

Article

Clause-linkage, Embeddedness, and Nominalizations in Chácobo (Pano)

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Abstract: As with all Pano languages, Chácobo links clauses together through an elaborate system of switch reference clauses. This paper provides a detailed description of switch reference and clause linkage in Chácobo (Pano) from a typological perspective. While previous work on Chácobo and Pano languages in general describes such clause-linkage strategies as involving subordination, no work has provided a detailed description of the diagnostics for classifying clause-linkage types with clause-linkage strategies in Pano. If these variables are relied on, nearly all clause-linkage strategies in Chácobo fall outside of typical coordination and subordinate patterns. There is also little reason to adopt such a distinction on language-internal grounds.

Keywords: switch reference; clause linkage

1. Introduction

Pano languages have highly complex systems of same/different subject marking. Same/different subject clauses are described as subordinate in many grammars of Pano languages (Fleck 2003, p. 1001; Valenzuela 2003, p. 413; Tallman 2018a, p. 317; Camargo Souza 2020). However, a detailed investigation of such clauses in terms of the criteria typically used to distinguish coordinate and subordinate clauses has not been conducted. Neely (2019, p. 434) claims that the relative coordinate or subordinate status of such clauses requires more research. Same/different subject clauses in Pano languages appear to be, in very general terms, structurally and functionally similar across Pano languages. Such clauses are marked for whether their subject is co-referential or obligatorily not co-referential with the subject of the main clause. Same-subject clauses also display “transitivity harmony” (Valenzuela 2005, 2013). They code whether the subject of the main clause is an A (subject of a transitive) or an S (subject of an intransitive) argument.

Whether “switch reference” clauses are described as subordinate or coordinate in the linguistic literature can partially depend on theoretical considerations. Finer (1985) seems to assume that all switch reference clauses are subordinate, and Roberts (1988) argues that switch reference clauses are coordinate based on a number of diagnostics (see Keine 2013 as well). More recent literature has claimed that some switch reference clauses are subordinate and others are coordinate (Stirling 1993; McKenzie 2015), while others have advocated for a third category or some subtype of coordination (Weisser 2012). In McKenzie’s survey of switch reference in North America, he argues that the debate about whether switch reference is coordinate or subordinate is “moot” because “SR in North America occurs with all types of clause connectives” (McKenzie 2015, p. 429). In other words, whether switch reference is subordinate or coordinate is a matter of typological variation (see the work of Baker and Souza 2019, for a recent overview).

Such perspectives assume that a discrete distinction between “coordinate” and “subordinate” clauses, borrowed from traditional grammar, is necessarily theoretically valid. They assume that there is an a priori distinction between coordinate and subordinate clauses (perhaps as a matter of language design) and it is simply a matter of picking the right set



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of distinguishing features that home in on the ideal type. Functional–typological literature, applying wider array of diagnostics more consistently, has suggested that there is a continuum between subordination and coordination types (Haiman and Thompson 1984; Lehmann 1988; Foley and Van Valin 1984; Van Valin 1993; Croft 2001; Cristofaro 2003). From this perspective, a linked-clause construction is coordinate or subordinate to some degree. The question arises as to whether actual typological patterns organize themselves into prototypes (Bickel 2010), perhaps due to functional and diachronic “attactor points” (Hawkins 2004; Bybee and Beckner 2015; Schmidtke-Bode 2019). In order to investigate clause linkage from such a perspective, detailed descriptive works are necessary, which apply a methodology that does not reify or presuppose candidate attractor points.

As stated above, in most works on Pano linguistics, same-subject clauses are described as “subordinate”. Evidence for this in Chácobo may come from the fact that an interrogative constituent can be asymmetrically extracted from the same-subject clause as in (1) below and such asymmetric extraction is typically regarded as evidence of subordinate status (Ross 1967). We can also see that the same-subject clause *yonoko=só* “work before V” is center-embedded, potentially yet another piece of evidence for subordinate status (Bickel 2010).

1. *hinawa=só_i tsi yonoko=só t_i ina tafi=’ tipas=ʔá*
 how=SA LNK work=PRIOR:SA t dog Tashi=ERG kill=INTER:PST
 ‘How, after working, did Tashi kill the dog?’
 (‘How did Tashi work after killing the dog?’)

Not all data point to a subordinate status for this construction in Chácobo, however. First, note that main clauses can also be center-embedded. An interrogative constituent can extract from a post-posed same subject clause (producing a sentence which is difficult to translate), which is generally unavailable to adjunct subordination (Bošković 2020).

2. *haw_i kako ho=ʔá t_i kopi=ʔáʒna*
 how=SA LNK work=INTER:PST t buy=PRIOR:SS
 ‘What, after Caco arrived, did he buy?’

Thus, center-embedding may not apply in this case, because it also suggests that the main clause is subordinate (Weisser 2015 on problems in interpreting such diagnostics). Illocutionary scope suggests that same-subject clauses in Chácobo may be a coordinated structure (Jendraschek and Shim 2018, inter alia). Subordinate clauses will typically be presupposed information, but in Chácobo, an interrogative illocutionary marker can scope over each predicate, suggesting a more coordinate-like structure.

3. *tfafo pi=ʔi tsi hiri=yá tfani=ka(n)=ʔá*
 pig eat=CONCUR:SS LNK Gere=COM speak=3PL=INTER:PST
 ‘Were they eating and were they speaking with Gere?’, ‘While they were eating, did they speak with Gere?’

Furthermore, we also expect subordinate clauses to be de-ranked compared to main clauses, displaying less tense-aspect-modal contrasts, for instance. While there are some limitations in marking, overall same-subject clauses display most of the same marking as main clauses, suggesting a relatively higher coordinate status. Nor are such cases of mismatch rare (Bickel 2010; Weisser 2012, 2015; Jendraschek and Shim 2018).

One approach to this apparent ambiguity is to discard the conflicting data.¹ We could choose one criterion (e.g., “extraction”) and discard the others as irrelevant to the assessment of that particular construction in Chácobo, changing which criteria are relevant or irrelevant depending on the language and classifying each construction based on whatever diagnostics give us the results that conform to our preferred theoretical position (see

Hofmeister and Sag 2010 for a relevant discussion on islands). However, this approach has been criticized as methodologically biased (Croft 2001) and is foreign to the methods in all mature sciences (Mayo 2018; Tallman 2021a, among others). If the distinction between subordination and coordination is taken as a grammatical primitive or the distinction represents some sort of substantive universal, explicit conditions need to be stated for its falsification. However, positing that it is appropriate to discard conflicting evidence in order to maintain a desired hypothesis at best makes claims about the universality of the distinction confirmationally lax, and, at worst, immunizes such a claim against falsification, making it a tautology: a coordinate–subordinate distinction can be recognized because diagnostics exist and can be cherry-picked to rationalize the distinction; however, the linguist sees fit. To assume that because a distinction is used in descriptive work, it must reflect a distinction which manifests substantive universals, is to lift a heuristic methodological unit into a theoretical postulate without justification. And to insist that the distinction is a well-tested hypothesis (and not a metaphysical prejudice) while maintaining that its falsification is in principle impossible is to seriously misunderstand scientific method (see Ozerov 2018 for a discussion of similar problems with the categories topic and focus categories, and Tallman 2020, n.d. on the notion of ‘word’, ω and X0).

From a typological perspective, allowing the definition of coordination and subordination to vary leads to problems for linguistic comparison. It is not clear that one linguist’s “subordination” will correspond to the next’s, if linguists are choosing criteria inconsistently. Assuming a distinction without providing a fixed and consistent empirically operationalized definition applied rigorously from one language to another will result in non-commensurability between language descriptions and hinder our ability to make verifiable and robust cross-linguistic generalizations. One solution to this problem would be to propose a fixed definition by fiat (a “comparative concept” or “retrodefinition”) defining coordination or subordination based on a single criterion so that the concept at least has mnemonic value (Haspelmath 2010, 2018). This perspective would preserve the traditional terminology without making claims about its usefulness in accounting for constraints on cross-linguistic variation, apart for making it clearer what researchers mean by the terms.

In this paper, I take a different approach, inspired specifically by Bickel’s (2010) multivariate approach to clause linkage, but more generally by work on polythetic classification in the biological sciences and other fields (Sokal and Sneath 1963; Needham 1972; Ellen 2008; Parnas 2015). Polythetic classification refers to classification in the absence of necessary and sufficient criteria for the relevant classes. In a systematic review of the diagnostics that distinguish between coordination and subordination, Bickel (2010) deconstructs the properties that have been posited as diagnostics to distinguish between coordination, subordination and/or co-subordination into a typological variable.² While cluster methods show that there are perhaps subordinate and coordinate prototypes, the typological variation in clause linkage swamps the simple classifications used in general linguistics. In this approach, an interesting question arises as to whether there is some “statistical order” to the patterns: there are no jointly sufficient and necessary conditions for distinguishing between coordination and subordination, but perhaps cross-linguistically and in a given language, the relevant diagnostics cluster into two groups better than would be expected if such a distinction was not relevant. The distinction between coordinate and subordinate is seen as a latent variable responsible for correlations between test results. I apply this perspective to the description and analysis of clause-linkage clauses in Chácobo.

This paper also provides the first detailed description of clause linkage in Chácobo (Pano). I show that the majority of Chácobo clause-linkage constructions (which includes all “switch-reference” clauses) are neither subordinate nor coordinate. I make this argument in the first place, by considering how Chácobo clause-linkage constructions pattern with respect to a broader typological sample, showing that they fall into neither candidate subordinate nor into candidate coordinate “prototypes”, but simply occupy a liminal middle ground (Weisser 2015; Jendraschek and Shim 2018). I also make this argument

language-internally, based on a wider variety of more fine-grained features than Bickel (2010). On language-internal grounds, the clause-linkage constructions of Chácobo do not cluster into two groups much better than chance with some differences arising depending on how the variables are aggregated. They do vary substantially from one another on language-internal grounds, but characterizing this variation in terms of coordination or subordination is misleading. I make this point with hierarchical clustering models coupled with simulation methods.

Section 2 provides language background on Chácobo. Section 3 describes the dependent clauses of Chácobo. Section 4 provides a description of the clause-linkage variables in relation to the clause-linkage constructions of Chácobo. This section contains some revisions of Bickel's criteria. Such revisions are to be expected in an autotypology approach (Bickel and Nichols 2002). Tests related to interrogative constituents need to be broken down further in Chácobo. Pano languages also display a type of "clause-skipping" in their agreement patterns that could be rallied as a diagnostic as well, since it plausibly related to Bickel's "layer of attachment". Sections 5 and 6 are concerned with assessing the degree to which a coordination–subordination distinction is motivated in Chácobo. I argue that it is not, based on two types of arguments: (i) one relying on the relative closeness of Chácobo clause-linkage strategies to candidate "prototype" subordinate and coordinate constructions; (ii) another based on whether there is evidence for language-internal clustering into two types of clause-linkage strategies. Section 7 provides some concluding remarks and discusses future research and problems with the application and comparability of some of the diagnostics.

2. Chácobo Language Background

Chácobo is a southern Pano language of the northern Bolivian Amazon. The language is spoken by approximately 1500 people. It is spoken in the town of Riberalta (Beni, Vaca Diez), and villages on or close to the Geneshuaya, Ivon, Benicito, and Yata rivers. The largest Chácobo village is Alto Ivon with about 500 inhabitants (and growing). Chácobo is still learnt as a first language by children in the villages. Typically, children who grow up in Riberalta do not learn to speak the language, perhaps acquiring a passive knowledge of it.

Chácobo has a relatively simple segmental inventory with four vowels (i, o, a, i) and 14 consonants (p, t, k, β, ts, tʃ, n, m, s, ʃ, ʂ, ʔ, h, j, w). Syllable structure is (C)V(C). All consonants can occur in the initial position, but only sibilants can occur in the coda position. In some dialects of Chácobo, the glottal fricative /h/ can occur in coda position, but the number of forms with the coda /h/ in the lexicon is relatively small.

Chácobo can be described as a tonal language in the sense that lexical items are distinguished by consistent indications of pitch (Hyman 2006).³ Lexical items in Chácobo have their syllables specified as either toneless or LH. The H has a relatively higher pitch on the syllable the LH is docked to. Throughout, I will mark a lexical LH with an acute accent. The timing of the L depends on morphosyntactic context. Within lexical items or highly frequent sequences of lexical items L is realized on the prior syllable. At less frequent junctures, the L is realized during on the syllable it is specified for. In other words, a form such as *kamáno* "jaguar" with the LH on the second syllable will be realized as [kámáno] "jaguar". A form such as *honi* "man" with the LH on the first syllable will be realized as [hǒni] with a contour tone on the first syllable. A tone reduction rule in Chácobo deletes an H if it occurs left-adjacent to a lexical LH (LHLH → LLH). The rule applies obligatorily, optionally, or not at all depending on context (Tallman 2018a; Tallman and Elías-Ulloa 2020). Chácobo also has grammatical (ergative, genitive, spatial) floating LH tones and morphemes which condition the appearance of an LH tone on an element to their left in certain circumstances. For instance, the adjectivalizer =*ʂini* has a floating LH to its left which docks to the final syllable of the element the morpheme combines with: *tsaya* "look" becomes *tsaya=ʂini* "a looker".

