Part VII

South America

22 Language and Subsistence Patterns in the Amazonian Vaupés

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22.1 Introduction: Foragers and Farmers

The majority of contemporary hunter-gatherer populations do not subsist in isolation, but maintain regular relations with neighboring sedentary cultivators. Such interactions have been documented in many parts of the world. In Africa, for example, we find the relatively well-known cases of Pygmy groups such as the Mbuti and Efe, who interact with Bantu and other neighbors (Turnbull 1965; Bahuchet and Guillaume 1982; Grinker 1994), as well as relationships between the foraging !Kung and the Bantu/Tswana (Lee 1979), the Okiek of Kenya and the Maasai (Woodburn 1988), and the Hadza of Tanzania and their various agriculturalist neighbors (Woodburn 1988). In Southeast Asia and the Philippines, similar relations exist between the foraging Agta and the farming Palanan (Peterson 1978; Headland and Reid 1989), the Batek Semang and the Senoi (Endicott 1984), and other groups. In South India, likewise, foraging Paliyans interact with neighboring agriculturalists (the Tamils; Gardner 1972), as do the Malapantaram (Morris 1982) and the Naiken (Bird 1983).

Despite the profound geographic and cultural differences that exist among these various groups, the relationships themselves are often strikingly similar. A common pattern has been described as a 'symbiosis' (e.g., Maceda 1964; Ramos 1980; see Peterson 1978: 337) in which the hunter-gatherer groups provide hunted meat, forest products such as honey and fruit, and labor in exchange for the carbohydrates and trade goods possessed by the agriculturalists (Garvan 1963: 51; Peterson 1978: 334–337). Individuals or families often enter into long-term contracts (as is the case between the Agta and Palanan; see Peterson 1978: 342). However, the farmers almost invariably treat the foragers as inferior, savage, and even 'animal-like' (e.g., Woodburn 1988: 38), such that the latter typically get the worst of the relationship (leading some scholars to suggest that 'symbiosis' may not be an entirely appropriate characterization; see Spielmann and Eder 1994: 309). Accordingly, intermarriage tends to be limited; where it does occur, it is

usually the hunter-gatherer woman who marries into the agricultural community, rather than the reverse.

The social imbalance resulting from this interaction tends to have profound linguistic consequences for the foraging populations. One-sided bilingualism is the norm, and in many cases this has resulted in language shift at some point in the past (cf. Spielmann and Eder 1994: 307). For example, the Philippine Agta apparently switched to Austronesian between 1,000 and 3,000 years ago (the variants have since become fully distinct; see Blust 1976; Reid 1987); various Aslian groups of Malaysia today speak Mon-Khmer languages (also probably adopted more than 2,000 years ago; Junker 2002: 151); and contemporary Pygmy groups speak Bantu and other languages (e.g., Bahuchet 1993). Many of these hunter-gatherers have nonetheless retained a specialized vocabulary relating to forest products and activities, kin relations, etc. (Peterson 1978: 338; Bahuchet 1993). Linguistic influence in the opposite direction is extremely rare, although cases do exist (most notably the adoption of clicks into Bantu languages; see Woodburn 1988; Chapter 6 by Güldemann, this volume).

The Amazon basin is likewise home to peoples whose mode of subsistence prioritizes hunting/gathering or horticulture, although most actually depend to some degree on both.[1] The interactions among many of these groups have much in common with those described for Africa, Southeast Asia, and elsewhere. This chapter focuses on one such example of forager–farmer relations, that existing between the Naduhup (Makú)[2] peoples, who maintain a foraging focus, and the more horticulturalist Tukanoan peoples of the northwest Amazon. While this relationship bears many of the hallmarks of forager–farmer interaction as encountered elsewhere in the world, it is particularly noteworthy in that, unlike the languages of many other foragers, the Naduhup languages have been maintained despite widespread bilingualism and profound language contact. The Naduhup languages thus provide us with a rare glimpse into the past, and allow us to address questions that have been raised regarding Amazonian foragers more generally, as well as foragers in other parts of the world: In particular, how old is the association of the Naduhup hunter-gatherers with their more horticulturalist neighbors, and indeed with horticulture generally? How well does the Amazonian case fit the profile of forager–farmer relations elsewhere in the world? An evaluation of lexical data, numeral systems, and language contact phenomena suggests that the current dynamics between these groups are a relatively consistent reflection of those that have existed for many generations, but that we can nevertheless determine an approximate point at which the interaction began.

Map 22.1 Location of Naduhup and neighboring indigenous languages.

22.2 Contemporary Foragers and Farmers in the Amazonian Vaupés

22.2.1 The Vaupés Region

The interaction between Naduhup hunter-gatherers and Tukanoan farmers is concentrated in the Vaupés region of the northwest Amazon (see Map 22.1). This strikingly multilingual region is home to some four different language families: East Tukanoan (which includes Tukano, also used as a regional lingua franca, and Desano, Tuyuka, Kotiria/Wanano, and perhaps a dozen other languages); Arawakan (of which Tariana is the sole representative in the Vaupés, Baniwa is spoken just to the northeast, and other languages were once spoken along the middle and lower Rio Negro); Naduhup (composed of Hup and Yuhup within the Vaupés, and Dâw and Nadëb outside it); and the sister languages Kakua and Nukak (formerly thought to be relatives of the Naduhup family; see Epps and Bolaños 2017 and Section 22.2.4). Also represented in the general area are the more recent imports Nheengatú (also known as Lingua Geral, a Tupi language spread ~~by missionaries~~), Spanish, and Portuguese.

22.2.2 "People of the River" and "People of the Forest"

The Tukanoan and Arawakan peoples of the region are all settled agriculturalists. Most live along major rivers and cultivate large gardens in which bitter

manioc is the principal crop, and bananas, chili peppers, potatoes, and other items are also grown. Fish provide the major source of protein. The Vaupés river peoples are best known for their institutionalized practice of linguistic exogamy, or obligatory marriage across language groups (see, e.g., Sorensen 1967; Jackson 1983; Chernela 1993; Stenzel 2005). Speakers identify with their father's language, but tend to be highly multilingual because they grow up surrounded by the multiple languages spoken by their mothers, aunts, and other married women in the village.[3] This practice has fostered a regional conception that language and identity are essentially inseparable, and that ~~any~~ mixing of languages is ~~highly~~ inappropriate. Code-switching and lexical borrowing are ~~thus actively avoided~~ (~~and this remains the case~~ even in the current circumstances of language shift); however, profound grammatical convergence has been shown to have taken place between Tariana and Tukano (Aikhenvald 2002, ~~etc~~.).

In contrast to the river dwellers, the Naduhup peoples of the region – and likewise the Kakua and Nukak peoples (see Silverwood-Cope 1972; Politis 1996, 2007; Cabrera et al. 1999) – are traditionally seminomadic forest dwellers. They rely heavily (or did until very recently) on hunting and gathering for subsistence, together with small-scale manioc farming. These foraging-focused peoples do not participate in the regional system of linguistic exogamy, preferring to marry among their own people, across clans. The discussion in this chapter, while comparative, focuses in particular on the Hup people (or Hupd'əh), who have a particularly close relationship with Tukanoans, and with whom I have had the most interaction.[4]

The Hupd'əh – like most of the other forest peoples of the region – have experienced relatively profound changes in lifestyle over the past three to four decades; these were initiated by missionaries who encouraged them (and in some cases coerced them; see Reid 1979) to move closer to the rivers and to settle in larger, more settled communities of as many as 200 people or more. While this has led to a more sedentary pattern and a greater reliance on horticulture than existed previously (see Reid 1979), the Hupd'əh have continued to spend extended periods of time away from their villages, often deep in the forest on hunting and gathering trips. Most Hupd'əh readily voice a strong preference for foraging, which they typically refer to as 'knocking about' in the forest (*g'etg'oʔ-*) (see also Reid 1979; Pozzobon 1991); agricultural activities, in contrast, are referred to as 'work' (*biʔ-*). A few families do not have their own gardens, and those that do almost invariably plant small patches and harvest the manioc long before it has grown to full size – in clear contrast to River Indian (Tukanoan and Arawakan) practices.

