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A phonological reconstruction of Proto-Cerrado (Jê family)[1]

This is the second paper in a series on the historical phonology of Macro-Jê languages. In this work, I examine the sound correspondences between the languages of the Central Jê branch, Xavánte and Xerénte, in order to arrive at a reconstruction of Proto-Central Jê. I further compare it to my reconstruction of Proto-Northern Jê (Nikulin 2016b) and propose a phonological reconstruction of Proto-Cerrado, the most recent common ancestor of Proto-Central Jê and Proto-Northern Jê. The paper also includes a non-exhaustive list of Cerrado etymologies.

Keywords: Jê languages, Macro-Jê languages, Xavánte, Xerénte, language reconstruction, comparative method

1. Introduction

In an earlier work (Nikulin 2016b), I have proposed a phonological reconstruction of Proto-Northern Jê, the proto-language of the branch that comprises Apinayé, Kayapó (Mẽbêngôkre), Suyá (Kĩsêdjê), Tapayúna, Timbira and Panará languages spoken in Central Brazil. In this paper I offer a reconstruction of Proto-Cerrado (PCerr)[2], the immediate ancestor of Proto-Northern Jê (PNJ) and the proto-language of its coordinate branch, Central Jê (PCJ).

Before proceeding to the main body of this paper, some comments on my PNJ reconstruction (Nikulin 2016b) are necessary. These concern the internal phylogenetic structure of the Northern Jê branch and individual correspondences.

1.1. Internal structure of Northern Jê

Recent lexicostatistical investigation has shown that the Northern branch of Jê languages has the internal structure shown in Figure 1.

Figure 1. Northern Jê languages
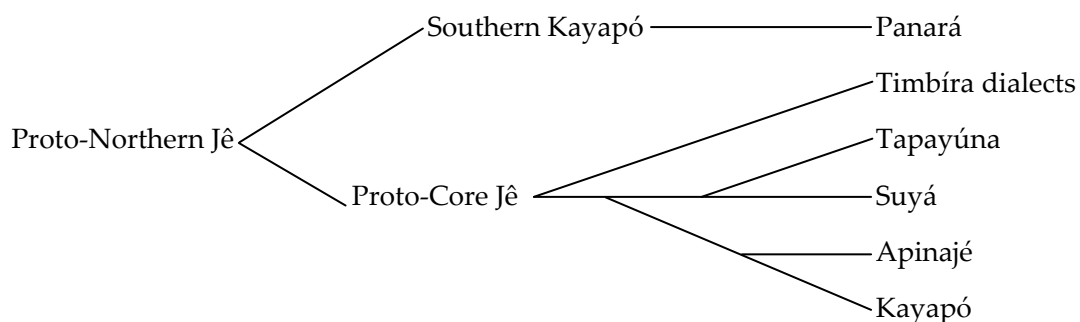
[2] Cerrado languages have been also called Amazonian Jê (Ribeiro and Voort 2010: 549) and Northern Jê (Ramirez et al. 2015: 261) in earlier literature.

Contrary to my earlier claims, Timbira is not likely to form a node with Apinayé and Kayapó (called *AMT* in Nikulin 2016b)[3]. Instead, it probably was the first language to split off from Proto-Core Jê. This must have occurred sometime between the III and VIII centuries CE[4] (70–82% matches on the 110-item Swadesh wordlist). The split between Apinayé–Kayapó and Suyá–Tapayúna should be dated sometime between the VII and X centuries CE (79–86% matches). It is also possible that Timbira, Apinayé–Kayapó and Suyá–Tapayúna diverged from each other simultaneously around 700 CE, in which case Core Jê would have a rake-like structure (cf. the working hypothesis in Nikulin 2015). The revision of the tree has been possible thanks to the inclusion of additional lexical data sources for modern languages not considered in Nikulin 2016b: Vasconcelos 2013, Bardagil-Mas 2016, Lapierre et al. 2016a (for Panará), Ham 1961, Albuquerque 2011, 2012 (for Apinayé), Camargo 2015 (for Tapayúna), DMK (for Suyá), Silva 2011, 2012 (for Pykobjê), Castro Alves 1999 (for Apãniekrá), Popjes and Popjes 1971 (for Ramkokamekrá).

The split of Northern Jê into Core Jê and Panará probably occurred sometime between the III and the V centuries BC (55–60% matches on the 110-item Swadesh wordlist), much earlier than the split of Core Jê. This is in line with my earlier views on the internal structure of the Northern Jê branch (Nikulin 2015, 2016a, 2016b), but contrasts sharply with an alternative hypothesis, according to which Panará would form a node with Timbira, 'Savannah Jê' (Lapierre et al. 2016b, Lapierre 2017). The main argument in favor of the Savannah Jê hypothesis is that both Panará and Timbira share a non-trivial, typologically rare and seemingly unnatural sound change: the devoicing of PNJ prenasalized voiced stops ($*^nb$, $*^nd$, $*^n\!d\!\!z$, $*^ng$). However, this sound change should be understood as part of a more general trend in Panará and Timbira historical phonologies: **all** PNJ voiced stops, including the oral stops $*b$, $*d\!\!z$, $*g$, became voiceless in both languages (Nikulin 2016b: 171–173); no mention of this fact is made by the proponents of the Savannah Jê hypothesis. Note that, although devoicing of prenasalized stops is indeed uncommon cross-linguistically, as correctly observed by Lapierre (2017), there is nothing uncommon about the situation in which a general stop devoicing process targets stops in all environments, including the position after a nasal segment (cf. Old High German *fintan* 'to find', *bintan* 'to bind', where *t* comes from an earlier $*d$ via the High German consonant shift). More crucially, the devoicing of voiced stops in Timbira counterfed the sound changes $*\!t\!\!s > h$, $*k > k^h$, unique to Timbira. This fact confirms that the voiced stop voicing in Panará and Timbira occurred independently.

1.2. Other additions

Major additions to my PNJ reconstruction (Nikulin 2016b) include some amendments based both on new sources and on new observations.

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[3] The existence of this clade has also been cautiously suggested by Carvalho (2016: 70).

[4] Annotated Swadesh wordlists, created within the GLD (Global Lexicostatistical Database) project, are scheduled to be available online at <http://starling.rinet.ru/new100>). Note that the Proto-Northern Jê word $*^nd\dot{\imath}w\dot{\imath}$ 'new' is a probable loanword and of borrowed origin and is marked as such in the database; it was considered as a native item in the lexicostatistical calculations for Northern Jê languages.

For divergence datings, I accept the flow glottochronological model advanced by Vasilyev and Saenko (2017) and the formula proposed by the authors: $N(t) = e^{-0.61t}(1 + 0.61t)$, where $N(t)$ is the match percentage within the 110-item Swadesh wordlist and t is the time depth of the divergence event expressed in thousands of years. The value of the loss coefficient (0.61) was calibrated on Romance material.

1.2.1. Panará

New data that became available to me after the publication of my PNJ reconstruction, especially a recent article on the development of PNJ *ɾ in Panará by Carvalho (2016), challenge a number of statements that can be found in Nikulin 2016b.

    1.2.1.1. **PNJ *ŋɾ.** Most importantly, the sound law PNJ *ŋɾ > PNR *y, based on a single cognate set PNJ *ŋɾɔ̃tɔ̃ 'toucan' > PNR *yɔ̃-kwekwe, yɔ̃-sa*, is now known to be erroneous. The true Panará reflex of this PNJ root is *iⁿkyɔ̃ pɛpɛtĩ* (Andrés Salanova, p.c.). The same PNJ cluster must be reconstructed for another cognate set proposed by Carvalho (2016: 59): PNJ *ŋɾɔ̃ 'to sprout' > PNR *kyɔ̃*, KAY *ŋɾõ* (from which PNJ *ʈ=i=ŋɾɔ̃-tɔ̃ 'sprout' > API *Ø=i=ŋɾɔ̃-tɔ̃*, TIM *h=i=ɾɔ̃-t* is derived), though the absence of prenasalization in Panará remains unclear. Note that PNJ *ŋ > PNR *ⁿk* in all environments, including the position before nasalized vowels.

    1.2.1.2. **PNJ *ka- and *a-.** Another fact that I failed to mention in Nikulin 2016b is that the outcomes of word-initial unstressed PNJ *ka-* and *a-* are exactly the same, suggesting a merger and a subsequent split development in the history of Panará, as shown in Figure 2.

Figure 2. The development of PNJ word-initial *ka-* and *a-* in Panará
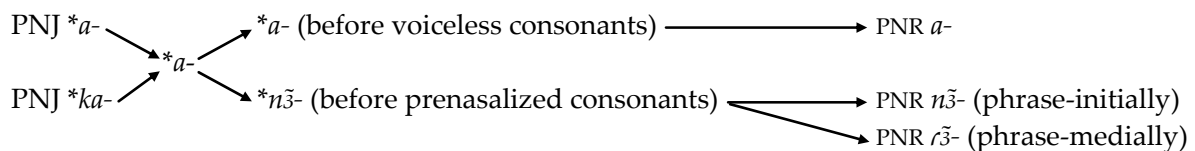
    The correspondences involved in this scheme are illustrated by examples (1–2), most of which are extracted from published sources (Nikulin 2016b: 171; Carvalho 2016: 58).

(1)   PNJ *ka-* and *a-* > PNR *nɔ̃- / =ɾɔ̃-*
    a. PNJ *ka=ⁿgɾɔ 'warm' > PNR *nɔ̃=kyɔ / =ɾɔ̃=kyɔ*;
    b. PNJ *kaⁿbɾo 'blood' > PNR *nɔ̃pyu / =ɾɔ̃pyu*;
    c. PNJ *kaŋɔ̃ 'snake'[5] > *kaⁿgɔ̃ > PNR *nɔ̃kɔ̃*;
    d. PNJ *aⁿgɜ 'sedge seed'[6] > PNR *nɔ̃ⁿkɜ*;
    e. PNJ *a=ⁿgɾo 'peccary' > PNR *nɔ̃ⁿkyo / =ɾɔ̃ⁿkyo*, etc.
(2)   PNJ *ka-* and *a-* > PNR *a-*
    a. PNJ *kadʑɜtɔ̃ 'cotton' > PNR *asɜtĩ 'cord';
    b. PNJ *kaʈuwă ~ *kaʈwa 'mortar' > PNR *asuă 'pestle';
    c. PNJ *kapɾĩ 'sad' > PNR *apɾĩ-pɛ*;
    d. PNJ *kapɾɔ̃tɔ̃ 'turtle' > PNR *apyɔ̃n*;
    e. PNJ *akɾo 'vine, fishing poison' > PNR *akyo*, etc.

    Note that Southern Kayapó wordlists capture a stage of Panará when the prothesis of *n-* had not yet occurred. For example, Barbosa (1918: 62, 81, 83) gives <a(n)kió> 'warm', <ampiô> 'blood', <anhán> 'snake', <ankiô> 'peccary'. This means that the prothesis of *n-* and its subsequent flapping are very recent and should be dated to the XX century.

    1.2.1.3. **Correspondence Proto-Core Jê *e ~ Panará ɜ.** Carvalho (2016: 60) cites two cognate sets that cannot be easily accounted for with my PNJ reconstructions. These are reproduced below in (3).

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[5] Glossed erroneously as 'blood' in Nikulin 2016b.

[6] This item is of significant cultural importance for the speakers of Cerrado languages. It denotes the seeds of a plant called *tiririca* or *capim-navalha* in Portuguese, which are used for making collars.

(3)   Proto-Core Jê *e ~ Panará ɜ
   a. Proto-Core Jê *prekĕ 'tall' ~ PNR pɨɜ 'big, tall';
   b. Proto-Core Jê *kaⁿbrekĕ 'red' ~ PNR nɜ̃ⁿprɜ / rɜ̃ⁿprɜ.

If only these comparisons are correct, we are dealing here with a correspondence Proto-Core Jê *e ~ Panará ɜ (note that Proto-Core Jê *e is known to correspond to Panará e and Proto-Core Jê *ɜ regularly corresponds to Panará ɜ). It must go back either to PNJ *e or to PNJ *ɜ; either Proto-Core Jê or Panará must have undergone a conditioned vowel change. In order to determine the directionality of this change, external data might turn out to be useful. The word for 'red' happens to have likely cognates in Central Jê: PCJ *prɛ: 'red' > XAV prɛ:(-di), XER prɛ(-di), Salinas Xavánte hoy=pyɛ, Xakriabá (Saint-Hilaire) oi=prɛ-de <oïpredé>, Akroá ši-kuca=brə <schikutzabrö>. PCJ *ɛ is known to correspond to PNJ *ɜ (see subsection 3.2), so the vowel in Panará appears to be more archaic. However, the decision to reconstruct PNJ *ɜ for the correspondence in question is problematic: PNJ *r is known to have yielded Panará y before non-front vowels (Nikulin 2016b: 170–171; Carvalho 2016: 66), which did not occur in PNR nɜ̃ⁿprɜ/rɜ̃ⁿprɜ. Reconstructing a front vowel for the same correspondence would not solve the issue: in this case PNR *prɜ would be expected instead of PNR pɨɜ.

The correspondence remains therefore unexplained and awaits further investigation.

1.2.2. Apinayé and Kayapó

In my description of the distribution of Apinayé and Kayapó reflexes of PNJ *ȶ (Nikulin 2016b: 172) I failed to observe that the reflex ʔ is most consistently found in PNJ stems whose initial consonant is a non-alternating *ȶ. The most salient examples are provided in (4) below.

(4)   PNJ *ȶ > API, KAY ʔ
   a. PNJ *ȶi 'bone' > KAY ʔi (Apinayé innovated and now uses both yi and i);
   b. PNJ *ȶo 'leaf, a hair' > API ʔo, KAY ʔo;
   c. PNJ *ȶɨ 'seed' > API ʔɨ, KAY ʔɨ;
   d. PNJ *ȶetĕ / *ȶeȶ 'to deceive' > API ʔeyč / ʔet (but KAY et).

Note that these stems do not behave as usual class II stems in terms of Rodrigues (2012), since they suffer no modification when an internal argument expressed with a full NP immediately precedes them[7]. Nevertheless, their initial consonant changes to a reflex of PNJ *y or *dʑ when their internal argument is expressed with a person-marking prefix (e.g. API iɲ-mɜ̃ a=čeyč ket-nɛ̃ 'don't lie to me!', KAY i=yo 'my (single) hair'). This fact leads Salanova (2011: 79) to consider that these consonants are present in the underlying representation of the person-marking prefixes in these languages, arguing that in Apinayé they surface even before consonants. However, the latter observation is valid only for the first person prefix (ič-), but not for the second person prefix (a-). Be that as it may, the presence of these consonants in the inflected forms of the stems under consideration is likely an innovation caused by analogy with true class II stems.

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[7] The stems that belong to class II are expected to exhibit the following initial consonants:

	PNJ	Apinayé	Kayapó
after a full NP (uninflected):	*y, *dʑ	ž, č	y, ž
after a person-marking prefix:	*y, *dʑ	ž, č	y, ž
elsewhere (third person):	*ȶ	Ø	Ø

These predictions are valid both within frameworks that treat these segments as prefixes (Rodrigues 2012) and within frameworks that consider *y ~ *dʑ and their reflexes as integral parts of roots.

1.2.3. Tapayúna

Camargo (2015) offers the most complete description of Tapayúna, but this work has not been taken into consideration in my earlier research. It helps fill one of the gaps in the description of the historical phonology of Tapayúna found in Nikulin 2016b, as shown below in (5).

(5) PNJ *g > TAP k, SUY k
    a. PNJ *ga '2.NOM' > TAP, SUY ka;
    b. PNJ *ga 'to roast (finite)' > TAP, SUY ka;
    c. PNJ *gu '1INCL.NOM' > TAP ko, SUY ku.

There is one curious fact about the transcription system employed in Camargo 2015: the phonemes m and w recognized by the same author elsewhere (Camargo 2010) are systematically rendered as w, and the character m is not used in the transcriptions altogether. This is not stated explicitly anywhere in the cited work. It is not entirely clear whether the correct explanation of this fact involves transcription issues or an ongoing sound change, but it must bear some relation to the apparently irregular instances of PNJ *^{m}b > TAP w, as attested by Camargo (2010). Examples of the latter are taken from (Nikulin 2016: 175) and reproduced in (6) below.

(6) PNJ *^{m}b > TAP w:
    a. PNJ *$(a=)ka^{m}bɜtɕ$ 'night' > TAP $a=gawərɕ̆$;
    b. PNJ *$^{m}bɛʥ^{n}ĩ$ 'honey' > TAP $wɛɣ$ (but TAP $^{m}bɛɣ-tɨ$ 'bee').

Further fieldwork on Tapayúna should clarify the issue.

Another claim in my earlier work that has been invalidated by new data referred to the impossibility of CCC-structured onsets in Tapayúna (Nikulin 2016b: 176). These are now known to be allowed, cf. Tapayúna $^{n}gʁwa-to$ 'moriche palm leaf' (although the former root is attested as $^{n}gʁuwă$ 'moriche palm' in isolation).

1.3. Structure of the paper

The remainder of this paper is organized as follows. Section **2** deals with Central Jê languages and the reconstruction of Proto-Central Jê. Onsets (subsection **2.1**), syllable nuclei (subsection **2.2**) and syllable-final and word-final phenomena (subsection **2.3**) are tackled separately. In section **3**, I compare my reconstructions of Proto-Central Jê and Proto-Northern Jê and arrive at a phonological reconstruction of Proto-Cerrado onsets (subsection **3.1**), nuclei (subsection **3.2**) and codas (subsection **3.3**). A non-exhaustive list of Cerrado etymologies is provided in section **4**. I conclude with section **5** where I discuss the findings presented in this paper and suggest topics for future research in Cerrado historical phonology.

2. Proto-Central Jê

Central Jê (Akwẽ, Akuwẽ[8]) languages constitute a phylum of closely related languages formerly spoken over a vast area in Central Brazil, centered on the Tocantins watershed and reaching the headwaters of the Parnaíba and the São Francisco in the east (since 19th century, Xavánte has also been spoken as far west as the Araguaia River due to a recent expansion

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[8] The endonyms of Xavánte and Xerénte are, respectively, $ʔaʔuwẽ$ and $akwẽ$. These forms are reconstructible to Proto-Central Jê (PCJ *$akuwẽ$ according to the correspondences described in this section below).

event). Of these, only Xavánte and Xerénte are currently spoken. Akroá, Xakriabá and the Salinas dialect of Xavánte are now extinct and their attestation is limited to short wordlists collected by Auguste de Saint-Hilaire, Wilhelm Ludwig von Eschwege, Karl Friedrich Philipp von Martius, Johann Baptist von Spix (Martius 1867) and Paul Ehrenreich (Ehrenreich 1895).

Akroá and Xakriabá wordlists have been tackled by Carvalho and Damulakis (2015), while some peculiarities of the Salinas dialect of Xavánte are discussed by Nikulin (2015: 27–29). Fragmentary nature of available data, combined with low internal diversity of the Central Jê group, makes the contribution of Akroá, Xakriabá and Salinas Xavánte data to the reconstruction of Proto-Central Jê minimal. For the most part of this subsection, only Xavánte and Xerénte data are considered below.

