, and exchanged marriage partners, objects, and ideas. Likewise, historical linguistics is a crucial tool for piecing together the puzzles of the Amazonian past – particularly in light of the fact that other means for doing so are limited, since much of the archaeological record is poorly preserved in the tropical climate, and Amazonian languages have no written tradition. Amazonian prehistory, in turn, may be an important piece of larger puzzles, including that of the peopling of the New World and the development and spread of worldwide innovations such as agriculture.

In the following sections, I summarize our present understanding of the relationships among Amazonian languages, focusing in particular on advances made within the last decade. Those relationships that can be attributed to descent from a common linguistic ancestor ('genetic' relationships) are examined first, followed by those that are the effects of contact. In the third section, I survey the proposals that have been made regarding Amazonian prehistory as it relates to the historical linguistics of the region.

## *2. Relationships due to Common Descent*

Until quite recently, work in Amazonian historical linguistics was directed almost exclusively toward classifying its many languages into a more manageable set of groupings. In spite of these efforts, the state of the art in Amazonian language classification is still rudimentary; a great deal of this diversity has resisted reduction, descriptive work (a prerequisite for classification) is lacking for a great many languages,<sup>2</sup> and as Campbell (1997: 170–171) observes, the dominant tendency has been to present large-scale classifications, to the neglect of careful, detailed work on individual families. Moreover, of the classifications that have been attempted, many have not relied on fully accepted historical linguistic methods – that is, appropriate application of the comparative method, which establishes descent from a common proto-language by identifying regular phonological, morphosyntactic, and other correspondences among the languages examined (as opposed to subjectively determined lexical comparison), and proposes subgroupings on the basis of shared innovations (rather than on percentages of shared lexical retentions; cf. Hock 1991; Campbell 2004 on historical linguistic methodology).

Accordingly, as of the late 1990s language classification in South America was, as Kaufman (1990: 53) put it, 'a puzzle that involves juggling opinions rather than resolving questions.' His own classification (1990, 1994; followed closely by Campbell 1997) was based on the intersections of the earlier proposals of Swadesh (1959), Loukotka (1968), Suárez (1974) and Greenberg (1987) (see Campbell 1997: 80–83 and Adelaar with Muysken 2004: 23–34 for a summary of these and other significant early classifications, including Martius 1867; Brinton 1891; Rivet 1924; and Mason 1950). While Kaufman's work represents the state of the art in the early to mid 1990s, it was clearly 'still relatively speculative,' as Campbell (1997: 82) observes.

The intervening 10 to 15 years have seen numerous advances in both descriptive and historical studies; yet given the scale of the task, few today would argue with Rodrigues' observation (2000b: 23) that 'historical-comparative studies of Amazonian languages are in a very incipient stage, and will only progress more decidedly when descriptive studies are intensified and cover the great majority of the region's languages.'<sup>3</sup> The most recent comprehensive surveys of Amazonian languages and their classification may be found in Dixon and Aikhenvald (1999a), Queixalós and Renault-Lescure (2000); further surveys by country are Rodrigues (2000b, 2006; cf. Rodrigues 1986) and Moore (2006, 2007) for Brazil, Solís Fonseca (2003) for Peru, and Gonzalez de Perez and Rodriguez de Montes (2000) for Colombia.

As an illustration of the obstacles still confronting language classification in the region, let us consider the small language family frequently referred to as 'Makú', located in the northwest Amazon. The core members of this family are the languages Hup, Yuhup, Dâw, and Nadëb, which form an undisputed group (sometimes called 'Nadahup'; see Epps 2008b, forthcoming; and Martins 2005, who calls the group 'Eastern Makú'). In addition, most classifications include the sister languages Kakua and Nukak, and many also consider Puinave (Wänsöhöt) to be related (e.g. Loukotka 1968; Campbell 1997: 183; Martins and Martins 1999; the latter does not include Puinave). However, the inclusion of Kakua and Nukak in these classifications has been based on extremely scanty evidence (a few brief word lists in Koch-Grünberg 1906a), as is the case for Puinave (a short paper by Rivet and Tastevin 1920 that uses scanty, inaccurate data and poor methodology; cf. Campbell 1997: 81; Rowe 1954: 15; see also discussion in Epps 2008b: 3–10). In the absence of further data to test these claims, authors of classifications simply cited preceding classifications for nearly 100 years, creating a kind of snowball effect that produced an illusion of authority. Very recently, new descriptive work on some of these languages has led to efforts to re-evaluate these claims for relationship; this work has produced some intriguing lists of possible cognates and, for Puinave, even some tentative proposals for sound correspondences with both Kakua/Nukak and the Nadahup

languages (Martins 2005: 331–340; Girón 2008: 419–439), but these authors conclude that the evidence is still too scant to warrant a conclusion (see Girón 2008: 439). Finally, with respect to the four established Nadahup languages, their subgrouping has so far been determined only by relative percentages of common lexical items (presumably retained from the proto-language; cf. Martins 2005), and further work is still hampered by a lack of published lexical data.