The forest orientation of the Hupd'əh is clearly an important part of their culture and their sense of identity, consistent with Rival's (1999: 81) observation that for foraging peoples generally, "hunting and gathering is as much a

social and cultural phenomenon as a form of ecological-economic adaptation" (see also Rival [2002] for the Waorani; Pozzobon [1994] for the Nadëb; Politis [1999, 2007] for the Nukak). For the Hupd'əh, this is illustrated by their self-reference as *j'ugan ʔuyd'əh* 'people of the forest' (in contrast to the Tukanoans, whom they call *dehmian ʔuyd'əh* 'people of the river'), and by the words of one Hup patriarch, Henrique Monteiro, as he recounted a mythical tale: "So Bone-Son [the creator] sent us up from the river, in order to live here in this land . . . We are to live here; here in the forest world it is good."

22.2.3 Dynamics of the Relationship

Within the Vaupés, the hunter-gatherer Naduhup peoples and the horticulturalist Tukanoans maintain a close relationship (see, e.g., Reid 1979; Ramos 1980; Jackson 1983; Milton 1984; Fisser 1988; Pozzobon 1991). Often described as 'symbiotic,' this interaction has much in common with that described for other foraging and farming peoples elsewhere in the world. The Hupd'əh – and similarly the Yuhup – provide their horticulturalist neighbors with meat, forest products, and labor, and receive agricultural products (especially manioc) and manufactured trade goods in exchange. Long-term 'patron–client' contracts exist between individuals and families, and an enormous amount of cultural material – rituals, religious beliefs, stories, and songs – is common to both groups (and widespread within the Vaupés generally). Little intermarriage takes place, and when this does occur it virtually always involves a Naduhup woman and a Tukanoan man; the children are thus considered Tukanoan, in keeping with the regional convention of patrilineal descent. The social imbalance is profound; Tukanoans consider Naduhup peoples inferior, incestuous (because they do not practice linguistic exogamy), and animal-like (see Reid 1979; Jackson 1983).

Bilingualism in Hup and Tukano (the East Tukanoan language that is used as a regional lingua franca) is almost 100% among Hup adults,[5] and a similar situation appears to hold for most Yuhup in Brazil. However, unlike foragers in many other parts of the world, the Naduhup peoples have not experienced language shift, despite this long-term bilingualism and social imbalance. This fact can probably be attributed to the widespread cultural attitude in the Vaupés that essentializes the link between language and identity.

The social dynamic between hunter-gatherers and horticulturalists described here – and its linguistic consequences – is most profound within the Vaupés region, but also exists beyond it. On the western side of the Vaupés, the Kakua people are reported to have had until quite recently a relationship with the Tukanoans of the region comparable to that maintained by the Hupd'əh (Silverwood-Cope 1972; Bolaños 2016). The Dâw (the Naduhup group on the eastern periphery of the Vaupés) and the River Indians in the vicinity appear

to have once had a similar relationship; however, possibilities for interaction with Tukanoans are more limited, because Dâw territory is outside the principal area occupied by Tukanoans (and is currently adjacent to the Brazilian town of São Gabriel da Cachoeira, where opportunities for interaction with non-Indians are also available). The Naduhup Nadëb people, on the other hand, are far removed from the Vaupés and have virtually no contact with Tukanoans; although they apparently had some interaction with Arawakan peoples in the past, this is ~~not the case~~ today (see Pozzobon 1991: 40; Epps 2017).

22.2.4 Who Are the 'Makú'?

In the linguistic literature, the name 'Makú' refers to a proposed language family that includes the four here termed 'Naduhup' (Hup, Yuhup, Dâw, and Nadëb). However, within the northwest Amazon region itself, the meaning of the term 'Makú' is quite different. The word is used exclusively by River Indians (and by some non-Indians) to refer to any of the various groups of foragers in the area – i.e. those who are considered 'wild' or 'animal-like' forest-dwellers by the region's more settled inhabitants. The most likely origin of the term is Arawakan (Koch-Grünberg 1906b: 877; cf. Baniwa-Kurripako *ma-aku* [NEG-speak] 'without speech'); it is considered highly offensive by the forest peoples themselves.

The name 'Makú' is thus used in reference to a range of peoples, including Naduhup, Yanomami, and others, who have no necessary relationship among themselves other than a subsistence pattern that is, in the eyes of the river dwellers, diametrically opposed to their own settled lifestyle. Early European visitors to the region were hosted by the River Indians, and what they learned of the region's more nomadic peoples (with whom they had little contact themselves) was necessarily colored by the River Indian perspective – as well as their own, perhaps not dissimilar cultural biases. This general use of the term 'Makú' was observed by one of these early visitors, Theodore Koch-Grünberg, who wrote that "under this name are grouped a whole quantity of groups with languages that are very different from each other and very primitive" . . . "[all are] hunting nomads, who have no agriculture" (1906a: 180–181, my translation).

Koch-Grünberg himself compiled word lists of many of the region's languages, and suggested a relationship among the Naduhup languages Dâw and Yuhup, and Kakua, spoken in Colombia and clearly related to the nearby language Nukak (see Map 22.1; Koch-Grünberg 1906a, 1906b). His suggestion was widely accepted, largely because data on these languages have always been scarce, and the inclusion of Kakua and Nukak in the 'Makú' language family became the convention (see, e.g., Rodrigues 1986; Campbell 1997; Martins and Martins 1999).

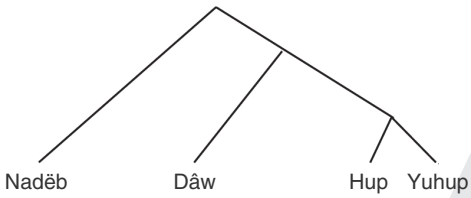

Figure 22.1 Relationships among Naduhup languages.

Yet, as Epps and Bolaños (2017) have argued, a closer evaluation of the available data (including Kakua documentation by Katherine Bolaños; see Bolaños 2016) indicates that there is at this point no conclusive evidence for a relationship between Kakua/Nukak and the four Naduhup languages (see also Martins 2005). As for the handful of close similarities that can be identified among Hup/Yuhup and Kakua/Nukak words, language contact is a likely explanation; indeed, contact between Hup and Kakua speakers – whose territories are adjacent – has been documented by Silverwood-Cope (1972; see also Reid 1979: 23). It is likely that the common identity of these 'Makú' peoples as forest-dwelling foragers, particularly when viewed in contrast to the settled Tukanoan agriculturalists, is part of what led outside observers to assume deeper similarities where none may actually exist.

On the other hand, the relationship between the four Naduhup languages – Hup, Yuhup, Dâw, and Nadëb – is well established on the basis of lexical and grammatical evidence, including many cognates and regular sound correspondences (Martins 2005; Epps and Bolaños 2017). The available data suggest the family tree in Figure 22.1, which is taken as a working assumption in this chapter. However, further historical work awaits more documentation, especially of Nadëb.

22.2.5 Tracing the First Inhabitants of the Vaupés

Of the three groups present in the Upper Rio Negro region today, there has been considerable speculation that the Naduhup peoples were the original inhabitants (Stradelli 1890; Koch-Grünberg 1906b: 878; Nimuendajú 1927/1950: 164; Aikhenvald 1999: 390). Within the Vaupés itself, ethnohistorical accounts of the Arawakan Tariana indicate that they arrived late to the area (possibly around 600 years ago) from the direction of the Rio Aiari to the north, moving into lands already occupied by Tukanoans (Cabalzar and Ricardo 1998: 57; Aikhenvald 2002: 24). According to Neves (2001: 281–283), the region of the Papuri and middle Vaupés Rivers had already been home to Tukanoan-speaking groups for hundreds of years by the beginning of the fifteenth century. Whether the Naduhup actually preceded them in the Vaupés or the Rio Negro

region more generally has yet to be determined; at least some of the claims to this effect may be no more than assumptions based on their foraging subsistence pattern, commonly associated with a more 'primitive' status (see the discussion in Aikhenvald [2002: 24]; also Headland and Reid [1989] concerning the Philippines). However, the distribution of languages today does support this scenario; only the Naduhup languages are spoken uniquely within the Rio Negro region (although more distant relations may yet turn up elsewhere). In contrast, Tukanoan languages are found as far away as Peru and Ecuador to the west, and the Arawakan family is widespread, with a likely homeland in northern Amazonia between the Rio Orinoco and Rio Negro (Aikhenvald 1999; Heckenberger 2002; Chacon 2014).