Xavánte and Xerénte share much of their irregular morphophonology. Phenomena like alternations and prefix substitution at the left margin of the stems, as well as nominalization via suffixing are also found in Northern Jê (and are easily projected onto Proto-Cerrado). Another phenomenon typical of Central Jê languages is the existence of special utterance-final allomorphs: a number of stems undergo drastic changes when they are preceded by a pause. These will be considered at the end of this section (2.3).

2.1. Onset

The correspondences between Xavánte and Xerénte onsets are rather straightforward and are exposed below in Table 1.

Table 1. Proto-Central Jê onsets and their reflexes in Xavánte and Xerénte

PCJ	XAV	XER
*p	p	p
*pɾ	pɾ	pɾ
*t	t	t
*c	c ~ s	ʂ ~ s
*k	ʔ	k
*kɾ	ʔɾ	kɾ
*kw	ʔw	kw
*km	ʔm	km
*b	b	b
*bɾ	bɾ	bɾ
*d	d	d
*ʒ	ʒ ~ z[9]	ʐ ~ z, ʐd ~ zd, d
*m	m	m
*mɾ	mɾ	mɾ
*n	n	n
*ɲ	ɲ[10]	n

[9] Quintino (2000: 39, 46) analyzes both /z/ and /j/ as phonemes, stating that there is some variation between the two in oral contexts. However, this claim is not illustrated with any minimal or near-minimal pair.

[10] According to Quintino (2000: 39–40, 2012: 125), before back nasal vowels the allophone [ŋ] is found instead of [ɲ]. This phenomenon is not attested by other researchers. In fact, Pickering (2010: 63) explicitly states that in his data [ɲ] is found both before back and front nasal vowels, noting that Quintino's data come from speakers from

PCJ	XAV	XER
*w	w	w
*ɾ	ɾ	ɾ
*h	h	h
*Ø	ʔ	Ø

Note that voiced stops and nasals are in complementary distribution both in Proto-Central Jê and in Xavánte: at least in the onset position, voiced stops occur in syllables with oral nuclei, whereas nasals occur only in syllables with nasal nuclei (McLeod 1974; Quintino 2000: 39–41, 2012: 124–125; Pickering 2010: 62, 73–77, 76–77)[11]. However, just like in Nikulin 2016b, I prefer to distinguish these allophones in my transcription. Note that the allophony in question was phonemicized in Xerénte due to syllabic reduction that eliminated some of the nuclei that had triggered the choice of the allophone in Proto-Central Jê (Mattos 1973).

Although most correspondences presented in Table 1 are trivial, several comments are in order.

2.1.1. The reconstruction of PCJ *c and *ʒ

Xavánte, Akroá and Xakriabá reflexes of PCJ phonemes reconstructed here as *c and *ʒ suggest that they should be reconstructed as stops or affricates rather than fricatives. The phonetic realization of the reflexes is discussed below.

McLeod (1974) describes the Xavánte reflexes as fluctuating between [č ~ c ~ š ~ s] and [ǯ ~ ʒ ~ ž ~ z] respectively, Quintino (2000: 44–45, 2012: 45) attests [c ~ s] and [ʒ ~ z] in plain speech register, while in Pickering's (2010: 63) data only fricatives ([s] and [z]) are found. According to Xavánte speaker Euzebio Prowari (*apud* Pickering 2010: 63), the affricates [c] and [ʒ] are a characteristic feature of the speech of the Xavántes from the Indigenous Areas Pimentel Barbosa and Areões. I transcribe the phonemes in question as *c* and *ʒ* hereinafter, since affricates are more likely to represent the more archaic state than fricatives.

In Salinas Xavánte, PCJ *c is reflected as *s* (sometimes *š*), while *ʒ is usually reflected as *θ* (sometimes *s*).

In Xerénte, PCJ palatal stops normally yielded fricatives. These fricatives are attested as retroflex [ʂ, ʐ] in earlier works (Mattos 1973; Krieger & Krieger 1994: XIII–XIV; Braggio 2004: 269), but in modern Xerénte they are mostly articulated as alveolar ([s, z]) according to more recent works (Sousa Filho 2007: 73; Souza 2008: 72–74; Grannier 2009: 252; Frazão 2013: 56; Cotrim 2016: 59). It is likely that we are dealing here with a very recent sound change. I shall transcribe Xerénte fricatives as retroflex in this paper.

In some words Xerénte displays aberrant reflexes of PCJ *ʒ (namely, XER ʐd or d), for which I am unable to offer an explanation. Note that these irregular reflexes often occur in variation with plain fricatives or with each other, e.g. *kbaʐdi-kɾe ~ kbadi-kɾe* 'hammock', *dakɔ ~ ʐakɔ* 'to climb', *dapaka ~ ʐapaka* 'to desire', *daɾõtõ ~ ʐaɾõtõ* 'to jump', *ʐawɾɛ ~ dawɛɾ* 'big', *ʐa ~ da* 'to stand', etc. Sousa Filho (2007: 255–256) analyzes alternating *d-* and *ʐ-* as allomorphs of the same mor-

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the Indigenous Area Pimentel Barbosa, whereas his own data come from residents of the community of São Marcos. For sake of simplicity, I follow McLeod (1974) and transcribe *ɲ*.

[11] Quintino (2012: 123–124) provides a minimal pair (*[da-di]* 'GNR-belly' vs. *[na-di]* 'mother-IMP'), but concludes that in the latter case the vowel of the root is underlyingly nasalized. All other researchers invariably list the form *nə̃* 'mother'.

pheme (the 'relational prefix' /z-/), suggesting that the occurrence of the forms with *d-* and *ʐ-* is not grammatically conditioned, but does not provide any explanation for the causes of the variation in question.

It is important to note that in a number of stems stem-initial PCJ *c* alternated with *ʒ* (in oral contexts) or *ɲ* (in nasal contexts). The *c*-initial allomorph occurred only after the second person prefix *ay-*, after the third person prefix *ĩ-* and in third person forms without an overt prefix, as is still the case in Xerénte (Sousa Filho 2007: 247–255) and Xavánte (Estevam 2011: 138; Hall et al. 1987: 286–287). Some examples are provided in (7) below.

(7)   PCJ *ʒ* and *c*
    a. PCJ *-ʒa* 'to stand' > XAV *-ʒa*, XER *-ʐa ~ -da*;
    b. PCJ *-ʒadawa* 'mouth' > XAV *-ʒadawa*, XER *-ʐdawa*;
    c. PCJ *-ɲɔ̃ytɔ* 'tongue' > XAV *-ɲɔ̃ytɔ ~ -ɲɔ̃ttɔ*, XER *-nõytɔ*;
    d. PCJ *ay-ca* 'you stand' > XAV *a-ca*, XER *ay-ʂa*;
    e. PCJ *ay-cadawa* 'your mouth' > XAV *a-cadawa*, XER *ay-ʂdawa*;
    f. PCJ *ay-cɔ̃ytɔ* 'your tongue' > XAV *a-cɔ̃ytɔ*, XER *ay-ʂõytɔ*.

While most authors agree that the phenomenon in question can be described as a stem-internal alternation, Sousa Filho (2007) considers that Xerénte *-ʐ-*, *-d-*, *-n-* and *-ʂ-* are separate prefixes ('relational prefixes' in the author's terms). In this work I adopt the former analysis.

In Akroá and Xakriabá, PCJ *c* seems to have been reflected as *s* (sometimes *š* in Xakriabá), while PCJ *ʒ* appears to have yielded *č* (sometimes *c* in Akroá). In the latter case the data also allow for a voiced interpretation of the reflex(es) (Carvalho and Damulakis 2015: 40).

2.1.2. Debuccalization of PCJ *k* in Xavánte

It is well-known that *k* has been historically debuccalized in Xavánte, changing to *ʔ* (Rodrigues 1999: 178; Carvalho and Damulakis 2015: 24–26). It did not affect the Salinas dialect of Xavánte, as attested by Ehrenreich (1895), nor is it visible in the wordlists collected by Francis de Castelnau and Johann Emmanuel Pohl in the 19th century (Rodrigues 2004; Carvalho and Damulakis 2015: 25)[12], suggesting that the development *k > ʔ* took place in the late 19th or early 20th century.

2.1.3. The depalatalization of PCJ *ɲ* in Xerénte

PCJ *ɲ* (allophone of PCJ *ʒ* in nasal contexts) was unconditionally depalatalized to *n* in Xerénte, thus phonemicizing the allophony reconstructible for PCJ. Note that the same process occurred independently in other Macro-Jê languages, notably in Southern Jê and in Jabutí (Ribeiro & Voort 2010: 565–566).

2.2. Nucleus

The correspondences between Xerénte and Xavánte vowels are straightforward, as presented in Table 2 below.

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[12] Note that Rodrigues (2004: 117–118) hypothesizes that the variety attested by Castelnau and Pohl is not the direct ancestor of modern Xavánte. This assumption is needed to account for the loss of *k* in Karajá male speech (evidenced by data from 1844), which Rodrigues attributes to Xavánte influence. If Rodrigues's hypothesis is correct, absolute dating for the sound change in question is not recoverable from historical sources.

Table 2. Proto-Central Jê vowels and their reflexes in Xavánte and Xerénte.

PCJ	XAV	XER	PCJ	XAV	XER
*a	a	a			
*ə	ə	ə	*ə̃	ə̃	ə̃
*ɨ	ɨ	ɨ			
*ɔ	ɔ	ɔ			
*o	o	o	*ɔ̃	ɔ̃	õ
*u	u	u			
*ɛ	ɛ	ɛ	*ɛ̃	ɛ̃	ẽ
*e	e	e			
*i	i	i	*ĩ	ĩ, i	ĩ

Two PCJ vowels, *ɨ and *o, were extremely rare, as are their reflexes in both languages. They are only found in a handful of words, like the postposition *ʒo / *co 'looking for, pursuing', the TAM marker *to, the verb *krɨkrɨ 'to cry.PL' or the noun *ʒɨːʒɨkɨ // *ʒɨːʒɨ 'grasshopper'. In fact, the phonemic status of ɨ and o is not recognized by Pickering (2010: 65, 163–165) for Xavánte, whereas some authors do not distinguish between Xerénte ə and ɨ (Sousa Filho 2007: 74; Frazão 2013: 54).

A non-trivial development occurred in Xavánte: PCJ *ĩ was denasalized to i after c (for example, PCJ *ɲĩcĩwi / *cĩcĩwi 'on the surface of' > XAV ɲiciwi / ciciwi, XER nʂĩwi / ʂʂĩwi; PCJ *kmə̃=cĩcĩ 'to fill' > XAV ʔmə̃=cici, XER kmə̃=ʂĩʂĩ). For this reason, the sequence /cĩ/ does not occur synchronically in Xavánte (Pickering 2010: 75, 153).

One very important, but poorly understood process that deeply affected Xerénte phonology and phonotactics consists in vowel elision (Mattos 1973; Ribeiro & Voort 2010: 554; Frazão 2013: 85). It massively eliminated PCJ vowels under uncertain conditions (the factors possibly included stress position, consonantal environment and position within the utterance), leading to the emergence of alternating forms like *hə-rə / h-rə / hə-r* 'to shout.NF', *kru-ku / kr-ku / kru-k* 'to din.NF'. The distribution of these allomorphs is underdescribed and is of particular importance for the understanding of Xerénte historical phonology. Whatever might have been the original conditions for vowel elision in Xerénte, the situation observed in this language is clearly innovative when compared to Xavánte. For this reason, I assume that Xavánte syllabification can be projected onto the PCJ level.

Vowel length is contrastive in Xavánte; it has been described in autosegmental terms. Long vowels are mostly found under specific prosodic or syntactic conditions (in utterance-final allomorphs or before the particle *hə̃*), except when they arise via compensatory lengthening that accompanies the elision of b before labials and ʔ (see subsection 2.3). Since nothing suggests that length contrast is innovative in Xavánte, I assume it was already present in PCJ and was lost in Xerénte.

2.3. Coda and utterance-final allomorphs

Xavánte allows two underlying codas: a labial coda (surface realizations include [b], [m], [p], [Ø] and lengthening of the previous vowel) and a palatal coda (surface realizations include [y], [Ø] and lengthening of the following consonant). They are analyzed as /b/ and /z/ by Pickering (2010: 179–220) and treated as suprasegmental phenomena by Burgess (1971).

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As a consequence of massive vowel elision, Xerénte phonotactic restrictions are very different from those of Xavánte and from those that can be reconstructed for Proto-Central Jê. However, both underlying Xavánte codas have their correspondences in Xerénte. These are summarized in Table 3 below.

Table 3. Proto-Central Jê underlying codas, their surface realizations and their reflexes in Xavánte and Xerénte

PCJ		XAV	XER
*/y/	*[y]	*y* (before *p, b, m, w, r, h*)	*y* (utterance-medially)[13]
		y ~ lengthening of the following C (before *ʔ*)	
		lengthening of the following C (before *t, d, n, ɲ, c, ʒ*)	
	[Ø]	Ø (utterance-finally)	Ø (utterance-finally)
*/m/	*[m]	*p* (before *t, c*)	*m* (utterance-medially, except before labials)
		m ~ *b* (before *d, ʒ, r*)	
		m (before *n, ɲ, h*)	
		b ~ lengthening of the preceding V (before *ʔ*)	
	[ː]	lengthening of the preceding V (before labials)	Ø (before labials and utterance-finally)
	[Ø]	Ø (utterance-finally)	

As is evident from Table 3 above, the coda allophony observed in Xavánte can be partly projected onto the PCJ level because it has exact correspondences in Xerénte. Namely, both in Xavánte and Xerénte both codas fail to surface in utterance-final position, and the labial coda has no consonantal realization preceding another labial consonant. Although it is possible to consider that PCJ had two underlying codas, they must have had multiple surface realizations already in PCJ. The allophony in question is exemplified in (8) below.

(8) Allophonic realizations of PCJ */-m/ and */-y/
    a. PCJ */tɛm/ 'new':
        *tɛ (utterance-finally) > XAV *tɛ*, XER *tɛ*;
        *tɛm (utterance-medially, not before labials) > XAV *tɛm / tɛb / tɛp*, XER *tɛm*
        *tɛː (before labials) > XAV *tɛː*, XER *tɛ*.
    b. PCJ */tə̃y/ 'rain':
        *tə̃ (utterance-finally) > XAV *tə̃*, XER *tə̃*;
        *tə̃y (utterance-medially) > XAV *tə̃y- / tə̃C-*, XER *tə̃y*.

The existence of utterance-medial and utterance-final allomorphs is not specific to PCJ morphemes that end underlyingly in */m/ or */y/ or their modern Xavánte and Xerénte reflexes. This type of allomorphy is attested both in Xavánte, where it is well described (Hall et al.

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[13] Note that in Xerénte *əy, ə̃y* are in free variation with *e, ẽ* (Krieger & Krieger 1994: X). Sometimes a nasalized coda (*ỹ*) is found in Xerénte; although the issue needs further investigation, I hypothesize that this happens before reflexes of PCerr prenasalized codas: cf. *həy-ʂu ~ he-ʂu* 'straw' < PCerr *kɜy* 'bark, skin' + *coy* 'leaf' and *hə̃ỹ-krɛ* 'to dry leather' (cf. PCerr *ⁿgɾɜ* 'dry'), *hə̃ỹ-pe* 'with a beautiful skin' (cf. PCerr *ⁿbɛʈɛ̌* 'good'), *hə̃ỹ-krɔ* 'to warm up by the fire' (cf. PCerr *ⁿgɾɔ* 'to heat'). Given the cursory nature of this hypothesis, I do not reconstruct this apparent contrast to Proto-Central Jê.

1987: 274–285; McLeod & Mitchell 2003: 54; Estevam 2011: 139–143), and in Xerénte, where it is mentioned *in passim* (Siqueira 2003: 42). This allomorphy is systematized in Table 5 below; for each allomorphy class, a PCJ reconstruction is proposed.

Table 4. Allomorphy conditioned by the position within the utterance in PCJ, Xavánte and Xerénte

PCJ		notes	XAV		XER	
medial	final		medial	final	medial	final
Class A. The last syllable is elided in the utterance-final allomorph						
*-VkV	*-V		-VʔV	-V	-(V)k(V)	-V
*-VbV	*-V	only PCJ *wakəbə // *wakə 'price'	-VbV	-V	-bV	-V
*-VcV	*-V	only PCJ *pece // *pe 'good'	-VcV	-V	-(V)ʂV	-V
Class B. The last syllable is elided in the utterance-final allomorph; the utterance-medial allomorph is affected by nasalization[14]						
*-ṼmṼ	*-V		-ṼmṼ	-V	-(Ṽ)mṼ	-V
*-ṼnṼ	*-V		-ṼnṼ	-V	-(Ṽ)nṼ	-V
Class C. PCJ *-aba // *-wa[15]						
*-aba	*-wa		-aba	-wa	-ba	-wa
Class D. The vowel of the penultimate syllable is lengthened in the utterance-final allomorph, and the consonant that immediately follows it becomes voiced (unless it is already voiced)						
*-VpV	*-V:bV	oral nucleus	-VpV	-V:bV	-(V)p(V)	-bV
*-VtV / *-ṼtṼ	*-V:dV / *-Ṽ:nṼ	oral / nasal nucleus	-VtV / -ṼtṼ	-V:dV / -Ṽ:nṼ	-(V)t(V) / -(Ṽ)t(Ṽ)	-dV / -nṼ
*-VdV / *-ṼnṼ	*-V:dV / *-Ṽ:nṼ	oral / nasal nucleus	-VdV / -ṼnṼ	-V:dV / -Ṽ:nṼ	no alternations	
*-VɾV	*-V:ɾV		-VɾV	-V:ɾV		
*-Vb(ɾ)V / *-Ṽm(ɾ)Ṽ	*-V:b(ɾ)V / *-Ṽ:m(ɾ)Ṽ	oral / nasal nucleus	-Vb(ɾ)V / -Ṽm(ɾ)Ṽ	-V:b(ɾ)V / -Ṽ:m(ɾ)Ṽ		
Class E. The final vowel is long in the utterance-medial allomorph but short in the utterance-final allomorph						
*-V:	*-V	oral nucleus	-V:	-V	no alternations	

Notes. (1) The notation -VCV (-VpV, -VʔV, …) presupposes that the vowels that flank the consonant are identical. (2) Ṽ stands for nasal vowels. V stands for any vowel (oral or nasal), unless it is found to the left of a slash (like in *-VtV/*-ṼtṼ), in which case it stands for an oral vowel.

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[14] Note that the vowel in the utterance-final allomorphs of class B stems may be either oral (like in XAV tɔ̃mɔ̃ // tɔ 'eye') or nasal (like in XAV mĩmĩ // mĩ 'firewood'). In the former case the nasality of the vowel predictably affects the realization of a preceding voiced consonant in the utterance-medial allomorphs (like in XAV nɔ̃mɔ̃ // du 'belly'). Moreover, in all Central Jê languages the inventory of nasal vowels is smaller than that of oral vowels, and for this reason multiple vowels found in utterance-final allomorphs may correspond to one and the same vowel in utterance-medial allomorphs of class B stems. For example, Xavánte stems whose word-medial allomorphs contain -ɔ̃- may end in -ɔ̃, -ɔ or -u in the utterance-final position, e.g. mɔ̃nɔ̃/mɔ̃ (habitual aspect particle), tɔ̃mɔ̃ // tɔ 'eye', nɔ̃mɔ̃ // du 'belly'.