Sorting out language relationships in Amazonia is made even more difficult by the fact that – due in large part to the general paucity of information – any given language seems to have a plethora of names, including Spanish, Portuguese, and even English spelling variants, and these are not used consistently across sources;<sup>4</sup> conversely, in some cases the same name is applied to multiple, and often unrelated, languages. Again, the ‘Makú’ family is a representative case: As member languages, Epps (2008b: 3) lists Hup, Yuhup, Dâw, and Nadëb; Martins and Martins (1999) list Hupda, Yuhup, Dâw, and Nadëb, to which they add Kakua and Nukak. Kaufman (1994: 60) and Campbell (1997: 183) list Hupda (with Yahup as a dialect), Kuri-Dou (may correspond to Dâw; noted as extinct), Kaman, Nadöb, Guariba (may correspond to a dialect of Nadëb), Cacia, Waviare (corresponds to Nukak), and Puinave. Rodrigues (1986: 87) gives Húpda, Yuhúp, Kamã (corresponds to Dâw), Nadëb, Guariba, and Bará (corresponds to Kakua). Even the family itself has at least four alternative names: in addition to Makú or Macú (e.g. Rodrigues 1986; Martins and Martins 1999), it has been called Puinavean (Kaufman 1990; Campbell 1997), Vaupés-Japura (Uaupés-Japura; Ramirez 2001a), and Nadahup (Epps 2008b, etc.). Of these, there are obvious problems with ‘Puinavean’, which derives from the dubious classification discussed above; there are also problems with ‘Makú’ (probably derived from Arawak ‘without speech’; cf. Koch-Grünberg 1906b: 877), since the same name (or some variant thereof) also refers to at least three other unrelated languages and groups in Amazonia (cf. Martins and Martins 1999: 251), and is currently in use as an ethnic slur in the upper Rio Negro region (applied to members of this ethnic/linguistic group; see Epps 2008b: 9–10). These concerns have motivated the proposals ‘Vaupés-Japura’ (based on the names of two local rivers) and ‘Nadahup’ (based on the names of the member languages Hup, Yuhup, Dâw, and Nadëb).

I turn now to a brief overview of the current state of classification and historical reconstruction for Amazonian languages, particularly in light of contributions made within the last 10 years. I focus on the four largest and most widespread families, Tupí, Arawak, Carib, and Macro-Jê, which dominate the map of Amazonia; interspersed among these, particularly in the periphery of the region, are the many small families and isolates or unclassified languages.

The Tupí family is represented throughout Amazonia, but is concentrated in the southwest. General and historical overviews of the family

are given by Rodrigues (1999b) and Gabas (2006), who list 10 subgroups; Moore (1994) addresses comparative Tupí syntax (see also Cabral and Rodrigues 2007). The majority of work relating to Tupí has focused on the large Tupí-Guaraní branch of the family, due in part to the fact that the location of several of these languages along the eastern seaboard brought them early to the attention of the European colonists. Jensen (1999) and Rodrigues and Cabral (2002) give a historically based discussion of this branch, and reconstructions of Proto-Tupí-Guaraní are found in Lemle (1971), Mello (1992, 2002), and Schleicher (1998); see also Soares and Leite (1991) for a discussion of Tupí-Guaraní vowel shift. Recent work has shown that Tupí-Guaraní itself forms a higher-level grouping with Mawé and Awetí (Rodrigues and Dietrich 1997; Drude 2006, forthcoming; Meira and Drude forthcoming), and that Ramarama and Puruborá may form a subgroup (Galucio and Gabas 2002), thus reducing the number of overall Tupí subgroups to seven. Work on other branches of Tupí is less advanced than is that on Tupí-Guaraní, but includes a partial reconstruction of Proto-Tupari (Moore and Galucio 1993), and comparative work on the Mondé (Moore 2005), Ramarama (Gabas 2000), and Munduruku (Picanço forthcoming) groupings.

The Arawak family is among the largest in the New World, both in terms of area covered and number of languages (about 40 living).<sup>5</sup> Arawak languages are concentrated in the western Amazon, but are encountered both north and south of the Amazon River, and extend to the northeast as far the Caribbean. The Arawak family has been the focus of more comparative work than have most other Amazonian families (other than Tupí); yet our understanding of its internal classification and reconstruction is still very limited, since – as with most Amazonian language groups – adequate reliable data are lacking (cf. Aikhenvald 1999a: 73, 2002, 2006; Facundes 2002; Michael forthcoming). Facundes (2002: 83–84) compares the internal classifications of the family offered by Payne (1991, principally involving the northern languages) and Aikhenvald (1999a; cf. Aikhenvald 2006), and notes that while they agree in general on which languages belong to the Arawak family as a whole, they propose quite different subgroupings. Aikhenvald (1999b, 2001) observes that some of the similarities among geographically proximate languages may be due to diffusion. A third classification is proposed by Ramirez (2001b), who suggests a division between western and eastern Arawak languages (as opposed to the more accepted northern and southern groupings); however, the study has methodological difficulties and considers only shared lexical retentions (cf. Michael forthcoming). Recent work by Facundes (2002) and Facundes and Brandão (2007, forthcoming) has addressed subgrouping among the southern Arawak languages, based on shared innovations.