22.3 Past Subsistence Patterns in the Vaupés: Foraging or Horticulture?

22.3.1 Characterizing the Naduhup Association with Horticulture

Horticulture today clearly plays an important role in the lives of the Hupd'əh and other Naduhup peoples, despite the cultural preference for hunting and gathering. Even for those families who do not consistently maintain small manioc plantings, cultivated foods – especially manioc and chili peppers – are nevertheless a dietary staple. No meal is considered complete in the Vaupés region without manioc, whether this appears as flatbread (*beiju* in the local Portuguese), coarse meal sprinkled on food or eaten in handfuls (*farinha*), or as a drink (usually *chibe*, manioc meal in water, or *mingau*, water thickened with tapioca). Those Hupd'əh who have no manioc of their own, or who wish to supplement the yield from their own small plantings, have a number of strategies for procuring it: they provide labor (e.g., in planting or clearing fields, building houses, etc.) to neighboring Tukanoans, to be paid in manioc; they help other Hupd'əh with chores of planting or manioc processing in exchange for a small share; or, occasionally, they simply help themselves from others' gardens. Tukanoans who live near Hupd'əh are particularly familiar with this latter strategy and typically take pains to locate their gardens well out of harm's way – often as much as a half-hour's paddle downriver.

While the contemporary Naduhup association with horticulture is relatively well established, it is less clear what the picture has been in the past. Are the Naduhup peoples' own horticultural practices and reliance on cultivated foods recent? Ancient? Representative of a stable semi-horticultural situation or a relatively abrupt transition toward cultivation? Is their association with horticulture historically independent of their relationship with River Indian agriculturalists, or have these always been linked? There appear to be at least

four possible characterizations of Naduhup horticultural history. These four hypotheses are presented in the text that follows, and then evaluated on the basis of lexical evidence from the Naduhup languages in the subsequent discussion.

In the first scenario, Naduhup horticulture as practiced today may be indicative of a recent, relatively abrupt shift from a foraging to an agricultural lifestyle, which is not yet completed. This would presumably imply that the Naduhup had little or no contact with either an agriculturalist lifestyle or those who practiced it – i.e., the River Indians – until a few generations ago, but were quickly impressed by the benefits of the new technology upon encountering it. The Naduhup peoples' current lackadaisical attitude toward agriculture would thus constitute a temporary and short-lived stage, and they could be expected to settle down and become more like the River Indians in the near future.[6] Ethnographic and archaeological accounts of shifts from foraging to farming elsewhere in the world offer little or no evidence for such an abrupt transition, but it is nonetheless considered here as a possibility.

In the second hypothetical picture, Naduhup horticulture as it appears today may represent a long-term, limited assimilation of a secondary subsistence strategy. Horticulture would thus have been a peripheral part of the foragers' lives for many generations, but its adoption would be incomplete and potentially never fully realized. This scenario appears to have precedent among a variety of present-day foragers; comparable cases have been reported in southern Africa (Solway and Lee 1990; Wilmsen and Denbow 1990), Southeast Asia (Headland and Reid 1989), and other parts of the world. As Bellwood observes:

> Agriculturalists and foragers can interact quite successfully for long periods, even millennia, under certain ecological situations where agriculture may be slightly marginal or where niches can be kept geographically separate . . . I know of no ethnographic cases where the erstwhile foragers have come to adopt agriculture to the same degree of intensity and success as their agriculturalist neighbors. In all cases the interaction or symbiosis seems merely to be slowing down of a process which elsewhere occurred much more quickly, that is, the ultimate assimilation of the foragers into the agricultural population. (Bellwood 1997:130)

While this second scenario assumes that the foragers' association with horticulture is old, it does not require it to be ancient – that is, it may be possible to establish a point in time before which the foragers truly were foragers, with no reliance on actively cultivated foods. In contrast, the third scenario calls even this into question, proposing that the foragers' secondary reliance on horticulture has necessarily been in place for millennia, and must in fact be as old as human habitation in the rain forest ecosystem itself (as we know it today). This possibility is based on the proposal that contemporary tropical rain forests are lacking in resources required for long-term human survival, and that access to

cultivated foods – whether direct or indirect – is essential (see Bailey et al. 1989; Headland and Bailey 1991). This proposal has been convincingly contested on the basis of contemporary ethnographic and archaeological evidence (see Brosius 1991; Endicott and Bellwood 1991 for Southeast Asia; also Bahuchet et al. 1991; Colinvaux and Bush 1991; Piperno and Pearsall 1998), but the possibility that some version of horticulture is ancient in the case of the Naduhup calls for consideration.

Finally, in a fourth possible scenario, the Naduhup may have been a primarily horticulturalist people at some time in the past, but later gave up their horticultural emphasis in favor of foraging. Such a reversion to hunting and gathering has been shown to have taken place among ethnographic foragers in various parts of the world, such as the Penan and Tasaday peoples of Southeast Asia (Bellwood 1985: 133–135), the prehistoric southern Maoris of New Zealand (Bellwood 1997: 130), and certain Bantu groups in southern Africa (Nurse et al. 1985: 149–153). In Amazonia, similar shifts affected a number of Tupi–Guaraní peoples, in particular, such as the Guajá (Balée 1999), the Yuqui, and the Sirionó of Bolivia (Roosevelt 1998, 1999; Neves and Petersen 2006: 284). In fact, the extreme pressures of conquest and the debated adequacy of food resources in the rain forest have led some scholars to suggest that perhaps such a shift affected *all* Amazonian hunter-gatherers, such that "the contemporary foraging societies of the humid tropics of South America . . . may have generally regressed from a past horticultural mode of production" (Balée 1999: 26; see also Lathrap 1968; Levi-Strauss 1968; Bailey et al. 1989).

22.3.2 Testing the Hypotheses: Lexical Evidence

The tools available for piecing together Naduhup history are limited. The archaeological record is not extensive in the region, as material remains are mostly biodegradable and rarely preserved, and the relative remoteness of the areas where Naduhup languages are spoken makes investigation difficult. Historical and ethnohistorical evidence is also inconclusive, in part because stories of origins and other historical events are highly prone to diffusion within the Vaupés. The traditional stories and myths I encountered among the Hupd'əh do not appear to indicate a shift in subsistence pattern. Early explorers in the region, Koch-Grünberg and Nimuendajú, reported a forager–farmer relationship much like that seen today (Koch-Grünberg 1906b: 880–881; Nimuendajú 1927/1950: 159, 164–165).[7]

Linguistic evidence appears to provide a promising route to reconstructing the history of the Naduhup peoples and their association with horticulture. A comparative-historical assessment of lexical data, in particular, allows a relatively fine-grained approach. The following discussion relies on the basic

assumptions of the 'Wörter und Sachen' methodology of cultural reconstruction (e.g., Sapir 1949: 439–444; Campbell 1997: 413–415; Epps 2014). According to these assumptions, if the word can be reconstructed to the proto-language, the concept it represents was probably present in the culture of its speakers. The concept also was likely to have been relatively important; studies of Tupi-Guaranian languages (Balée and Moore 1994; Balée 2000) and Mayan languages (Leonti et al. 2003), for example, suggest that plant names relating to culturally useful plants (as opposed to nonexploited plants) tend to be relatively time stable. Second, morphologically complex words (such as compounds and derivations) are more likely to be recent innovations than are monomorphemic words. Finally, calques and loanwords are more likely to represent new concepts than old, familiar ones, and the borrowed word and the concept are likely to have the same source; this is based on the recognition that lexical borrowing motivated by need appears to be more common cross-linguistically than lexical replacement for prestige or other reasons.

Clearly, these assumptions do not always apply, and conclusions based on individual words are suspect – especially in the case of the Naduhup languages, where only preliminary efforts at reconstruction have been made. Nevertheless, the Wörter und Sachen assumptions can be applied to an entire semantic *domain* (as opposed to an individual word) with some reliability. The following discussion presents a cross section of semantic domains relating to useful wild-occurring plants, domesticated plants (both those requiring little active cultivation and those that are more intensively cultivated), and other horticultural vocabulary, in order to test the following predictions: First, if horticulture is ancient among the Naduhup (whether as a primary or secondary subsistence strategy), the horticultural lexicon should not be significantly more innovative (i.e., newer) than the useful noncultivated plant lexicon, and (conversely) comparable numbers of cultivated and noncultivated plant terms should reconstruct to Proto-Naduhup. Second, if horticulture is very recent among the Naduhup, the horticultural vocabulary should be highly variable across all four languages, and should not reconstruct to any branch of the family.