[15] The alternation -aba // -wa may affect the realization of the preceding segment in Xavánte (and presumably also in PCJ). For example, in XAV mãpɾebaba // mãpɾeːwa 'father-in-law, mother-in-law' underlying /m/ is predictably realized as [b] before -aba, but as vowel length before the labial consonant -w (this is described in the subsection above).

A minimal number of exceptions to these generalizations is found. In the Xavánte reflex of PCJ *ɲĩp=tete // *ɲĩp=teːde 'to be strong' (XAV ɲĩp=tete / ap=tete // ɲĩp=teːte / ap=teːte 'to get strong, to make an effort, to recover'), the medial consonant does not undergo voicing in the utterance-final allomorph, as expected; however, the Xerénte reflex is regular (cf. XER nĩp=tete ~ nĩp=tte ~ nĩp=tet // nĩp=tde). In PCJ *pati // *paːdi 'southern tamandua' (XAV pati // paːdi, XER padi, pat-ɾe), unlike in other class D stems, the vowels flanking the alternating consonant are not identical. The stem PCJ *kutə // *kuhəːdə 'tapir' (XAV ʔutə // ʔuhəːdə, XER ktə // kdə) exhibits loss of a medial syllable in the utterance-medial allomorph (PCJ **kuhətə would be expected).

Although I do not make an attempt at postulating a morphophonemic analysis for each class of the allomorphy, it is tempting to consider that the final vowels of the stems of classes A, B and D are absent from their underlying representation, since their quality is entirely predictable: they are always a copy of the vowel of the penultimate syllable[16]. This fact allows for a rhyme treatment of the bisyllabic sequences participating in the alternations; for example, the underlying representation of PCJ *bakɔtɔ // *bakɔːnɔ 'girl' (XAV baʔɔtɔ // baʔɔːnɔ, XER bakɾtõ[17] // baknõ) would include the rhyme */-ɔt/ and the coda*/-t/.

In the remainder of this paper I will use segmental reconstruction for the alternating stems, despite being aware that it is possible to posit morphophonemic rules accounting for the allomorphy.

3. Proto-Cerrado

Now that phonological reconstructions are available for Proto-Northern Jê and Proto-Central Jê, it is possible to assess the reconstruction of Proto-Cerrado. Onsets, syllable nuclei and codas will be tackled separately.

3.1. Onset

An allophonic process targeting underlying nasal consonants is reconstructed by me for Proto-Northern Jê. It triggers the surface realization of underlying nasal consonants */m/, */n/, */ɲ/ and */ŋ/ as prenasalized voiced obstruents (*ⁿb, *ⁿd, *ⁿdʑ, *ⁿg) in oral contexts (as defined by the nasality of the nucleus). It is important to note that an essentially identical process is attested in Macro-Jê languages beyond the Cerrado branch (see D'Angelis 1998 for Kaingáng, Pessoa 2012 for Krenák and Voort 2007: 138 for Arikapú)[18] and thus must go back to Proto-Macro-Jê.

The correspondences between Proto-Northern Jê and Proto-Central Jê onsets, as well as the proposed Proto-Cerrado reconstructions for these correspondences, are exposed below in Table 5.

As is evident from the table, Proto-Northern Jê faithfully retains the contrasts that existed in Proto-Cerrado. The only innovation that I posit for the history of Proto-Northern Jê onsets is the fortition of PCerr *w (in all environments) and *y (in stressed syllables), as exemplified in (8) below.

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[16] Note that this phenomenon is highly reminiscent of Proto-Northern Jê echo vowels (Nikulin 2016b: 168–168, 182–183).

[17] The variation kt ~ kɾt, kd ~ kɾd is widely attested in Xerénte (see Frazão 2013: 46).

[18] An Optimality Theory account of the prenasalized consonants in Macro-Jê languages is offered by Damulakis (2010). Voort's analysis of Arikapú phonology is challenged by Ribeiro (2008).

Table 5. Proto-Cerrado onsets and their reflexes in Proto-Northern Jê and Proto-Central Jê.

PCerr		PNJ		PCJ		
before oral vowels	before nasal vowels	before oral vowels	before nasal vowels	before PCerr oral non-high vowels	before PCerr oral high vowels	before PCerr nasal vowels
*p(ɾ)		*p(ɾ)		*p(ɾ)	*b(ɾ)	*m(ɾ)
*ⁿb(ɾ)	*m(ɾ)	*ⁿb(ɾ)	*m(ɾ)			
*t		*t		*t	*d	*n
*ⁿd	*n	*ⁿd	*n			
*ʈ		*ʈ		*c	*ʒ, *h†	*ɲ
*ⁿdʑ	*ɲ	*ⁿdʑ	*ɲ		N/A	
*y		*y, *dʑ‡		*ʒ	*ʒ, *c§	
*k(ɾ)		*k(ɾ)		*k(ɾ), *h, *w¶		*k(ɾ)
*ⁿg(ɾ)	*ŋ(ɾ)	*ⁿg(ɾ)	*ŋ(ɾ)			N/A
*g		*g				
*w		*b		*w		
*ɾ		*ɾ		*ɾ		
*∅		*∅		*∅		

† *h before *i, *ʒ elsewhere. ‡ *dʑ in stressed syllables, *y in unstressed syllables. § *c before *i, *ʒ elsewhere. ¶ PCerr *kʒ, *ⁿgʒ, *k(ɾ)i, *ⁿg(ɾ)ɨ > PCJ *hə; PCerr *ka- > PCJ *waː- (in initial unstressed syllables).

(8) Fortition in Proto-Northern Jê
　　a. PCerr *wĩ / *wĩ-ɾ 'to kill' > PNJ *bĩ / *bĩ-ɾ, PCJ *wĩ / *wĩ-ɾĩ;
　　b. PCerr *wa 'I' > PNJ *ba, PCJ *wa;
　　c. PCerr *weke 'partridge' > PNJ *beke, PCJ *wiki;
　　d. PCerr *kuyɘ 'bad smell, to stink' > PNJ *kudʑɘ, PCJ *kuʒɛ, etc.

Note that Proto-Northern Jê has both *w and *y in stressed syllables, but only in words that lack an established Cerrado, Jê or Macro-Jê etymology, like PNJ *yɘtɕ̆ ~ *yʒtɕ̆ 'sweet potato', *wɛwɛ 'butterfly'. These may be explained away as borrowings from an unknown source or attributed to a substrate North Amazonian language, whose existence is corroborated by certain lexical similarities between Proto-Northern Jê, Nadahup and Yanomami languages (Nikulin & Carvalho 2017: 38).

Proto-Central Jê appears to be much less conservative than Proto-Northern Jê. The most important change that affected its onsets was the merger of voiceless and voiced occlusive consonants; it is described in more detail in subsection 3.1.1 below. Other conditioned sound changes are tackled in subsections 3.1.2–5.

3.1.1. Occlusive merger

The merger of Proto-Cerrado voiceless and voiced occlusives rearranged the distribution of most of the onsets. PCerr *k and *ⁿg normally yield PCJ *k in all contexts, as shown in (9) below.

(9)   Occlusive merger in velars
    a. PCerr *kakă 'to cough' > PNJ *kakĭ, PCJ *kaka;
    b. PCerr *kɾa 'offspring' > PNJ *kɾa, PCJ *kɾaː // *kɾa;
    c. PCerr *kẽtɛ̃ 'stone' > PNJ *kẽnɛ̃, PCJ *kẽtɛ̃ // *kɛ̃ːnɛ̃;
    d. PCerr *kɾɔ̃y 'head' > PNJ *kɾɔ̃, PCJ *kɾɔ̃y // *kɾɔ̃ 'head, fruit';
    e. PCerr *kɾɛ̃ 'parakeet' > PNJ *kɾɛ̃, PCJ *kɾɛ̃;
    f. PCerr *kɾɛ̃ / *kɾɛ̃-ɾ ~ *kɾɛ̃-nɛ̃ 'to eat' > PNJ *kɾɛ̃ / *kɾɛ̃-ɾ, PCJ *kɾɛ̃ / *kɾɛ̃-nɛ̃;
    g. PCerr *kuȶɨmɨ 'fire' > PNJ *kuȶɨ, PCJ *kuɲɔ̃mɔ̃ // *kucə;
    h. PCerr *ᵑgoy 'water' > PNJ *ᵑgo(ȶ-), PCJ *kuy // *ku 'still water';
    i. PCerr *ᵑgɾɜ 'dry' > PNJ *ᵑgɾɜ, PCJ *kɾɛ;
    j. PCerr *ᵑgɾɛ 'egg' > PNJ *ᵑgɾɛ, PCJ *kɾe 'egg', etc.

As for PCerr labial and coronal obstruents, reflexes vary. Before nasal nuclei, both voiceless and voiced occlusives yielded nasal consonants (10).

(10)   Occlusive merger in labials and coronals before PCerr nasal nuclei
    a. PCerr *pĩmĩ 'firewood' > PNJ *pĩ 'wood', PCJ *mĩmĩ // *mĩ;
    b. PCerr *pɾɔ̃ 'wife' > PNJ *pɾɔ̃, PCJ *mɾɔ̃;
    c. PCerr *pɾɔ̃m 'hungry' > PNJ *pɾɔ̃mɔ̃ 'hungry, to want', PCJ *mɾɔ̃m // *mɾɔ̃;
    d. PCerr *mɔ̃y 'greater rhea' > PNJ *mɔ̃, PCJ *mɔ̃y // *mɔ̃;
    e. PCerr *mɛ̃y 'to throw.SG' > PNJ *mɛ̃/*mɛ̃-ɲ, PCJ *mɛ̃y // *mɛ̃;
    f. PCerr *tɛ̃/*tɛ̃-m 'to go.SG' > PNJ *tɛ̃/*tɛ̃-m, PCJ *nɛ̃-m // *nɛ̃ 'to go.DU';
    g. PCerr *tɔ̃y 'brother' > PNJ *tɔ̃, PCJ *nɔ̃y // *nɔ̃ 'younger sibling of the same sex';
    h. PCerr *nɔ̃/*nɔ̃-Pɾɔ̃ 'to lie.SG' > PNJ *nɔ̃/*nɔ̃-ɾ, PCJ *nɔ̃/*nɔ̃-mɾɔ̃, etc.

Before Proto-Cerrado high oral nuclei, voiced obstruent reflexes are found (11).

(11)   Occlusive merger in labials and coronals before PCerr high nuclei
    a. PCerr *puɾŭ 'field' > PNJ *puɾŭ, PCJ *buɾu // *buːɾu;
    b. PCerr *pɨy 'achiote' > PNJ *pɨ, PCJ *bəy // *bə;
    c. PCerr *ᵐbutŭ 'neck' > PNJ *ᵐbutŭ, PCJ *butu // *buːdu;
    d. PCerr *ᵐbɨtɨ 'sun' > PNJ *ᵐbɨtɨ, PCJ *bətə // *bəːdə;
    e. PCerr *ᵐbɨnɨ 'tail, penis' > PNJ *ᵐbɨ, PCJ *mɔ̃nɔ̃ // *bə;
    f. PCerr *tikĭ 'belly' > PNJ *tikĭ, PCJ *diki // *di;
    g. PCerr *tu/*tu-ɾ 'to carry' > PNJ *tu/*tu-ɾ, PCJ *du // *du-ri;
    h. PCerr *tumŭ 'belly' > PNJ *tu, PCJ *nɔ̃mɔ̃ // *du, etc.

Before other Proto-Cerrado oral nuclei, voiceless obstruents are the regular outcome (12).

(12)   Occlusive merger in labials and coronals before PCerr non-high nuclei
    a. PCerr *kupe 'to touch, to move' > PNJ *kupe, PCJ *kupi;
    b. PCerr *paɾă 'foot' > PNJ *paɾĭ, PCJ *paɾa // *paːɾa;
    c. PCerr *ᵐba 'liver' > PNJ *ᵐba, PCJ *pa;
    d. PCerr *ᵐbɾɔ 'ashes' > PNJ *ᵐbɾɔ, PCJ *pɾɔ 'powder, foam';
    e. PCerr *kaᵐbɾoy 'blood' > PNJ *kaᵐbɾo, PCJ *waːpɾuy // *waːpɾu;
    f. PCerr *teɾĕ 'fruit of a k. of palm' > PNJ *teɾĕ, PCJ *tiri // *tiːɾi 'bacuri coconut';
    g. PCerr *te 'tick' > PNJ *te, PCJ *ti;
    h. PCerr *tɜbⁿ 'new' > PNJ *tɜbⁿĭ 'raw', PCJ *tɛm // *tɛ;
    i. PCerr *tɛpɛ̆ 'fish' > PNJ *tɛpɛ̆, PCJ *tepe // *teːbe;
    j. PCerr *ɲɔ̃ytɔ 'tongue' > PNJ *ɲɔ̃tɔ, PCJ *ɲɔ̃ytɔ;
    k. PCerr *ⁿdɔmɔ̃ 'eye' > PNJ *ⁿdɔ(p-), PCJ *tɔ̃mɔ̃/*tɔ, etc.

Note that the process described in this subsection occurred prior to the raising of Proto-Cerrado mid-high vowels in Central Jê (PCerr *e > PCJ *i, PCerr *o > PCJ *u) and prior to the lowering of PCerr *ɨ > PCJ *ə. That way, the contrast between Proto-Cerrado syllables like *te and *ti survives in Proto-Central Jê as *ti and *di (cf. 11f and 12f–g).

The situation with Proto-Cerrado palatal occlusives is slightly more complicated. Many Proto-Cerrado inflectable stems are subject to the alternation of their initial consonant: their uninflected form features a stem-initial *y- (*ɲ- before nasal vowels) and their third person form starts with a *ȶ-, cf. PCerr *ywa 'tooth' (third person *ȶwa), PCerr *ɲɔ̃ytɔ 'tongue' (third person *ȶɔ̃ytɔ). It is likely that alternating PCerr *ȶ- and *y- / *ɲ- remain distinct in Central Jê languages. For example, PCerr *ɲĩkɔpɔ̃ (third person *ȶĩkɔpɔ̃) 'nail, claw' yielded PCJ *ɲĩkɔpɔ // *ɲĩkɔːbɔ, which appears as *-cĩkɔpɔ // *-cĩkɔːbɔ after the prefixes *ay- (second person) and *ĩ- (third person). If PCJ allomorphs do reflect PCerr uninflected form and third person form respectively, the merger of palatal occlusives in PCJ has to be considered incomplete.

However, the Central Jê reflexes of non-alternating PCerr *ȶ, as well as of its voiced counterpart *ⁿȡ, display a behavior similar to *p, *t, *ᵐb and *ⁿd. The relevant cognate sets are provided in (13) below.

(13) Merger of PCerr palatal occlusives
a. PCerr *ȶoy 'leaf, a hair' > PNJ *ȶo, PCJ *cuy // *cu;
b. PCerr *yaȶe 'nest' > PNJ *yaȶe, PCJ *ʒaci;
c. PCerr *kaⁿȡe 'star' > PNJ *kaⁿȡe, PCJ *waːci;
d. PCerr *ⁿȡa / *ⁿȡa-ɾ 'to bite' > PNJ *ⁿȡa / *ⁿȡa-ɾ, PCJ *ca / *ca-ɾi;
e. PCerr *ȶɨmɨ 'seed' > PNJ *ȶɨ, PCJ *ɲɔ̃mɔ̃ // *ʒə;
f. PCerr *kuȶɨmɨ 'fire' > PNJ *kuȶɨ, PCJ *kuɲɔ̃mɔ̃ // *kuʒə;
g. PCerr *ȶĩ 'meat' > PNJ *ȶĩ, PCJ *ɲĩ.

The following distribution is found in Proto-Central Jê: a voiceless reflex (PCJ *c) is found before PCerr non-high oral vowels (13a–d), a voiced reflex (PCJ *ʒ) is found before PCerr high oral vowels (13e–f), and a nasal reflex (PCJ *ɲ) occurs preceding a nasal vowel (13g). A more profound investigation of Central Jê historical morphology should shed light on the details of the operation of the occlusive merger at the palatal point of articulation.

3.1.2. PCerr *ka- > PCJ *waː-

As has already been noted by Davis (1966: 14), PCerr *ka- yielded PCJ *waː- in unstressed (non-final) syllables (Davis erroneously states that the condition for this sound change is the word-initial position, but in reality it fails to occur in monosyllabic words, like PCerr *kakă 'to cough' > PCJ *kaka). Some examples are provided in (14).

(14) PCerr *ka- > PCJ *waː-
a. PCerr *kaᵐbroy 'blood' > PNJ *kaᵐbro, PCJ *waːpruy // *waːpru;
b. PCerr *kaⁿȡe 'star' > PNJ *kaⁿȡe, PCJ *waːci;
c. PCerr *ka=ⁿgrɔ 'hot' > PNJ *ka=ⁿgrɔ, PCJ *waː=krɔ;
d. PCerr *katɔ̃kɔ̃ 'to explode, to pop, to shoot' > PNJ *katɔ̃kɔ̃ 'firearm, to explode, to pop', PCJ *wanɔ̃kɔ̃ 'to explode, to attack';
e. PCerr *kaⁿga 'lazy' > PNJ *kaⁿga, PCJ *waːka;
f. PCerr *karɔ̃ 'shadow, spirit' > PNJ *karɔ̃, PCJ *waːrɔ̃, etc.

It is probable that PCerr *k was articulated as *[g] in unstressed syllables, at least before *a; this allophonic realization is attested synchronically in Apinayé and Tapayúna. Panará also seems to retain its traces (Nikulin 2016b: 171, 176). Carvalho (2016: 70) observed that "[t]hough one might claim that the outcomes of the Panará and Central Jê developments are only tenuously similar, the conditioning environment is identical for both and seems interestingly unusual", suggesting tentatively that this might be an innovation shared by Panará and Central Jê. Given that other data support the inclusion of Panará into Northern Jê, ruling out the possibility of a node consisting of Central Jê and Panará, I am inclined to envision these facts as direct traces of a Proto-Cerrado allophony.

3.1.3. PCerr *ʈi > PCJ *hi, PCerr *yi > PCJ *ci

Certain developments of PCerr palatals before *i are evident in the cognate sets listed in (15) below.

(15)   PCerr *ʈi > PCJ *hi, PCerr *yi > PCJ *ci
 a.   PCerr *ʈi 'bone' > PNJ *ʈi, PCJ *hi;
 b.   PCerr *yi/*yi-ɾ (3 person *ʈi/*ʈi-ɾ) 'to put, to lay' > PNJ *ɟi/*ɟi-ɾĭ (3 person *ʈi/*ʈi-ɾĭ), PCJ *hi/*hi-ɾi;
 c.   PCerr *ɲĩyi 'name' > PNJ *ɲĩɟi, PCJ *ɲĩci // *ɲĩːci;
 d.   PCerr *piyi ~ *pĩyi 'one' > PNJ *pɨɟi, PCJ *mĩci.

However, details of this development are still poorly understood. For instance, it is unclear why the third person form of the verb 'to put, to lay' (15b) was generalized in Central Jê.

3.1.4. PCerr *k(ɾ)ɨ, *ⁿg(ɾ)ɨ, *k₃, *ⁿg₃ > PCJ *hə

Davis (1966: 14) already noted that Proto-Jê *k and *kɾ are reflected as Xavánte h before ə. However, it is now evident that the change *k(ɾ) > *h was fed by the occlusive merger: PCerr *k and *ⁿg behave identically in this respect. The data presented in (16) below exemplify the merger of *kɾɨ and *ⁿgɾɨ, *k₃ and *ⁿg₃.