With the exception of Arawak, the Carib family has more languages than any other South American family, but has received considerably less

attention than Arawak or Tupí. Carib languages are concentrated in northeast Amazonia, with a small branch to the south on the Xingu River (a tributary of the Amazon). The most recent classification of the family is that of Meira (2006), who proposes six main branches in contrast to Kaufman's earlier proposal of four (Kaufman 1989 ms, 1990, 1994; see Campbell 1997: 204; Gildea 1998; Derbyshire 1999: 25); see also earlier work by Durbin (1977: 35, 1985: 358–60). Other recent historical work on the Carib family includes Gildea's (1998) reconstruction of aspects of Proto-Carib morphosyntax, Meira's (2002) comparison of pronominal and demonstrative systems in Carib languages, and work by Meira et al. (forthcoming) on Carib ablaut. For particular branches of the family, Meira (2000) offers a reconstruction of the Proto-Taranoan branch of Carib, Gildea (2003) and Mattéi-Muller (2002) discuss a 'Venezuelan branch', and Meira and Franchetto (2005) propose that southern Carib languages form two distinct subgroups.

The Macro-Jê family (of which the Jê languages form one branch) is located principally in southern Amazonia. Macro-Jê was established only recently as a legitimate family, in part through the comparative work of Davis (1966, 1985), and more recently in work by Rodrigues (1999a, 2000c, 2002; Rodrigues and Cabral 2007); the actual relationship of the various putative branches to the family is still in some doubt (see Ribeiro 2006). While a tentative internal classification was proposed in Rodrigues (1999a: 167–168), this was made only on geographic grounds (distinguishing Eastern, Central, and Western branches), and work on internal genetic classification is currently in its initial phases (Ribeiro 2007, forthcoming; Castro Alves forthcoming; see Ribeiro and van der Voort forthcoming). Ribeiro and van der Voort (forthcoming) have recently presented evidence that the Jabuti family of Rondônia (southwest Brazil) constitutes an additional branch of the Macro-Jê family, and Adelaar (forthcoming) argues likewise for Chiquitano (Bolivia and Brazil).

Amazonia's smaller families have on the whole been the subject of even less historical work than its larger families, and what work does exist is likewise of varying quality. Historical reconstructions have been proposed for the Pano family (Shell 1965; see also Loos 1999), the Tukano family (Waltz and Wheeler 1972; see also Barnes 1999), Nadahup ('Eastern Makú') (Martins 2005), and Tacana (Key 1968; Girard 1971), but these should be regarded as preliminary efforts. Reconstructions of Arawá (Dixon 2004; see also Dixon 1999) and Bora-Witoto (Aschmann 1993) are relatively solid. Recent efforts to determine higher-level groupings among small families and unclassified languages include Adelaar's (2000) proposal of a genetic relationship between Harakmbut (a language of Peru) and Katukina (a small family of western Brazil), and van der Voort's (2005) evaluation of the evidence for linking the unclassified languages Kwaza, Aikanã, and Kanoê (all found in the Guaporé region of western Brazil), which he considers still too scanty to warrant a positive conclusion.

In contrast to the relatively few efforts to establish the internal classification of established families, there have been many proposals of distant relationships across families. The best known is undoubtedly that of Greenberg (1987), who claimed to have reduced all the languages of South America, Mesoamerica, and most of North America to a single huge family ('Amerind'; for discussion of the problems with Greenberg's approach, see Campbell 1988). Swadesh (1959, 1962) was not far behind with his proposal of four genetic units for South American languages. Many other claims for long-range relationship have been put forward; Kaufman (1990, 1994; see Campbell 1997) considers some of these in his tentative hypotheses for higher-level groupings, although to date very few have gained widespread acceptance, and some have been generally dismissed upon closer scrutiny. One of the most widely discussed proposals suggests that Carib, Macro-Jê, and Tupí are distantly related (Rodrigues 1985, 2000a; Davis 1985: 299–300; Urban 1992), based on a number of similar phonological, morphological, and syntactic characteristics (see Klein 1994: 355), including resemblances in irregular morphology (Ribeiro and van der Voort forthcoming).

Much of the literature dealing with South American languages (particularly works published before the mid-1990s) attempts to assign absolute dates to the families in question (i.e. the breakup of the proto-languages), usually by means of glottochronology, an approach which rests on the assumption that rates of lexical replacement will be essentially constant across languages and through time. However, this assumption and others underlying the method have been shown to be problematic (e.g. Klein 1994: 347–350; Campbell 2004: 200–210; but cf. Brown 2008), and the glottochronological dates ascribed to South American languages should in general be taken as highly unreliable. This is underscored by the considerable variation among time-depths estimated via these or comparable techniques by different scholars. For example, the age of the Arawak family is given variably as 3000 years (Urban 1992: 95), 5000 years (Migliazza 1982: 508), and 4500 years (Swadesh 1959; cf. Kaufman 1990: 51), and estimates for Carib range from 2000–3000 years (Urban 1992: 93) to 4500 years (Migliazza 1982: 504) to 3700 years (Swadesh 1959; Kaufman 1990: 51). The questionable accuracy of such dates is particularly important when considering efforts to correlate linguistic data with that of other disciplines, such as archaeology, since many non-linguists continue to accept glottochronological estimates uncritically.