In considering the following tables, it should be kept in mind that (as indicated in the introduction with respect to horticulture and hunting/gathering in Amazonia generally) the distinction between cultivated and noncultivated plants is not necessarily clear-cut. Several of the plants species listed here as noncultivated are nevertheless managed and/or semidomesticated (e.g., barbasco, *Lonchocarpus* spp.; ayahuasca, *Banisteriopsis caapi*) by Vaupés peoples, including the Naduhup. Other plants are domesticated species or varieties, but are like nondomesticates in that they do not require intensive or regular care, and may be susceptible to unintentional 'planting' and to

harvesting by others than those who planted them. For example, plants such as achiote (*Bixa orellana*) and peach-palm (*Bactris gasipaes*) were widely dispersed throughout Amazonia by indigenous peoples in ancient times, such that current stands are presumably anthropogenic (at least by descent), but are not necessarily actively managed; their exploitation is thus more consistent with a hunting-gathering lifestyle than is the exploitation of more intensively managed crops (see, e.g., Clement et al. [2009] on the foraging Waorani people's use of the peach-palm). For some plants, a domesticated variant may have wild counterparts (i.e., different species, varieties, or even some other plant with a common resemblance or use), and these may share a name (e.g., cacao, *Theobroma* spp.; cashew, *Anacardium* spp.). The precise origin of a given plant and the degree to which it has been spread by human hand is not always clear, so particular distinctions made here may require some revision in future work.

The following tables contrast the semantic domains of useful wild-occurring plants (Table 22.1), relatively low-maintenance domesticates (Table 22.2), more intensively cultivated domesticates (Table 22.3), and other terms relating to cultivars (Table 22.4) across the four Naduhup languages. Tukano (Eastern Tukanoan) and Baniwa (Arawakan) counterparts are also provided for comparison.[8] Conventions for interpreting the tables are as follows: bolded items are presumed to be cognate[9] across all four languages of the Naduhup family; underlined items are cognate *either* across Hup and/or Yuhup and Dâw *or* across Dâw and Nadëb (and not identified as loans into their common ancestor; see the discussion that follows). Words identified as likely candidates for borrowings and calques are discussed in footnotes, and morphologically complex forms are glossed in parentheses (but note that information on morphological complexity is particularly scarce for Nadëb, and the identification of loans is made more difficult by a lack of data from other regional languages, which in many cases are underdocumented or extinct).

A comparison of the tables suggests that horticultural and nonhorticultural vocabulary is not of an equivalent age in the Naduhup languages. In Table 22.1, which presents a representative sample of terms for useful wild-occurring plants across the Naduhup languages and in two of their River Indian neighbors (Tukano and Baniwa), at least half the terms are likely candidates for cognates across all four Naduhup languages. The picture is roughly comparable to that which emerges when we compare other semantic domains of core vocabulary, such as body parts, native animals, etc. Among the terms for domesticated plants (Tables 22.2 and 22.3) and other vocabulary associated with horticultural activities (Table 22.4), in contrast, we find very few cognates across the four languages, but many compounds and morphologically complex forms, and a number of likely lexical borrowings and calques. Even if we rule out terms for

Table 22.1 *Useful wild-occurring plants (may be semidomesticated or managed)*

Gloss		Naduhup				E. Tukanoan	Arawakan
		Hup	Yuhup	Dâw	Nadëb	Tukano	Baniwa
açai palm[a]	*Euterpe precatoria*	*g'œdʔɛ̆g* ['?-fruit']	*k'œdʔág* ['?-fruit']	*năk*	*manág*	*mipî*	*manákhe*
black palm	*Oenocarpus bacaba*	***ciwĭb***	***wíb***	***wîm***	***ʃiwiːm***	*yumû*	*póoperi*
buriti palm	*Mauritia flexuosa*	***ɟ'ăk***	***c'ák***	***căk***	***ɟa̰ːk***	*ne'ê*	*íitewi*
ayahuasca/ caapi[b]	*Banisteriopsis caapi*	*kapíʔ*				*kapi*	*kaâpi*
caraná (thatch palm)	*Mauritiella armata*	*tɔ̆p-g'œt* ['shelter-leaf']		*pɔ̂j*	*tapɔːn*	*muhî*	*ttiíña*
cashew[c]	*Anacardium* spp. (wild and domesticated types)	*jãhám*	*jãhăm*	*waʃap*	*akaːj*	*sõrâ*	*akáyo*
cipó vine	*Heteropsis* spp.	***júb***	***jŭb***	***jum***	***juːm***	*misî*	*dápi*
kapok cotton	*Ceiba pentandra*	***cuwŭk***	***wúk***	***wŭk***	***ʃiwik***	*buˈsá*	*pirimítsi*
tree-grape	*Pourouma cecropiifolia*	*buhúh, pĭŋ*		*huh*	*ʃarapuːʔ*	*iˈšê*	*kamhéro*
cunuri	*Cunuria spruceana*	***pĕd***	***péd***	***pɔ̂ːd***	***pəəd***	*wapi*	*kóonoli*
genipap	*Genipapa americana*	*d'ád, bobo-ʔag*	*deh d'ád*	*jenipapu*	*karawiiñ*	*weʔé*	*dáana*
ingá[d]	*Inga* spp.	*mĭn*	*mín*	*mĩ̆n*	*kameʔpiʔ*	*mene*	
japurá	*Erisma japura*	***jawák***	***wăk***	***wak***	***jawʌk***	*baˈtî*	*dzáapora*
Mushroom	(edible generic)	***páb'***	***pŏb'***	***pəb, pəm'***	***pʌm***	*eheka'* [no generic]	*iralída, keerípa*
seje palm	*Jessenia bataua*[e]	***wáh***	***wăh***	***wax***	***wʌk***	*yumû*	*ponáma*
paxiuba palm[f]	*Ireartea exorrhiza*	***púp-teg***	***pŭp teg***	***pup bax***	*baʔbuː, kakoːr*	*watá*	*éeña, póopa*

Table 22.1 (*cont.*)

	Gloss	Naduhup				E. Tukanoan	Arawakan
		Hup	Yuhup	Dâw	Nadëb	Tukano	Baniwa
barbasco/timbó	*Lonchocarpus* spp.	***d'ŭç***	***d'úç***	***dŭʃ***	***dɻ:j***	*ehû*	[no generic]
tucumã palm	*Astrocaryum aculeatum*	*g'ŏb*	*j'ĭp*	*tukma*[g]	*kajero*	*yaî-beta*	
ucuqui	*Pouteria ucuqui*	***mĭh***	***mih***	***mi***	***mʌʔ***	*pupiâ*	*híiniri*
umari	*Poraqueiba serica*	***pĕɻ***	***péɻ***	***pæɻ***	***pa:t'***	*wamɨ*	*dóomali*

[a] The Nadëb and Dâw forms are borrowed from Arawakan.
[b] This word is shared across Hup, Tukanoan, and Arawakan languages in the region; see discussion that follows. *Banisteriopsis caapi* (a vine used to produce a hallucinogenic drink) is semidomesticated, but wild varieties are native to the northwest Amazon.
[c] The Nadëb and Baniwa forms are loans from Nheengatu (Tupi).
[d] It is possible that the Hup, Yuhup, and Dâw forms are borrowed from Tukanoan.
[e] Also known as *Oenecarpus bataua*.
[f] It is possible that the Hup, Yuhup, and Dâw forms are Arawakan loans.
[g] Borrowed from Nheengatú (Tupi) *tucumã*.

Table 22.2 *Relatively low-maintenance domesticates*

Gloss		Naduhup				E. Tukanoan	Arawakan
		Hup	Yuhup	Dâw	Nadëb	Tukano	Baniwa
achiote (annato)	*Bixa Orellana*	***hăw***	***háw***	***hâw***	***ha:w***	*mosâ*	*phirimáapa*
avocado	*Persea americana*	*Juhúm*	*juhŭm*	*hũ̂m*	*baraja:ʔ*	*ũyû*	*piirídza*
calabash tree[a]	*Crescentia cujete*	*b'ɔ́ʔ*	*b'ɔ́ʔ*	*bɔʔ*	*ʔək*	*wahá*	*kóoya*
cocoa[b]	*Theobroma* spp.	*kakáwa*, *bəʔuk* (wild sp.)	*kakawa*	*hûlʔ (ahoro wild sp.)*	*k'a:w, koro, ahoro*		*kákawa*
peach-palm	*Bactris gasipaes*	*ɻ'ĭw*	*c'ɨ́w*	*cîw*	*ji:h, ji:ʔ*	*ĩrê*	*píipiri*

[a] The same indigenous names may also apply to the domesticated bottle-gourd, *Lagenaria siceraria.*

[b] In Hup, the borrowed variant of Portuguese *cacao* (ultimately from Nahuatl) apparently refers to the cultivar *Theobroma cacao*, while other names refer to the wild species. Balée (2003) attributes the prevalence of borrowed variants of *cacao* in Amazonian languages to the greatly heightened importance of the plant after European contact, when it became an export crop.