Section 3 below). For the purposes of this paper, I treat mixed constructions as verbal predicate constructions. The reason for this is that, in contrast to the predictions of [Salanova and Tallman \(2020\)](#), transitivity agreement between the same/different subject clauses and mixed main clauses treat such constructions as verbal predicate constructions.

Chácobo verbal predicates can be modified by many temporal, aspectual, modal, and evidential categories including “lexically heavy” categories such as associated motion. Chácobo verbal predicates are coded obligatorily for temporal distance (or “graded tense”) for which there are six overtly expressed categories: =ní “remote past”, =yamít “distant past”, =ʔitá “recent past”, =yá “recent past (perfect, mirative)”, =tsi~=tsa “immediate present/past”, =fari “tomorrow”, =sǐ “remote future ([Tallman and Stout 2016](#)). The language also has a highly elaborate associated motion (AM) system. The associated motion markers display suppletive allomorphy depending on the transitivity of the verb they combine with and the number of its S/A subject: (i) =kaná~=βoná “going”, (ii) =honá~=βiná “coming”, (iii) =kayá~=βayá “do and go”, (iv) =kiria~=βiria “do and come”, (v) =kó~=boʔó “do and go (distributed)”, (vi) =koná~=boʔoná “go, do and come”, among others ([Tallman 2020](#)). These facts should be kept in mind when discussing whether a given dependent clause is “finite” or not: it is unclear what exactly finiteness means in the context of Chácobo verb structure as it is unclear which of the aforementioned categories should be considered inflectional and which not.⁴ In this paper, I assume that the potential expression of associated motion can be considered part of the relative finiteness of a clause.

The data for this paper come from approximately 32 months of fieldwork and an annotated corpus of about 28 h, transcribed and translated in ELAN. Data from naturalistic speech are supplemented with data from elicitation. Data from elicitation come from Caco Moreno and were double-checked with Miguel Chávez. Some of the extraction data could only be verified with one speaker, however, and are thus not necessarily as reliable. Part of the corpus for these data is documented with ELAR ([Tallman 2018b](#)).

3. Dependent Clauses

All dependent clauses in Chácobo can be usefully divided into four types depending on how they constrain subject A/S coreference. **Same-subject** (glossed ss or s_A) clauses have A/S subjects which is coreferential with the S/A subject of the main clause. **Different-subject** (glosses ds/A) clauses have an S/A subject which is not coreferential with that of the matrix clause. **Noun-modifying clauses** (NMD) and **nominalized clauses** (NMLZ) are unspecified with respect to whether their subject is coreferential with that of main clauses. Note that noun-modifying and nominalized clauses can take on an adverbial function.

Same and different-subject clauses vary in terms of the temporal relation they have with the main clause (“Temporal relation” in the table below). Some dependent clauses alternatively function to modify noun phrases (“Noun-modifying”) and some can function as arguments of verbs (“Referential function”). An overview of the clause-type morphemes is provided in Table 2.

None of the clause-linkage constructions are dedicated complementation constructions insofar as complementation is defined in terms of core arguments of the main verbs. However, the agentive nominalized clause *can* take on this function: it can function as a clausal argument of the verb, even though this is not very common in natural speech ([Tallman](#)). This is important because [Bickel \(2010\)](#) claimed to only code clauses which were plausibly of an adjunct status. All clauses of Chácobo have such a status, or at least could be analyzed as such. The only caveat is that there is one clause-linkage strategy which can take on a complementation function (those clauses marked with =ʔái(na) “agentive nominalizer”).

Note that some of the markers have phonologically short and long allomorphs. The short forms appear when the dependent clause occurs before the clause-type morpheme of the main clause. The long form occurs when the dependent clause occurs after the clause-type morpheme of the main clause. For instance, the short forms of the prior same-subject markers =ʔaʂ(na)~=sǒ(na) occur when the dependent clause occurs before the clause-

type markers as in 7 and 8. Examples of the long forms are found in 35 and 36 (Section 4.1). These examples also illustrate that same subject-clauses code the transitivity of the main clause. This is called inter-clausal participant agreement in Pano linguistics (Valenzuela 2005).⁵

Table 2. Dependent clauses in Chácobo.

Form	Relation to Main Clause	Temporal Relation	Noun-Modifying	Referential Function
<i>ʔáʂ(na)</i>	same S	prior	no	no
<i>ʂó(na)</i>	same A	prior	no	no
<i>ʔi(na)</i>	same S	concurrent	no	no
<i>kí(na)</i>	same A	concurrent	no	no
<i>ʎoʂparí</i>	same A/S _{NVP}	subsequent	no	no
<i>pama(ʔáʂ)</i>	same S	interrupted event	no	no
<i>pama(ʂó)</i>	same A	interrupted event	no	no
<i>(asyndetic)</i>	same S/A	planned succession	no	no
<i>kí(no)</i>	different S/A	prior	no	no
<i>ʎo</i>	different S/A	concurrent	no	no
<i>ʎoʂparíno</i>	different S/A	subsequent	no	no
<i>ʔá(ka(to)/na)</i>	none	anterior	yes	no
<i>ʔái(ka(to)/na)</i>	none	imperfective	yes	yes (agentive)
<i>tí</i>	none	purpose	no	yes (instrumental)

7. *hawí* *poko* *pi=ʂó* *tsi* *no* *ima=ní=ki*
 3SG:GEN intestine eat=**PRIOR:SA** LNK 1PL roast-REMPST=DECL:PST
 “After eating his intestines, we roasted it.” 0027:004

8. *paʔiti* *nima=ʔáʂ* *tsi* *kiá* *áʂina=’*
 jug put=**PRIOR:SS** LNK REPORT Ashina=ERG
kí-tʂa=ní=ki
 leg-open-REMPST=DECL:PST
 “Ashina put down the jug and opened her legs (over it).” 0818:0003

Same-subject clauses can also be distinguished according to the temporal relation they code. The examples in 7 and 8 above encode that the event of the dependent clause is prior to that of the main clause. The morphemes =*ʔi(na)* and =*kí(na)* encode an event which is concurrent or subsequent to the event of the main clause. Examples are provided in 9 and 10 below.

9. *hátsi* *gokóʂa* *ʂita=kí* *tʂof-a=kí*
 then children CROSS-**CONCUR:SS** step.ON=TR-PRIOR:DS/A
tsi *rati=ʔi* *kiá* *hóni*
 LNK be.scared-C REPORT man
 “Then when the children crossed (the patio), they would step on (near his penis), and the man was scared.” 0804:0038

10. *hátsi* *kama* *síri* *hiá=roʔá*
 then jaguar old good=LIMIT
map-a *hah* *ʂari* *wíʂti*
 close-TR yes sun one
no-kí *his-má-ʔi* *kiá*
 1PL:ACC see=**CAUS-CONCUR:SS** REPORT
kamáno *nokí* *pi=kína*
 jaguar 1PL:ACC eat=**CONCUR:SA**
 “So he kept it well, yes, and after one day the jaguar visited (saw) us to eat us.”
 0181:0105

Chácobo has a highly infrequent subsequent dependent clause marked with =nošparí (there are only four examples in my corpus).

- | | | | | |
|-----|-----------------|-------------------|------------------------|---------------|
| 11. | <i>hakirikí</i> | <i>naa</i> | <i>ka=ʔita=ʔá=ka</i> | <i>βari</i> |
| | then | DEM.PROX | GO=RECPST=NMLZ:PST=REL | day |
| | <i>no</i> | <i>ho=nošparí</i> | <i>hawí</i> | <i>yonóko</i> |
| | 1pl | come=SUBSEQ:SS/A | 3SG.GEN | work |
| | <i>mi</i> | <i>a=kí</i> | <i>tsi</i> | <i>ní</i> |
| | 2sg | do=PRIOR:DS/A | LNK | INTER |
| | <i>naa</i> | <i>no</i> | <i>ho=ita=ʔána</i> | |
| | DEM.PROX | 1PL | come=RECPST=NMLZ:PST | |
- “After this, yesterday, before we came, “what work did you do before arriving?” (he said)” 1865:0060

Same-subject and different-subject clauses can occur in chains. In the following example, a concurrent same-subject clause marked with =ʔi “same-subject S/A concurrent” is embedded under a prior same-subject clause as in 12.

- | | | | | |
|-----|------------------|-------------|----------------------|----------------|
| 12. | <i>βakífmari</i> | <i>tsi</i> | <i>sani</i> | <i>a(k)=ʔi</i> |
| | morning | LNK | fish | do=CONCUR:SS |
| | <i>tsi</i> | <i>karo</i> | <i>a(k)=ʔó</i> | <i>hawiniá</i> |
| | LNK | lumber | do=PRIOR:SA | what.time |
| | <i>barí=no</i> | <i>kará</i> | <i>ho=kí=a</i> | <i>tiá</i> |
| | day=SPATIAL | EPIS | come=DECL:NONPST=1sg | EPIS |
- “After getting lumber and fishing, what time/day will I come back.” 0243:0094–0095

The relation between dependent and main clause can also be aspectual. The morpheme =pama “same-subject, interrupted” encodes that the event expressed by the dependent clause is interrupted by an event of the main clause. Examples are provided in 13 and 14 below.

- | | | | | | |
|-----|----------------------|------------|------------|-------------|-----------|
| 13. | <i>ka=páma</i> | <i>tsi</i> | <i>kiá</i> | <i>finó</i> | <i>ha</i> |
| | GO=INTRMP:SS/A | LNK | REPORT | monkey | 3sg |
| | <i>nika=ní=ki</i> | | | | |
| | hear=REMPST=DECL:PST | | | | |
- “As he was going (he stopped) and heard the monkey”
- | | | | | |
|-----|-------------------------------|---------------------------------|------------|------------|
| 14. | <i>tašaʔa(k)=βoná=pama</i> | <i>tsi</i> | <i>kiá</i> | <i>mai</i> |
| | sweep=GOING:TR/PL=INTRMP:SS/A | LNK | REPORT | earth |
| | <i>ha</i> | <i>rooʔa(k)=ní=ki</i> | | <i>ï</i> |
| | 3sg | fall.into.earth=REMPST=DECL:PST | | IDEO |
- “As she started to sweep the floor, she fell through the ground and yelled ëë” 0638:0090

Chácobo also displays asyndetic clause conjunction (called asyndetic “coordination” in Tallman (2018b)). To the best of my knowledge, such an asyndetic clause linkage construction has not been described for any other Pano languages. The construction is typically used when the conjoined events display some parallelism, or even identity as in 15, respectively.

- | | | | | | |
|----|-------------|--------------|-------------|-------------|--------------------------|
| 15 | <i>ható</i> | <i>fiina</i> | <i>βii</i> | <i>ható</i> | <i>fiina</i> |
| | 3PL:GEN | soul | bring | 3PL:GEN | soul |
| | <i>βii</i> | <i>kiá</i> | <i>yofí</i> | <i>táfi</i> | <i>i=pao=ní=ki</i> |
| | bring | REPORT | spirit | Tashi | AUX=HAB=REMPAST=DECL:pst |
- “He used to bring the spirits and brought the spirits.” 0783:0064

Asyndetic conjunction seems to be used to highlight the fast and perhaps planned succession of events acted out by the A/S participant. For instance, the following utterance comes from a story of a man who seeks to kill his in-laws by farting in their face after mixing his farts with tar—both actions (grabbing and coming) are performed purposefully and sequentially with the intent to kill via gastrointestinal gases.

16	<i>sito</i>	<i>atf-á</i>	<i>tsi</i>	<i>ho=ʔi</i>	<i>kiá</i>
	pitch	grab-TR	LNK	come=C	REPORT
	“He grabbed the tar and came (to fart in her face)” 0852:0076				

As it will become relevant for the discussions below, I point out here that asyndetic clauses are somewhat hard to elicit. One often has to start with an instance of such clauses occurring in natural speech and then modify it to obtain elicitation judgments. This is perhaps due to the fact that I do not yet fully understand the semantics and/or pragmatics of these clauses.