## *2. Relationships Due to Contact*

Overlaid across Amazonia's linguistic map of genetic relationships is a distinct network of relationships that can be attributed to contact among languages. Understanding the effects of language contact is a crucial part of the puzzle of language classification, since shared features due to

common inheritance must be distinguished from those due to diffusion (e.g. Thomason and Kaufman 1988; Aikhenvald 2001); language contact also gives us fascinating insights into the past interactions of speakers, as discussed in more detail below. However, as with the genetic classification of Amazonian languages, we are still a long way from a thorough understanding of contact relationships in the region.

Language contact effects can be the outcome of a variety of scenarios. These may involve language shift, in which speakers of one language switch to another, as well as creolization or language mixing, in which a new language emerges. In all of these cases, the resulting language is typically characterized by substrate features, conventionalized variations derived from improper learning or from elements of the original language(s) that were spoken before the shift took place. Along the Rio Negro, for example, many speakers of East Tukano and Arawak languages have shifted to *Língua Geral* (Nheengatú), a Tupí-Guaraní *lingua franca*, which has developed morphosyntactic and phonological features (such as evidentiality and voiced stops) to match those found in the speakers' original languages (Floyd 2005, Aline Cruz, personal communication). A similar scenario may explain the relatively profound differences between the languages Kokama and Omagua (western Amazonia) and other members of the Tupí-Guaraní family. While these languages are sometimes considered to have been among the first to split off from the rest of the family (Migliazza and Campbell 1988; Urban 1992: 92; see Campbell 1997: 201), Urban (1996: 82–90) suggests that they may actually be cases of early shift to *Língua Geral*, and points to Arawak-like lexical, phonological, and morphosyntactic characteristics that may be substrate features. Similarly, Cabral (1995) suggests that Kokama may be a creole.

When the languages in contact are maintained, presupposing multilingualism among speakers (usually through intermarriage and/or economic interaction), the outcome is normally some form of borrowing. This may be limited to lexical borrowing, particularly in cases where multilingualism is relatively short-term or non-pervasive within the speech community (cf. Thomason and Kaufman 1988). The upper Xingu, where speakers of Arawak, Carib, Macro-Jê, and other languages have been in limited contact (for about a century, cf. Heckenberger 1996) is an illustrative case, although Seki (1999) suggests that with continued contact more features may be expected to diffuse. In other instances, the traces of ancient contact are the only indication that some interaction may have taken place, as in the case of old lexical loans from Tupí-Guaraní into Carib languages (Rodrigues 1985; see Urban 1992: 93).

Where multilingualism is pervasive and sustained over a longer period, diffusion of grammatical categories and structures may also occur, causing the grammars of the languages involved to become more similar over time. Cases in which this diffusion involves multiple languages within a given geographic region are considered linguistic areas. There have been



a considerable number of proposals for linguistic areas within Amazonia; many of these are supported only circumstantially (i.e. shared features are noted, but it is not determined whether these are actually due to contact), but for others historical comparison among related languages provides clearer evidence of diffusion (see Campbell 1997: 330–331, 346–350 for a discussion of proposals and methods).

Perhaps the best-defined example of a linguistic area within Amazonia is the Vaupés region, located in the northwest Amazon. The Vaupés is home to speakers of languages belonging to the East Tukano, Arawak, and Nadahup families, who have maintained a pervasive multilingualism through the practice of linguistic exogamy, or obligatory marriage across language groups (in the case of the Tukano and Arawak peoples), and economic interaction (in the case of the Nadahup peoples and their neighbors). Social pressure to maintain distinct languages has fostered a resistance to lexical borrowing, but the diffusion of grammatical structures has proceeded unchecked, leading to considerable grammatical convergence across the region. Areas of grammar that have been affected include phoneme inventories, nasal prosody, verb serialization, noun classification, evidentiality, and many more. Comparative-historical studies of this convergence provide evidence for East Tukano influence on Arawak (Tariana; Aikhenvald 1999b, 2002), Arawak influence on East Tukano (Gomez-Imbert 1996; Stenzel and Gomez-Imbert forthcoming), East Tukano influence on Nadahup (Epps 2005, 2007, 2008a), and for diffusion among East Tukano languages themselves (Gomez-Imbert 1991, 1993, 1999; Gomez-Imbert and Hugh-Jones 2000). While the locus of intense contact appears to be the Vaupés region, there is additional evidence that areal diffusion has affected languages within the wider region as well, extending to the northeast into the Içana basin (Aikhenvald 1999b), and to the west and south into southeastern Colombia and northern Peru, involving languages of the Witoto, Tukano, Arawak, and other families (Seifart and Payne 2007; Epps 2006; Hansen 2007; Aikhenvald 2003).