Table 22.3: *More intensively cultivated domesticates*

Gloss		Naduhup				E. Tukanoan	Arawakan
		Hup	Yuhup	Dâw	Nadëb	Tukano	Baniwa
banana, plantain[a]	*Musa* spp.	*pɨhɨ́t*	*wɨhɨ̌t, panah*	*ʃel,' nãl'*	*mase:r, pãnã:r*	*ohô*	*palána*
cane (sugar)[b]	*Saccharum officinarum*	*mŭh teg* ['arrow stick']	*néŋ-teg* ['honey stick']	*xɜ̃n'*	*ka:n*	*ãrɨ*	*máapa*
cará	*Dioscorea* spp.	*ɟ'ɜ̃́h*	*c'ãh*	*ʔĭn*	*ʔɨ:n*	*yaʔmû*	*áaxi*
coca[c]	*Erythroxylum coca*	*pũʔɜ̃́k* [*ʔuk-* 'pick up loose material']	*cohó*	*tuʔ*	*batoʔ*	*paâtu*	*hiipáto*
maize[d]	*Zea mays*	*pɨhit júm* ['banana-sow' (v.)]	*hóka*	*w'at*	*janati*	*ohôka*	*káana*
manioc[e]	*Manihot esculenta*	*kajak tɔ̃ʔ; kijak tɔ̃ʔ* [*tɔʔ* 'tuber']	*jăk tɔʔ*	*jăk*	*bo:g*	*kií*	*káini*
sweet manioc	*Manihot esculenta*	*kajak wĕd* ['manioc-eat']; *wĕd kijak* ['eat-manioc']	*jak wœd* [*'manioc-eat'*]	*jăk jaʔ* ['manioc-grill']	*mahɔur*		*kapíwali*
papaya[f]	*Carica papaya*	*mamáw*	*mamáw*	*mɜ̃w*	*mapah*	*mamu*	
peanut	*Arachis hypogaea*	*j'œʔ tutú* ['feces into.ground']	*j'œʔ tutuʔ* ['feces into.ground']				
hot pepper	*Capsicum* spp.	*kɔ̃w*	*kɔ̃w*	*xɔ́w*	*poː h*	*biâ*	*áati, mítsa*

highlighted words should be shaded

pineapple[g]	*Ananas comosus*	*canã*, *jɔ̃j*	*jɔ́j*	*wãn*	*mawã:d*	*sẽrá*	*máawiro*
sweet potato[h]	*Ipomoea batatas*	*piʔ*	*jɔʔhə̃h*	*jɔʔ*	*karahi:r*	*yãpî*	*kalíri*
squash[i]	*Cucurbita* spp.	*bɔʔ-wɛ́d* [‘gourd-eat’]	*bɔʔ-wɛ́d* [‘gourd-eat’]	*limũ̂*			
tobacco	*Nicotiana* spp.	***hũt***	***hũt***	***hũt***	***hũ:t***	*mɨrô*	*dzéema*

[a] The cultivated banana was probably brought to Brazil in the 1500s. The Hup and Yuhup terms are identical to those used for a wild plant resembling a banana plant (*Heliconia* sp., with similarly large useful leaves), and may have been derived via semantic shift. The Baniwa term *palána* may be borrowed from Portuguese/Spanish; the Yuhup, Dâw, and Nadëb variants were probably borrowed via Arawakan.

[b] Sugar cane is not native to South America. The Hup name is the same as that used for the native arrow cane; the Dâw and Nadëb forms are borrowed from Portuguese *cana* ‘cane.’

[c] Words for ‘coca’ appear to be lexical borrowings shared across Arawakan, Tukanoan, Dâw, and Nadëb. The most likely source is Arawakan.

[d] ‘Maize’ in Yuhup is a Tukanoan borrowing; the Dâw ~~term is~~ probably ~~a loan~~ from Nheengatú (*awači*). Maize is of Mesoamerican origin, and was probably a relatively late pre-Colombian arrival to Amazonia (Piperno and Pearsall 1998).

[e] It is possible that the syllable *ki/ka* in the Hup terms for manioc is borrowed from Tukanoan.

[f] Words for ‘papaya’ appear generally to be borrowed variants of Portuguese *mamão*; the Nadëb term is borrowed from Arawakan (e.g., Piapoco *mapaya*; Arawakan languages are the most likely source of the Spanish/English term *papaya*).

[g] Hup *cană* is borrowed from Tukano; the Nadëb and Dâw forms from Arawakan.

[h] The Hup term may be related via borrowing to Tukano *yãpi*; the Nadëb form is ~~probably~~ an Arawakan loan.

[i] The Dâw form is probably a loan from Nheengatú.

Table 22.4 *Other terms relating to cultivars*

	Naduhup				E. Tukanoan	Arawakan
Gloss	Hup	Yuhup	Dâw	Nadëb	Tukano	Baniwa
caxiri[a] (manioc beer)	*húptok* ['person-belly']	*ʔə́g* [nominalized form of verb 'drink']	*ʔə́g* [nominalized form of verb 'drink']	*jaraki*	*peêru*	*pádzawaro*
comatá (strainer)	*kojŏj*		*tun*	*juh, jaraʔta:*	*tõhôpaha*	*ttíiroli, báats*
manioc meal[b]	*kẽn* [toast(v.)]; *cíh* [also means 'grass']	*cak pój* ['mash toasted']	*ʃúk*	*mafu:k*	*poká*	*matsóka*
manioc mash	*cĕk*	*cák*	*jăk-dæp* ['manioc mash']	*maru:h*	*kii kurá, kii siʔtí*	*hípoanhi, phóakhe*
grater	***hĩp***	***hĩ̆p***	***hĩ:p***	***hĩp***	*sõkôro* (v. *oé*)	*áada*
griddle	*b'ɔk káb* ['pot ?']	*b'ɔkʔáh*	*bɔ́d*	*afi:ra*	*ata*	*póali*
manicuera/tucupi (boiled manioc juice)	*kajak dĕh* ['manioc liquid']	*ki-déh* ['sour-liquid']	*jak-nəx* ['manioc liquid']	*karahi:*	*yõka* (manicuera) *kii-boo koo* (tucupi)	*kaínia*
manioc bread[c]	*b'ãʔ, pãn'* [any flat cake]	*k'ŏj*	*bãʔ*	*madáo, kanapĩh*	*ãhû* [cf. *baʔâ* 'eat']	*peéthe*
mingau	*wɔ̆n'*	*wɔ́n'*	*lăj*	*kajahar*	*yumúka* (non-manioc: *koo*)	*koríakaa kamókaa*
plant/sow/sprout (v.)	***jum-*** (seeds) ***cĩ̃j'-*** ['poke in'; 'plant manioc cuttings']	***jum-***	***júm***	***jɔ:m***, *i-pih*, ***ʃing*** 'plant manioc cuttings'	*otê*	*-pana*
garden field	*b'ɔ̆t* [from 'chop down trees' (v)]	*b'ɔ́t*	*kaw*	*gə:w* ['chop down trees' (v)]	*wesé*	*keníke*
sifting basket	*cím'*	*cím'*	*bɔj lig*	*jerata, napíd*	*siʔapahá* (v. *siʔa*)	*dopítsi, oropéma*
tapioca	***nŭh***[d]	***núh***	***nŭh***	***nú:h***, *fɛ̃:j*	*wetá*	*mhéetti*
tipiti (manioc press)	*jɔ̃h*	*lumeʔ*	*lumeʔ*	*harum*	*wãti-kẽʔewa*	*ttirolípi*
tripod	*mɔhɔ̆j* (='deer')	*cô* ('deer')	*cô* ('deer')	*hetʃiid doo*	*yamâ* ('deer')	*mháitsi*

[a] The Nadëb term for caxiri (beer) is probably an Arawakan loan, e.g., from Mandawaka *jaláki*; the Tukano word may be derived from 'bubble, ferment.'
[b] The Dâw and Nadëb terms for 'manioc meal' are probably borrowed from Arawakan.
[c] The Hup and Dâw words for 'manioc bread' may be related by borrowing to Tukano *baʔa* 'eat.'
[d] Refers to any solid matter that settles out of liquid.

plants that are post-European-contact imports from outside the region (such as banana and sugar cane), the horticultural vocabulary in the Naduhup languages appears much more innovative, and thus probably newer, than the noncultivated plant terminology. Consider the words for 'maize,' for example: the Hup term is a lexical innovation ('planting banana'), the Yuhup and Dâw terms are loans (from Tukanoan and Nheengatú, respectively), and the Nadëb term is of uncertain origin.