There are two different subject clauses. Different subject clauses marked with =*ki(no)* code that an event occurs prior to the main clause. Switch reference clauses marked with =*no* occur concurrently with the event of the main clause. Examples of the prior switch reference are provided in and 18 below.⁶

17.	<i>hakirikí</i>	<i>toa</i>	<i>ha</i>	<i>pi=kí</i>	<i>tsi</i>	<i>kiá</i>
	then	DEM.DIST	3SG	eat= PRIOR:SS/A	LNK	REPORT
	<i>ha</i>	<i>toa</i>	<i>iwati=</i>	<i>yopa=ní=ki</i>		
	3SG	DEM.DIST	gra.mo=ERGlook.for.not.find=REMPAST=DECL:PAST			
	<i>hawí</i>	<i>ʔakí</i>	<i>kamáno</i>	...	<i>toa</i>	
	3sg.GEN	child	jaguar	...	DEM.PROX	
	<i>kako=</i>		<i>pi=ʔána</i>			
	CACO=ERG		eat=NMD:PAST			
	“And after he (Caco) ate him (his father), it is said that his gran mother looked for him and didn’t find him (Caco), nor the jaguar that Caco ate.” 0032:001					
18.	<i>tíma há</i>	<i>wa=kí</i>		<i>tsi</i>		
	sound 3SG	TR=PRIOR:DS/A		LNK		
	<i>kia há</i>	<i>ráya</i>		<i>ho=ní=ki</i>		
	REPORT 3SG	parrot		COME=REMPST=DECL:PST		
	“After he (the woodpecker) had been knocking (sounding), the parrot came.” 0780:0071					

Examples of concurrent marked clauses are provided in.⁷

19.	<i>háʔi</i>	<i>tóka=ka</i>	<i>mai</i>	<i>kíni</i>	<i>oto</i>
	surely	like.SO=REL	earth	hole	cough
	<i>oto</i>	<i>há</i>	<i>wa=no</i>	<i>tsi</i>	<i>kiá</i>
	cough	3	TR=CONCUR:DS/A	LNK	REPORT
	<i>hóni</i>	<i>wítsa</i>	<i>ho=ní=ki</i>		
	man	other	come=REMPAST=DECL:pst		
	“When they were coughing from the cave like this, another man arrived.” 0008:0110				

Finally, there are dependent clauses which are not constrained with respect to whether they do or do not share an argument in common with the main clause. Clauses marked with =*ʔai(na)* can be coreferential with the object or the subject of the main clause as in 20 and 21, respectively.

20. *a=βona=ʔá=ka* *makína* *ʔfipatia=βona=ʔá=ka* *kará* *tóa*
do-GOING=NMLZ=REL machine row-GOING=NMLZ=REL DUB DEM:DIST
a(k)=pao=ní=ki *yamaβo=* *ʔápa*
kill-HAB-REMPAST=DECL:PST dead=ERG father
“While that one was rowing or going by motor (on the river), my father would kill him.” 0312:0334
21. *ʂára=ka* *ʂóβo* *náa* *paso=ní=ki* *kiá*
inside=REL house DEM:PROX be.silent=REMPAST=DECL:PST REPORT
nika=ʔáina
listen=NMLZ:AGT
“So the jaguar went silent listening to what was going on in the house” 0026:0019

There is a past tense =ʔá(*na*) which is also unspecified with respect to whether it requires coreference with the subject of the main clause. It can be coreferential with the subject as in 22, or not as in 23.

22. *ima* *ima=fina* *ha*
roast roast=AT.NIGHT 3
wa=ʔá=ka *káʂa=ki* *kiá*
TR =NMD:ANT=REL angry=DECL:PST REPORT
yóʂa
woman
“After roasting it all night, the woman was angry (it is said)” 0483:0945
23. *ha* *ho=ʔá=ka* *yoanomano*
3 come =NMD:ANT=REL for.a.long.time
ho=tikí(n) *tsáka* *=ní=ki*
come=AGAIN agouti =REMPAST=DECL:PST
“After he arrived, and then after a while, the agoutis came.” 0058:0032

Note that =ʔá(*na*) and =ʔá(*na*)-marked dependent clauses can modify noun phrases. In many cases, they are ambiguous between a noun-modifying and a predicate-modifying function (see [Guillaume 2011](#) for similar phenomena in Cavineña). This is illustrated in 24 and 25.

24. *yonoko=ʔá=ka* *hini* *yoʂa=* *á(k)=ki*
work=NMLZ=REL chicha woman=ERG make=DECL:pst
“The woman who is working made chicha.”/“While the woman was working, she made chicha.”
25. *yonoko=ʔá=ka* *hini* *yoʂa=* *á(k)=ki*
work=NMLZ=REL chicha woman=ERG make=DECL:PST
“The woman who had worked made chicha.”/“After the woman worked, she made chicha.”

There is a strong tendency for =ʔá(*na*) and =ʔá(*na*)-marked clauses to be predicates of non-verbal predicate constructions ([Tallman 2018b](#)). When such clauses do occur in non-verbal predicate constructions, they also strongly tend to occur after the subject, contradicting the general trend for non-verbal predicate constructions that follow a predicate–subject order ([Tallman 2018b](#) for details). Examples where the =ʔá(*na*) and =ʔá(*na*)-marked dependent clauses occur as predicates in non-verbal predicate constructions occur in 26 and 27.

26. *hati=ro?a=ka no?iria=bo tsi kiá ho=yo=?áina*
 all=LIMIT=REL people=PL LNK REPORT come=ALL=NMLZ
 “All the people came.”/“The people were the ones who all came.” 0014:0187
27. *wítsa tsi kiá naa aka(n)=ita=?ána*
 other LNK REPORT DEM.PROX be.killed=RECPST=NMD:pst
 “This is the other one that was killed”/“This other one was killed.”
 0056:0131

Dependent marked clauses marked with =?ái(na) can function as arguments of a verb. One could refer to such cases as headless relative clauses or simply claim that the clauses are nominalized themselves (Shibatani 2019). Examples occur in 28 and 29. Dependent clauses marked with =?ái(na) cannot function as arguments of a verb (independent of a head noun that they modify).

28. *hati=ro?a tfani=kan=?ai=βo hoi ha*
 all=LIMIT speak=PL=NMLZ=PL speech 3
bitf=?i kiá
 take=C REPORT
 “It grabs the speech, all that is spoken.” 2153:0409
29. *diezaño ha =?á=ka i-a=rí kai=kí*
 ten.year 3 =NMD:PST=REL 1SG-EPEN=AUG mother=DAT
tsi ka=kas=kí=a i kiá
 LNK GO=VOL=DECL:NONPAST=1SG say REPORT
naa riso=kan=?ái=βo ka=?ai
 DEM.PROX die-PL=NMLZ=PL/ASSOC GO=NMLZ
kia=?ái=ka=bo
 lie=NMLZ=REL=PL/ASSOC
 “When they are 20 years of age “I want to go to my mother” they say, and these that are dead go and lie.” 0783:0031

Another type of clause-linkage device is marked with =tí “purpose/instrumental nominalizer”, which codes a purpose clause. An example is provided in 30.

30. *toa to?otí siri i*
 DEM.DIST shot.gun old 1SG
bi=ní=ki naa ro?á tsi
 grab=REMPAST =DECL:pst DEM.PROX LIMIT LNK
yona=kí=a βikoβí sani a(k)=tí
 use =DECL:NONPST=1SG nail.arrow fish kill=NMLZ:PURP
 “I bought that old shot gun; I use this nail arrow to fish only.” 0903:0098

Dependent clauses marked with =tí can also function as predicates in non-verbal predicate constructions as in 27.

31. *harí náama go mí βana=ka(n)=tí*
 again already DECL 2SG:GEN harvest=PL=NMLZ:PURP
 “It is already again time for your harvest.” 2153:0848

The marker also functions as an instrumental nominalizer. By “instrumental” I mean it creates a referent: “object is used for V”. Examples where =tí-marked forms which have a referential function are provided in 32.

32. *hawí* *tí-niṣ-i=tí* *pistia* *tsi* *kiá* *ha*
 3sg:gen neck-tie-ITR=NMLZ:PURP small LNK REPORT 3
tí-niṣ=ni=ki
 neck-tie-ITR=REMPST=DECL:PST
 “He (Caco) tied his little scarf around his (the Kingfisher’s) neck.” 2119:0357

All dependent clauses in Chácobo require another clause to be present in the same sentence to occur – a clause which they are dependent to. However, this other clause needs not be a main clause, as I defined it above. Dependent clauses can be “co-dependent” with another dependent clause as in 33 and 34.

33. *ḃoti* *ha* *=wa=kí* *tsi* *naká*
 go.down 3 =TR=PRIOR:DS/A LNK chew
naká *no* *=wa=ḃána*
 chew 1PL =TR=NMD:pst
 “When she went down, we had chewed everything (the yuca).” 1156:0091

34. *ḃaḃi=’* *fita* *fita=ḃái=ka* *no*
 road=SPAT CROSS CROSS=NMLZ=REL 1PL
atf-a=ḃána
 grab-TR=NMD:PST
 “We grabbed it when it crossed the road.” 1157:0127

Based on the Chácobo data, I add “capacity to function referentially” and ability to modify nouns as another variable in the clause-linkage typology. These variables were not considered in Bickel (2010) but they are important for fully capturing variation in clause linkage, especially in a South American context (see the papers by Zariquiey et al. 2019).

4. Parameters of Typological Variation in Chácobo-Dependent Clauses

This section applies diagnostics for the coordination–subordination distinction to the clause-linkage strategies of Chácobo. Most of these properties are described in the work of Bickel (2010). Some of these properties, or typological variables, are broken down further in order to account for the observed variation found in Chácobo. For instance, whether dependent clauses can have their own interrogative constituents depends on the part of speech of the constituent clause in question. Also, finiteness is not treated as a binary variable as it is in the work of Bickel (2010). Rather, I consider every TAAMME modification for which I have data.

As noted above, some elicitation data are used to fill gaps in my corpus or to provide negative evidence where necessary. To this end, I constructed a survey of elicitation questions designed to test all the relevant variables from Bickel. The original recordings for the data from naturalistic speech and the elicitation data can be found in the work of Tallman (2018b). The parameters are summarized in Table 3 below.

Table 3 contains the variables from the work of Bickel (2010) and additional variables that I have added to this study. The new variables are marked off with “(new)” beside the name of the variables. The justification for adding such variables is provided throughout the description. I also code variables as they are found in Bickel as well, which allows me to contextualize the patterns with respect to Bickel’s data (see Section 5). Note that, ideally, I would recode all of Bickel’s data according to the new variables I have added. This would follow autotypology methodology more faithfully (Bickel and Nichols 2002). Unfortunately, I do not have the relevant data for these variables in all the languages of Bickel’s study. My goal in adding more variables is partially to provide a richer description of Chácobo, but also to encourage researchers to consider the new variables in their own descriptive studies, an issue that I return to in Section 7.

Table 3. Parameters of variation with respect to the coordination–subordination distinction.

Variable	Values
Position: The position of the dependent clause vis-à-vis the main clause with which it enters a dependency relation is	FIXED: POST-MAIN: is fixed and is always after the main clause
	FIXED: PRE-MAIN: is fixed and is always before the main clause
	FLEXIBLE-ADJACENT: can be before or after the main clause but must be adjacent to it
	FLEXIBLE-RELATIONAL: can be before or after the main clause and can be separated from the main clause by other dependent clauses (Bickel 2010, pp. 81–82)
WH: Question words and constituent focus inside dependent clauses are allowed	OK: allowed
	BANNED: not allowed (Bickel 2010, pp. 81–82)
WH-NP-EXT-MAIN (new): An NP constituent interrogative can be extracted from a main clause.	OK: Extraction of an NP constituent interrogative can always occur out of a main clause
	LOCAL: Extraction of an NP constituent interrogative can occur out of a main clause when the main clause is local.
	BANNED: Extraction of an NP constituent interrogative out of a main clause is banned
WH-NP-EXT-DEP (new): An NP constituent interrogative can be extracted from a dependent clause	OK: Extraction of an NP constituent interrogative can always occur out of a dependent clause
	LOCAL: Extraction of an NP constituent interrogative can occur out of a dependent clause when the dependent clause is local
	BANNED: Extraction of an NP constituent interrogative out of a dependent clause is banned
WH-ADV-EXT-MAIN (new): An AdvP constituent interrogative can be extracted from a main clause.	OK: Extraction of an AdvP constituent interrogative can always occur out of a main clause
	LOCAL: Extraction of an AdvP constituent interrogative can occur out of a main clause when the main clause is local
	BANNED: Extraction of an AdvP constituent interrogative out of a main clause is banned
WH-ADV-EXT-DEP (new): An AdvP constituent interrogative can be extracted from a dependent clause	OK: Extraction of an AdvP constituent interrogative can always occur out of a dependent clause.
	LOCAL: Extraction of an AdvP constituent interrogative can occur out of a dependent clause when the dependent clause is local
	BANNED: Extraction of an AdvP constituent interrogative out of a dependent clause is banned
WH-NP-ATB-EXT (new): An NP interrogative constituent can be across the board extracted	OK: ATB extraction is allowed
	BANNED: not allowed
	NOT APPLICABLE: There are no contexts that allow us to assess the claim
Extraction: Extraction of elements of dependent clauses is	OK: allowed
	BANNED: not allowed (Bickel 2010, pp. 81–82)

Table 3. Cont.