Other areas of Amazonia in which diffusion may be responsible for grammatical similarities among unrelated languages include the Guaporé-Mamoré region of southwest Brazil and eastern Bolivia (Crevels and van der Voort 2008) and the Orinoco-Amazon region in the north of the continent (Migliazza 1985: 20; cf. Campbell 1997: 348). On a larger geographic scale, Doris Payne (1990b) and Kaufman (1990: 33) have suggested that eastern and western Amazonia pattern differently with respect to a number of features, such as degree of morphological complexity, and Dixon and Aikhenvald (1999b: 8–10) observe that particular grammatical features are concentrated in certain regions; for example, lexical tone appears in the Vaupés region and in the south on the Rondônia/Mato Grosso border (see also Moore 1999), and switch-reference marking occurs mainly in the western Amazon. More fine-grained areal-typological

studies are needed to investigate patterns of this nature; as the number of significant descriptive studies grows, this is at last becoming a more realistic goal (cf. Epps et al. 2008).

Considerable discussion has been devoted to the question of whether the Amazonian region as a whole could be considered a linguistically distinct region with respect to the rest of Central and South America. There is as yet little consensus on this issue, and even where it may be possible to attribute widely shared features to something other than independent innovation, the question of whether these might be due to contact or to relatively deep genetic relationship is at this point largely unanswerable. Among the earliest (and tentative) proposals for an Amazonian linguistic area are Derbyshire and Pullum (1986: 16–19, 1991: 3) and Klein (1992: 33–34, 1994: 354), who list several widely shared traits, including O before S word order, verb agreement with both subject and object, and the use of nominalizations for relative and subordinate clauses (see also Derbyshire 1987; David Payne 1990; and Derbyshire and Payne 1990). However, Constenla Umaña (1991: 135) and Doris Payne (1990b: 3) observe that many of these traits are widespread throughout the Americas generally, and may not define a specifically Amazonian region (see Campbell 1997: 348–351 for discussion). More recently, Dixon and Aikhenvald (1999b: 8–10; see also Aikhenvald 2007) propose over a dozen linguistic features to be widespread in Amazonia and distinct from the neighboring Andean region; these include polysynthesis, head-marking, extensive classifier or gender systems, few oblique cases, cross-referencing of only one argument on the verb, some prefixing, and certain phonological features such as a five-member vowel system. A visual inspection of the maps in the ‘World Atlas of Language Structures’ (Haspelmath et al. 2005) suggests that several of these features may indeed define an Amazonian region, although others are not clearly supported by WALS; additional features that appear in WALS as clustered in Amazonia include relatively small consonant inventories, relatively large vowel inventories, and a lack of a morphologically defined second person imperative form, among others. Finally, Beier et al. (2002) propose a ‘discourse area’ centered on – but not limited to – the Amazon basin, characterized by ceremonial dialogue, echo speech, ritual wailing, parallelism, shamanistic language use, and other characteristics. More work is needed to determine whether these features or others are in fact significant Amazonia-wide tendencies.

### 3. *Language and Prehistory*

The question of what relationships exist among Amazonian languages begs the question of why they exist. What movements of peoples and exchanges of ideas may account for Amazonia’s linguistic diversity, for the patchwork distribution of its languages, and for the web of contact effects

linking otherwise unrelated groups? What can the linguistic picture tell us about the prehistory of these languages' speakers? In this section, I examine a number of approaches to these questions, from tracing the origins of far-flung language families to gleaning clues about past cultural patterns and subsistence practices.

I turn first to the issue of Amazonia's linguistic diversity. It is frequently asked why Amazonia – and indeed all the Americas – has such a high density of distinct genetic units overall, but this question has proved difficult to answer. Nichols (1990) proposes that the linguistic diversity of the New World indicates a very ancient initial settlement, based on known rates of diversification, but Nettle (1999: 120–122) challenges this with the observation that rates of diversification may not be constant, especially when comparing initial dispersals into uninhabited territory with other kinds of language spread. Nichols (1992, 1997, 1998) also raises the question of whether some common factor or factors, such as geography, can account for areas of high linguistic diversity ('accretion' or 'residual' zones) vs. those of low diversity ('spread' zones); she identifies Amazonia an accretion zone because of its high diversity. However, it is not clear what Amazonia might have in common with other linguistically diverse areas like New Guinea (certainly not its mountainous geography, which may foster isolation of groups and thence diversity); moreover, Amazonia itself has its own areas of high and low diversity (see below), so Nichols' distinction may have little explanatory value here (see Campbell and Poser 2008: 307–308). Nevertheless, work in population genetics has indicated that Amazonian peoples have tended to maintain smaller, more isolated groups than have peoples in the Andean regions – whether for socio-cultural, environmental, or other reasons – as is consistent with the diverse linguistic picture (Tarazona-Santos et al. 2001).