There are nevertheless a few words in the horticultural vocabulary that do appear to be cognate across all four Naduhup languages. The most noteworthy are the terms for tobacco (*Nicotiana* spp.) and achiote (*Bixa orellana*). Both of these plants are early domesticates that probably originated elsewhere in South America. Tobacco has two main cultivated variants in South America (*N. tabacum* and *N. rusticum*), which are thought to have originated via hybridization in far southern Amazonia and on the western slopes of the Andes, respectively (Brücher 1989: 181); achiote, used widely as a dye and body paint, was probably domesticated in southwestern Amazonia and spread widely by people at an early date (Clement et al. 2009). That the names of these plants apparently reconstruct to proto-Naduhup, and are not identifiable as loans from outside this language family, suggests that Naduhup involvement with these domesticates is very old. However, whether or not the speakers of proto-Naduhup actually cultivated these plants themselves remains a mystery; alternative explanations include trade, borrowing among daughter languages, ~~or~~ early semantic shift of terms that originally designated some wild counterpart.

Among the other terms relating to cultivars or to their processing, we find three cognates across the Naduhup languages: 'grater,' 'plant/sow/sprout,' 'tapioca', ~~and possibly 'tipiti' (manioc press)~~. However, most ~~these are terms that~~ are not limited to horticultural meanings. The term 'grater' is a nominalized form of the verb 'grate,' a means of processing a variety of wild foods (such as seeds, fruits, and even leaves) in addition to manioc. In Hup, the term used for 'plant, sow' also means 'sprout, germinate' (regardless of human intervention), and the word for 'tapioca' is a generic term applied to any solid matter that settles out of a liquid, such as arrow poison (information on whether these variations in meaning are found in Hup's sister languages is not available).

The relative newness of most of the Naduhup horticultural vocabulary, in contrast to the domain of useful wild plants, suggests strongly that active cultivation is not ancient among the Naduhup peoples. It is undoubtedly the case that Naduhup foragers have managed their forest resources to some degree, and the presence of cognates for tobacco and achiote may indicate some early knowledge of domesticated plants (though not necessarily their active cultivation). However – and especially given that neither tobacco nor

achiote are raised as food – the linguistic data suggest that even a secondary dependence on domesticated plants is not ancient for the Naduhup, and postdates the breakup of the proto-language. Active horticulture does not therefore appear to have been necessary for their long-term survival; nor is there any evidence that the Naduhup experienced a reversion from horticulture to foraging at any time in their history, in contrast to the Amazonian Guajá (Balée 1999).

Just as the lexical evidence does not support an ancient dependence on horticulture, it also is not consistent with a scenario in which the Naduhup are undergoing an abrupt, recently initiated shift to horticulture. The data in Tables 22.2–22.4 suggest that many horticultural terms predate the later splits in the family; similarly, several of the candidates for lexical borrowing from neighboring languages appear quite old (in contrast to many other, less well integrated Tukanoan borrowings that appear in Hup).

Yet for those horticultural terms that do appear to reconstruct to lower-level groupings within the Naduhup family, their distribution presents a fuzzy historical picture. Several terms in the tables are common to Hup–Yuhup–Dâw but are not shared by Nadëb (e.g., 'calabash tree,' 'manioc,' 'peach-palm,' and 'hot pepper') – as we would expect given the family tree suggested in Figure 22.1. However, other terms are common to Dâw-Nadëb but not to Hup-Yuhup ('banana,' 'pineapple,' 'garden field' ['chop down trees (v.)'], as well as the Arawakan borrowings 'manioc meal,' 'coca,' and 'açaí,' among others). If these words are indeed shared innovations (i.e., words that entered the lexicon since the breakup of Proto-Naduhup), this distribution would suggest two competing possibilities for subgrouping the Naduhup languages. A likely explanation is that contact among Naduhup groups continued for some time after the initial breakup of the Naduhup family, with the geographically intermediate Dâw speakers continuing to interact with the other groups. This is a plausible scenario given Naduhup mobility (for example, Hup speakers undertake frequent treks to other Hup villages to visit relatives, look for spouses, etc.), and there are historical accounts of Dâw contact with the Nadëb (e.g., Assis 2001). It is also possible that one or more groups of River Indians had contact with Dâw, Nadëb, and/or with Hup-Yuhup speakers in these early days and were a source of loanwords into more than one Naduhup group. This picture will become clearer as historical work progresses.

The various loans and calques from Tukanoan and Arawakan languages that appear in the Naduhup horticultural vocabulary suggest that the source of the Naduhup peoples' horticultural knowledge was indeed their River Indian neighbors. Probable borrowings from Tukanoan include 'maize' in Yuhup, 'pineapple' in Hup, and possibly 'manioc bread' in Hup and Dâw

(which bears a ~~striking~~ resemblance to 'eat' in Tukano). 'Coca,' 'manioc meal,' and other terms in Dâw and Nadëb are Arawakan borrowings, and a few loans from Nheengatú (Tupi) are also encountered (probably borrowed since European contact). A few other, more recent horticultural terms ('cocoa,' 'sugar cane,' and 'papaya') in several Naduhup languages are of Portuguese origin (but in many cases probably entered via Tukano or Arawakan). That the languages of the neighboring cultivators were the sources of these loans in Naduhup, rather than vice versa, is established by the fact that many of these horticultural terms appear to have cognates across the Arawakan and Tukanoan families (or large branches thereof; see Huber and Reed 1992), but this is clearly not the case for the Naduhup languages.

In summary, the lexical evidence suggests that Naduhup horticulture is a secondary subsistence strategy that has been in place for many generations, but is not ancient. The Naduhup peoples' association with horticulture probably intensified between the initial and subsequent splits of the family, through contact with the river-dwelling farmers in region.

22.4 Further Linguistic Clues to Forager-Farmer Interaction in the Vaupés

22.4.1 Additional Lexical Evidence

Horticultural vocabulary is not the only source of evidence for reconstructing the history of the Upper Rio Negro region. Perhaps the most intriguing additional lexical clue is the word meaning 'River Indian,' which is common to Hup (*wɔ̃h*), Yuhup (*wɔh*), and Dâw (*wɔ̃h*) (see Martins 2005: 270), but is apparently absent from Nadëb. This fact suggests a forager–farmer interaction that is later than the initial family split, but older than the subsequent splits – consistent with the horticultural evidence discussed earlier. However, we cannot at this point definitively rule out the possibility that the word is older, and was subsequently lost in Nadëb, or that it is younger, and was borrowed among the Naduhup languages – although contact between Dâw and Hup/Yuhup speakers would itself have to be quite old, since a considerable distance separates their contemporary territories.

Other vocabulary provides clues to what Naduhup life may have been like before there was intensive contact with agriculturalists. Cognate terms pertaining to material culture (listed in Table 22.5) suggest that the Naduhup peoples were familiar with these concepts early on, before the breakup of the proto-language.[10]

Particularly striking in this list is the presence of words for 'hammock' and 'canoe.' Koch-Grünberg, one of the earliest European visitors to the region, described the Naduhup peoples as "crude nomadic hunters,

Table 22.5 *Cognate Naduhup terms relating to material culture*

Gloss	Hup	Yuhup	Dâw	Nadëb
hammock	*jág*	*jăg*	*jæg*	*jag*
canoe	*hɔh-tĕg*	*hɔ́h*	*xɔ*	*h'ɔ:h*
axe	*mɔ̆m*	*mɔ́m*	*mə̃̂m*	*mi:m*
shoot with blowgun	*cɔw*	*cɔw*	*ʃɔw*	*ʔefo:w*
shaman	*cə́w*	*cə̆w*	*ʃəw*	*ʃə:w*
fishhook	—	*dáj'*	*lăj'*	*(ko)rã:j*

who … know neither hammock nor canoe, but who have an excellent knowledge of the woods" (1906b: 877; my translation). However, the lexical data suggest that the Naduhup peoples not only knew the hammock and canoe in Koch-Grünberg's time, but had known them for many generations. That 'canoe' appears to reconstruct is perhaps particularly noteworthy, since Naduhup peoples occupy the forest zones between the larger rivers, and associate canoe travel with the River Indians.[11] Koch-Grünberg's description is probably once again a reflection of the unequal relationship between the horticulturalists and the foragers of the region – he and other European visitors attained much of their knowledge of the Naduhup peoples through the River Indians.