Variable	Values
Foc: Focus marking on dependent clauses is	Reformulated into focus position (Bickel 2010, pp. 81–82)
Foc-position (new): Focus or topic position in the clause	OK: available, one can show that there is a focus position in both conjuncts
	BANNED: cannot be established that there is more than one focus/topic position
Finiteness: The dependent clause is headed by a verb that is	FINITE: at least as many categories must be marked as in main clauses
	NON-FINITE: only fewer categories are allowed
	ANY: either the same range or less categories can be marked (Bickel 2010, pp. 81–82)
ILL-mark: Marking of illocutionary force operators in the dependent clause is	OK: allowed
	BANNED: not allowed
	HARMONIC: allowed but subject to constraints based on the tense or status choice in the main clause (Bickel 2010, pp. 81–82)
T-mark: Marking of tense or status operators in the dependent clause is	OK: allowed
	BANNED: not allowed
	HARMONIC: allowed but subject to constraints based on the tense or status choice in the main clause (Bickel 2010, pp. 81–82)
Finiteness: The dependent clause is headed by a verb form that is	FINITE: at least as many categories must be marked as in main clauses
	NON-FINITE: only fewer categories are allowed
	ANY: either the same range or less categories can be marked
Finiteness-multiple (new): A T(ense), A(aspect) A(ssociated) M(otion), M(odal) E(vidential) marker is	OK: allowed
	BANNED: not allowed
Layer: The dependent clause adjoins	AD-V: to the predicate and can be center-embedded
	AD-S: to the clause and cannot be center-embedded (Bickel 2010, pp. 81–82)
Center-embed-case (new): Center embedding via ergative case marking is	OK: allowed
	BANNED: not allowed
Center-embed-pa (new): Center-embedding via participant agreement is	OK: allowed
	BANNED: not allowed
T-scope: The scope of tense or status operators in the main clause is	CONJUNCT: extends to the main clause and the dependent clause
	LOCAL: is limited to the main clause
	EXTENSIBLE: extends to either the main clause alone or to both the main clause and the dependent clause, but never to the dependent clause alone. (Bickel 2010, pp. 81–82)

Table 3. Cont.

Variable	Values
ILL-scope: The scope of illocutionary operators in the main clause is	CONJUNCT: extends to the main clause and the dependent clause
	LOCAL: is limited to the main clause
	EXTENSIBLE: extends to either the main clause alone or to both the main clause and the dependent clause, but never to the dependent clause alone. (Bickel 2010, pp. 81–82)
NEG-scope (new)	CONJUNCT: extends to the main clause and the dependent clause
	LOCAL: is limited to the main clause
	EXTENSIBLE: extends to either the main clause alone or to both the main clause and the dependent clause, but never to the dependent clause alone
Referential-function (new): A referential function is	NA: not allowed
	AGENTIVE: allowed and the clause/NP has an agentive function
	INSTRUMENTAL: allowed and the clause/NP has an instrumental function
Noun-modify-function (new): A noun-modifying function is	NO: not allowed
	YES: allowed (e.g., the clause can function as a relative clause)

An obvious example of a new variable I have in light of the evidence from Chácobo comes from the variable `CENTER-EMBED:PA`. This refers to the possibility that a given dependent clause can be skipped over by a switch-reference marker. This variable may be very specific to Chácobo, or Pano languages, but its value for a given construction could be construed as evidence for subordinate or coordinate status for that construction and it good be seen as a sub-variable of Bickel’s `LAYER`. Center-embedding is plausibly more associated with subordination than with coordination. The other new variables `REFERENTIAL-FUNCTION` and `NOUN-MODIFYING-FUNCTION` are more general. They are important to add in the context of South American languages, due to the tendency for many languages in the region to have constructions which can function as either noun modifiers or adverbial clauses. Other new variables are those that refer to the possibility of constituent interrogatives to function as arguments of or modify dependent clauses. This variable relates to both `WH` and `EXTRACTION`.

4.1. Position in Relation to Main Clause

As Bickel (2010, p. 76) notes, the flexibility of the dependent clause in relation to the main clause is understood as an indicator of “subordinate” status. “Coordinate” or chained clauses are thought to occur in a more fixed order. In the generative literature, this criterion could be thought of following from the “Coordinate Structure Constraint” since it bans movement of conjuncts in coordinate structures, but not complex sentences with subordinate clauses (Ross 1967, p. 161; Weisser 2015, p. 11). All dependent clauses in Chácobo can occur on either side of the main clause except asyndetic conjunction, and the interrupted event `=pama` clauses. Thus, with respect to the position variable, only the asyndetic conjunction and `=pama` marked constructions are coordinate.

As noted above, some of the same/different subject markers display a different phonological form depending on whether they mark a clause that occurs after or before the main clause. The prior same subject clauses are realized as `=ʔáʂna` and `=ʂóna` rather than `=ʔáʂ` and `=ʂó`, respectively. Examples of the prior same-subject clauses occurring after the main clause, with their “long form” markers are provided in 35 and 36.

Table 4. The results for the POSITION variable applied to clause-linkage constructions.

Form	Gloss	Value
ʔáʂ(na)	PRIOR:SS	flexible:relational
ʂó(na)	PRIOR:SA	flexible:relational
ʔi(na)	CONCUR:SS	flexible:relational
kí(na)	CONCUR:SA	flexible:relational
ʎoʂparí	SUBSEQ:SS/A	flexible:relational
pama(ʔáʂ)	INTERRUPT:SS/A	fixed:pre-main
(asyndetic)	QUICK:SS/A	fixed:pre-main
kí(no)	PRIOR:SS/A	flexible:relational
ʎo	CONCUR:SS/A	flexible:relational
ʎoʂparíno	SUBSEQ:SS/A	flexible:relational
ʔá(ka(to)/na)	NMD:ANT	flexible:relational
ʔái(ka(to)/na)	NMLZ:AGT	flexible:relational
tí	NMLZ:PURP	flexible:relational

4.2. Illocutionary (Interrogative) Marking and Scope (ILL-Marked, ILL-Scope)

Illocutionary force can be used as a criterion to distinguish coordination from subordinate clause-linkage. Clauses are more subordinate if they are not scoped over by illocutionary force and if they do not have illocutionary marking. An intermediate case is where illocutionary force scopes over both conjuncts but they cannot be each be marked by their own illocutionary force independently as in 42, referred to as cosubordination in some of the literature (Foley and Van Valin 1984; Good 2003, inter alia). The fact that 43 is not grammatical suggests that the relevant construction is cosubordinate to these authors.

- 42. Jeff has already left for Wittenberg and should arrive there tomorrow.
- 43. *Has Jeff already left for Wittenberg and should arrive there tomorrow?

Dependent clauses in Chácobo cannot have their own illocutionary marking independent of the main clause. However, an illocutionary marker of a main clause can scope over a dependent clause. Bickel (2010) described four possibilities with respect to illocutionary scope: (i) LOCAL: the illocutionary operator scopes just over the main clause; (ii) CONJUNCT: the illocutionary operator scopes over the main and the dependent clause; (iii) EXTENSIBLE: the illocutionary operator extends over the main clause or the main clause and the dependent clause, but never just the dependent clause; (iv) DISJUNCT: the illocutionary operator extends to either the main or the dependent clause but never both.

Data from elicitation reveal that all interrogative operators are **extensible** across all dependent clauses in Chácobo except the “nominalized purpose/instrumental” clause marked by =tí and the interruptive same-subject clause marked by =páma. An illustration of the extensible character of interrogatives with dependent clauses is provided in 44. The interrogative marker scopes over just the main clause or the main clause and the dependent clause. The interpretation whereby the illocutionary operator scopes over both the dependent and main clause does not appear to be particularly common in naturalistic speech. Note that one knows that an extensible interpretation is possible nevertheless, because 45 and 46 are both permissible answers to the question in 44. From this point on, I will not include the permissible answers and assume that extensibility can be read off the alternative translations.

- 44. t/afo pi=ʔi tsi hiri=yá t/fani=kan=ʔá
pig eat=CONCUR:SS LNK Gere=COM speak-3PL=INTER:PAST
“While they were eating did they speak with Gere?”/“Were they eating pig and did they speak with Gere?”

45. *hiri=yá* *tʃani=ka(n)=yáma=ki* *hama* *tʃatfo*
 Gere=COM speak=3PL=NEG=DECL:PST but pig
pi=ká(n)=ki
 eat=3PL=REMPST=DECL:PST
 “They did not speak with Gere, but they did eat pig.”
46. *tʃatfo* *pi=ká(n)=yáma=ki* *hama* *hiri=yá*
 pig eat=3PL=REMPAST=DECL:PST but Gere=COM
tʃani=ká(n)=ki
 speak=3PL=NEG=DECL:PST
 “They did not speak with Gere, but they did eat pig.”

Extensible interpretations are also found with prior same-subject clauses and different subject clauses as in 47, 48, and 49.

47. *tʃafo* *pi=ʔáʂ* *tsi* *hiri=yá* *tʃani=kan=ʔá*
 pig eat=PRIOR:SS LNK Gere=COM speak=3PL=INTER:PST
 “Did they speak with Gere after eating pig?”/
 “Did they speak with Gere, and did they eat pig?”
48. *tʃafo* *pi=ʂó* *tsi* *hiri* *honi=βá*
 pig eat=PRIOR:SS LNK Gere man=PL:ERG
tsaya=ʔá
 see=INTER:PST
 “Did the men see Gere after eating pig?”/
 “Did they eat pig and see Gere?”
49. *honi=ʼ* *rafa=ki=roʔá* *tsi* *ina*
 man=ERG hit=PRIOR:DS/A-LIMIT LNK dog
riʂo=ʔá
 die=INTER:PST
 “Right after the man hit the dog, did it die?/Did the man hit the dog and did it die?”

The same pattern applies to all dependent clauses except the interruptive clause and the purposive clause. The purposive clause does not display extensibility with respect to interrogatives, as is shown in 50. Rather, the interrogative only scopes over the main clause and the information in the =*tí*-marked clause is presupposed. Thus, with this clause the scope property is local, rather than extensible.

50. *ʂoβo* *a(k)=tí* *karo* *kiis-a=ʔaí*
 house make=NMLZ:PURP lumber cut-TR=INTER:2SG
 “Are you gathering lumber to build a house.”
 “*Are you building a house and are you gathering lumber?”

Thus, most dependent clauses in Chácobo pattern somewhat like cosubordination in that interrogative force scopes over them. But they are not like cosubordination in that they can also have an interpretation where the illocutionary operator does not scope over them. The instrumental nominalizer and the same-subject interruptive clause behave most like a subordinate clause in this respect as they can only display local scope. For the same-subject interruptive clause, this may be somewhat problematic because it patterns more like a coordinate clause with respect to the POSITION variable.

The results for the ILL-SCOPE and ILL-MARK variables are provided in Table 5. These variables are adopted from Bickel (2010) without modification.

Table 5. The results for the ILL-SCOPE/ILL-MARK variable applied to clause-linkage constructions.

Form	Gloss	ILL-MARK	ILL-SCOPE
<i>ʔáʂ(na)</i>	PRIOR:SS	banned	extensible
<i>ʂó(na)</i>	PRIOR:SA	banned	extensible
<i>ʔi(na)</i>	CONCUR:SS	banned	extensible
<i>kí(na)</i>	CONCUR:SA	banned	extensible
<i>ʎosparí</i>	SUBSEQ:SS/A	banned	extensible
<i>pama(ʔáʂ)</i>	INTERRUPT:SS/A	banned	local
<i>(asyndetic)</i>	QUICK:SS/A	banned	extensible
<i>kí(no)</i>	PRIOR:SS/A	banned	extensible
<i>ʎo</i>	CONCUR:SS/A	banned	extensible
<i>ʎosparíno</i>	SUBSEQ:SS/A	banned	extensible
<i>ʔá(ka(to)/na)</i>	NMD:ANT	banned	extensible
<i>ʔái(ka(to)/na)</i>	NMLZ:AGT	banned	extensible
<i>tí</i>	NMLZ:PURP	banned	local

4.3. Negative Marking and Scope (NEG-Marked, NEG-Scope)

In contrast to illocutionary marking, in Chácobo, negation can be marked in all dependent clauses. Despite this difference, similar questions about illocutionary scope can also be asked of negation. In Chácobo, all dependent clauses can be marked with negation, although it is not common in naturalistic speech. Some illustrative examples are provided in 51 with the purposive clause and in 52 with a same-subject clause.