(16)   PCerr *kɾɨ, *ⁿgɾɨ, *k₃, *ⁿg₃ > PCJ *hə
 a.   PCerr *kɾɨ 'cold' > PNJ *kɾɨ, PCJ *hə;
 b.   PCerr *kukɾɨtĭ 'tapir' > PNJ *kukɾɨtĭ, PCJ *kutə // *kuhəːdə;
 c.   PCerr *kɾɨtĭ 'flint, firestone; metal' > PNJ *kɾɨtĭ, PCJ *hətə // *həːdə;
 d.   PCerr *ⁿgɾɨkĭ 'angry, upset' > PNJ *ⁿgɾɨkĭ, PCJ *həkə;
 e.   PCerr *k₃y 'skin, bark, breast' > PNJ *k₃, PCJ *həy;
 f.   PCerr *k₃ / *k₃-ɾ 'to shout' > PNJ *k₃ / *k₃-r, PCJ *hə / *hə-rə;
 g.   PCerr *ⁿg₃ 'men's house' > PNJ *ⁿg₃ 'men's house, courtyard', PCJ *hə 'young men's house', etc.

The development of PCerr *kɨ and *ⁿgɨ in Central Jê is less clear due to the scarcity of relevant data. One possible cognate set that suggests that PCerr *kɨ > PCJ *hə involves the correspondence of Proto-Southern Jê *yãd=kɨ 'mouth' to Xavánte ʒay=hə 'lip, mouth' and probably Xerénte ʐay=hə 'buttocks' (< PCJ *ʒay=hə); no Northern Jê cognate is available. If these words are indeed cognate, they must go back to a Proto-Jê stem ending in *=kɨ.

Note that PCerr *kɾ₃ and *ⁿgɾ₃ must have developed normally, cf. PCerr *ⁿgɾ₃ 'dry' > PNJ *ⁿgɾ₃, PCJ *kɾɛ.

3.1.5. Interaction with medials

It appears that Proto-Cerrado had a system of rising diphthongs, just like Proto-Northern Jê. In some cases Proto-Cerrado medials triggered special reflexes of Proto-Cerrado onsets in Proto-Central Jê, including PCerr *ʈw, *kw > PCJ *w, PCerr *yw > PCJ *kw, PCerr *Cye > PCJ *ʒa ~ *ca. However, the examples are very limited. They are listed in (17) below.

(17)　Interaction of PCerr onsets and medials in PCJ

    a.　PCerr *ʈwakɔ̃ 'coati' > PNJ *ʈwakɔ̃, PCJ *wakɔ̃;

    b.　PCerr *ywa 'tooth' > PNJ *ʥwa, PCJ *kwa;

    c.　PCerr *kVywa 'salt' > PNJ *kaʥwa, PCJ *kəkwa-rɔ̃;

    d.　PCerr *kɜykwa 'sky' > PNJ *kVykwa, PCJ *həywa[19];

    e.　PCerr *yadă=kwa 'mouth' > PNJ *yaɾ=kwa, PCJ *ʒada=wa;

    f.　PCerr *kyey 'thigh' > PNJ *kye, PCJ *ʒay // *ʒa (non-alternating ʒ);

    g.　PCerr *ⁿgye/*ⁿgye-ʥⁿ 'to enter.PL' > PNJ *ⁿgiyă/*ⁿgye-ʥⁿ, PCJ *ʒa/*ʒa-ci 'to enter.DU' (non-alternating ʒ);

    h.　PCerr *tyetě 'to burn' > PNJ *tyetě, PCJ *ʒata // *ʒaːda;

    i.　PCerr *kye/*kye-dⁿ 'to drag, to pull' > PNJ *kye/*kye-dⁿ, PCJ *ca/*ca-ɾi.

Davis (1966: 23) also identifies Xavánte *wam // wa* 'fat' (PCJ *wam // wa) as a cognate of PNJ *twɘbⁿĭ id. Since the correspondences of PNJ *wɘ in Central Jê are otherwise unknown, this comparison is plausible, but still uncertain.

3.2. Nucleus

The correspondences between Proto-Northern Jê and Proto-Central Jê nuclei, as well as the proposed Proto-Cerrado reconstructions for these correspondences, are exposed below in Table 6 [20].

Table 6. Proto-Cerrado vowels and their reflexes in Proto-Northern Jê and Proto-Central Jê.

PCerr	PNJ	PCJ		PCerr	PNJ	PCJ
*a	*a, *ã[†]	*a		*ʒ̃	*ʒ̃	*ə̃
*ɜ	*ɜ	*ɛ, *ə[‡]				
*ɘ	*ɘ			*ɨ̃	*ɨ̃	
*ɨ	*ɨ, *ɨ̃[†]	*ə				
*ɔ	*ɔ	*ɔ		*ɔ̃	*ɔ̃	*ɔ̃
*o	*o	*u				
*u	*u, *ũ[†]			*ɛ̃	*ɛ̃	*ɛ̃
*ɛ	*ɛ	*e				
*e	*e	*i		*ĩ	*ĩ	*ĩ
*i	*i					

† *ã, *ũ, *ɨ̃ occur before *m in coda. ‡ PCerr *kɜ, *ⁿgɜ > PCJ *hə.

[19] Possibly something other than PCJ *w has to be reconstructed for the reflex of PCerr *kw: in the word for 'sky' a cluster in attested in Xakriabá <akoâ> (Eschwege's notes) and Salinas Xavánte *haiɲuă*; however, this is not the case with the word for 'mouth': Xakriabá <d'atohá> (Eschwege), <daïdauá> (S. Hilaire), Salinas Xavánte =*sedaua* (Martius 1867: 142, Ehrenreich 1895: 151, 153).

[20] Oliveira (2005: 61) cites a talk entitled 'Vowel shift in Central Jê' (Oliveira & Ribeiro 2005); unfortunately, I have had no access to its abstract.

As is evident from the table above, Proto-Northern Jê is very conservative in its vocalism. The nasalization of *a, *u and *ɨ before syllable-final *m in Proto-Northern Jê is described in (Nikulin 2016b: 176–177). This is clearly a Proto-Northern Jê innovation: in Central Jê, oral vowels are found, as shown in (18) below.

(18)   Proto-Northern Jê innovative nasalization
    a.   PCerr *tubⁿ 'old, tall (?)' > PNJ *tũmũ, PCJ *dum // *du 'tall', *dum-kɾata // *dum-kɾaːda 'elder sibling of the opposite sex';
    b.   PCerr *kubⁿtɨbⁿ 'capybara' > PNJ *kũmtɨ̃mɨ̃, PCJ *kumdə.

Unlike Proto-Northern Jê, Proto-Central Jê innovated considerably. As a result of a vowel shift, discussed already by Ribeiro and Voort (2010: 554), PCerr *ɘ and *ɜ yielded PCJ *ɛ (19a–i)[21], PCerr *ɛ was raised to PCJ *e (19j–n), and PCJ *e and *o merged with *i and *u, respectively (19o–y) (see subsection 3.1.1 for the effect of this merger on the preceding consonants).

(19)   Vowel shift in Proto-Central Jê
    a.   PCerr *ⁿbɘ/*ⁿbɘ-ɖ̮ⁿ > PNJ *ⁿbɘ/*ⁿbɘ-ɖ̮ⁿ 'to carry', PCJ *kwa=pɛ 'to carry.DU';
    b.   PCerr *kuɾɘ 'smooth' > PNJ *kuɾɘ, PCJ *kuɾɛ;
    c.   PCerr *kuyɘ 'bad smell, to stink' > PNJ *kudʑɘ, PCJ *kuʒɛ;
    d.   PCerr *yɘ 'bitter' > PNJ *dʑɘ, PCJ *ʒɛ;
    e.   PCerr *tɜbⁿ 'new' > PNJ *tɜbⁿĩ 'raw', PCJ *tɛm // *tɛ;
    f.   PCerr *ⁿgɾɜ 'dry' > PNJ *ⁿgɾɜ, PCJ *kɾɛ;
    g.   PCerr *=yɜ (instrumental suffix) > PNJ *=dʑɜ, PCJ *=ʒɛ;
    h.   PCerr *aⁿgɜ 'sedge seed' > PNJ *aⁿgɜ, PCJ *akɛ;
    i.   PCerr *pɾɜ 'ember' > PNJ *pɾɜ, PCJ *pɾɛ;
    j.   PCerr *tɛpĕ 'fish' > PNJ *tɛpĕ, PCJ *tepe // *teːbe;
    k.   PCerr *ⁿgɾɛ 'egg' > PNJ *ⁿgɾɛ, PCJ *kre;
    l.   PCerr *tɛy 'leg' > PNJ *tɛ, PCJ *tey // *te;
    m. PCerr *kɾɛ 'to plant' > PNJ *kɾɛ, PCJ *kre;
    n.   PCerr *kɾɛ 'orifice, hole' > PNJ *kɾɛ, PCJ *=kre;
    o.   PCerr *teɾĕ 'fruit of a k. of palm' > PNJ *teɾĕ, PCJ *tiɾi // *tiːɾi 'bacuri coconut';
    p.   PCerr *te 'tick' > PNJ *te, PCJ *ti;
    q.   PCerr *yaʈe 'nest' > PNJ *yaʈe, PCJ *ʒaci;
    r.   PCerr *kaⁿɖ̮e 'star' > PNJ *kaⁿɖ̮e, PCJ *waːci;
    s.   PCerr *weke 'partridge' > PNJ *beke, PCJ *wiki;
    t.   PCerr *kupe 'to touch, to move' > PNJ *kupe, PCJ *kupi;
    u.   PCerr *komŏ 'cudgel; horn; patch of trees' > PNJ *ko, PCJ *kɔ̃mɔ̃ // *ku 'cudgel; horn';
    v.   PCerr *ⁿgoy 'water' > PNJ *ⁿgo(ʈ-), PCJ *kuy // *ku 'still water';
    w. PCerr *ʈoy 'leaf, a hair' > PNJ *ʈo, PCJ *cuy // *cu;
    x.   PCerr *kaⁿbɾoy 'blood' > PNJ *kaⁿbɾo, PCJ *waːpɾuy // *waːpɾu;
    y.   PCerr *kopŏ 'fly' > PNJ *kopŏ, PCJ *kupu // *kuːbu, etc.

In addition to the shift, two other developments affected the vocalism of Proto-Central Jê: PCerr *ɨ was lowered to PCJ *ə (PCJ *ɨ occurs in words without any external etymology), and PCerr *ɜ̃ and *ɔ̃ merged in PCJ *ɨ̃. These changes are exemplified in (20) and (21), respectively.

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[21] Oliveira and Ribeiro (2005 *apud* Oliveira 2005: 61) state that *ɜ and *ɘ remained distinct in PCJ, yielding *ɛ and *e, respectively. I was able to identify only one word with PNJ *ɘ corresponding to PCJ *e: PNJ *tɘʈĭ 'hard, strong' ~ PCJ *tete // *teːde 'hard, strong'. This should be attributed to an additional sound law: before a coronal stop in coda, PCJ *e is found instead of *ɛ, also as a reflex of PCerr *ɜ (PCerr *wɜdɜ̃ 'tree' > PNJ *wɜɾɜ̃, PCJ *wede // *weːde).

(20) Lowering of PCerr *ɨ in Proto-Central Jê

    a. PCerr *kubⁿtɨbⁿ 'capybara' > PNJ *kũmtɨ̃mɨ̃, PCJ *kumdə.

    b. PCerr *pɨy 'achiote' > PNJ *pɨ, PCJ *bəy // *bə;

    c. PCerr *kuʨɨmɨ̃ 'fire' > PNJ *kuʨɨ, PCJ *kuɲõmə̃ // *kuʒə;

    d. PCerr *am=ⁿʥɨ 'bee sp.' > PNJ *am=ⁿʥɨ, PCJ *am=ʒə;

    e. PCerr *ⁿbɨtɨ̃ 'sun' > PNJ *ⁿbɨtɨ̃, PCJ *bətə // *bəːdə;

    f. PCerr *ⁿbɨnɨ̃ 'tail, penis' > PNJ *ⁿbɨ, PCJ *mə̃nə̃ // *bə, etc.

(21) Merger of PCerr *ɟ̃ and *ə̃ in Proto-Central Jê

    a. PCerr *krɟ̃y 'head' > PNJ *krɟ̃, PCJ *krə̃y // *krə̃ 'head, fruit';

    b. PCerr *prɟ̃m 'hungry' > PNJ *prɟ̃mɟ̃ 'hungry, to want', PCJ *mrə̃m // *mrə̃;

    c. PCerr *mɟ̃y 'greater rhea' > PNJ *mɟ̃, PCJ *mə̃y // *mə̃;

    d. PCerr *nɟ̃ 'mother' > PNJ *nɟ̃, PCJ *nə̃;

    e. PCerr *ɲɨ̃ / *ɲɨ̃-Prɨ̃ 'to sit.SG' > PNJ *ɲɨ̃ / *ɲɨ̃-r, PCJ *ɲə̃-mrə̃ (finite: 2SG *ay=cə̃);

    f. PCerr *kwɨ̃ / *kwɨ̃-r 'to chop' > PNJ *kwɨ̃ / *kwɨ̃-r, PCJ *kwə̃ / *kwə̃-rĩ, etc.

A context-specific development of PCerr *ɟ̃ after velars has already been treated in subsection 3.1.4.

3.3. Coda

Proto-Central Jê codas, as well as Proto-Central Jê alternating rhymes of the classes A, B and D (see 2.3 above), have regular correspondences in Proto-Northern Jê. Proto-Central Jê classes C and E are of unknown origin. The most secure correspondences are listed in Table 7 below.

Table 7. Proto-Cerrado codas and their reflexes in Proto-Northern Jê and Proto-Central Jê.

PCerr	PNJ	PCJ	PCerr	PNJ	PCJ
*-pV̆	*-pV̆	*-pV (D)	*-mV̆	*-Ø	*̃-mṼ (B)
*-tV̆	*-tV̆	*-tV (D)	*-nV̆	*-Ø	*̃-nṼ (B)
*-kV̆	*-kV̆	*-kV (A)	*-ŋV̆	*-Ø	*-kV (A)
*-ɾV̆	*-ɾV̆	*-ɾV (D)	*-y	*-Ø	*-y
*-ɾ	*-ɾ	*-ɾĭ	*-bⁿ/*-m	*-bⁿĭ/*-mV̆	*-m

Note that some codas that are reconstructible to Proto-Northern Jê do not occur in words with secure Cerrado, Jê or Macro-Jê etymologies. These include PNJ *-wV̆ and *-yĭ [22]. I suggest that such words entered Proto-Cerrado as loans from an unknown North Amazonian language: words like PNJ *kukoyĭ 'monkey' and PNJ *ⁿdɨwĭ 'new' [23] are suspiciously similar to Hup *kukúy*, Yanomama *ku(u)ku-moxi* 'night monkey' and Hup *ⁿd'əw-ɔ́y* 'new', respectively (Nikulin & Carvalho 2017: 38).

3.3.1. Voiceless codas in Proto-Cerrado

As is evident from the table above, Proto-Northern Jê voiceless stops in coda position correspond to PCJ voiceless stops in coda utterance-medially. PCJ *p and *t, on one side, and PCJ *k,

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[22] Possible exceptions include PNJ *bayĭ 'snake sp.' ~ PCJ *waːhi 'venomous snake', PNJ *ⁿʥɟyĭ ~ PCJ *cɛpcɛtɛ // cɛpcɛːdɛ 'woodpecker'. Both comparisons are dubious.

[23] Erroneously glossed as 'field' in (Nikulin 2016b: 180).

on the other, behave differently. PCJ stems in *-pV and *-tV belong to class D, as shown in (22) below, whereas PCJ stems in *-kV belong to class A, as exemplified in (23).

(22) PCerr stems in *-pV̆, *-tV̆
    a. PCerr *kopŏ 'fly' > PNJ *kopŏ, PCJ *kupu // *ku:bu;
    b. PCerr *tɛpɛ̆ 'fish' > PNJ *tɛpɛ̆, PCJ *tɛpɛ // *tɛ:bɛ;
    c. PCerr *ɲĩp=kɔpɔ̆ 'nail, claw' > PNJ *ɲĩp=kɔpɔ̆, PCJ *ɲĩ=kɔpɔ // *ɲĩ=kɔ:bɔ;
    d. PCerr *ⁿbɨtɨ̆ 'sun' > PNJ *ⁿbɨtɨ̆, PCJ *bətə // *bə:də;
    e. PCerr *ⁿbutŭ 'neck' > PNJ *ⁿbutŭ, PCJ *butu // *bu:du;
    f. PCerr *ɲɔ̃=kotŏ 'chest' > PNJ *ɲɔ̃=kotŏ, PCJ *ɲɔ̃=kutu // *ɲɔ̃=ku:du;
    g. PCerr *tyetĕ 'to burn' > PNJ *tyetĕ, PCJ *ʒata // *ʒa:da;
    h. PCerr *kɔtɔ̆ 'cicada' > PNJ *(kɔ)kɔtɔ̆, PCJ *kɔtɔ // *kɔ:dɔ;
    i. PCerr *kukɾɨtɨ̆ 'tapir' > PNJ *kukɾɨtɨ̆, PCJ *kutə // *kuhə:də;
    j. PCerr *kɾitĭ 'grasshopper' > PNJ *kɾitĭ, PCJ *kɾiti // *kɾi:di;
    k. PCerr *kɾată 'base' > PNJ *kɾatĭ 'base, stem, lower part of the body', PCJ *kɾata // *kɾa:da 'base, beginning; near; grandparent';
    l. PCerr *ɾĩtĩ 'to look' > PNJ *ɾĩtĩ, PCJ *ɾĩtĩ // *ɾĩ:nĩ, etc.

In one instance, the final consonant has apparently been irregularly nasalized in Proto-Northern Jê: PCerr *kɛ̃tɛ̃ 'stone' > PNJ *kɛ̃nɛ̃, PCJ *kɛ̃tɛ̃ // *kɛ̃:nɛ̃.

(23) PCerr stems in *-kV̆
    a. PCerr *kokŏ 'wind' > PNJ *kokŏ, PCJ *ɾɔ:=wa=kuku // *ɾɔ:=wa=ku;
    b. PCerr *tikĭ 'belly' > PNJ *tikĭ, PCJ *diki // *di;
    c. PCerr *tɔtɔkɔ̃ 'to throb' > PNJ *tɔtɔkɔ̃, PCJ *tɔtɔkɔ // *tɔtɔ;
    d. PCerr *kakă 'to cough' > PNJ *kakĭ, PCJ *kaka;
    e. PCerr *ⁿgɾikɨ 'angry, upset' > PNJ *ⁿgɾikɨ, PCJ *həkə;
    f. PCerr *katɔ̃kɔ̃ 'to explode, to pop, to shoot' > PNJ *katɔ̃kɔ̃ 'firearm, to explode, to pop', PCJ *wanɔ̃kɔ̃ 'to explode, to attack', etc.

Utterance-final allomorphs of Central Jê counterparts of the cognate sets (23d–f) have not been attested, but these stems are expected to belong to class A.