The patterns of diversity within Amazonia are perhaps a more promising source of clues to the region's prehistory than is the question of its overall diversity. In particular, considerable effort has been devoted to tracing the original points of dispersal for the most widespread language families, Tupí, Arawak, Carib, and Macro-Jê. These efforts have relied principally on the insight that the most likely homeland is the place of maximum linguistic diversity (Sapir 1949[1916], reformulated as 'migration theory' by Dyen 1956). However, given that the subgrouping of most Amazonian families is not yet well-established, that distant relatives may not yet have been associated with any given family, and that other relatives may be extinct and undocumented, pinpointing areas of maximum diversity in Amazonia is not necessarily straightforward (see Ribeiro and van der Voort forthcoming); moreover, the place of maximum diversity is clearly not the only possible homeland for a given language family. Current proposals for homelands of Amazonian language families should thus be understood as tentative, and much more historical work is needed before alternative methods, most notably matching homelands to the

ranges of reconstructed words for flora and fauna in the proto-languages, can be applied (cf. Urban 1992: 90).

The principal proposals for the homelands of Amazonia's major families may be summarized as follows. For the Tupí family, the most likely point of origin is generally agreed to be in southwest Amazonia, in the area of the Brazilian state of Rondônia, where the majority of the family's branches are concentrated (Rodrigues 1964, 1999b: 107, 2000a; Migliazza 1982: 514; Urban 1992: 92, 1996); alternative views favoring a Tupí homeland along the central Amazon River (e.g. Lathrap 1970; Brochado 1984: 36) are largely based on problematic attempts to correlate linguistic and archaeological data, and on methodologically flawed linguistic work. Ramirez (2006) provides evidence from lexical borrowing for more recent migration routes of Tupí-Guaraní speaking peoples (also documented historically; see Métraux 1927). The Arawak homeland is more uncertain; the general consensus in recent work is that it lay in western Amazonia, but whether it was to the north or the south of the Amazon River is not obvious since structural diversity is high in both regions (see Urban 1992: 96; Rodrigues 2000b: 18). Aikhenvald (1999a: 75) favors a northern homeland, between the Negro and Orinoco Rivers, based on her internal classification and on ethnohistoric evidence; Heckenberger (2002: 103) does likewise, appealing to archaeological as well as linguistic evidence. It is also observed that the paths of Arawak migrations lay largely along rivers and coastal areas (Migliazza 1982: 514; Heckenberger 2002: 106). For the Carib family, there is a general consensus for a northeast Amazonian origin (probably between the Amazon and Orinoco rivers), where the family's diversity is widely agreed to be concentrated (Migliazza 1982: 515; Durbin 1977, 1985: 357; Villalón 1991; see also Urban 1992: 94; Leite and Franchetto 2006: 32). However, Rodrigues (2000a, following von den Steinen 1886: 308) suggests a southern homeland on the basis of old lexical borrowings from Carib into Proto-Tupí-Guaraní, and informed by his view of Carib linguistic diversity, although this is contested by Meira and Franchetto (2005: 177). Proposals for the homeland of Macro-Jê are the most tentative, given that so little work has been done on this family's internal classification. While it has been assumed that Macro-Jê maximum diversity – and thus its homeland – lies in southeast Brazil (e.g. Urban 1992: 90–91), the recent proposals that the eastern languages may in fact be relatively closely related (Ribeiro 2007), and that the group has additional members (Jabuti and Chiquitano) in far western Amazonia (see above), suggest that central Brazil may be a more likely homeland (Ribeiro and van der Voort forthcoming).

What may have motivated these languages' diversification and spread over such large territories, and likewise what may explain the more localized distributions of other Amazonian families and isolates, are still largely matters of conjecture. One commonly invoked model emphasizes demographic expansion, involving migrations of speakers who physically

carried their languages with them. Inter- and intra-group conflict, among other social factors, are implicated in the fissioning and dispersal of Amazonian groups (e.g. Migliazza 1982: 498; Migliazza and Campbell 1988: 387), as has been documented in historic times (Stark 1985: 187; Brandhuber 1999). Certain cases of expansion may have been associated with some important technological or cultural innovation, as Urban (1992: 69) suggests for the particularly rapid spread of the Tupí-Guaraní languages throughout Amazonia. It has frequently been proposed that agriculture might have been such an innovation. According to some models, the development of agriculture would have produced relatively rapid demographic growth, leading to the expansion of language groups such as the Arawak (e.g. Migliazza 1982: 516; Dixon and Aikhenvald 1999b: 17). This proposal follows work by Renfrew (1987, 1997) and Bellwood (2001), who have argued that the development of agriculture has motivated language spreads in many parts of the world; however, as McConvell (2001: 145) and Campbell and Poser (2008: 324–325) have argued, this model has various weaknesses and should not be applied uncritically. With respect to the Arawak expansion in Amazonia, Heckenberger (2002: 101–102) observes that there is no evidence of such population pressure, and that while agriculture may have been a factor, ‘certainly the processes were varied and caused more commonly by local and contingent social and political conditions rather than the general, presumably impersonal forces of, for instance, demographic growth, at least if ethnographic patterns are any guide.’