51. *tʃani=yáama=tí* *haβá=ki* *híri*
 speak=NEG-NMLZ:PURP run=DECL:PST Gere
 “Gere ran away so he wouldn’t have to speak.” PTCP OBSV

52. *moʔi=yáama=ʔi* *waaʂá=ki* *honi*
 move=NEG-CONCUR:SS paddle=DECL:NONPST man
 “He is paddling without moving.” PTCP OBSV

Whether negative marking is extensible or local depends on which dependent clause is involved. Asyndetic conjunction and all same-subject clauses are extensible with respect to negation. This means that, when the negative marker occurs in the main clause, the negation can have a strictly local interpretation (modifying the event of the main clause) or display scope over the main and the same-subject clause, as in 53 below.

53. *ʂoβo=kí* *kaʔi=ʔi* *tsi* *honi*
 house=DAT arrive=CONCUR:SS LNK man
tsaʔo=yáama=ki
 sit=NEG-DECL:PST
 “When the man arrived at this house, he didn’t sit down.”
 “The man did not arrive at his house, nor did he sit down.”

However, the interpretation of the negation modification must be local when the dependent clause is a different subject clause.

54. *ʂoβo=kí* *yoʂa* *kaʔi=kí* *tsi* *honi=’*
 house=DAT woman arrive=PRIOR:DS/A LNK man=ERG
tsaya=yáama=ki
 see=NEG-DECL:PST
 “When the woman arrived at the house, the man did not see her.”
 *”The woman did not arrive at the house and the man did not see her.”

In contrast to same/different-subject clauses, nominalized clauses marked with =*ʔáí(na)* require negation to be interpreted locally. That is, if a main clause is marked with the negative =*yáma*, the negative scopes over the main clause and not the imperfective clause, as illustrated in 55.

55. *yonoko=ʔáí=ka* *yoʒa=ʹ* *hini* *a(k)=yáma=ki*
 work=NMLZ=REL woman=ERG chicha make=NEG=DECL:PST
 “As the woman worked, she made did not make chicha.”
 “*The woman neither worked, nor made chicha.”

This is not true of the nominal-modifying clause marked with =*ʔá(na)*, as illustrated in 56 below. Clauses marked with this marker are extensible with respect to negation marking.

56. *yonoko=ʔá=ka* *yoʒa=ʹ* *hini* *a(k)=yáma=ki*
 work=NMD:ANT=REL woman=ERG chicha make=NEG=DECL:PST
 “After the woman worked, she didn’t make the chicha.”
 “The woman neither worked, nor made chicha.”

Thus, in Chácobo, all same-subject clauses display extensibility with respect to negation. This also includes asyndetic conjunction. This means that the negative marker can have a local or wide scope interpretation. However, with different subject clauses, the negation only has local scope. Finally, nominalized clauses display extensible scope. Different subject clauses would appear to be the most subordinate-like according to negative scope. Table 6 summarizes the results of applying diagnostics based on negation.

Table 6. The results for the NEG-MARKED/NEG-SCOPE variable applied to clause-linkage constructions.

Form	Gloss	NEG-MARKED	NEG-SCOPE
<i>ʔáʒ(na)</i>	PRIOR:SS	ok	extensible
<i>ʒó(na)</i>	PRIOR:SA	ok	extensible
<i>ʔi(na)</i>	CONCUR:SS	ok	extensible
<i>ki(na)</i>	CONCUR:SA	ok	extensible
<i>ʹnoʒparí</i>	SUBSEQ:SS/A	ok	extensible
<i>pama(ʔáʒ)</i>	INTERRUPT:SS/A	ok	local
<i>(asyndetic)</i>	QUICK:SS/A	ok	extensible
<i>ki(no)</i>	PRIOR:SS/A	ok	local
<i>ʹno</i>	CONCUR:SS/A	ok	local
<i>ʹnoʒparíno</i>	SUBSEQ:SS/A	ok	local
<i>ʔá(ka(to)/na)</i>	NMD:ANT	ok	extensible
<i>ʔáí(ka(to)/na)</i>	NMLZ:AGT	ok	local
<i>tí</i>	NMLZ:PURP	ok	local

4.4. Constituent Interrogatives (WH)

One of the criteria Bickel (2010) uses is whether a dependent clause can host a constituent interrogative. In Chácobo, research thus far suggests that all constituent interrogatives are fronted.⁸ Furthermore, one cannot have a sentence with two constituent interrogatives of the same type even when one could, in principle, be licensed by a dependent clause. This is illustrated with the ungrammatical sentences in 57 and 58. The ability for another interrogative constituent to occur when one of the dependent clauses is present has been tested with all the dependent clauses.

57. **tsowi* *tsowi* *tsaya* *awini=’* *=wa=ki’*
 who **who** see woman=ERG -TR=PRIOR:DS/A
 tsi *tafi=’* *raaʔak* *=ʔá*
 LINK Tashi=ERG scold =INTER:PST
 Intended: “Who did the woman see and (after) who did Tashi scold?”
58. **tsowi* *awini=’* *tsaya* *wa=ki’* *tsi*
 who woman=ERG see TR=PRIOR:DS/A LNK
 tsowi *tafi=’* *raaʔak=ʔá*
 who Tashi=ERG scold=INTER:PST
 Intended: “Who did the woman see and (after) who did Tashi scold?”

4.5. Information Structure Positions and Markers (FOC)

Bickel (2010) describes having a focus position and being able to have a focus marker as potentially independent variable. However, testing for “focus” as a typologically consistent variable is made difficult by the fact that there is no cross-linguistically agreed-upon definition of focus: that is, the notions “focus” and “topic” can be similarly broken down into a number of distinct senses, uses, or “variables” (Ozerov 2018, 2021).

It is outside the scope of this paper to attempt to integrate a typology of information structure categories into clause-linkage typology. Instead, I will refer to a variable that refers to positions that have information structural definitions. The clause-initial position in Chácobo has a number of functions. It is used for contrastive focus and in answer to questions for NPs, but is also associated with givenness, especially with verbs (Tallman 2018a). In Chácobo, this position is marked off by having the Wackernagel-like morpheme *tsi* occur before it, referred to as “position 5 morph” in Tallman (2018a) and glossed as “linker” here (for more examples, see Tallman (2018a)).

A contrastive focus-like function of this initial, prior to *tsi*, position is provided in 59. The noun phrase *hawí roʔá* “his large vulture” is in a position before *tsi* and has a contrastive focus function in the following example.

59. *hawí* *roʔá* *tsi* *kiá* *kaʔi=ʂini*
 3SG:GEN large.vulture LNK REPORT know=v>ADJLZ
 hama *kiá* *hawí* *siyaʔi* ...
 but REPORT 3SG:GEN Siyabi ...
 hawí *roʔá* *tsi* *kiá*
 3SG:GEN large.vulture LNK REPORT
 ʔoti=ní=ki
 descend=REMPST=DECL:PST
 “His (Mabocorihua’s) large vulture knew, but not his siyabi... then it was his large vulture that descended.” 00063:0155–0157

The question which is relevant for clause-linkage typology is whether this focus/topic position can be projected in dependent clauses. That is, can dependent clauses have a “first position” before *tsi* independent from the main clause? Chácobo-dependent clauses appear to be able to contain this pre-*tsi* first position Evidence for this is that *tsi* can occur more than when in clause-linkage constructions with same-subject clauses as in (60), (61), and (62).

60. *hama* *kako=’* *tsi* *kiá* *toa*
 but Caco=ERG LNK REPORT DEM:DIST
 kamano=’ *ʔíro* *moto* *toka=ta(n)=ʂó*
 jaguar=GEN eye chive do.SO=GO&DO-PRIOR:SA
 tsi *kamano=’* *ʔíro* *hana=ki*
 LNK jaguar=GEN eye mouth=DAT
 toa=ní=ki
 explode=REMPST=DECL:PST
 “But when Caco did so with the jaguar’s eye and chive, the jaguar’s eye exploded in his mouth.” 0181:0164

61.	<i>goβo</i> house	<i>ak=(?)á</i> do=PRIOR:SS	<i>tsi</i> LNK	<i>tana</i> distance	
	<i>raka-na=tan=i</i> stay-INTRC=GO&DO=CONCUR:SS		<i>ható</i> 3PL:GEN	<i>iwatí</i> gra.mo	<i>βi=mitsa</i> recieve=PSBL
	<i>natani=βayá</i> pass.by=DO&GO:TR/PL		<i>tsi</i> LNK	<i>goβo</i> house	<i>a(k)=βayá</i> do=DO&GO:TR/PL
	<i>tsi</i> LNK	<i>goβo</i> house	<i>a(k)=βayá</i> do=DO&GO:TR/PL		<i>tsi</i> LNK
	<i>kiá</i> REPORT	<i>ha</i> 3	<i>βo=kan=ní=ki</i> go=PL-REMPST=DECL:PST		

“When they made the house, they stayed there for just one week and then right after their grandmother could have recieved them, they passed by, they made the house, and they left.” 0181:0220

62.	<i>tana</i> distance	<i>tsi</i> LNK	<i>hoi-ko</i> get.up-DISTR		<i>=pama</i> =INTRMP:SS/A
	<i>tsi</i> LNK	<i>kiá</i> REPORT	<i>yáma</i> NEG	<i>tsi</i> LNK	<i>go</i> DECL

“After he got up “there is nothing” (he said)” 0181:0090

Different subject clauses can also contain the marker *tsi* in them as in 63.

63.	<i>ha</i> 3SG	<i>ak=(?)á=ka</i> do=NMD:ANT=REL		<i>wiakí</i> after.day	<i>tsi</i> LNK
	<i>híni</i> chicha	<i>no</i> 1PL	<i>ak=(?)á=ka</i> do=NMD:ANT=REL		<i>toʔo-ko</i> stir-DISTR
	<i>ha</i> 3	<i>=kí</i> =PRIOR:DS/A	<i>tsi</i> LNK	<i>wiakí</i> after.day	<i>wai=kí</i> garden=DAT
	<i>ká=ki</i> go=DECL:NONPST		<i>noa</i> 1PL	<i>toka</i> do.so	<i>tsi</i> LNK
	<i>ha=βita</i> 3-COM	<i>ká=ʔi</i> go=CONCUR:S	<i>i</i> 1SG	<i>i=pao=ní=ki</i> do =HAB=REMPST=DECL:PST	

“When she did it, the day after we made the chicha, after she stirred it, the day after we go to the garden with her.” 1840:0041

The initial position is also present in nominalized clauses marked with *=ʔái(na)*, as in 64.

64.	<i>toa</i> DEM:DIST	<i>i</i> 1SG	<i>haβi=ʔái=ka</i> learn=NMLZ=REL	<i>tsi</i> LNK	<i>piʔa</i> little
	<i>i</i> 1SG	<i>ina=kana=ʔái</i> ascend=GOING:ITR=NMLZ		<i>tsi</i> LNK	<i>go</i> DECL
	<i>toa</i> DEM:DIST	<i>haʔiki ...</i> then ...		<i>noʔó</i> 1SG:GEN	<i>naama</i> dream
	<i>tsi</i> LNK	<i>go</i> DECL	<i>toa</i> DEM:DIST	<i>toa</i> DEM:DIST	<i>haska</i> same

=kato
=REL

“When I was learning, I got better and better, then something like my dream will be.” 1840:0133

The nominal-modifying clause marked with *=ʔái(na)* and the purpose-nominalized clause marked with *=ti* do not appear with *tsi* in them. Based on this, I assume that the first position is not available to these clauses.

The results of the informational structural variable are reported in Table 7. The results may not be comparable to the data in the work of Bickel (2010). However, this is because the concept of FOCUS is not comparable. Thus, I have replaced the variable with something

which is marked in Chácobo grammar which I consider to be relevant to the coordination–subordination distinction.

Table 7. The results for the FOCUS/TOPIC POSITION variable applied to clause-linkage constructions.