3.3.2. Rhotic codas in Proto-Cerrado

I reconstruct two types of Proto-Cerrado stems with a rhotic coda. Just like in Proto-Northern Jê (Nikulin 2016b: 182), rhotic coda followed by an echo vowel would have been characteristic of nouns. In Central Jê, it patterns with PCerr *-pV̆ and *-tV̆ (class D stems). On the other hand, non-finite forms of verbs would have featured a rhotic with a suppressed echo vowel. In this case, a final *-i is inserted in Central Jê (*-ĩ if the preceding syllable carries nasality). This is shown in (24) below.

(24) Distinction between PCerr *-ɾV̆ and *-ɾ
    a. PCerr *paɾă 'foot' > PNJ *paɾĭ, PCJ *paɾa // *pa:ɾa;
    b. PCerr *puɾŭ 'field' > PNJ *puɾŭ, PCJ *buɾu // *bu:ɾu;
    c. PCerr *teɾĕ 'fruit of a k. of palm' > PNJ *teɾĕ, PCJ *tiɾi // *ti:ɾi 'bacuri coconut';
    d. PCerr *ɲɔ̃ɾɔ̃ 'cord, vine' > PNJ *ɲɔ̃ɾɔ̃, PCJ *wede=ɲɔ̃ɾɔ̃ // *wede=ɲɔ̃:ɾɔ̃;
    e. PCerr *wĩ/*wĩ-ɾ 'to kill' > PNJ *bĩ/*bĩ-ɾ, PCJ *wĩ/*wĩ-ɾĩ;
    f. PCerr *pa/*pa-ɾ 'to finish' > PNJ *pa/*pa-ɾ, PCJ *pa/*pa-ɾi 'to finish, to erase';
    g. PCerr *tu/*tu-ɾ 'to carry' > PNJ *tu/*tu-ɾ, PCJ *du/*du-ɾi;
    h. PCerr *ⁿdʑa/*ⁿdʑa-ɾ 'to bite' > PNJ *ⁿdʑa/*ⁿdʑa-ɾ, PCJ *ca/*ca-ɾi, etc.

However, the allomorph *-ɾi cannot be attached to Central Jê reflexes of PCerr roots ending in certain vowels, like *ɜ and *ɛ̃. Allomorphs with echo vowels may be found in such cases, cf. PCJ *hə/*hə-ɾə 'to shout' (< PCerr *kɜ/*kɜ-ɾ).

3.3.3. Nasal codas in Proto-Cerrado

Central Jê stems that belong to class B correspond to vowel-final stems in Proto-Northern Jê. I reconstruct nasal codas followed by an echo vowel. The correspondence is exemplified in (25) below.

(25) Proto-Cerrado etyma yielding Central Jê class B stems
  a. PCerr *pĩmĩ 'firewood' > PNJ *pĩ 'wood', PCJ *mĩmĩ // *mĩ;
  b. PCerr *komŏ 'cudgel; horn; patch of trees' > PNJ *ko, PCJ *kɔ̃mɔ̃ // *ku 'cudgel; horn';
  c. PCerr *kuʨɨmɨ 'fire' > PNJ *kuʨɨ, PCJ *kuɲɔ̃mɔ̃ // *kuʒə;
  d. PCerr *ʨɨmɨ 'seed' > PNJ *ʨɨ, PCJ *ɲɔ̃mɔ̃ // *ʒə;
  e. PCerr *ⁿdɔmɔ̃ 'eye' > PNJ *ⁿdɔ(p-), PCJ *tɔ̃mɔ̃ / *tɔ;
  f. PCerr *ⁿbɨnɨ 'tail, penis' > PNJ *ⁿbɨ, PCJ *mɔ̃nɔ̃ // *bə;
  g. PCerr *tumŭ 'belly' > PNJ *tu, PCJ *nɔ̃mɔ̃ // *du, etc.

The Proto-Northern Jê consonant-final allomorph *ⁿdɔp- (25e) is preserved only in Apinayé, where it occurs before any elements in postposition (Ham 1961: 27; Oliveira 2005: 375). The final consonant -p must be understood as a relic of the Proto-Cerrado coda.

For Central Jê class A stems ending in *-kV̆ that correspond to zero in PNJ, I suggest reconstructing PCerr *-ŋV̆. The denasalization of *ŋ in PCJ is expected: no such phoneme can be reconstructed for PCJ, even in the onset position. The clearest examples are provided in (26).

(26) Proto-Cerrado *-ŋV̆
  a. PCerr *pɔŋɔ̆ 'arrow, bamboo' > PNJ *pɔ-ʨe 'bamboo', PCJ *pɔkɔ // *pɔ 'big arrow';
  b. PCerr *ⁿboŋŏ 'lake' > PNJ *ʨ=i=ⁿbo, PCJ *puku // *pu.

At first sight, the reconstruction of a velar segment for this correspondence conflicts with external data: probable Maxakalí cognates of these words are *pohox* /puC/ 'arrow' and *puxhep* /piC-hɛP/ 'lake', with palatal codas. However, PCerr *ŋ may correspond to Maxakalí palatals even in the onset position (cf. PCerr *kaŋɑ̃ 'snake' and Maxakalí *kãyã* /kãɲã/ 'snake'), which renders the reconstructive hypothesis in question plausible.

3.3.4. Palatal coda in Proto-Cerrado

Proto-Central Jê stems whose underlying representations end in */-y/ correspond to vowel-final stems in Proto-Northern Jê. I reconstruct PCerr *-y for this correspondence. Some examples are provided in (27).

(27) Proto-Cerrado stems in *-y
  a. PCerr *tɔ̃y 'brother' > PNJ *tɔ̃, PCJ *nɔ̃y // *nɔ̃ 'younger sibling of the same sex';
  b. PCerr *mɜ̃y 'greater rhea' > PNJ *mɜ̃, PCJ *mɔ̃y // *mɔ̃;
  c. PCerr *ⁿgoy 'water' > PNJ *ⁿgo(ʨ-), PCJ *kuy // *ku 'still water';
  d. PCerr *kɾɜ̃y 'head' > PNJ *kɾɜ̃, PCJ *kɾɔ̃y // *kɾɔ̃ 'head, fruit';
  e. PCerr *pɨy 'achiote' > PNJ *pɨ, PCJ *bəy // *bəː
  f. PCerr *kaᵐbɾoy 'blood' > PNJ *kaᵐbɾo, PCJ *waːpɾuy // *waːpɾu;
  g. PCerr *ʨoy 'leaf, a hair' > PNJ *ʨo, PCJ *cuy // *cu;

h. PCerr *kʒy 'skin, bark, breast' > PNJ *kʒ, PCJ *həy;

i. PCerr *kyey 'thigh' > PNJ *kye, PCJ *ʒay // *ʒa;

j. PCerr *tɛy 'leg' > PNJ *tɛ, PCJ *tey // *te;

k. PCerr *krɔy 'rotten' > PNJ *krɔ, PCJ *krɔy // *krɔ;

l. PCerr *mɛ̃y 'to throw.SG' > PNJ *mɛ̃/*mɛ̃-ɲ, PCJ *mɛ̃y // *mɛ̃, etc.

In (27c), one Northern Jê language (Apinayé) retains two allomorphs: ⁿgo and ⁿgoyč- (before any elements in postposition, see Ham 1961: 27); I reconstruct PNJ *ⁿgo(ʈ-). The correspondence under examination also seems to be valid word-medially: PCerr *ɲɔ̃ytɔ 'tongue' > PNJ *ɲɔ̃tɔ, PCJ *ɲɔ̃ytɔ.

3.3.5. Labial coda in Proto-Cerrado not followed by an echo vowel

Stem-final *-/m/ in Proto-Central Jê corresponds to -bⁿĩ/-mV̆ in Proto-Northern Jê (per nasality); I reconstruct PCerr *-bⁿ/*-m for this correspondence. It is instantiated in the stems listed in (28).

(28) Proto-Cerrado stems in *-bⁿ/*-m

a. PCerr *prʒ̃m 'hungry' > PNJ *prʒ̃mʒ̃, PCJ *mrɔ̃m // *mrɔ̃;

b. PCerr *tɛ̃ / *tɛ̃-m 'to go.SG' > PNJ *tɛ̃ / *tɛ̃-m, PCJ *nɛ̃-m // *nɛ̃ 'to go.DU';

c. PCerr *tubⁿ 'old, tall (?)' > PNJ *tũmũ, PCJ *dub // du 'tall', *dub-krata // *dub-kraːda 'elder sibling';

d. PCerr *yobⁿ 'to grind' > PNJ *ɟobⁿ 'flour, powder', PCJ *ʒum // *ʒu;

e. PCerr *tʒbⁿ 'new' > PNJ *tʒbⁿĩ 'raw', PCJ *tɛm // *tɛ, etc.

The utterance-internal allomorph of PCJ *kumdə (< PCerr *kubⁿtɨbⁿ 'capybara', cf. PNJ *kũmtɨ̃mɨ̃) is unattested, but the predicted form is *kumdəm.

3.3.6. Complex codas in Proto-Cerrado

In a number of stems, PNJ *-rV̆ or *-r correspond to PCJ *-brV/*-mrV. I tentatively reconstruct PCerr *-PrV̆ for these cases. Some examples are provided in (29) below.

(29) PCerr *-PrV̆ and its reflexes

a. PCerr *yʒ/*yʒ-Prʒ̆ 'to enter.SG' > PNJ *ɟʒ/*ɟʒ-r, PCJ *ʒɛ/*ʒɛ-brɛ;

b. PCerr *ɲɨ̃/*ɲɨ̃-Prɨ̃̆ 'to sit.SG' > PNJ *ɲɨ̃ / *ɲɨ̃-r, PCJ *ɲɔ̃-mrɔ̃ (finite: 2SG *ay=cɔ̃);

c. PCerr *nɔ̃/*nɔ̃-Prɔ̃̆ 'to lie.SG' > PNJ *nɔ̃/*nɔ̃-r, PCJ *nɔ̃/*nɔ̃-mrɔ̃;

d. PCerr *yuPrŭ 'pus' > PNJ *ɟu ~ *ɟurŭ, PCJ *ʒubruy;

e. PCerr *ka=tɔ/*ka=tɔ-Prʒ̆ 'to leave, to go out' > PNJ *ka=tɔ/*ka=tɔ-r 'to leave, to go out, to be born', PCJ *wa=tɔ/*wa=tɔ-brɔ, etc.

It is possible that PCJ *tɔbrɔ 'to get down (Xavánte), to cross a body of water (Xerénte)' and PCJ *cebre 'to roast (Xavánte), to become soft, cooked (Xerénte)' are related to PNJ *tɔ/*tɔ-r 'to fly, to dance' and *ga/*ɟʒ-r 'to roast', but this is far from certain. I have no explanation for Central Jê non-finite forms in *-mrĩ, like PCJ *cɔ̃/*cɔ̃-mrĩ 'to find', *cɔ̃/*cɔ̃-mrĩ 'to give', *cacɔ̃/ *cacɔ̃-mrĩ 'to hang', *cĩ/*cĩ-mrĩ 'to seize, to shoot', *nɔ̃/*nɔ̃-mrĩ 'to lay.DU', *ɲɔ̃/*ɲɔ̃-mrĩ 'to weave'. These verbs must be accounted for by future research.

Yet another possible instance of a complex coda in Proto-Cerrado is suggested by a handful of verbs that have two different forms in Proto-Central Jê: a form in *-kV̆ and a form in *-rV̆ (cf. PCJ *tɔ=pɔ-kɔ/*tɔ=pɔ-rɔ 'to open one's eyes, to wake up'; *pu-ku/*pu-ru 'to pierce', *dəkə // *də/*dərə // *dəːrə 'to die', *waptɔ̃-kɔ̃/waptɔ̃-rɔ̃ 'to fall, to be born.SG/DU', etc.). The syntactic distri-

bution of these forms is not fully explored. I abstain from reconstructing Proto-Cerrado forms in *-krV̌* for the verbs that feature the phenomenon in question, but such a solution remains a possibility.

3.3.7. Other possible codas in Proto-Cerrado

PCerr *d* also seems to have occurred in coda position, but only two examples have been identified so far; these are listed in (30).

(30)   Evidence for reconstructing PCerr *-dV*
    a. PCerr *wɜdǯ* 'tree' > PNJ *bɜrǯ*, PCJ *wede // *weːde*;
    b. PCerr *yad-kwa* 'mouth' > PNJ *yar-kwa*, PCJ *ʒada-wa*.

I was unable to identify regular PCJ correspondences of the PNJ codas *-ʈǐ*, *-dⁿ(ǐ)*, *-ɖ̢ⁿ(ǐ)*, *-nV̌* due to the scarcity of available examples. I provisionally project these PNJ codas to Proto-Cerrado, but a better solution is likely to be possible. Some examples are provided in (31).

(31)   Tentatively reconstructed Proto-Cerrado codas
    a. PCerr *ⁿbɛʈɛ̌* 'good' > PNJ *ⁿbɛʈǐ*, PCJ *pece // *pe*;
    b. PCerr *tɘʈɘ̌* 'hard, strong' > PNJ *tɘʈǐ*, PCJ *tete // teːde*;
    c. PCerr *kye/*kye-dⁿ* > PNJ *kye/*kye-dⁿ* 'to drag, to pull', PCJ *ca/*ca-ri*;
    d. PCerr *ⁿgye/*ⁿgye-ɖ̢ⁿ* 'to enter.PL' > PNJ *ⁿgiyǎ/*ⁿgye-ɖ̢ⁿ*, PCJ *ʒa/*ʒa-ci* 'to enter.DU';
    e. PCerr *ɲĩnɨ̃* 'guts, faeces' > PNJ *ɲĩnǐ*, PCJ *ɲɔ̃nɔ̃* 'faeces';
    f. PCerr *yɜɖ̢ⁿʒ̃* 'sweet' > PNJ *ɖ̢ɜɖ̢ⁿǐ*, PCJ *ʒey // *ʒe*, etc.

Yet another problematic correspondence is found in PNJ *prɔ̃tɔ̃* 'to run' ~ PCJ *ay=ca=mrõy // *ay=ca=mrõ* 'to run.DU', if only this comparison is valid.

3.3.8. Notes on echo vowels

The phenomenon of echo vowels, reconstructed by me for Proto-Northern Jê (Nikulin 2016b: 169, 182), undoubtedly existed in Proto-Cerrado. However, certain particularities of its realization reconstructible for Proto-Northern Jê might have not existed in Proto-Cerrado. For instance, the height dissimilation after the nucleus *a* seems to be a PNJ innovation, since in PCJ a copy of the nucleus appears in the echo vowel position (cf. PCerr *parǎ* 'foot' > PNJ *parǐ*, PCJ *para // *paːra*, PCerr *kratǎ* 'base' > PNJ *kratǐ* 'base, stem, lower part of the body', PCJ *krata // *kraːda* 'base, beginning; near; grandparent'; PCerr *kakǎ* 'to cough' > PNJ *kakǐ*, PCJ *kaka*, etc.). The presence of the echo-vowel *-ǐ* after palatal and post-nasalized codas in Proto-Northern Jê also appears to be innovative. That way, in my reconstruction Proto-Cerrado echo vowels were always identical to the nucleus.

Note that the suppression of the echo vowels in the non-finite forms of the verbs can be securely reconstructed to Proto-Cerrado. In Proto-Central Jê, PCerr *-r* yielded *-ri/*-rĩ* (according to the nasality of the nucleus). In Proto-Northern Jê, the contrast between PCerr *-rV̌* and *-r* seems to have been retained, though it has been deteriorated in most modern Northern Jê languages (see Nikulin 2016b: 182 for traces of this contrast).

3.3.9. Unexpected nasalization in Proto-Central Jê

A number of Central Jê stems exhibit an unexpected nasalization of the stem vowel. They are listed in (32) below.

(32)   Unexpected nasalization in Proto-Central Jê

    a.   PCerr *ɾɛ 'to leave' > PNJ *ɾɛ, PCJ *ɾɛ̃/*ɾɛ̃-mɛ̃ 'to leave.SG';

    b.   PCerr *ⁿday 'rain' > PNJ *ⁿda, PCJ *tɔ̃y // *tɔ̃;

    c.   PCerr *tu/*tu-ɾ 'to urinate' > PNJ *tu/*tu-ɾ, PCJ *tɔ̃/*tɔ̃-ɾĩ;

    d.   PCerr *pa/*pa-ɾ 'to kill' > PNJ *pa/*pa-ɾ, PCJ *pɔ̃/*pɔ̃-ɾĩ 'to kill.DU';

    e.   PCerr *ⁿgɾɛ/*ⁿgɾɛ-ɾ 'to sing, to dance' > PNJ *ⁿgɾɛ/*ⁿgɾɛ-ɾ, PCJ *ay=kɾɛ̃ / *ay=kɾɛ̃-nɛ̃ 'to dance.SG'.

Note that this nasalization cannot have preceded the occlusive merger (see subsection 3.1.1); otherwise, nasal occlusives would have been expected in 32b–d. Moreover, it cannot be easily explained away as a sporadic process postdating the occlusive merger: in this case PCJ **nɔ̃/**nɔ̃-ɾĩ 'to urinate' (< **du/**du-ɾi) would be the expected form. Presently I have no explanation for this correspondence.

4. Cerrado etymologies

This section contains the cognate sets upon which the observations made in this paper are based.