In contrast to demographic spread, languages may also spread via shift on the part of speakers of other languages, presumably impelled by some form of cultural expansion associated with the dominant language. Hornborg (2005) argues that this model may best account for the spread of Arawak throughout the Amazon region. He observes that a number of factors may have promoted the dominance of Arawak culture, including agriculture and other aspects of technology and culture. Trade may also have played an important role; some Arawak languages have been documented as trade languages (Hornborg 2005: 600), and there is considerable evidence for extensive Arawak control and use of the network of trade routes that once linked large regions of northern South America (Lathrap 1973; Vidal 2000). Investigation into substrate phenomena in Arawak (and other) languages may shed light on the question of whether their spread came about through language shift. Further work by Hornborg and Eriksen (2005) also proposes that as the Arawak linguistic and cultural complex expanded along the major rivers, the more upland ranges of the Macro-Jê, Tupí, Pano, and Carib peoples may have been circumscribed by the Arawak presence, creating a kind of ‘cultural barrier’ that engendered further linguistic diversification.

There have been numerous efforts to pin down some of the answers to these questions by linking language spreads to particular cultural

complexes attested in the archaeological record. These have focused on ceramics (in part because ceramics are one of the few remnants of material culture that survive in the rain forest; for example, Lathrap 1970; Brochado 1984; Oliver 1989). For example, Lathrap (1970) suggests a connection between the makers of 'Saladoid-Barrancoid' ceramics and the speakers of Arawak languages (cf. Heckenberger 2002: 107). However, most of these suggestions remain largely speculative, in part because many aspects of Amazonian material culture are not coterminous with ethnic or linguistic groups, but tend to be shared within widespread, multiethnic and multilingualistic 'regional systems' (see Neves 1999: 230).

It has frequently been pointed out that the proposed homelands of Amazonia's most widespread language families, as well as most of its isolates and small families, are located on the periphery of the Amazon basin, whereas the indigenous languages occurring in the central lowlands are represented almost exclusively by the spread of the four largest families, Tupí, Macro-Jê, Carib, and Arawak. On the contemporary map of Amazonia, there is little doubt that the general absence of indigenous languages and cultures along the Amazon river and its major eastern tributaries is due to the early and intensive settlement of these areas by Europeans and their descendants (see Rodrigues 2000b: 21; Heckenberger 2002: 104), and it is also worth noting that the peripheral areas may have attracted groups from elsewhere (Kaufman 1990: 35; Crevels and van der Voort 2008: 172), including relatively recent refugees from the central areas, which would have increased their diversity. However, it seems unlikely that European contact is wholly responsible for the patterns of Amazonian diversity seen today, and Kaufman's (1994) estimates of the locations of Amazonian languages at the time of contact show a picture that is not markedly different from the present one in this respect.

While there is as yet no satisfying explanation for this uneven distribution of Amazonian languages, a number of correlations have been suggested among family homelands, areas of high diversity, and non-linguistic phenomena. Dahl (2006) observes that the linguistically diverse peripheral regions correspond to the paths of initial migration into South America suggested by archaeologists (Anderson and Gillam 2000), so could represent the regions of earliest human settlement. Urban (1992: 100) similarly proposes that the centers of Amazonian language dispersal were all located in the periphery, but adds the highly improbable suggestion that permanent settlement of the central lowland regions was very recent, within the last 1000 years (contradicted by archaeological evidence; for example, Roosevelt 1994a,b: 4–9; Scheinsohn 2003: 351). Migliazza (1982: 500–502), following Meggers (1975, 1977, 1979; cf. Neves 1999: 253), observes that homeland proposals for the Tupí, Arawak, and Carib families correspond to the presumed locations of forest refugia, the discontinuous 'islands' of forest that may have existed during relatively

dry periods (the last of which is thought to have occurred from 2000–4500 years ago; for example, Prance 1982). Just as the forest refuge hypothesis has been proposed as a way to account for Amazonia's biological diversity, Meggers and Migliazza suggest that it may account for linguistic diversity as well, since the forest islands would have fostered diversification, followed by dispersal. However, recent work in biology and geology has brought the refugia hypothesis generally into question (e.g. Knapp and Mallet 2003; Whinnett et al. 2005). Finally, Clement et al. (2005) observe that the proposed points of origin for a number of domesticated plant species (manioc, peach palm, cacao, etc.) are also in the periphery of the Amazon basin, and that the correlation between this and the homelands for the largest language families suggests a possible connection between the early domestication of these crops and spread of these language families.

Most efforts to consider Amazonian prehistory through a linguistic lens have taken such relatively coarse-grained approaches, probably for some of the same reasons – mind-boggling linguistic diversity and general scarcity of data – that have promoted large-scale language classification to the neglect of internal subgrouping (see Section 2). However, it is perhaps the fine-grained approaches (while still few) that yield the most promising insights into Amazonian pasts. In general, these studies examine vocabulary in a particular group of languages in light of the working assumptions of the *Wörter und Sachen* ('words and things') approach: a word reconstructed to the protolanguage represents a concept relevant to its speakers, morphologically complex words are more likely to be recently innovated than are morphologically simple terms, and words borrowed from another language suggest that the concepts were borrowed from its speakers. Based on Payne's (1991) reconstruction of Proto-Arawak, for example, Heckenberger (2002: 106–115) observes that the first Arawaks appear to have cultivated manioc, corn, sweet potato, pepper, achiote, and tobacco; they made ceramics, used hammocks, lived along larger rivers (indicated by their word for caiman, which appears in major waterways), recognized hierarchical social relations (older/younger sibling, chief/commoner, etc.), and observed certain types of rituals and rites of passage (see also Facundes 2002: 95; Brandão and Facundes 2007). Similarly, cognates across the Nadahup (Makú) languages suggest that the speakers of this proto-language were familiar with canoes, despite their forest orientation and habit of traveling on foot (Epps 2008b: 33).