Form	Gloss	Value
ʔáʂ(na)	PRIOR:SS	ok
ʂó(na)	PRIOR:SA	ok
ʔi(na)	CONCUR:SS	ok
kí(na)	CONCUR:SA	ok
ʎoʂparí	SUBSEQ:SS/A	ok
pama(ʔáʂ)	INTERRUPT:SS/A	ok
(asyndetic)	QUICK:SS/A	banned
kí(no)	PRIOR:SS/A	ok
ʎo	CONCUR:SS/A	ok
ʎoʂparíno	SUBSEQ:SS/A	ok
ʔá(ka(to)/na)	NMD:ANT	ok
ʔái(ka(to)/na)	NMLZ:AGT	ok
tí	NMLZ:PURP	banned

4.6. Asymmetric Extraction of NP Constituent Interrogatives (WH-NP-EXT)

Extraction may be considered a classical test for distinguishing between coordination and subordination. In coordinate clauses, no elements from either of the conjuncts can be extracted asymmetrically (from one conjunct and not the other) (Ross 1967; Levine 2009; Weisser 2015; Bošković 2020), while “across-the-board” extraction is indicative of coordinative status.⁹ One of the ways this diagnostic has been used is with the extraction of interrogative constituents. To simplify matters, I will only refer to the extraction of interrogative constituents. Future research will be concerned with assessing extraction in other types of contexts (e.g., right dislocation, adverb extraction).

The issue of extraction presented in Bickel (2010) is simplified compared to the number of variables and values relevant for capturing potential cross-linguistic variation. Bickel (2010) only has a single binary-variable EXTRACTION. However, a distinction needs to be made between the (i) type of element being abstracted, as noted above; (ii) the status of the clause of the extraction site (main or dependent); (iii) whether the extraction site is local to the landing site.

In order to bring some order to these possibilities, I first make a distinction between noun phrase and adverbial phrase extraction (WH-NP vs. WH-Adv), with the latter being discussed in Section 4.7. Then, these variables are split up further according to whether we are dealing with extraction from the marked-dependent clause or the main clause (WH-NP-MAIN vs. WH-NP-DEP; WH-Adv-MAIN vs. WH-Adv-DEP). Finally, each of these variables can take three values: (i) OK: extraction of the NP/AdvP interrogative constituent is always allowed; (ii) LOCAL: extraction of the NP/AdvP interrogative constituent is only allowed when the extraction site and the landing site are not interrupted from each other by more than one clause boundary (see Section 4 above for a similar formulation); (iii) BANNED: Extraction of the NP/AdvP interrogative constituent is not allowed. Cases where extraction can occur *only* non-locally do not occur and thus this is not specified as one the potential values.

There are additional caveats and complications involved in interpreting asymmetric extraction of NP constituents in Chácobo. These are discussed in Appendix A (Appendix A.1).

Non-locally, NP constituent interrogatives cannot be extracted from a same-subject clause. If the same subject clause is on the right-side of the main clause, then the fronting cannot occur as illustrated by the ungrammaticality of the following examples.

65. **hawi_i* *kako=’* *oša=ʔá* _i *kopi=ʔášna*
 what_i Caco=ERG sleep=INTER:PST _i buy=PRIOR:SA
 “What did Caco buy and then slept?”
66. **hawi_i* *kako* *oša=ʔá* _i *finá=ʔina*
 what_i Caco buy=INTER:PAST _i think=CONCUR:SS
 “What did Caco think about when he slept?”

Extraction of constituent NPs from main clauses is permitted whether such extraction is non-local or not in a same-subject construction. This is illustrated in 67 and 68.

67. *hawi_i* *hawi* *šoβo* =*ki* *ho =šó* *kako=’*
 what_i 3SG:GEN house =DAT arrive=PRIOR:SA Caco=ERG
 _i *kopi=ʔá*
 _i buy=INTER:PST
 “What did Caco think about when he slept?”
68. *hawi* *tsi* *aʃi=ki* *βoka=’* _i *kopi=ʔá*
 what LNK bathe=CONCUR:SA Boca=ERG _i buy=INTER:PST
 “What while/before bathing did Boca buy?”

For =*páma* “interruptive”-marked clauses, non-local extraction out of its main clause is not allowed, however, as illustrated by the ungrammaticality of the example below.

69. **hawi_i* *ka=pama* *tsi* *kiá* *ha* _i *nika=ʔá*
 what_i go=INTRMP:S/A LNK REPORT 3 _i listen=INTER:PST
 Intended: “What while going did he hear?”

Asyndetic same-subject clauses can display asymmetric extraction as in 70.

70. *tsowi_i* _i *atf-a* *hawi* *taʔi* *niš-a*
 who_i _i grab-TR 3SG:GEN foot tie-TR
 honi=’ =*wa* =*ʔá*
 man=ERG =TR =INTER:PST
 Intended: “Who did the man grab and grab his foot?”

Note that asyndetic same-subject clauses display a fixed position (Section 4.1), which suggests that they are coordination constructions. However, they also allow for asymmetric extraction, as in the example above. A researcher who is dedicated to the coordination-subordination distinction will have to discard the position diagnostic *just so* and claim that the clause is fact subordination, or state that this construction violates the coordinate-structure-constraint (Hofmeister and Sag 2010 for relevant discussion).

Different-subject clause constructions marked with =*ki* “prior” or =*no* “concurrent” appear to be more permissive with the extraction of noun phrase constituents. As with =*ʔáš(na)~=šó(na)* and =*ʔi(na)~=ki(na)* same-subject clauses, non-local extraction is permitted out of a main clause. In contrast to same-subject clauses, they appear to allow for non-local extraction from a dependent clause.

71. *hawi_i* *kará* *ka* *honi=’* *kamá* *tʃoif-á=ki* *tsi*
 what_i EPIS REL man=ERG jaguar shoot.at-TR=PRIOR:DS/A LNK
 _i *haβá=ʔá*
 _i run=INTER:PST
 “What ever did Caco think about when he slept?”

72. *haw_i* *hawí* *βakí* *pistia* *haβa=ɔá* *honí* *___i*
 what_i 3SG:GEN child small run=INTER:PST man=ERG *___i*
tʃoif-a=kína
 shoot.at-TR-PRIOR:D/SA
 “What did Caco shoot and then its child escaped?”

Nominalized and noun-modifying clause constructions likewise both allow for extraction either locally or non-locally (Note, however, there is a problem in interpretation of this example related to the potential presence of a null resumptive pronoun, see Appendix A.1).

73. *hawí* *kará* *ka_i* *tsi* *yošá* *hawí*
 what DUB REL_i LNK woman=ERG 3SG:GEN
haʔini *=yá* *tʃani=ɔá* *___i* *a(k)=áina*
 girl =COM speak=INTER:PST *___i* make=NMLZ
 “What ever was she making while she talked to her daughter?”
 (“What_i was the woman who making it_i talked to her daughter?”)

Nominalizing purpose/instrumental clauses, however, cannot have NP-constituent interrogatives extracted out of them. For instance, the following is not grammatical in Chácobo according to the speakers I asked:

74. *??haw_i* *riberalta=kí* *ha* *ka=ɔá* *___i* *kopi=tí*
 ??what_i Riberalta=DAT 3SG go=INTER:PST *___i* buy=NMLZ:PURP
 “What did he go to Riberalta to buy?”

The full results of applying asymmetric extraction to each of the clause-linkage constructions are summarized in Table 8.

Table 8. The results for the NP-WH-EXTRACTION-(FROM)MAIN/(FROM)DEPENDENT variable applied to clause-linkage constructions.

Form	Gloss	FROM MAIN CLAUSE	FROM DEPENDENT CLAUSE
<i>ɔás(na)</i>	PRIOR:SS	ok	local-only
<i>šó(na)</i>	PRIOR:SA	ok	local-only
<i>ʔi(na)</i>	CONCUR:SS	ok	local-only
<i>kí(na)</i>	CONCUR:SA	ok	local-only
<i>ʔnošparí</i>	SUBSEQ:SS/A	ok	local-only
<i>pama(ɔás)</i>	INTERRUPT:SS/A	banned	local-only
<i>(asyndetic)</i>	QUICK:SS/A	banned	banned
<i>kí(no)</i>	PRIOR:SS/A	ok	ok
<i>ʔno</i>	CONCUR:SS/A	ok	ok
<i>ʔnošparíno</i>	SUBSEQ:SS/A	ok	ok
<i>ɔá(ka(to)/na)</i>	NMD:ANT	ok	ok
<i>ɔái(ka(to)/na)</i>	NMLZ:AGT	ok	ok
<i>tí</i>	NMLZ:PURP	ok	ok

4.7. Asymmetric Extraction of AdvP Constituent Interrogatives (WH-ADV-EXT)

In same-subject clause constructions, adverbial constituent interrogatives can be asymmetrically extracted from same-subject and main clauses in local and non-local contexts. One can see that, when the main clause is final, a fronted adverbial constituent can modify either a local same-subject clause or the main clause. Interpreted in terms of extraction, the interrogative constituent can be extracted from the same-subject clause or the main clause as in 75 and 76.

75. *hawinia_i hini ak=(?)aš* _i *kako tsaʔo=ʔá*
 where_i chicha drink=PRIOR:SS _i Caco sit=INTER:PST
 “Where, after he drank chicha, did Caco sit?”
76. *hawinia_i _i hini ak=(?)aš* *kako tsaʔo=ʔá*
 where_i _i chicha drink=PRIOR:SS Caco sit=INTER:PST
 “Where did Caco drink chicha and then sit?”

The adverbial interrogative constituent can be extracted from a local main clause as in 77 or a non-local same-subject clause as in 78.

77. *hawinia_i kako tsaʔo=ʔá* _i *hini ak=(?)ašna*
 where_i Caco sit=INTER:PST _i chicha drink=PRIOR:SS
 “Where did Caco drink and then sit?”
78. *hawinia_i _i kako tsaʔo=ʔá hini ak=(?)ašna*
 where_i _i Caco sit=INTER:PST chicha drink=PRIOR:SS
 “Where did Caco drink before he sat?”

There appear to be no constraints on the extraction of adverbial constituents from prior and concurrent same-subject clauses.

Same-subject clauses marked with the interruptive =*pama* ban non-local extraction, even of adverbial constituents. The basic facts are illustrated in 79 and 80.

79. *hawisoβa_i _i hini a(k)=pama tsi finó*
 with.what_i _i chicha do=INTRMP:SS/A LNK monkey
ha nika =ʔá
 3SG listen =INTER:PST
 “With what was he drinking chicha, when he heard the monkey?”
80. **hawisoβa_i hini a(k)=pama tsi _i finó*
 with.what_i water do=INTRMP:SS/A LNK _i monkey
ha nika =ʔá
 3SG listen =INTER:PST
 “With what, while he was drinking chicha, did he hear the money?”

Different-subject constructions marked with =*kí(na)* “prior different A/S” or = “no concurrent different A/S” allow for all types of adverbial extraction. An example of local extraction of an adverbial constituent interrogative is provided in 81. An example of non-local extraction of an adverbial constituent interrogative from a different subject clause is provided in 82.

81. *hini=só_i _i hawí βakí pistia haβa*
 how=SA_i _i 3SG:GEN child small run
 =*ki* *honi=’* *kamá t/oiʔ-a =kína*
 =DECL:PST man=ERG jaguar shoot-TR =PRIOR:DS/A
 “Why did his_j child escape when the man shot the jaguar_j?”
82. *hini=só_i hawí βakí pistia haβa =ki*
 how=SA_i 3SG:GEN child small run =DECL:PST
 _i *honi=’* *kamá t/oiʔ-a =kína*
 _i man=ERG jaguar shoot-TR =PRIOR:DS/A
 “Why, when his_j child escape, did the man shoot the jaguar_j?”

For clause-linkage with nominalized clauses, all extraction possibilities are available when the extracted constituent interrogative is an adverbial clause. This is illustrated in 83 through 86.

83. *hawĩnia_i* _{*i*} *hini* *ak* =(?)*ái=ka*
 where_{*i*} _{*i*} chicha make =NMLZ =REL
yoʒa= *hawí* *haʒíni* =*yá* *tʃani=ʒá*
 woman=ERG 3SG:GEN girl =COMIT speak=INTER:PST
 “Where was she making chicha when the woman spoke to her daughter?”
84. *hawĩnia_i* *hini* *ak* =(?)*ái=ka* _{*i*}
 where_{*i*} chicha make =NMLZ =REL _{*i*}
yoʒa= *hawí* *haʒíni* =*yá* *tʃani=ʒá*
 woman=ERG 3SG:GEN girl =COMIT speak=INTER:PST
 “Where, when she was making chicha, did the woman speak to her daughter?”
85. *hini=ʒó_i* _{*i*} *yoʒa=* *hawí* *haʒíni* =*yá*
 why=PA_{*i*} _{*i*} woman=ERG 3SG:GEN girl =COMIT
tʃani =*kí* *hini* *ak* =*ʒáina*
 speak =DECL:PST chicha make =NMLZ
 “Why did the woman speak with her daughter while she made chicha.”
86. *hini=ʒó_i* *yoʒa=* *hawí* *haʒíni* =*yá* *tʃani*
 why=PA_{*i*} woman=ERG 3SG:GEN girl =COMIT speak
 =*ki* _{*i*} *hini* *ak* =*ʒáina*
 =DECL:PST _{*i*} chicha make =NMLZ
 “Why, while the woman spoke with her daughter, was she making chicha?”