    PCerr *aⁿgɜ 'sedge seed' > PNJ *aⁿgɜ (API aⁿgɜ, KAY aŋɜ, TIM akɜ, PNR nɔ̃ⁿkɜ), PCJ *akɛ (XAV ʔaʔɛ, XER akɛ);

    PCerr *ⁿba 'liver' > PNJ *ⁿba (API ⁿba, KAY ma, SUY, TAP ⁿba, TIM pa/=mpa, PNR ĩⁿpa), PCJ *pa (XAV, XER pa);

    PCerr *ⁿba/*ⁿba-ɾ 'to hear, to listen' > PNJ *ⁿba/*ⁿba-ɾ 'to hear, to know, to listen' (API ⁿba/ⁿba-ɾ, KAY ma/ma-ɾĭ, TIM pa/pa-ɾ/=mpa/=mpa-ɾ, SUY ⁿba/ⁿba-y, TAP ⁿba/ba-y, PNR iⁿpa-ɾĭ), PCJ *wa=pa/*wa=pa-ɾi 'to hear, to listen, to obey' (XAV wa=pa/wa=pa-ɾi, XER wa=pa/wa=pa-ɾi ~ wa=pa-ɾ);

    PCerr *ⁿba 'afraid' > PNJ *=ⁿba (API ⁿba, KAY =ma, SUY =ⁿba, TAP ⁿba, TIM pa, PNR yũ=paŋ), PCJ *pa-hi (XAV pa-hi, XER pa-hi), PCJ *pi=pa (XAV pi=pa, XER pi=pa);

    PCerr *ⁿbɛȶɛ̆ 'good' > PNJ *ⁿbɛȶĭ (API ⁿbɛč, KAY mɛč, SUY ⁿbɛɾĭ, TAP ⁿbɛy-, TIM pɛy, PNR ĩⁿpɛ), PCJ *pece // *pe (XAV pece // pe 'well; to recover, to get better', XER peꞯe // pe 'good, beautiful');

    PCerr *ⁿbɘ/*ⁿbɘ-dɸ̩ⁿ 'to carry' > PNJ *ⁿbɘ/*ⁿbɘ-dɸ̩ⁿ 'to carry' (API ⁿbɘ/ⁿbɘ-ydɸ̩ⁿ ~ ⁿbɘ-ɾ, KAY mɘ/mɘ-ydɸ̩ⁿ 'to grab', TIM pɘ/pɘ-dⁿ, SUY ⁿbɘ/ⁿbɘ-dⁿĭ 'to grab', (?) PNR ĩⁿpɨ-ɾĭ), PCJ *kwa=pɛ 'to carry.DU' (XAV ʔwa=pɛ, XER kwa=pɛ);

    PCerr *ⁿbitɨ̆ 'sun' > PNJ *ⁿbitɨ̆ 'sun' (API ⁿbit, KAY mit, SUY, TAP ⁿbiɾĭ, TIM pit, PNR ĩⁿpitĭ), *ⁿbit-ɾwɘ 'moon' (API ⁿbit-vɾɘ, KAY miti-ɾwɘ, SUY ⁿbit-ɬwɘ, TIM pit-wɾɘ), PCJ *bɘtə // *bɘːdə 'sun, day' (XAV bɘtə // bɘːdə 'sun, day, hour', XER bdə 'sun, day, god');

    PCerr *ⁿbinɨ 'tail, penis; man' > PNJ *ⁿbɨ (API ya=ⁿbɨ 'tail', ⁿbɨ 'man', KAY ya=mɨ 'tail', mɨ 'man', SUY ⁿbɨ 'tail, penis', mɛ̃=ⁿbɨ-ye 'man', TAP ⁿbɨ, TIM ya=pɨ 'tail', mpɨ 'man', PNR yɔ̃=ⁿpɨ 'tail', iⁿpɨ 'man'), PCJ *mɔ̃nɔ̃ // *bə 'tail, penis' (XAV mɔ̃nɔ̃ // bə, XER mnɔ̃ // bə 'tail'), *ay=bə 'man' (XAV ʔay=bə, XER am=bə);

    PCerr *ⁿboŋŏ 'lake' > PNJ *ȶ=i=ⁿbo (API ʔ=i=ⁿbo, KAY i=ⁿbo, TIM h=i=po, h=ĩː=po), PCJ *puku // *pu (XAV puʔu // pu 'lake with a spring', XER pku);

    PCerr *ⁿbɾɔ 'ashes' > PNJ *ⁿbɾɔ (API ⁿbɾɔ, KAY mɾɔ, TIM pɾɔ), PCJ *wede=pɾɔ 'coal' (XAV wede=pɾɔ 'coal; coffee', XER wde=pɾɔ 'coal; coffee; sawdust'), *kə=ʒay=pɾɔ 'foam; beer' (XAV ʔə=ʒay=pɾɔ, XER kə=ʐaĩ=pɾɔ ~ kə=ʐam=pɾɔ), *ʒaday=pɾɔ 'saliva' (XAV ʒaday=pɾɔ, XER ʐdaĩ=pɾɔ 'saliva'), (?) *pɾɔ 'to burn' (XER pɾɔ);

    PCerr *ⁿbutŭ 'neck' > PNJ *ⁿbutŭ (API ⁿbut, KAY mut, SUY ⁿbuɾŭ, TAP mũɾŭ, ⁿbu-ti ~ mũ-ti, TIM put, PNR iⁿputĭ 'nape'), PCJ *butu // *buːdu (XAV butu // buːdu, XER bdu);

PCerr *=ⁿbuy 'to see' > PNJ *=pu/*=pu-dφⁿ (API =ⁿbu/=ⁿbu-ydφⁿ, KAY mũ/mũ-yɲ, SUY =ⁿbu, TAP mũ, TIM =pu /=pu-dⁿ, PNR puŋ ~ pũ/=ⁿpuŋ ~ =ⁿpũ), PCJ *ʒa=buy // *ʒa=bu (XAV ʒa=buy // *ʒa=bu, XER ẓa=bu), *pi=buy // *pi=bu (XAV pi=buy // pi=bu 'to know how to, to control, to care, to observe, to tame'), XER pi=bu 'to observe, to visit');

PCerr *ⁿday 'rain' > PNJ *ⁿda (API ⁿda, KAY na, SUY, TAP ⁿda, TIM ta, PNR iⁿta), PCJ *tɔ̃y // *tɔ̃ (XAV, XER tɔ̃y // tɔ̃);

PCerr *ⁿdɔmɔ̃ 'eye' > PNJ *ⁿdɔ(p-) (API ⁿdɔ(p-), KAY nɔ, SUY, TAP ⁿdɔ, TIM tɔ/=ntɔ, PNR ĩⁿtɔ), PCJ *tɔ̃mɔ̃/*tɔ (XAV tɔ̃mɔ̃/tɔ, XER tmõ/tɔ);

PCerr *ⁿdφa/*ⁿdφa-r 'to bite' > PNJ *ⁿdφa/*ⁿdφa-r (API ʒa/ʒa-r, KAY ɲã/ɲã-yɲ, SUY, TAP ⁿta, TIM ca/ca-r/=nca/=nca-r, PNR iⁿsa/iⁿsa-rɪ̆), PCJ *ca/*ca-ri (XAV ca/ca-ri, XER ṣa/ṣa-ri ~ ṣa-r);

PCerr *ⁿdφɨ 'bee', *am=ⁿdφɨ 'bee sp.' > PNJ (API ⁿʒɨ, TAP ⁿbɛy=ti), *am=ⁿdφɨ (API am=ⁿʒɨ, KAY am=yɨ, TIM am=cɨ), PCJ *am=ʒə (XAV ab=ʒə 'bee sp. (*Tetragona clavipes*)', XER am=ẓə 'Brazilian wasp (*Protonectarina sylveirae*)');

PCerr *ⁿgɜ 'men's house' > PNJ *ⁿgɜ 'men's house, courtyard' (API ⁿgɜ(p-), KAY ŋɜ, SUY, TAP ⁿgɜ, TIM kɜ), PCJ *hə 'young men's house' (XAV hə);

PCerr *ⁿgo 'louse' > PNJ *ⁿgo (API ⁿgo, TAP ⁿgo, TIM ko/=ŋko, PNR kyɜ̃=ko), PCJ *ku (XAV ʔu);

PCerr *ⁿgoy 'water' > PNJ *ⁿgo(ʨ-) (API ⁿgo(yč-), KAY ŋo, SUY, TAP ⁿgo, TIM ko, PNR iⁿko), PCJ *kuy // *ku 'still water' (XAV ʔuy // ʔu, XER kuy-);

PCerr *ⁿgɔy 'wet, to soak' > PNJ *ⁿgɔ (API ⁿgɔ, KAY ŋɔ, SUY ⁿgɔ, TAP ⁿgɔ ~ ⁿgo, TIM kɔ, PNR kɔw), PCJ *kɔy // *kɔ (XER kɔy // kɔ);

PCerr *ⁿgrɛ 'egg, testicle' > PNJ *ⁿgrɛ (API ⁿgrɛ, KAY ŋrɛ, SUY ⁿgɹɛ, TAP ⁿgʁɛ, TIM krɛ/=ŋkrɛ, PNR iⁿkrɛ), PCJ *kre 'egg' (XAV ʔre, XER kre);

PCerr *ⁿgrɛ/*ⁿgrɛ-r 'to sing, to dance' > PNJ *ⁿgrɛ/*ⁿgrɛ-r (API ⁿgrɛ/ⁿgrɛ-r, KAY ŋrɛ/ŋrɛ-rɛ̃ 'to sing', SUY ⁿgɛ-lɛ̆, TAP ⁿgʁɛ/ⁿgɛ-rɛ̆, TIM krɛ), PCJ *ay=krɛ̃/*ay=krɛ̃-nɛ̃ 'to dance.SG' (XAV ay=ʔrɛ̃/ay=ʔrɛ̃-nɛ̃);

PCerr *ⁿgrɜ 'dry' > PNJ *ⁿgrɜ (API ⁿgrɜ, KAY ŋrɜ, SUY ⁿgɹɜ, TAP ⁿgʁɜ, TIM krɜ/=ŋkrɜ), PCJ *krɛ (XAV ʔrɛ, XER krɛ);

PCerr *ⁿgrɨkɪ̆ 'angry, upset' > PNJ *ⁿgrɨkɪ̆ 'angry' (API ⁿgrɨkɪ̆, KAY ŋrɨk, SUY ⁿgɹɨkɪ̆, TIM krɨk/=ŋkrɨk, PNR ĩⁿkyɨ), PCJ *həkə (XAV həkə);

PCerr *ⁿgrɔ 'to heat', *ka=ⁿgrɔ 'hot, fever' > PNJ *ⁿgrɔ (API ⁿgrɔ 'to bake', KAY am=ŋrɔ 'heat', SUY ⁿgɹɔ, TIM krɔ), *ka=ⁿgrɔ 'hot, fever' (API ka=ⁿgrɔ, KAY ka=ŋrɔ, SUY k(ʰ)a=ⁿgɹɔ 'warm; to burn', TAP ka=ⁿgʁɔ, TIM ka=krɔ, PNR nɜ̃=kyɔ), PCJ *krɔ (XAV rɔː=ʔrɔ 'the end of the dry season', XER həỹ=krɔ ~ heỹ=krɔ 'to warm up by the fire'), *waː=krɔ 'hot, fever' (XAV waː=ʔrɔ, XER wa=krɔ);

PCerr *ⁿgye/*ⁿgye-dφⁿ 'to enter.PL' > PNJ *ⁿgiyă/*ⁿgye-dφⁿ 'to enter.PL, to put into a deep container.PL' (API ⁿgye/ⁿgye-ydφⁿ, ya=ⁿgye, KAY ɲiyɔ̃/ŋye-ydφⁿ, ya=ŋye-y, SUY ŋye/ŋye-lɛ̆, TIM a=kye-y), PCJ *ʒa/*ʒa-ci 'to enter.DU' (non-alternating ʒ) (XAV ʒa/ʒa-ci, XER ẓa-ṣi ~ ẓa-ṣ);

PCerr *ka 'white' > PNJ *ya=ka (API, KAY, SUY, TAP ya=ka, TIM ya=kʰa), PCJ *ka (XAV ʔa, XER ka);

PCerr *kaⁿbroy 'blood' > PNJ *kaⁿbro 'blood, menstruation' (API kaⁿbro, KAY kamro ~ kamrõ, SUY kaⁿb.lo, TAP kanrɔ, TIM kapro, PNR nɜ̃=pyu), PCJ *waːpruy // *waːpru (XAV waːpruy // waːpru, XER wapru);

PCerr *kaⁿdφe 'star' > PNJ *kaⁿdφe (API kaⁿʒe, KAY kaɲe-ti-rɛ, SUY kaⁿte-či, TAP kaⁿte-či ~ kaⁿde-či, TIM kace-rɛi, PNR nɜ̃sɨ-ti ~ nɜ̃su-ti), PCJ *waːci (XAV waːci, XER waṣi);

PCerr *kaⁿga 'lazy' > PNJ *kaⁿga, *dφu=kaⁿga 'lazy, to give up, to refuse' (API kaⁿga, KAY kaŋa, ʒu=kaŋa, SUY kaⁿga, TAP tu=ɛ̃ⁿga, TIM kaka 'to leave alone', PNR sw=aⁿka), PCJ *waːka (XAV waːʔa, XER waka);

PCerr *kakă 'to cough' > PNJ *kakɪ̆ (API kakă, TIM kʰak), PCJ *kaka (XAV ʔaʔa, XER kka);

PCerr *karɔ̃ 'shadow, spirit' > PNJ *karɔ̃ 'shadow, spirit, image' (API karɔ̃, KAY, TAP karõ 'image', TIM karɔ̃), PCJ *waːrɔ̃ (XAV həy=ba=waːrɔ̃ 'dead body');

PCerr *ka=tɔ/*ka=tɔ-Pɾɔ̆ 'to leave, to go out' > PNJ *ka=tɔ/*ka=tɔ-r 'to leave, to go out, to appear, to be born' (API ka=tɔ/ka=tɔ-r, KAY ka=tɔ/ka=tɔ-rɔ̆, SUY ka=tʰɔ/ka=tʰɔ-lɔ̆, TAP ka=ʈɔ/ka=ʈɔ-rɔ̆, TIM ka=tɔ/ka=tɔ-r), PCJ *wa=tɔ/*wa=tɔ-brɔ (XAV wa=tɔ/wa=tɔ-brɔ, XER wa=tɔ-brɔ ~ wa=tɔ-br ~ wa=t-brɔ);

PCerr *katɔ̃kɔ̃ 'to explode, to pop, to shoot' > PNJ *katɔ̃kɔ̃ 'firearm, to explode, to pop' (API katɔ̃ⁿkɔ̃, KAY katɔ̃ⁿk, SUY katɔ̃ŋɔ̃, TIM katɔ̃k, PNR atɔ̃-sɨ 'bullet'), PCJ *wanɔ̃kɔ̃ 'to explode, to attack' (XAV wanɔ̃ʔɔ̃, XER wanɔ̃kɔ̃);

PCerr *kɛ̃tɛ̃ 'stone' > PNJ *kɛ̃nɛ̃ (API kɛ̃nɛ̃, KAY kɛ̃n, SUY kʰɛ̃nɛ̃, TAP kɛ̃nɛ̃, TIM kʰɛ̃n, PNR kĩ̃ɛy), PCJ *kɛ̃tɛ̃ // *kɛ̃:nɛ̃ (XAV ʔɛ̃tɛ̃ // ʔɛ̃:nɛ̃, XER ktɛ̃ // knɛ̃);

PCerr *kɔ/*kɔ-r 'to shout' > PNJ *kɔ/*kɔ-r 'to sing (of birds)' (API kɔ/kɔ-r, KAY kɔ/kɔ-rɔ̆, TIM kʰɔ), PCJ *hə/*hə-rə (XAV hə/hə-rə, XER hə/hə-rə ~ hə-r ~ h-rə);

PCerr *kɔy 'skin, bark, breast' > PNJ *kɔ (API, KAY kɔ, SUY kʰɔ, TAP kɔ, TIM kʰɔ, PNR kɔ 'skin, bark'), PCJ *həy (XAV hə, XER həy ~ he // hə 'body, skin, breast'), *həy-mɔ̃nɔ̃ // *həy-ba 'being' (XAV həy-mɔ̃nɔ̃ // həy-ba 'to be, to behave; being, body', XER həy-mba ~ he-mba 'to exist; soul, body, image');

PCerr *kɔykwa 'sky' > PNJ *kVykwa (API katkwa, KAY kɔykwa, TAP kaykʷa, TIM koykʰwa), PCJ *həywa (XAV həywa, XER həywa ~ hewa);

PCerr *kokŏ 'wind' > PNJ *kokŏ (API kokŏ, KAY kok, SUY kokŏ, TAP kogŏ, TIM kʰok), PCJ *rɔ:=wa=kuku // *rɔ:=wa=ku (XAV rɔ:=wa=ʔuʔu // rɔ:=wa=ʔu, XER rɔ=wa=kku), *wa=kuku // *wa=ku 'to blow (of wind) (XER wa=kku);

PCerr *komŏ 'cudgel; horn; patch of trees' > PNJ *ko (API ko 'cudgel; patch of trees', KAY ko 'cudgel; patch of trees', SUY ko 'cudgel', TAP ko 'cudgel', TIM kʰo), PCJ *kɔ̃mɔ̃ // *ku 'horn' (XAV ʔɔ̃mɔ̃ // ʔu, XER kmɔ̃ // ku);

PCerr *kopŏ 'fly' > PNJ *kopŏ (API kop-ti, kop-rɛ, TAP kowŏ, TIM kʰop), PCJ *kupu // *ku:bu (XAV ʔupu // ʔu:bu, XER kpu // kbu);

PCerr *kɔtɔ̆ 'cicada' > PNJ *(kɔ)kɔtɔ̆ (API kɔ(ʔ)kɔt-lɛ, TIM kɔ(ʔ)kʰɔt, (?) kʰɔr), PCJ *kɔtɔ // *kɔ:dɔ (XAV ʔɔtɔ // ʔɔ:dɔ, XER kdɔ ~ krdɔ);

PCerr *kɾa 'offspring' > PNJ *kɾa (API, KAY kɾa, SUY k(ʰ)ɾa, TAP kχa, TIM kʰɾa), PCJ *kɾa: // *kɾa (XAV ʔɾa: // ʔɾa, XER kɾa);

PCerr *kɾată 'base' > PNJ *kɾatĭ 'base, stem, beginning; lower part of the body' (API kɾată 'waist, leg, beginning, medial part of a long object', kɾayč 'wall, stem, stalk', KAY kɾayč 'trunk, stump, pelvis', SUY kʰɹaɾĭ 'beginning', TIM kʰɾat, PNR kyatĭ 'waist'), PCJ *kɾata // *kɾa:da 'base, beginning; near; grandparent' (XAV ʔɾata // ʔɾa:da, XER kɾata // kɾda 'previous, old; near');

PCerr *kɾɛ 'to plant' > PNJ *kɾɛ (API, KAY kɾɛ, SUY kʰɹɛ, TIM kʰɾɛ 'to dig, to plant', PNR kɾɛ), PCJ *kre (XAV ʔre, XER kre);

PCerr *kɾɛ 'orifice, hole' > PNJ *kɾɛ (API, KAY kɾɛ, TAP kχɛ, TIM kʰɾɛ, PNR kɾɛ), PCJ *am=kre 'hole, pit, tomb' (XAV ab=ʔre, XER ap=kre), *kre 'vagina, anus' (XAV ʔre, XER kre 'vagina');

PCerr *kɾɛ̃ 'parakeet' > PNJ *kɾɛ̃ (API kɾɛ̃-ti, kɾɛ̃-rɛ, SUY kɛ̃, TAP kχɛ̃, TIM kʰɾɛ̃-rɛ), PCJ *kɾɛ̃ (XAV ʔɾɛ̃-re, XER kɾɛ̃);

PCerr *kɾɛ̃/*kɾɛ̃-r ~ *kɾɛ̃-nɛ̃ 'to eat' > PNJ *kɾɛ̃/*kɾɛ̃-r (API kɾɛ̃/kɾɛ̃-r 'to eat, to swallow', KAY kɾɛ̃/kɾɛ̃-n, SUY kʰɹɛ̃/kʰɹɛ̃-nɛ̃, TAP kχɛ̃/kɛ̃-rɛ̆, TIM kʰɾɛ̃/kʰɾɛ̃-r, PNR kɾɛ̃), PCJ *kɾɛ̃/*kɾɛ̃-nɛ̃ (XAV ʔɾɛ̃/ʔɾɛ̃-nɛ̃, XER kɾɛ̃/kɾɛ̃-nɛ̃);

PCerr *kɾɔ̃ 'dark, cloud' > PNJ *kɾɔ̃ (PNR ɾɔ̃=kyɔ̃/ya=kyɔ̃), *ka=kɾɔ̃ 'dark cloud' (API kaʔ=kɾɔ̃, KAY ka=kɾɔ̃, TIM ka=kʰɾɔ̃), PCJ *kɾɔ̃ (XAV ʒa=ʔɾɔ̃ 'darkness', tɔ̃=ʒa=ʔɾɔ̃ 'rain cloud', ʔɾɔ̃=dəʔə/ʔɾɔ̃=də 'black, dark', XER kɾɔ̃ 'black (in compounds)', aynɔ̃=ka=kɾɔ̃ 'rain cloud');