Conversely, a number of terms relating to ritual life are widely shared among the languages of the Upper Rio Negro region.[12] The common 'dabucuri' ritual (so called in the local Portuguese, borrowed from Nheengatú), in which one group makes a ceremonial presentation of fruit or some other commodity to another group (and all celebrate with large quantities of manioc beer), is a calqued form of the verb 'pour out' in both Tukano and Hup (but not in Dâw or Nadëb, which have different terms of uncertain origin). The name of the hallucinogenic plant *Banisteriopsis caapi* is a loanword shared across Tukano, Baniwa (Arawakan), and Hup within the Vaupés (and likely by other languages as well), and the name of the principal deity or culture hero is likewise a widespread calque ('Bone-Son' in Hup, Dâw, and Tukano, 'One on the Bone' in Baniwa). The fact that Baniwa, an Arawakan language spoken outside the Vaupés, ~~is not currently in~~ contact with Tukanoan, and does not seem to be a source of other loans in Tukanoan languages or vice versa (as far as the available information suggests), suggests that Arawakan languages were the source of these shared lexical items, and possibly of other elements of ritual culture common to the peoples of the Upper Rio Negro generally.[13]

22.4.2 Numeral Systems

Additional clues to the history of the Vaupés peoples come from their numeral systems. It has been widely observed that a correlation exists between numeral systems of minimal complexity and hunter-gathering societies, or societies generally having little in the way of social stratification, division of labor, or complex trading patterns – in other words, little socioeconomic need to manipulate exact quantities of items (see, e.g., Greenberg 1978:291, Stampe 1976:596, Winter 1999:43).

In the Vaupés, the River Indian languages (East Tukanoan and Arawakan) all have numeral systems of comparable complexity and very similar structure. These include etymologically opaque lexical 'atoms' (i.e. forms not based on any smaller number) for 'one,' 'two,' and 'three'; a term for 'four' which translates as 'has sibling/is accompanied,' a term for 'five' which translates as 'one hand';[14] and a base-five system for 5–20 using fingers and toes. This level of complexity is typical of the Tukanoan and Arawakan families in general (see Huber and Reed 1992).

In contrast, the Naduhup numeral systems vary considerably. Nadëb may have established terms for 1–3 only, and even these are not 'basic' numerals in that they are reported to have alternative and approximate meanings. Dâw has lexical atoms for 1–3, but then reportedly employed the calqued expression 'has a sibling' for all even numbers up to 10, and 'has no sibling' for the corresponding odd numbers. The numeral systems in Hup and Yuhup closely resemble those in the Vaupés River Indian languages: lexical atoms 1–3, calqued terms for 'four' meaning 'has sibling/is accompanied' and for 'five' meaning 'one hand,' and a base-five strategy using fingers and toes for 5–20.[15]

There is little doubt that the Naduhup numeral systems are relatively young in comparison to those of the River Indians (see Epps [2006] for a detailed discussion). Not only does the variation within the family suggest some amount of independent innovation since the days of Proto-Naduhup, but the terms for 1–3 in Hup, Yuhup, and Dâw are for the most part etymologically transparent (and not cognate in Nadëb, with the exception of 'three'): 'one' appears to be related to a demonstrative in all three cases, 'two' is derived from 'eye-quantity' in Hup and Dâw, and 'three' is derived from 'rubber-tree-seed quantity' (the rubber tree (*Hevea* sp.) has a distinctive three-lobed seed). Moreover, the terms for 'four' in these Naduhup languages, and for 'five' and up for Hup and Yuhup, are Tukanoan calques, suggesting that the Naduhup development of higher numerals was motivated by language contact and by an increased need for numerals in trade. The Vaupés numeral systems thus support the picture presented earlier, in which the Naduhup peoples developed more complex patterns of subsistence and

trade through their contact with the River Indians, since the breakup of the proto-language.

22.4.3 Grammatical Convergence

Although the contact between the Naduhup and the River Indians has not led to language shift, the Naduhup languages within the Vaupés region have nonetheless been profoundly affected. Within the Vaupés linguistic area, the cultural association between language and personal identity has led to a conscious avoidance of language mixing, such that lexical borrowing, code-switching, and ultimately language shift have been actively resisted; however, areal diffusion has resulted in profound grammatical convergence. This has affected the language of the horticulturalist Tariana, whose participation in the linguistic exogamy system has put them in close contact with Tukano (Aikhenvald 2002), but has had a similar effect on the languages of the Hup and Yuhup foragers, who today experience nearly complete unilateral bilingualism in Tukano (Epps 2007). Outside the Vaupés, contact with Tukanoan speakers today is very limited for the Dâw, and essentially completely absent for the Nadëb; this is reflected in their languages, which have undergone much less convergence toward Tukano than that undergone by Hup and Yuhup.

Examples of the effects of Tukanoan contact on the Naduhup languages of the Vaupés are many and pervasive (see Epps 2007, 2008a, 2008b for detailed discussion). Contact has probably been responsible for the spread of phonological features such as tone (which today is found in Hup, Yuhup, and Dâw) and nasalization as a morpheme-level prosody (in Hup and Yuhup only). The development of a complex system of evidentiality distinctions in Hup and Yuhup has clearly been carried out on a Tukanoan model (though the markers themselves have been grammaticalized from native material); only a single reported marker reconstructs to Proto-Naduhup, while Hup now has four distinct evidential markers and a five-way contrast (Epps 2005, 2008b). Similarly, Hup and Yuhup have developed a recent versus distant past tense distinction that closely parallels the Tukanoan pattern, and Hup's recently grammaticalized future suffix probably had the same catalyst. Other features in Hup and Yuhup that are probably due (at least in part) to Tukanoan contact include the many lexical calques (such as those discussed earlier), extensive verb compounding, nominal number marking patterns, noun classification, and many more.

The effects of contact with Tukanoan on the Naduhup languages are closely correlated with their proximity to the Vaupés region, where foragers and farmers interact most closely today. This suggests a period of intense contact between Hup/Yuhup and Tukanoan speakers, less intense contact for Dâw speakers, and no contact between Tukanoans and Nadëb. This fact (and that

Nadëb speakers were in contact with Arawakan groups in the past) may explain some of the striking differences between Nadëb's typological profile and those of Hup, Yuhup, and Dâw – such as ergative-absolutive versus nominative–accusative alignment, a strong preference for prefixing versus suffixing, head-marking versus dependent-marking, etc.

Finally, although it is not clear how much time is required for extensive grammatical convergence like that exemplified by Hup/Yuhup to take place, it is probably a relatively long-term process. (Compare, for example, the Xingu region of Brazil, where 150–200 years of cultural and linguistic exchange has not yet led to extensive areal diffusion of linguistic features, although multilingualism in this region is more limited; see Seki 1999.) Because linguistic categories are borrowed in the Vaupés, but the borrowing of words and morphemes themselves is generally avoided, extensive reanalysis and grammaticalization are required to generate new native morphemes to fill the slots in the developing paradigms. This process probably requires several generations, at a minimum (see also Aikhenvald 2002: 24), and thus supports the picture of long-term forager–farmer interaction that is emerging here.

22.5 Conclusion

A variety of features of the Naduhup languages – a relatively innovative horticultural lexicon; cognate terms for 'River Indian' in Hup, Yuhup, and Dâw; recent, Tukanoan-inspired numeral complexity; and grammatical convergence of Naduhup languages toward Tukanoan within the Vaupés – all support a consistent historical picture. The Naduhup peoples probably relied almost exclusively on hunting and gathering in the days when they spoke Proto-Naduhup, but this began to change soon after the initial break-up of the family, when they came into contact with horticulturalist Tukanoan and Arawakan peoples (Figure 22.2; see also Neves 2001). Around this time, the Naduhup presumably established a trade relationship with their farming neighbors that gave them consistent access to horticultural products, and then began to engage in small-scale cultivation themselves. While it is impossible at this point to date this interaction chronologically, the degree of separation among the Naduhup languages suggests that – in a cautious estimate – perhaps 1,500 to 3,000 years have passed since the breakup of Proto-Naduhup; the initiation of contact with horticulturalists would be somewhat more recent.