As far as I have been able to discern, one cannot extract adverbial constituent interrogatives from purpose clauses. Evidence for this is provided in 87 and 88.

87. *hini=ʒó* *pila* *kopi* =*tí* *yonoko* =*ʒá*
 why battery buy =NMLZ:PURP work =INTER:PST
 “Why did s/he work to buy batteries?” “Why after working did/she buy batteries?”
88. *hini=ʒó* *yonoko* =*ʒá* *pila* *kopi* =*tí*
 why battery =INTER:PST battery buy =NMLZ:PURP
 “Why did s/he work” to buy batteries?”
 ??”Why after working did/she buy batteries?”

The values of the adverbial constituent interrogative extraction variable are summarized in Table 9.

Table 9. The results for the ADV-WH-EXTRACTION-(FROM)MAIN/(FROM)DEPENDENT variable applied to clause-linkage constructions.

Form	Gloss	FROM MAIN CLAUSE	FROM DEPENDENT CLAUSE
<i>ʒáʒ(na)</i>	PRIOR:SS	ok	ok
<i>ʒó(na)</i>	PRIOR:SA	ok	ok
<i>ʒi(na)</i>	CONCUR:SS	ok	ok
<i>kí(na)</i>	CONCUR:SA	ok	ok
<i>ʒoʒparí</i>	SUBSEQ:SS/A	ok	ok
<i>pama(ʒáʒ)</i>	INTERRUPT:SS/A	banned	local-only
<i>(asyndetic)</i>	QUICK:SS/A	ok	ok
<i>kí(no)</i>	PRIOR:SS/A	ok	ok
<i>ʒno</i>	CONCUR:SS/A	ok	ok
<i>ʒoʒparíno</i>	SUBSEQ:SS/A	ok	ok
<i>ʒá(ka(to)/na)</i>	NMD:ANT	ok	ok
<i>ʒái(ka(to)/na)</i>	NMLZ:AGT	ok	ok
<i>tí</i>	NMLZ:PURP	ok	banned

As stated above, the EXTRACTION variable of Bickel only codes whether any extraction can occur out of a dependent clause, as I understand him. However, the literature reports differences in extraction from main or dependent clauses and differences in the extraction of core and adverbial arguments (Hofmeister and Sag 2010, inter alia), and in Chácobo there appears to be a difference. I, therefore, suggest that the variable may be worth expanding on in this paper.

4.8. Center-Embedding via Ergative Case Marking (Layer of Attachment)

Bickel (2010) describes a variable that he calls “layer of attachment”, making a distinction between clauses that adjoin to the predicate (ad-V), clauses that adjoin to the sentence (ad-S and clauses that adjoin to “some higher level and appear “detached” from the main clauses...” (Bickel 2010, p. 77)).

The main criterion for distinguishing between ad-V and ad-S is whether a dependent clause can appear center-embedded vis-à-vis a main verb. In Chácobo, ergative marking cannot skip over a dependent clause. An ergative case must be assigned locally. This is shown in 89 and 90.

- | | | | | | |
|---|--|-------------------------------------|--------------------------------|-------------|-----------------|
| 89. | yonoko
work
taji=
Tashi=ERG | =só
=PRIOR:SA
wa
TR | tsi
LNK
=ki
=DECL:pst | ano
paca | tipas
murder |
| “After working, Tashi killed the paca.” | | | | | |
| | | | | | |
| 90. | *taji =
Tashi =ERG
tipas
murder | yonoko
work
=ki
=DECL:PAST | =só
=PRIOR:SA | tsi
LNK | ano
paca |
| “After working, Tashi killed the paca.” | | | | | |

I have no obvious cases wherein case marking from the main clause skips over a dependent clause. On this basis, all dependent clauses are classified as Ad-S. The problem with such a classification, however, is that, if we look at participant agreement, we arrive at the opposite result.

4.9. Center-Embedding via Participant Agreement

A clause which could be argued to be center-embedded could be argued to be subordinate. In Chácobo, there is a type of center-embedding that can occur when there are adjacent same-subject clauses. An example is provided in 91. In this example, tsaʔo=só could be argued to be center-embedded because the participant agreement marking of the previous clause skips over it and agrees with the transitivity of the main clause. In elicitation contexts, speakers find cases with no such agreement skipping preferable, as in 92.

- | | | | | | |
|---|-----------------------------|--------------------------|------------|------------------|---------------------------|
| 91. | ?kaʔi=só
arrive=PRIOR:SA | tsaʔo=só
sit=PRIOR:SA | tsi
LNK | honi=
man=ERG | tsáya=ki
see=DECL:PST |
| “The man arrived and then sat down and looked at them.” | | | | | |
| | | | | | |
| 92. | kaʔi=ʔás
arrive=PRIOR:SS | tsaʔo=só
sit=PRIOR:SA | tsi
LNK | honi=
man=ERG | tsáya =ki
see=DECL:PST |
| “The man arrived and then sat down and looked at them.” | | | | | |

In Chácobo, the most common pattern is for a same-subject clause to agree with the clause directly to its right (or left for those clauses which occur after the clause-type morpheme of the main clause), regardless of whether this clause is dependent or not. Examples are provided in 93 and 94 below.

98. *wiakí* *iari* *paşna-ria=şó* *şoşo*
 tomorrow 1SG-TOO be.hungry-AUG =PRIOR:SA house
tsaʔo *tsaʔo=βaʔina=ʔána* *iari* *wiakí*
 sit sit=ALLDAY=NMD:ANT 1SG-AUG tomorrow
tana=i *ka=fari=ki=a*
 fish=CONCUR:S go=CRAS-RECL:NONPAST =1SG
 “Tomorrow, after being hungry, and sitting around all day at home, I will go
 fishing.” 1154:0054

The nominalizer *ʔái(na)* can also be skipped over in a similar way as in the example 99 below.

99. *tfof-a=ta=şó* *yoşa* *ho=ʔái=ka*
 kill-TR-PNCT=PRIOR:SA woman arrive=NMLZ=REL
biroa *kaiti* *bibikima=ní=ki*
 cutuchi door hang.up=REMPAST=DECL:PST
 “After she killed the snake, she hung it in the front of the house, where
 the woman was coming.” 0029:0028

In elicitation, I was able to collect center-embedding via participant agreement for all of the clause-linkage strategies. Bickel (2010) did not include center-embedding via participant agreement as a variable.

4.10. Finiteness Marking and TAAME Marking

Finiteness can be defined in a graded manner (Givón 2001; Cristofaro 2005; Adger 2007). Givón (2001), for example, considers finiteness to be a scale. That is, a given clause can be more or less finite depending on how many categories expressible in the main clause can be marked in it. Below, I provide a review of fourteen verbal categories (T(ense)-A(spect)-A(ssociation)-M(otion)-M(odality)-E(videntiality)) for which I have enough data. I consider whether they can be marked in dependent clauses. The relevant examples and data are provided in Appendix A. Here, I present only an overview.

The following morphemes/categories are banned from all dependent clauses: =*yá* “mirative perfect”; =*tikín* “again”; *pistia* “a little”; *kará* “dubitative”; *ní* “remote past”; *kiá* “reportative”. The following morphemes/categories are permitted in all dependent clauses; =*yó* “completive”; =*finá* “at night”; =*βiki* “interactional”; =*tikín* “again”; =*wistí* “once”; =*raβí* “a few times”; =*winí* “before someone”. In addition, all associated motion markers appear to be permitted in dependent clauses.

Other morphemes/categories vary in terms of whether they can occur in dependent clauses. Table 10 summarizes what morphemes can occur in what dependent clauses.

Table 10. Morphemes/categories across different dependent clauses.

	prior:ss	prior:sa	concur:ss	concur:sa	subseq:ss/a	interrupt:ss/a	quick:ss/a	prior:ds/a	concur:ds/a	subseq:ds/a	nmlz:agt	nmd	nmlz:purp
HABITUAL	✓	✓	✗	✗	✗	✓	✓	✓	✗	✗	✓	✗	✗
ALLDAY	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✗
PUNCTUAL	✗	✗	✗	✗	✗	✗	✓	✗	✗	✗	✓	✓	✓
GO&DO	✓	✓	✓	✓	✓	✓	✗	✓	✓	✗	✓	✓	✗
TOMORROW	✗	✗	✓	✓	✓	✓	✗	✗	✓	✓	✓	✓	✗
RECPAST	✓	✓	✗	✗	✗	✗	✗	✓	✗	✗	✗	✓	✗
DISTPAST	✓	✓	✗	✗	✗	✗	✗	✓	✗	✗	✗	✓	✗

Table 10. Cont.

	prior:ss	prior:sa	concur:ss	concur:sa	subseq:ss/a	interrupt:ss/a	quick:ss/a	prior:ds/a	concur:ds/a	subseq:ds/a	nmlz:agt	nmd	nmlz:purp
REMFUT	✗	✗	✓	✓	✗	✗	✗	✗	✗	✗	✓	✗	✗
CNTRFCT	✓	✓	✓	✓	✓	✓	✗	✓	✓	✓	✓	✓	✗
ABIL	✓	✓	✓	✓	✓	✓	✗	✓	✓	✓	✓	✓	✗
LIMIT	✗	✗	✗	✗	✗	✗	✓	✓	✓	✓	✓	✓	✓
DISTAL	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✗	✓	✓
ANXIETY	✓	✓	✓	✓	✓	✗	✓	✓	✓	✓	✓	✓	✓
VOLITIVE	✗	✗	✓	✓	✓	✓	✓	✗	✓	✓	✓	✓	✗

Note that the table above refers to what morphemes speakers accept in dependent clauses, not necessarily what appears in natural speech. If one follows Bickel’s (2010) variable of finiteness, all dependent clauses in Chácobo are finite. However, one could consider finiteness to be a matter of degree relating to what categories can be expressed in the relevant dependent clauses. If one uses this notion, dependent clauses may vary in terms of how finite they are. The nominalized purpose clause would appear to be the least finite. Most other clauses are roughly the same, however.

5. Discussion I: Cross-Linguistic Assessment

In this section, I will briefly assess whether and how clause-linkage strategies in Chácobo pattern with embeddedness (coordination vs. subordination) from a cross-linguistic perspective. In order to do this, I leverage the data in the work of Bickel (2010) adding the Chácobo clause-linkage data.

A NeighborNet (see Bryant and Moulton 2004) was run with Bickel’s (2010) data combined with the Chácobo clause-linkage data. A graph similar to the one found in Bickel’s work (2010) is presented in Figure 1 below. This was constructed with the data available in the Supplementary Materials (Tallman 2024). The data for the cross-linguistic assessment do not contain any of the new variables that I introduced throughout this study, because these have not been coded with the languages of Bickel’s study. The following variables are therefore excluded: center-embedding via participant agreement; across-the-board extraction; asymmetric extraction of AdvP constituents; asymmetric extraction of NP constituents; and all the individual variables related to marking of specific morphemes. Extraction variables are all lumped into one variable EXTRACTION and the marking of functional categories is replaced with the variable FINITENESS. Ideally, we would apply the new variables across all the other languages (Bickel and Nichols 2002), but this is outside the scope of this paper.

For the cross-linguistic data, a dissimilarity matrix was developed using the statistical software R (R Core Team 2014). I use Gower’s distance to calculate the dissimilarity matrix. Gower’s distance is a metric for computing the overall dissimilarity between two elements when the variables are of different types (see Gower 1971 for the mathematical details). It can also be used when the variables are categorical. A dissimilarity matrix is a matrix that gives measurements of distance between each of the datapoints in a data frame. The values are between 0 and 1, where 0 means that the clause-linkage constructions are identical with respect to the variables and 1 means that the clause-linkage constructions are as different as possible with respect to the variables. For instance, Chácobo’s concurrent same-subject clause linkage construction has a distance of 0.36 from English’s *to -ing* participle construction, but a distance of 0.73 from English’s *and* conjunction. This translates to

the concurrent same-subject clause being more similar to the participle construction than to and conjunction in English.