PCerr *kɾɔ̃y 'head' > PNJ *kɾɔ̃ (API, KAY, SUY kɾɔ̃, TAP kχɛ̃, TIM kʰɾɔ̃, PNR iyɔ̃), PCJ *kɾɔ̃y // *kɾɔ̃ 'head, fruit' (XAV ʔɾɔ̃y // ʔɾɔ̃, XER kɾɔ̃y // kɾɔ̃);

PCerr *kɾitĭ 'grasshopper' > PNJ *kɾitĭ (API kɾitĭ, TAP k(χ)it-či, ki-rɛ), PCJ *kɾiti // *kɾi:di (XAV ʔɾiti // ʔɾi:di, XER kɾti // kɾdi 'grasshopper sp. (likely *Tropidacris cristata*));

PCerr *kɾɨ 'cold' > PNJ *kɾɨ (API, KAY kɾɨ, SUY kʰɹɨ, TAP kχɨ, TIM kʰɾɨ, PNR kyɨ), PCJ *hə (XAV, XER hə);

PCerr *kɾitɨ 'flint, firestone; metal' > PNJ *kɾitɨ (API kɾitɨ 'flint; to attack', SUY kɹiɾɨ 'metal', kɹit-či 'ax', kɹit-twa 'fishhook', kɹit-ho 'big knife'), PCJ *hətə // *hə:də (XAV hədə-ra 'ax', XER hdə);

PCerr *kɾɔy 'rotten' > PNJ *kɾɔ (API, KAY kɾɔ, TIM kʰɾɔ), PCJ *kɾɔy // *kɾɔ (XAV ʔɾɔy // ʔɾɔ, XER kɾɔy // kɾɔ);

PCerr *kubⁿtɨbⁿ 'capybara' > PNJ *kũmtĩmɨ (KAY kunũm, SUY kutũmũ, TAP koʈũnũ ~ koʈũwũ, TIM kũmtũm, PNR intɨŋ), PCJ *kumdə (XAV ʔubdə, XER kumdə);

PCerr *kukɾitɨ 'tapir' > PNJ *kukɾitɨ (API ku(ʔ)krit, KAY kukɾit, SUY k(ʰ)uk(ʰ)ɹiɾɨ, TAP kukχiɾɨ, TIM kukʰɾit, PNR (i)kyitĩ), PCJ *kutə // *kuhə:də (XAV ʔutə // ʔuhə:də, XER ktə // kdə);

PCerr *kupe 'to touch, to move' > PNJ *kupe (API kupe/kupe-yɟⁿ, TIM kupe/kupe-dⁿ 'to touch lightly; to reproach'), PCJ *kupi (XAV ʔupi, XER kupi 'to touch');

PCerr *kupu 'to wrap' > PNJ *kupu (API, KAY, TIM kupu), PCJ *kubu 'to cover' (XAV ʔubu);

PCerr *kuɾ꞉ 'smooth' > PNJ *kuɾꞈ (TIM kuɾꞈ), PCJ *kuɾɛ (XAV ʔuɾɛ, XER kuɾɛ);

PCerr *kuʈimɨ 'fire' > PNJ *kuʈɨ (API kuvɨ, KAY kuwɨ, SUY kwisɨ, TAP kutɨ, TIM kuhɨ, PNR isɨ), PCJ *kuɲəmə̃ // *kuʒə (XAV ʔuɲəmə̃ // ʔuʒə, XER kunmə̃ // kuʒə);

PCerr *kuyꞈ 'bad smell, to stink' > PNJ *kuɟꞈ (API kučꞈ, SUY, TAP kutꞈ, TIM kucꞈ), PCJ *kuʒɛ (XAV ʔuʒɛ, XER kuʒɛ);

PCerr *kVywa 'salt' > PNJ *kaɟwa (API kačwa, SUY kʰatwa, TAP katʷa, TIM ka:cwa), PCJ *kVkwa-((?) XAV ʔĩʔwa-wa:hə, XER kəkwa-rə̃);

PCerr *kwɨ/*kwɨ-r ~ *kwɨ-ɲ 'to hit, to strike' > PNJ *kwɨ/*kwɨ-ɲ ~ *kwɨ-r (API kwɨɾɨ, at=kwɨɾɨ ~ at=kwɨ/pi=kwɨ-yɲ 'to break long objects', SUY ku=kwɨ, TIM kwɨ/kwɨ-n, PNR kwɨ), PCJ *kwə̃/*kwə̃-rĩ 'to chop' (XER kwə̃/kwə̃-rĩ ~ kwə̃-r);

PCerr *kye/*kye-dⁿ 'to drag, to pull' > PNJ *kye/*kye-dⁿ (API kže/kže-dⁿ, KAY kye/kye-dⁿ, TIM kʰye/kʰye-dⁿ, (?) PNR kɾꞃ-rĩ), PCJ *ca/*ca-ri (XAV ca/ca-ri);

PCerr *kyey 'thigh' > PNJ *kye (API kže, KAY kye, TAP če, TIM kʰye), PCJ *ʒay // *ʒa (non-alternating *ʒ) (XAV ʒay // ʒa, XER ʐda);

PCerr *mɛ̃y 'to throw.SG' > PNJ *mɛ̃/*mɛ̃-ɲ (API mɛ̃/mɛ̃-yɲ, KAY mɛ̃/mɛ̃-yɲ, SUY mɛ̃/mɛ̃-nĩ, TAP mɛ̃/mɛ̃-y 'to give, to throw', TIM mɛ̃/mɛ̃-n), PCJ *mɛ̃y // *mɛ̃ (XAV mɛ̃y // mɛ̃, XER mɛ̃);

PCerr *mɜ̃y 'greater rhea' > PNJ *mɜ̃ (API mɜ̃-ti, TAP mɛ̃-či, TIM mə̃), PCJ *mə̃y // *mə̃ (XAV mə̃y // mə̃, XER mə̃);

PCerr *mɜ̃/*mɜ̃-r 'to go/come' > PNJ *mɜ̃/*mɜ̃-r (API mɜ̃/mɜ̃-r 'to go/come.PL', KAY mõ/mõ-rõ 'to go/come.PL', SUY mɜ̃/mɜ̃-lɜ̃ 'to go/come.PL', TAP mõ/mõ-rõ 'to go/come.PL', TIM mɜ̃/mɜ̃-r, PNR mɜ̃(w)/mɜ̃-rĩ), PCJ *mɜ̃/*mɜ̃-rĩ 'to go/come.SG' (XAV mɜ̃/mɜ̃-rĩ, XER mõ-rĩ);

PCerr *nɜ̃ 'mother' > PNJ *nɜ̃ (API nɜ̃, KAY nã, SUY nɜ̃, PNR nɜ̃-pyꞃ), PCJ *nə̃ (XAV nə̃);

PCerr *nɜ̃/*nɜ̃-Pɾɜ̃ 'to lie.SG' > PNJ *nɜ̃/*nɜ̃-r (API nɜ̃/nɜ̃-r, KAY nõ/nõ-rõ, SUY nɜ̃/nɜ̃-lɜ̃, TAP nõ, TIM nɜ̃/nɜ̃-n, PNR nɜ̃), PCJ *nɜ̃/*nɜ̃-mɾɜ̃ (XAV nɜ̃/nɜ̃-mɾɜ̃, XER nõ-mɾõ ~ n-mɾõ ~ nõ-mɾ);

PCerr *ŋɜ̃/*ɲɜ̃-r 'to give' > PNJ *ŋɜ̃/*ɲɜ̃-r (API ŋɜ̃/ɲɜ̃-r ~ ɲɜ̃-t, KAY ŋã/ɲõ-rõ, SUY ŋɜ̃/ɲɜ̃-lɜ̃, TAP ŋõ, TIM ŋɜ̃/yɜ̃-r, PNR s=ɜ̃/yɜ̃-rĩ), PCJ *cɜ̃/*cɜ̃-mɾĩ (XAV cɜ̃/cɜ̃-mɾĩ 'to give, to send', XER ʂõ/ʂõ-mɾĩ ~ ʂõ-mɾ);

PCerr *ŋɜ̃ɾɜ̃/*ɲɜ̃t 'to sleep' > PNJ *ŋɜ̃ɾɜ̃/*ɲɜ̃t (API ŋɜ̃ɾɜ̃/ɲɜ̃t, KAY ŋõɾõ/ɲõt, SUY ŋɜ̃ɾɜ̃/ɲɜ̃nɜ̃, TAP ɲõnõ/ɲõrõ, PNR sɜ̃tĩ), PCJ *ɲɜ̃tɜ̃ // *ɲɜ̃:nɜ̃ (finite: 2SG *ay=cɜ̃) (XAV ɲɜ̃tɜ̃ // ɲɜ̃:nɜ̃ (finite: 2SG a=cɜ̃), XER nõtõ ~ nõt);

PCerr *ɲĩp=kɔpɜ̃ 'nail, claw' > PNJ *ɲĩp=kɔpɜ̃ (API ɲi(ʔ)=kɔpɜ̃, KAY ɲĩ=kɔp, TAP kɔwɜ̃, ɲĩ=kɔwɜ̃, ɲĩ=kɔwɜ̃ 'claw', TIM yɜ̃=kɔp), PCJ *ɲĩ=kɔpɔ // *ɲĩ=kɔ:bɔ (XAV ɲĩ=pɔ, XER nĩ=krbɔ);

PCerr *ɲĩp=kra 'hand' > PNJ *ɲĩp=kra (API ɲi(ʔ)=kra, KAY ɲi=kra, SUY ɲɨ̃=kɹa, ɲĩ=kɹa, TAP ɲɛ̃=kχa, TIM yɜ̃=kʰra, PNR yĩ=kya), PCJ *ɲĩp=kra (XAV ɲĩp=krata // ɲĩp=kra:da (contamination with PCJ *krata // *kra:da 'stem, beginning'), XER nĩp=kra);

PCerr *ɲĩyi 'name' > PNJ *ɲĩɟi (API ɲiči, KAY ɲiži, SUY ɲ=iⁿti, TAP ⁿti ~ ⁿtĩ=ⁿdi, TIM yici, PNR i(ⁿ)si), PCJ *ɲĩci // *ɲĩ:ci (XAV ɲĩci // *ɲĩ:ci, XER nĩʂi-ʐɛ);

PCerr *ɲɨ/*ɲɨ-ɾɨ́ 'to sit.SG' > PNJ *ɲɨ/*ɲɨ-ɾ (API ɲɨ/ɲɨ-ɾ, KAY ɲɨ/ɲɨ-ɾɨ̆, SUY ɲɨ/ɲɨ-lɨ̆, TAP ɲɨ, TIM yɨ/yɨ-ɾ, PNR ɲɨ̆), PCJ *ɲɔ̃-mɾɔ̃ (finite: 2SG *ay=cɔ̃) (XAV ɲɔ̃-mɾɔ̃ (finite: 2SG a=cɔ̃), XER nɔ̃-mrɔ̃ ~ n-mrɔ̃);

PCerr *ɲɨ̃nɨ́ 'guts, faeces' > PNJ *ɲĩnɨ̆ (API ɲĩnɨ̆, KAY ɲĩn, SUY ɲĩnɨ̆, TAP ɲĩɾɨ̆, TIM yĩn, PNR yɨ̆), PCJ *ɲɔ̃nɔ̃ (XAV ɲɔ̃nɔ̃, XER nnɔ̃);

PCerr *ɲɔ̃=kotŏ 'chest' > PNJ *ɲɔ̃=kotŏ (API ɲɔ̃=kotŏ, KAY ɲɔ̃kot, TAP ɲõ=koⁿdɔ, TIM ɲɔ̃=kʰot), PCJ *ɲɔ̃=kutu // *ɲɔ̃=ku:du (XAV ɲɔ̃=ʔutu // ɲɔ̃=ʔudu, XER nɔ̃=knɔ̃);

PCerr *ɲɔ̃ɾɔ̃ 'cord, vine' > PNJ *ɲɔ̃ɾɔ̃ (API ɲɔ̃ɾɔ̃ 'vine, fiber', pɜɾ=ɲɔ̃ɾɔ̃ 'rope, vine', TIM yɔ̃ɾ), PCJ *ɲɔ̃ɾɔ̃ // *ɲɔ̃:ɾɔ̃ 'vein, sinew' (XAV ɲɔ̃ɾɔ̃ // ɲɔ̃:ɾɔ̃, XER wa=nrɔ̃), *wede=ɲɔ̃ɾɔ̃ // *wede=ɲɔ̃:ɾɔ̃ 'cord, rope, vine' (XAV wede=ɲɔ̃ɾɔ̃ // wede=ɲɔ̃:ɾɔ̃, XER wde=nrɔ̃);

PCerr *ɲɔ̃ytɔ 'tongue' > PNJ *ɲɔ̃tɔ (API ɲɔ̃ʔtɔ, KAY ɲõtɔ, TAP ɲõʈɔ, TIM yɔ̃ʔtɔ, PNR sɔ̃tɔ), PCJ *ɲɔ̃ytɔ (XAV ɲɔ̃ytɔ ~ ɲɔ̃ttɔ, XER nɔ̃ytɔ);

PCerr *pa 'arm, branch' > PNJ *pa (API, KAY pa, SUY hwa, TTAP hʷa, TIM, PNR pa), PCJ *pa-kɾata // *pa-kɾa:da (XER pa-kɾta // pa-kɾda), *wede=pa 'root' (XAV wede=pa, XER wde=pa), (?) *paynɔ̃ 'arm' (XAV panɔ̃, XER paynõ);

PCerr *pa/*pa-ɾ 'to finish' > PNJ *pa/*pa-ɾ 'to finish, cessative/completive marker' (API pa/pa-ɾ, KAY pa, SUY hwa, TAP hʷa, TIM pa-ɾ), PCJ *pa/*pa-ɾi 'to finish, to erase' (XAV pa/pa-ɾi, XER pa/pa-ɾi ~ pa-ɾ);

PCerr *pa/*pa-ɾ 'to kill.PL' > PNJ *pa/*pa-ɾ (KAY pa-ɾɨ̆, SUY hwa/hwa-yɨ̆, TAP hʷa, PNR pa-ɾɨ̆), PCJ *pɔ̃/*pɔ̃-ɾɨ̃ 'to kill.DU' (XAV pɔ̃/pɔ̃-ɾɨ̃, XER pɔ̃/pɔ̃-ɾɨ̃ ~ pɔ̃-ɾ);

PCerr *paɾă 'foot' > PNJ *paɾɨ̆ (API paɾă 'foot; jirau, wall', KAY paɾɨ̆, SUY hway 'foot; jirau', TAP hʷay 'foot; bed', TIM paɾ, PNR pa:), PCJ *paɾa // *pa:ɾa (XAV paɾa // pa:ɾa, XER pɾa 'foot, footprint');

PCerr *pe/*pe-ɾ ~ *pe-k 'to fart' > PNJ *pe/*pe-k (API pe/pe-k, SUY hwe, TIM pe-k), PCJ *pi/*pi-ɾi (XAV pi/pi-ɾi);

PCerr *pĩmɨ̃́ 'firewood' > PNJ *pɨ̃ 'wood' (API, KAY pɨ̃, SUY hwɨ̃ 'tree', TAP hʷɨ̃ 'tree', TIM pɨ̃), PCJ *mĩmɨ̃ // *mɨ̃ (XAV mĩmɨ̃ // mɨ̃, XER mmɨ̃);

PCerr *pɨy 'achiote' > PNJ *pɨ (API, KAY pɨ, TAP hʷɨ, TIM pɨ), PCJ *bɨy // *bɨ (XAV bɨy // bɨ, XER bɨ);

PCerr *pɨyi ~ *pɨ̃yi 'one' > PNJ *pɨʥi (API pɨči ~ pĭči, KAY pɨʒi, SUY, TAP wɨti, TIM pɨci-t, PNR iⁿpɨtɨ̆), PCJ *mĩci (XAV mĩci, XER ʂ=mĩʂi), *pici (XER pɨʂi, pɨʂ-tu // pɨʂ-du) 'only';

PCerr *pɔ 'flat, wide' > PNJ *pɔ (API, KAY pɔ, SUY hɔ, TIM pɔ), PCJ *pɔ (XER pɔ);

PCerr *pɔŋɔ̃ 'arrow, bamboo' > PNJ *pɔ-ʈe 'bamboo' (API pɔ-ʔe, TIM pɔʔ-he), PCJ *pɔkɔ // *pɔ 'big arrow' (XAV pɔkɔ // pɔ);

PCerr *pɾɔ̃ 'wife' > PNJ *pɾɔ̃ (API pɾɔ̃, KAY pɾõ, SUY hʎɔ̃, TAP hrõ, TIM pɾɔ̃ 'wife (dead)'), PCJ *mɾɔ̃ (XAV mɾɔ̃, XER mrõ 'spouse, to marry');

PCerr *pɾɜ 'ember' > PNJ *pɾɜ (API pɾɜ, KAY pɾɜ 'ashes', SUY hʎɜ 'ashes', TIM pɾɜ, pɾɜy-pɾɜy 'coal'), PCJ *pɾɛ (XER pɾɛ-hika 'glowing embers', pɾɛ-nĩʐuɾi 'spark', pɾɛ-ʑapdɔ 'ember');

PCerr *pɾɔ̃m 'hungry' > PNJ *pɾɔ̃mɔ̃ 'hungry, to want' (API pɾɔ̃mɔ̃, KAY pɾɔ̃m, SUY hʎɔ̃mɔ̃ 'to want', TAP hrẽmẽ̆ 'hungry', TIM pɾɔ̃m, PNR pɾɔ̃nɨ̆), PCJ *mɾɔ̃m // *mɾɔ̃ (XAV mɾɔ̃m // mɾɔ̃ 'hungry, food', XER mɾɔ̃m // mɾɔ̃);

PCerr *puɾŭ 'field' > PNJ *puɾŭ (API, KAY puɾŭ, SUY huʎŭ, TAP huɾŭ, TIM puɾ, PNR pu:), PCJ *buɾu // *bu:ɾu (XAV buɾu // bu:ɾu, XER bɾu);

PCerr *ɾɛ 'to leave' > PNJ *ɾɛ/*ɾɛ-ɾ (API ɾɛ/ɾɛ-ɾ ~ ɾɛ), PCJ *ɾɛ̃/*ɾɛ̃-mɛ̃ 'to leave.SG' (XAV ɾɛ̃/*ɾɛ̃-mɛ̃, XER ɾɛ̃/ɾɛ̃-mɛ̃ ~ ɾɛ̃-m ~ ɾ-mɛ̃);

PCerr *ɾɨ̃tɨ̃ 'to look' > PNJ *ɾɨ̃tɨ̃ (API ɾɨ̃tɨ̃, TIM ɾɨ̃t), PCJ *ɾɨ̃tɨ̃ // *ɾɨ̃:nɨ̃ (XAV ɾɨ̃tɨ̃ // ɾɨ̃:nɨ̃ 'to look for', XER ɾɨ̃tɨ̃ ~ ɾtɨ̃);

PCerr *ta/*ta-dⁿ 'to tear' > PNJ *ta/*ta-dⁿ (API ta 'to pick, to harvest', KAY ta 'to cut', SUY kʎẽ=ta 'to cut', TAP kχẽ=ʈa 'to cut with one cut', TIM ta/ta-dⁿ 'to cut, to remove'), PCJ *ay=ta // *ta-ɾi (XAV a=ta/ta-ɾi 'to get torn', XER ta-ɾi ~ ta-ɾ 'to pluck, to pick, to tear');