The available evidence thus suggests a long history of forager–farmer interaction with maintenance of separate lifeways. This scenario is consistent with other cases of contemporary and historically documented forager–farmer interaction elsewhere in the world, as observed by Bellwood:

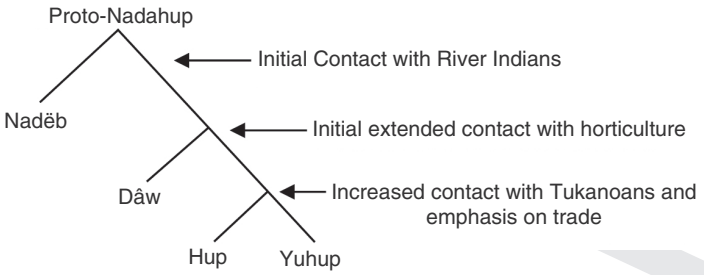

Figure 22.2 Naduhup languages and contact with horticulturalists.

> Ethnographic foragers have never [fully] adopted agriculture. Even when they occasionally include a small amount of cultivation in their subsistence round . . . they never do this to the extent that they are able to compete both demographically and technologically with surrounding long-term agriculturalists. (Bellwood 1997: 131–132)

It is also consistent with what archaeological data has revealed about such cases of interaction in the past (Price and Gebauer 1995: 7–8). In Mesoamerica, for example, "agriculture was adopted only slowly, and the hunter-gatherer communities show a marked reluctance to give up their foraging life and to make a commitment to farming" (Bray 1977: 294).

While in contemporary cases the typical linguistic outcome of this interaction is language shift on the part of the foragers, the Vaupés case – like that of the !Kung and other hunter-gathering peoples in southern Africa – shows that the long-term separation of lifeways can also foster language maintenance where cultural conditions are right. But the Vaupés situation shows that such maintenance is nevertheless likely to come at a cost: the Naduhup languages have undergone significant grammatical convergence toward the horticulturalists' language.

The linguistic dynamics of forager–farmer interaction may have profound implications for our understanding of the contemporary distribution of the world's languages. While we must exercise caution in extrapolating from contemporary relationships to those in prehistory (see, e.g., Spielmann and Eder 1994: 316, Roosevelt 1998: 200), it is nevertheless likely that past relationships had much in common with those we witness today. As interaction between hunter-gatherers and agriculturalists has probably existed on all continents where agriculture has taken hold, and has probably been present since agriculture's inception, we can suppose that for some 12,000 years at least part of the earth's population has been involved in "highly significant intercultural exchange" (Peterson 1978: 347). Linguistic exchange has clearly been an inseparable part of this interaction. The spread of many language families (such as Bantu, Austronesian, and Indo-European) over wide geographic

areas has been attributed to the spread of agriculture, via the complete assimilation or out-competition of hunting and gathering peoples (Renfrew 1987; Bellwood 1997, 2001, inter alia). Similarly, where cultural factors favor language maintenance rather than complete assimilation – as in the Vaupés case – a likely outcome is grammatical convergence, resulting in multiple unrelated languages with very similar typological profiles. It is possible that such scenarios of maintenance and convergence were even more common in the distant past, before agriculture gained a firm foothold. Thus, just as the spread of agriculture may have been responsible for the widespread distribution of many large language families, the interaction between hunter-gatherers and farmers on the fringes of these spreads could have played a role in establishing the large-scale areal patterns (Dahl 2001; Haspelmath et al. 2005) observed among the languages of the world today.

Acknowledgments

Information on Hup (aka Hupda, Jupde) was obtained via original fieldwork on the Rio Tiquié, Amazonas, Brazil, conducted in 2000–2004. Support for this research from Fulbright-Hays, the National Science Foundation (BCS0111550), and the Max Planck Institute for Evolutionary Anthropology, Leipzig is gratefully acknowledged. My thanks go to my Hup hosts and language teachers, as well as to the Museu Parense Emílio Goeldi and the Instituto Socioambiental in Brazil for practical assistance with fieldwork. Additional work on the material discussed in this chapter was supported by NSF ('Dynamics of Hunter-Gatherer Language Change' HSD0902114). I am also grateful to participants in the Workshop on Historical Linguistics and Hunter-Gatherer Populations in Global Perspective (MPI EvA, Leipzig, 2006) for comments on the material in this chapter.

NOTES

1. Defining hunter-gatherers and agriculturalists, and distinguishing the one from the other, is not as clear-cut a task in Amazonia as it is in some other parts of the world. Nearly all contemporary Amazonian foragers also practice limited cultivation, and have been shown to manage forest resources and to depend on foodstuffs sprung from past habitation sites and garden fallows (e.g., Posey 1984; Balée 1992, 1993; Politis 1996, 1999, 2007; Zent and Zent 2004). Similarly, Amazonian horticulturalists commonly rely on fishing and some hunting and gathering for their protein and other needs (as is the case for the Tukanoan and Arawakan peoples discussed in this chapter). Thus the distinction between the two subsistence patterns is best considered a continuum (Piperno and Pearsall 1998: 7; Rival 2006: S82–83; see also Smith 2001). Nevertheless, as work by Rival (2002, 2006 inter alia), Politis (1999 inter alia), and others has demonstrated, different groups can be characterized *relatively* as foragers or farmers on the basis of their primary subsistence strateg(ies) and corresponding cultural emphasis.

2. The name 'Naduhup' is preferred because (a) the name 'Makú' occurs in the literature in reference to several unrelated language groups in Amazonia and is thus prone to confusion, and (b) the name 'Makú' is widely recognized in the Vaupés region as an ethnic slur, directed against the members of this ethnic/linguistic group (see Section 22.2.4). 'Naduhup' combines elements of the names of the four established languages that make up the family (Nadëb, Dâw, Yuhup, Hup); see Epps and Bolaños (2017).
3. This practice has begun to break down in recent years as speakers of local languages experience a shift to Tukano and/or Portuguese; however, marriages are still determined by ethnic affiliation (Tukano, Desano, etc.), which retains a close ideological association with the heritage language (Stenzel 2005).
4. See Epps (2008b) for a comprehensive grammar of Hup. The Hup language is also known as Hupda, from the ethnonym Hup-d'əh (people-PL) 'the people.'
5. This figure is based on my experience among the Hup people living between the Tiquié and Vaupés Rivers.
6. Of course, the current interaction with non-Indian society represents an additional force encouraging a more sedentary lifestyle.
7. Koch-Grünberg also wrote that the Naduhup peoples he encountered "ha[d] no agriculture" (1906b: 877) and were "very primitive" (but see Section 22.4.1).
8. Gaps in the tables are due to unavailability of data. Sources for data are: Hup: my fieldnotes; Yuhup: Ospina (2002), Martins (2005), and my fieldnotes; Dâw: Martins (2004), Martins (2005), and my fieldnotes; Nadëb: Schultz (1959), Weir (1984), and Martins (1999, 2005); Tukano: Ramirez (1997b); Baniwa: Ramirez (2001). The data for Naduhup are given in a slightly adjusted version of the regularized phonemic transcription given in Martins (2005) (because transcriptions vary across sources); the Tukano and Baniwa data are given in the orthographies used in their sources.
9. Judgments of likely cognates are based on my analysis and on the ~~reconstruction given~~ in Martins (2005); they are still somewhat tentative.
10. While we cannot at this point absolutely rule out borrowing in the past among the daughter languages or parallel semantic shift, the probable status of these words as cognates – like the word for 'River Indian' discussed earlier – is supported by the presence of regular sound correspondences (see Martins 2005: 225–228).
11. Contemporary Naduhup peoples do use canoes, primarily for fishing. At least within the Vaupés region, the Naduhup do not make the canoes themselves, but trade for them with the River Indians. This is in keeping with the general economic system in the region, in which the various groups maintain a system of divided labor, such that each contributes a different aspect of material culture to the trading circuit: along the Tiquié River, for example, the Tukanos make painted benches, the Hupd'əh make baskets, and the canoe-making falls to the Tuyuka (an East Tukanoan group).
12. Unfortunately, however, documentation of these terms is particularly scant.
13. The peoples of the region (despite their linguistic differences) share a wide range of rituals (*dabucuri*, initiation, etc.), and most notably the *yurupari* complex, which involves sacred trumpets that only men may see; a comparable tradition of sacred trumpets is widely represented among Arawakan peoples throughout Amazonia (see Wright 2011). A range of song styles, myths, and other cultural practices is also shared throughout the Upper Rio Negro region.

14. Aikhenvald (2002: 107–108) has shown that the terms for 'four' and 'five' in Tariana are calqued from Tukanoan and have replaced earlier terms.
15. Sources of data for the discussion in Section 22.4.2–3 are: Yuhup (Ospina 2002), Dâw (Martins 2004), Nadëb (Weir 1984), Tukano (Ramirez 1997a), and Tariana (Aikhenvald 2002, 2003).

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