Studies of this kind may also shed light on changes in the past lifeways of Amazonian peoples. For example, Payne (1985) observes that possible loans between Arawak and Bora-Witoto languages include a number of culture-specific items like coca, drum, rattle, and the hallucinogenic *Banisteriopsis caapi*; Arawak may likewise be the source of terms for *Banisterium* and the principal deity or cultural hero in East Tukano and Nadahup languages of the Vaupés region (Epps forthcoming), suggesting

that Arawak peoples had a profound cultural influence on these neighboring groups (cf. Hornborg's model of Arawak expansion, discussed above). With respect to changes in subsistence patterns, Balée (1999; see also Balée and Moore 1994) demonstrates that the agricultural vocabulary in the language of the hunter-gatherer Guajá people reconstructs to Proto-Tupí-Guaraní, indicating that the Guajá were once agriculturalists who returned to foraging, probably as a response to European pressures. Conversely, comparative-historical work with the Nadahup family suggests that their contemporary emphasis on hunting and gathering is representative of their past, but that they gained some agricultural knowledge from neighboring East Tukano groups (Epps forthcoming). The expansion of Nadahup numeral systems over time likewise appears to correlate with the onset of interaction and economic exchange with East Tukano peoples (Epps 2006, forthcoming). Finally, Bernal et al. (2007) observe that terms for the palm *Iriarteia deltoidea* in East Tukano languages are based on the root 'starch', indicating that it was probably a food source in the past; the unlikelihood that this would be exploited by people with access to root crop agriculture suggests a not-so-distant hunting and gathering past for the East Tukano peoples themselves.

#### 4. Conclusion

While our understanding of the classification of Amazonian languages and the contact-induced relationships among them is still in its infancy, important strides have been made in the past decade. These advances include not only historical and comparative studies involving multiple languages, but also solid descriptive studies of particular languages upon which further historical work may be based. However, the descriptive task is particularly urgent given the acutely endangered status of many Amazonian languages, and is also particularly gargantuan given the number of languages that still lack even basic descriptions (cf. Leite and Franchetto 2006; Moore 2007, forthcoming; Moore et al. 2008). Only with more descriptive work will our understanding of Amazonian historical linguistics be able to progress, and with each language that disappears undocumented another piece of the puzzle is lost forever.

As more descriptive data become available, future advances in Amazonian historical linguistics will depend on prioritizing a relatively fine-grained approach. In studies of language classification, internal subgrouping and reconstruction of established families are particularly needed, and the investigation of how various lexical and grammatical features pattern within particular regions of Amazonia will be essential to understanding contact relationships. Work of this kind will in turn allow us to reconstruct a more detailed conception of Amazonian prehistory, and to eventually solve some of the puzzles that the intricate map of Amazonian languages presents to us.



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### *Short Biography*

Patience Epps' research interests include the description and documentation of indigenous Amazonian languages, language contact and change, linguistic typology, and linguistic anthropology. Her publications include the monograph *A Grammar of Hup* (Mouton de Gruyter 2008; a description of a Nadahup language of the northwest Amazonian Vaupés region) and papers in *Diachronica*, *Studies in Language*, and *Linguistic Typology*. She holds a BA in anthropology from the College of William and Mary and a PhD in Linguistic Anthropology from the University of Virginia, and was a pre-doctoral fellow at the Max Planck Institute for Evolutionary Anthropology in Leipzig, Germany. She is currently an assistant professor in the Department of Linguistics at the University of Texas at Austin.

### *Notes*

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<sup>1</sup> 'Amazonia' is here loosely defined as the lowland region encompassing the Amazon and Orinoco River basins (cf. Dixon and Aikhenvald 1999b: 4; Rodrigues 2000b: 15).

<sup>2</sup> See Fabre (2005) for a comprehensive bibliography of works on South American languages.

<sup>3</sup> My translation from the Portuguese.

<sup>4</sup> One such point of difference in naming relates to the use of the suffix *-an* on the names of language families, as suggested by Kaufman (1990: 35). While this convention appears to be a sensible way of distinguishing languages from families (which often take their name from that of a single language), it has not taken hold among scholars writing in languages other than English, and is not universally used even among those scholars who do write in English (e.g. Dixon and Aikhenvald 1999a: xxiv). I therefore follow the South American convention in this paper and do not use *-an* with family names.

<sup>5</sup> As noted by Aikhenvald (1999a: 73), Facundes (2002: 81), and others, the name 'Arawakan' has been applied to a proposed larger grouping that links the Arawak family (also termed 'Maipurean') with Arawá, Candoshi, and several other groups (e.g. Kaufman 1990: 58). However, these associations are largely based on early, methodologically flawed works (Matteson 1972; Noble 1965), and have not in general been borne out by closer scrutiny.

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