PCerr *te 'tick' > PNJ *te (API te-ti, KAY te, TAP ʈe, TIM te:-ɾɛ, te:-ti), PCJ *ti: // *ti (XAV ti:-ʔa, XER ti);

PCerr *teɾĕ 'fruit of a k. of palm' > PNJ *teɾĕ (API te-ɾɛ, TIM teɾ-ɾɛ, teɾ-ti 'assai fruit'), PCJ *tiɾi // *ti:ɾi 'bacuri coconut' (XAV tiɾi // *ti:ɾi);

PCerr *tɛpĕ 'fish' > PNJ *tɛpĕ (API, KAY tɛp, SUY t(ʰ)ɛwĕ, TAP ʈɛwĕ, TIM tɛp, PNR tɛpĭ), PCJ *tepe // *te:be (XAV tepe // te:be, XER tpe // tbe);

PCerr *tɛy 'leg' > PNJ *tɛ (API, KAY tɛ, SUY tʰɛ, TAP ʈɛ, TIM, PNR tɛ), PCJ *tey // *te (XAV tey // te, XER te);

PCerr *tẽ/*tẽ-m 'to go/come.SG' > PNJ *tẽ/*tẽ-m (API tẽ/tẽ-m, KAY tẽ/tẽ-m, SUY t(ʰ)ẽ/t(ʰ)ẽ-mɛ̆, TAP ʈẽ/ʈẽ-mɛ̆, TIM tẽ/tẽ-m, PNR tẽ/tẽ-ɾĭ), PCJ *nẽ-m // *nẽ 'to go.DU' (XAV nẽ-m // nẽ, XER nẽ-m ~ nẽ-mã // nẽ);

PCerr *tɜbⁿ 'new, raw' > PNJ *tɜbⁿĭ 'raw' (API tɜbⁿ // tɜmɜ̆, SUY tʰɜmĭ, TIM tɜbⁿ), PCJ *tɛm // *tɛ (XAV tɛm // tɛ);

PCerr *tɘʈɜ̆ 'hard, strong' > PNJ *tɘʈĭ (API tɘyč/tɘyt, KAY tɘyč, SUY tɘɾɜ̆, TIM tɘy, PNR tɘtĭ), PCJ *tete // te:de (XER tete ~ tte ~ tet), PCJ *ɲĩp=tete/*ap=tete // *ɲĩp=te:de/*ap=te:de 'to be strong' (XAV ɲĩp=tete/ap=tete // ɲĩp=te:te/ap=te:te 'to get strong, to make an effort, to recover', XER ɲĩp=tete ~ ɲĩp=tet ~ ɲĩp=tte // ɲĩp=tde);

PCerr *tikĭ 'belly' > PNJ *tikĭ (KAY tik, SUY t(ʰ)ikĭ, TIM tik 'pregnant'), PCJ *diki // *di (XAV diʔi // di, XER dki // di 'belly; to fill the stomach');

PCerr *ti/*tikĭ/*ti-ɾ 'to die' > PNJ *ti/*ti-k (API, KAY ti/ti-k, SUY ti/ti-kĭ, TAP ʈi/ʈi-gĭ, TIM ti/ti-k, PNR ti), PCJ *dəʔə // də/də-ɾə (XAV dəʔə // də/də-ɾə, XER dkə // də/də-ɾə);

PCerr *tikɨ 'black' > PNJ *tikĭ (API tikĭ, KAY tik, SUY tikĭ, TAP ʈigĭ, TIM tik, PNR kə=ti:), PCJ *dəkə // *də (XAV ʔɾɜ̃=də, XER dkə 'dark', (?) wa=k(ɾ)=ti // wa=k(ɾ)=di);

PCerr *tɔtɔkɔ̃ 'to throb' > PNJ *tɔtɔkɔ̃ (TIM tɔtɔk 'heartbeat, heart'), PCJ *tɔtɔkɔ // *tɔtɔ (XAV tɔtɔ, XER tɔtɔkɔ ~ tɔtkɔ);

PCerr *tɔ̃y 'brother' > PNJ *tɔ̃ (API, SUY tɔ̃, TIM tɔ̃ 'brother (alive)', PNR tɔ̃), PCJ *nɔ̃y // *nɔ̃ 'younger sibling of the same sex' (XAV nɔ̃y // nɔ̃, XER nõ-ɾe);

PCerr *tu/*tu-ɾ 'to carry' > PNJ *tu/*tu-ɾ (API tu, KAY tu/tu-ɾĭ, TIM tu/tu-ɾ, PNR tu-ɾĭ 'to carry in a basket.SG'), PCJ *du // *du-ɾi 'to carry.SG' (XAV du // du-ɾi, XER du/du-ɾi ~ du-ɾ);

PCerr *tu/*tu-ɾ 'to urinate' > PNJ *tu/*tu-ɾ (API tu/tu-ɾ, SUY tu), PCJ *tɔ̃/*tɔ̃-ɾĩ (XAV tɔ̃/tɔ̃-ɾĩ, XER tɔ̃-ɾĩ);

PCerr *tubⁿ 'old, tall (?)' > PNJ *tũmŭ 'old' (API tũmŭ, KAY tũm, SUY tũmŭ, TAP ʈũmŭ, TIM tũm, PNR =tũ), PCJ *dum // *du 'tall' (XER dum), *dum-kɾata // *dum-kɾa:da 'elder sibling of the opposite sex' (dub-ʔɾata // dub-ʔɾa:da, XER dum-kɾda);

PCerr *tumŭ 'belly' > PNJ *tu (API tu 'belly, intestine', KAY tu, TAP ʈu, TIM, PNR tu, i=tu 'tuber'), PCJ *nɔ̃mɔ̃ // *du (XAV nɔ̃mɔ̃ // du, XER nmõ 'fat (adj.)');

PCerr *tyetĕ 'to burn' > PNJ *tyetĕ (API četĕ, KAY čet/čeɾĕ, SUY seɾĕ, TAP čeɾĕ ~ teɾĕ, TIM cet, PNR titĭ), PCJ *ʒata // *ʒa:da (XAV ʒata // ʒa:da, XER ẕata);

PCerr *ʈi 'bone' > PNJ *ʈi (API i ~ ži, KAY ʔi, SUY si, TAP ti, TIM hi, PNR si), PCJ *hi (XAV, XER hi);

PCerr *ʈĩ 'meat' > PNJ *ʈĩ ~ *ɲĩ (API, KAY, SUY, TAP ɲĩ, TIM yĩ ~ hĩ, PNR yĩ), PCJ *ɲĩ (non-alternating *ɲ) (XAV ɲĩ, XER nĩ);

PCerr *ʈɨmɨ̆ 'seed' > PNJ *ʈɨ (API, KAY ʔɨ ~ ɨ, SUY sɨ, TAP tɨ, TIM hɨ, PNR sɨ), PCJ *ɲɔ̃mɔ̃ // *ʒə (XAV ɲɔ̃mɔ̃ // ʒə, XER ẕə);

PCerr *ʈoy 'leaf' > PNJ *ʈo (API ʔo ~ o, KAY ʔo, SUY hwĩ=so, TAP to ~ hʷĩ=to, TIM ho 'leaf, a hair', PNR pəɾi=sˈo), PCJ *cuy // *cu (XAV we=cuy-ɾɔ̃, =cuy // =cu, XER ṣu 'a hair');

PCerr *ʈwakɔ̃ 'coati' > PNJ *ʈwakɔ̃ (API wakɔ̃, SUY swakɔ̃, TAP toakõ, TIM wakʰɔ̃), PCJ *wakɔ̃ (XAV waʔɔ̃, XER wakõ);

PCerr *weke 'partridge' > PNJ *beke (TIM pekʰe), PCJ *wiki (XAV wiʔi, XER wiki ~ wĩki);

PCerr *wɜdɜ̆ 'tree' > PNJ *bɜɾɜ̆ (API pɜɾɜ̆ ~ paɾɐ̆ 'tree, horn, plant, trunk, canoe, car', KAY bɜɾĭ 'tree, horn', TIM pɜɾ 'tree, horn', PNR pɜɾi 'tree', kɣɜ̃=si=pɜɾĭ 'horn'), PCJ *wede // *we:de (XAV wede // *we:de, XER wde);

PCerr *wĩ/*wĩ-ɾ 'to kill.SG, to extinguish' > PNJ *bĩ/*bĩ-ɾ (API pĩ/pĩ-ɾ, KAY bĩ/bĩ-n, SUY pĩ/pĩ-l̃i, TAP mĩ/mĩ-ɾ̃i, TIM pĩ/pĩ-ɾ 'to kill (with an arrow), to extinguish'), PNR pĩ/pĩ-ɾ̃i), PCJ *wĩ/*wĩ-ɾ̃i (XAV wĩ/wĩ-ɾ̃i, XER wĩ/wĩ-ɾ̃i ~ w-ɾ̃i);

PCerr *ya 'to stand.SG' > PNJ *ɖa/*ɖɜ-bⁿ ~ *ɖã-m (API ča/čɜ-bⁿ ~ ča-ɾ, KAY ža/žã-m, SUY ta/tã-mã, TAP ta, TIM ca/ca-bⁿ ~ cɜ-bⁿ ~ ca-ɾ, PNR sɜ̃ ~ sa:ŋ), PCJ *ʒa (XAV ʒa, XER da);

PCerr *yad-kwa 'mouth' > PNJ *yaɾ-kwa (API ya-kva, KAY, SUY yay-kwa, TAP yay-kʷa, TIM yaɾ-kʷa, PNR sa-koa), PCJ *ʒada-wa (XAV ʒadawa, XER ʐdawa 'mouth, door');

PCerr *yaʈe 'nest' > PNJ *yaʈe (API, KAY yae, TIM ya:he, PNR sase), PCJ *ʒaci (XAV ʒaci, XER ʂaʂi 'to make a nest');

PCerr *yɜ 'pain, to hurt' > PNJ *ɖɜ (API čɜ, SUY, TAP tɜ, TIM cɜ, PNR sɜ/sɜ-ɾĭ), PCJ * (XAV ʒɛ, XER ʐɛ);

PCerr *yɜ 'urine' > PNJ *ɖɜ 'urine, bladder' (API čɜ, TIM cɜ), PCJ *ʒɛ (XAV ʒɛ, ʒɛ-kɾe 'bladder', XER ʐɛ 'bladder');

PCerr *=yɜ (instrumental suffix) > PNJ *=ɖɜ (API =čɜ, KAY =ǯɜ, SUY, TAP =tɜ, TIM =cɜ), PCJ *=ʒɛ (XAV =ʒɛ, XER =ʐɛ);

PCerr *yɜ/*yɜ-Pɾɜ 'to enter.SG' > PNJ *ɖɜ/*ɖɜ-ɾ (API a=čɜ/čɜ-ɾ, KAY wa=ǯɜ/wa=ǯɜ-ɾǯ, SUY a=tɜ/tɜ=tɜ, TIM cɜ/cɜ-ɾ, PNR sɜ), PCJ *ʒɛ/*ʒɛ-bɾɛ (XAV ʒɛ/ʒɛ-bɾɛ, XER ʐɛ-bɾɛ ~ ʐ-bɾɛ ~ dɛ-bɾɛ);

PCerr *yɵ 'bitter' > PNJ *ɖɵ (API čɵ, KAY ǯɵ, TAP tɵ, TIM cɵ), PCJ *ʒɛ (XAV ʒɛ, XER ʐɛ);

PCerr *yi/*yi-ɾ 'to put, to lay' > PNJ *ɖi/*ɖi-ɾĭ (API či/či-ɾĭ, KAY ǯi/ǯi-ɾĭ, SUY ti/ti-ɾĭ, TIM ci/ci-ɾ), PCJ *hi/*hi-ɾi 'to put.SG' (XAV hi/hi-ɾi 'to put, to leave.SG', XER hi/hi-ɾi 'to put, to cook, to determine.SG');

PCerr *yobⁿ 'to grind' > PNJ *ɖobⁿ 'flour, powder' (API čob // čomŏ, KAY ǯobⁿ, (?) TAP to=tom-či, TIM cobⁿ), PCJ *cum // *cu (XAV ʂu, XER ʂum ~ ʂumã // ʂu);

PCerr *yuPɾŭ 'pus' > PNJ *ɖu ~ *ɖuɾŭ (API ču ~ čuɾŭ, KAY ǯuɾŭ, TAP tuɾŭ, TIM cuɾ), PCJ *ʒubɾuy (XAV ʒubɾuy // ʒubɾu, XER ʐbɾuy // ʐbɾu);

PCerr *ywa 'tooth' > PNJ *ɖwa (API čwa, KAY ǯwa, SUY twa, TAP tʷa, TIM cwa, PNR swa ~ soa), PCJ *kwa (XAV ʔwa, XER kwa).

A non-exhaustive list of grammatical morphemes includes:

PCerr *wa 'I (nominative)' > PNJ *ba (API wa, KAY ba, SUY wa/pa, TAP wa, TIM wa/pa), PCJ *wa (XAV wa-hɔ̃, XER wa, wa-hɔ̃);

PCerr *iɖⁿ- 'I (oblique)' > PNJ *iɖⁿ- (API i-/ič-/iɲ-, KAY, SUY, TAP i-, TIM iy-), PCJ *ĩ:- (XAV ʔĩ:-, XER ĩ-);

PCerr *ga 'thou (nominative)' > PNJ *ga (API ka, KAY ga, SUY, TAP, TIM, PNR ka), PCJ *ka (XAV ʔa-hɔ̃, XER ka, to=ka);

PCerr *ay- 'thou (oblique, class I)' > PNJ *a- (API, KAY, SUY, TAP, TIM a-, PNR a- ~ ha-), PCJ *ay (XAV ʔay-, XER ay-);

PCerr *mɜ̃ 'dative postposition' > PNJ *mɜ̃ (API, KAY, SUY, TAP, TIM, PNR mɜ̃), PCJ *mɔ̃ (XAV, XER mɔ̃);

PCerr *ɲĩm 'genitive postposition' > PNJ *ɲĩm (PNR yĩ), PCJ *ɲĩm (XAV ɲĩm, XER nĩm);

PCerr *tɛ 'ergative postposition' > PNJ *=tɛ (API, KAY, SUY =tɛ, TAP =ɾɛ, TIM =tɛ), PCJ *te (XAV =te, XER =te).

The following comparisons are somewhat problematic:

PCerr *ⁿbɛɲĕ 'honey' > PNJ *ⁿbɛʥ̃ⁿĩ (API ⁿbɛyʥ̃ⁿ, KAY mɛyʥ̃, SUY ⁿbɛnĭ, TAP ⁿbɛy, TIM pɛdⁿ, PNR nã=pɛyŋ), PCJ *pĩnĩ/pĩ (XAV pĩnĩ/pĩ)[24];

PCerr *pɾɔ̃tɔ̃ ~ *pɾɔ̃y > PNJ *pɾɔ̃tɔ̃ 'to run' (API pɾɔ̃ⁿtɔ̃, KAY pɾɔ̃ⁿt, SUY h.lɔ̃nɔ̃), PCJ *ay=ca=mɾɔ̃y // *ay=ca=mɾɔ̃ 'to run.DU' (XAV a=ca=mɾɔ̃y // a=ca=mɾɔ̃);

PCerr *yɜʥ̃ⁿɜ̃ ~ *yɛy 'sweet, tasty' > PNJ *ʥ̃ɜʥ̃ⁿĩ (API čɜyʥ̃ⁿ, KAY ǯɜyʥ̃ⁿ, TIM cɜdⁿ), PCJ *ʒey // *ʒe (XAV ʒey // ʒe, (?) XER ẓeỹ).

5. Conclusion

In this paper I have undertaken the first attempt at a systematic reconstruction of Proto-Cerrado phonology and lexicon. However, a number of issues remain to be tackled. These include:
— evolution of Central Jê verbal morphology and morphosyntax with a special attention to finiteness, verbal number and alignment;
— identification of the remaining correspondences between Proto-Northern Jê and Proto-Central Jê, particularly involving diphthongs and codas;
— emergence of unexpected nasality in certain Central Jê roots;
— the origin of Central Jê stems belonging to the classes A and C.

Yet another issue that remains beyond the scope of this paper are contacts between Central Jê languages and Northern Jê languages. In addition to evident Central Jê borrowings in individual Northern Jê languages (Xavánte ʔutə // ʔuhəːdə 'tapir' > Tapayúna uhə-či ~ uhɜ-či, Central Jê *bətə // *bəːdə or Xavánte bətə // bəːdə 'sun' > Panará wətə-ti[25]), a number of roots reconstructible to Proto-Northern Jê and to Proto-Central Jê display completely irregular sound correspondences, suggestive of their loan origin in one of the branches (or in both), cf. 'southern tamandua' (PNJ *pɜtɜ̃, PCJ *pati // *paːdi)[26], 'paca' (PNJ *ⁿgɾa, PCJ *kɾawa), 'tobacco' (PNJ *kaɾɛʥ̃ⁿĩ ~ *kaɾiʥ̃ⁿĩ, PCJ *waɾĩ), 'Babassu palm' (PNJ *ɾɔ̃ɾɔ̃, PCJ *nɔ̃ɾɔ̃y). It is also necessary to mention the curious case of the "Menren"[27] wordlist provided by Loukotka (1963: 51–54), which represents a Timbira variety close to Pykobjê (as suggested by its vocalism) and contains a considerable number of word of obvious Central Jê origin (Nikulin 2015: 26–27).

According to the principles of bottom-up reconstruction, a reconstruction of Proto-Jê is necessary in order to warrant a coherent use of Jê data in Macro-Jê comparative studies. I intend to proceed to this stage in a future paper.

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[24] If Xavánte *pĩnĩ // pĩ* is a result of leveling of PCJ *pĩnĩ // *pi, it may be compared to Xerénte *pi* (as in tɔ=pi 'eye rheum'), Proto-Southern Jê *ⁿbe 'liquid', Rikbáktsa *pi-hik*, Karajá bɛ, Proto-Jabutí *ⁿbi 'water'. In this case, Proto-Cerrado *ⁿbenĕ should be reconstructed, and the etymology of PNJ *ⁿbɛʥ̃ⁿĩ has to be viewed as unknown.

[25] This etymology has been suggested by Carvalho (2016: 71–72). A native synonym, *iⁿpɨtĭ*, also exists in Panará; this item is a true cognate of PCJ *bətə // *bəːdə.

[26] As Ribeiro and Voort (2010: 557) point out, vaguely similar words exist in Karajá, Jabutí, Tupí and Karíb languages, which suggests that this item might by a Wanderwort.

[27] A mistranscription of *mẽ=hẽ* 'Indians', lit. 'our meat'.

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А. В. Никулин. Реконструкция фонологии праязыка нагорной ветви семьи же

Статья продолжает серию публикаций по исторической фонологии языков южноамериканской макросемьи макро-же. Автор устанавливает систему регулярных фонетических соответствий между языками центральной группы семьи же (шаванте и шеренте) и предлагает на их основе реконструкцию праязыка этой группы. Затем эта реконструкция сопоставляется с реконструкцией праязыка северной группы семьи же (Nikulin 2016b), и предлагается реконструкция общего праязыка для этих двух групп, пранагорного же. В статье приводится не претендующий на полноту список этимологий для нагорной ветви семьи же.

Ключевые слова: языки же, языки макро-же, язык шаванте, язык шеренте, языковая реконструкция, сравнительно-исторический метод.