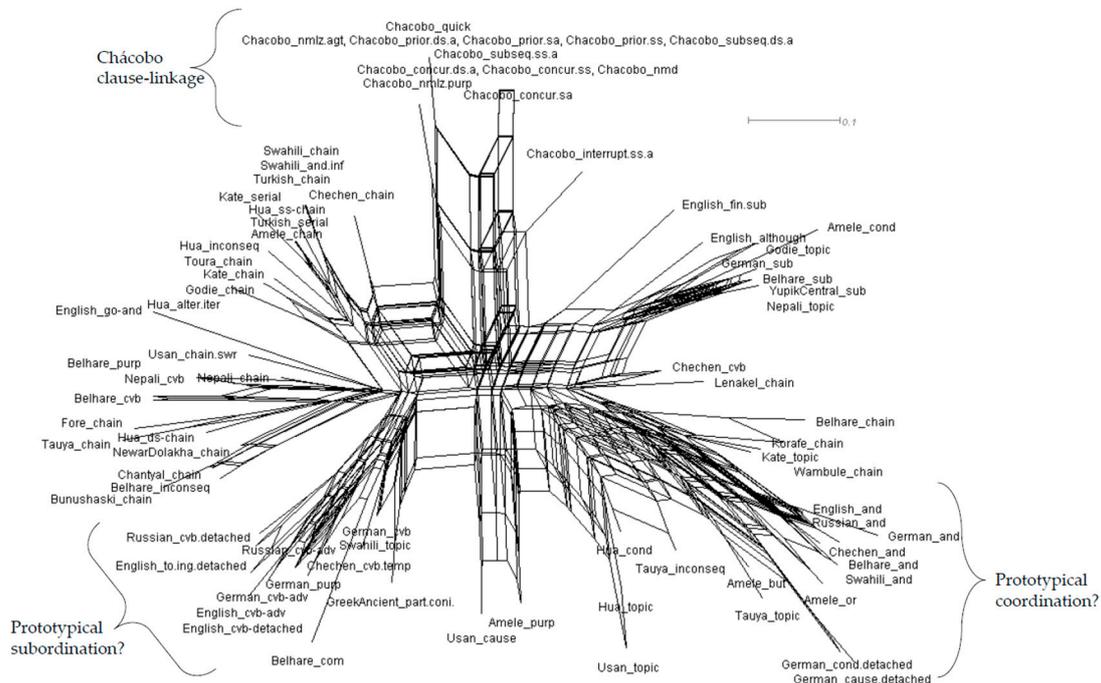


Figure 1. Neighbornet using Bickel’s (2010) data with simplified Chácobo data added.

A Zenodo file has the full dissimilarity matrix (Tallman 2024). Table 11 provides an example of a dissimilarity matrix with only 8 of the 82 data points/clause-linkage constructions.

Table 11. A dissimilarity matrix using Gower’s coefficient and data points from the work of Bickel (2010) with data from the current study.

	Chácobo_interrupt.ssa	Chácobo_prior.ds/a	English_and	English_to_ing.detached	German_and	Nepali_chain	Hua_ss-chain	Tauya_chain
Chácobo_interrupt.ssa	0	0.27	0.73	0.18	0.73	0.40	0.44	0.70
Chácobo_prior.ds/a	0.27	0	0.73	0.36	0.73	0.40	0.56	0.70
English_and	0.73	0.73	0	0.82	0.09	0.40	0.78	0.60
English_to_ing.detached	0.18	0.36	0.82	0	0.73	0.50	0.33	0.70
German_and	0.73	0.73	0.09	0.73	0	0.50	0.89	0.70
Nepali_chain	0.40	0.40	0.40	0.50	0.50	0	0.33	0.33
Hua_ss-chain	0.44	0.56	0.78	0.33	0.89	0.33	0	0.13
Tauya_chain	0.70	0.70	0.60	0.70	0.70	0.33	0.13	0

A dissimilarity matrix can be used in various exploratory data analyses. I use a Neighbornet here because it was used in Bickel’s original study. Neighbornets are also relatively

common in typological research (see [Cysouw 2007](#); [Wichmann and Saunders 2007](#); [Nichols and Warnow 2008](#); [Donohue et al. 2011](#); [Grünthal and Nichols 2016](#), inter alia).

A nexus file built from the dissimilarity matrix was then imported into Splitstree4 ([Huson 1998](#); [Huson and Bryant 2006](#)). The resulting NeighborNet is provided in Figure 1.

[Bickel \(2010\)](#) suggests that his clause-linkage data may show clusters which could be called “prototypes”. I have annotated the domains which correspond to candidate clusters of subordinate and coordinate prototypes. Note that most clause-type strategies fall in between these categories and the NeighborNet is highly reticulated.

Two properties are notable in the NeighborNet above. First, the Chácobo clause-linkage strategies do not cluster with either of the prototypes. They appear to be in some intermundia between the two types. Secondly, they tend to cluster with each other (at the top of the graph), rather than falling within some well-defined category established by easily identifiable prototypes. Without choosing some arbitrary criterion for classification as either coordinate or subordinate, it is unclear whether they should be coordinate or subordinate with respect to typological patterns. The problem with such ambiguity for syntactic theory is that it could imply that claims about coordination or subordination specific constraints cannot be meaningfully assessed in Chácobo. For example, we cannot assess whether constraints on extraction in coordinate clauses can be assessed for any given instance of clause linkage (see Section 4.6 on this point as well), because we cannot be sure we are dealing with coordination rather than subordination ([Tallman 2021a](#) for discussion on the lack of falsifiability of theories that reify and presuppose traditional categories rather than seeking to test their validity).

On the other hand, the variables (diagnostics) that have thus far been constructed are perhaps too coarse-grained, relative to what may be needed to give a reliable assessment of cross-linguistic clustering. Future research may show that there are clearly distinct clusters once the variables have been better articulated and made more precise. Furthermore, given that the criteria crosscut a number of more fine-grained distinctions in cross-linguistic categories (control constructions, nominalized clauses, etc.), interpreting the results in terms of a binary distinction between coordination and subordination is perhaps misleading. These issues are discussed in more detail in Section 7.

6. Discussion II: Language-Internal Assessment

In this section, we will assess whether some type of fuzzy distinction can be made between coordinate and subordinate clauses in Chácobo based only on language-internal evidence. We will use a wider range of more detailed variables to make the assessment. As noted in the discussion above, a number of [Bickel’s](#) clause-linkage variables can be further split up into more variables.

To summarize again the distinction between the cross-linguistic database and the one specific to Chácobo, [Bickel’s](#) EXTRACTION is expanded and/or split up into WH-NP-EXT-MAIN (extraction of an NP-constituent interrogative from the main clause in a clause-linkage construction), WH-NP-EXT-DEP (extraction of an NP-constituent interrogative from the dependent clause in a clause-linkage construction), WH-ADV-EXT-MAIN (extraction of an adjunct-constituent interrogative from the main clause in a clause-linkage construction), WH-ADV-EXT-DEP (extraction of an adjunct-constituent interrogative from the dependent clause in a clause-linkage construction), WH-NP-ATB-EXT (across the board extraction of an NP-constituent interrogative). [Bickel’s](#) FINITENESS is split up into variables for every single bound marker that can elaborate or modify a verb (e.g., HABITUAL, PUNCTUAL, COMPLETIVE, ETC.). [Bickel’s](#) LAYER is reinterpreted and split into CENTER-EMBED:CASE (can a dependent clause be skipped over by case) and CENTER-EMBED:PARTICIPANTAGREEMENT (can a dependent clause be skipped over in participant agreement). Rather than referring to the selection of a verb or a clause, I refer to the constituent identified by treating the clause-linkage-strategy as a constituency test. Constituency test results refer to the left and right edges of groupings in relation to an array of sequentially ordered syntagmatic positions identified by treating the clause-linkage strategies as coordinative-based constituency tests. The

reader should consult Tallman (2021b, n.d.) and the papers of Tallman et al. (n.d.) for details. Constituency test variables add MIN-LEFT-EDGE (the left edge of the constituent identified by the clause-linkage strategy via a planar structure and a minimal/wide-scope interpretation), MAX-LEFT-EDGE (the right edge of the constituent identified by the clause-linkage strategy via a planar structure and a minimal/wide-scope interpretation), MIN-LEFT-EDGE (the left edge of the constituent identified by the clause-linkage strategy via a planar structure and a maximal interpretation), MAX-LEFT-EDGE (the right edge of the constituent identified by the clause-linkage strategy via a planar structure and a maximal interpretation). Other variables that are added are whether the clause can have a NOUN-MODIFYING function, whether the clause can be REFERENTIAL, and the behavior of NEGATIVE-SCOPE. Definitions for these variables are provided at the beginning of Section 4 and throughout the relevant sections as well.

Based on these variables, we will attempt to assess whether clause-linkage strategies in Chácobo can be grouped into coordinative and subordinate constructions overall. The strategy that will be used to make this assessment will be bottom-up hierarchical clusters. I assume that, if some general dichotomy between coordinate and subordinate clauses is motivated in Chácobo, the data will cluster into two groups better than chance. I argue based on a hierarchical cluster model of the data in relation to a simulated null hypothesis that no such better-than-chance partition is present.¹⁰

Section 6.1 will explain the logic and basic ideas behind agglomerative hierarchical clustering (see Borcard et al. 2018 for a practical introduction among many other sources). Readers who have some basic understanding of exploratory data analysis may want to skip this section.¹¹ Section 6.2 will apply a confirmatory analysis which leverages the simulation of a “null” distribution (e.g., Spanos 2013) modelling a hypothetical situation where there is no distinction between coordinate and subordinate constructions. It is shown that the Chácobo data on clause-linkage are not sufficiently distinct from this null distribution, even while they show a strong tendency to cluster *in general* better than the simulated null. I do not mean to imply that this is the only method that one could use to assess the question. I am only suggesting that it may be a useful tool when the data display a high dimensionality (many different logically distinct variables), making a qualitative assessment more difficult.

6.1. Agglomerative Hierarchical Cluster on Clause-Linkage Constructions

The objective of a clustering methodology is to find groups in data based on some measure of similarity.¹² There are a large number of clustering methods based on different algorithms and different notions of what it means for datapoints to be in a “group”. Based on the logic of the problem presented in this paper, I use an agglomerative hierarchical clustering. Agglomerative hierarchical clustering starts with the assumption that every datapoint is its own cluster and successively builds higher clusters from these by taking the clusters which are closest according to a dissimilarity metric and grouping them into a new cluster. The result is a tree structure with partitions at different levels of dissimilarity. The method is not new (Sokal and Sneath 1963) and has been widely used in many fields, including linguistics (e.g., Dagmar and Fieller 2014).

As stated above, to run a hierarchical cluster model we develop a dissimilarity matrix for the clause-type data frame. This is conducted as in Section 5, but with a larger dataset which contains all the variables which have been applied to Chácobo. I use Gower’s metric as in the previous section. The more fine-grained database used for this study including relevant R code is provided in Tallman (2024).

The distance matrix for the clause-linkage constructions in Chácobo is provided in Table 12.

Table 12. Dissimilarity matrix for clause-linkage constructions in Chácobo.

	prior:ss	prior:sa	concur:ss	concur:sa	subseq:ss/a	interrupt:ss/a	quick:ss/a
prior:ss	0	0	0	0	0.008547	0.470085	0.401709
prior:sa	0	0	0	0	0.008547	0.470085	0.401709
concur:ss	0	0	0	0	0.008547	0.470085	0.401709
concur:sa	0	0	0	0	0.008547	0.470085	0.401709
subseq:ss/a	0.008547	0.008547	0.008547	0.008547	0	0.461538	0.393162
interrupt:ss/a	0.470085	0.470085	0.470085	0.470085	0.461538	0	0.547009
quick:ss/a	0.401709	0.401709	0.401709	0.401709	0.393162	0.547009	0
prior:ds/a	0.162393	0.162393	0.162393	0.162393	0.17094	0.478632	0.487179
concur:ds/a	0.162393	0.162393	0.162393	0.162393	0.17094	0.478632	0.487179
subseq:ds/a	0.162393	0.162393	0.162393	0.162393	0.153846	0.461538	0.470085
nmd	0.179487	0.179487	0.179487	0.179487	0.188034	0.649573	0.504274
nmlz:agt	0.34188	0.34188	0.34188	0.34188	0.350427	0.65812	0.666667
nmlz:purp	0.581197	0.581197	0.581197	0.581197	0.57265	0.649573	0.487179
	prior:ds/a	concur:ds/a	subseq:ds/a	nmd	nmlz:agt	nmlz:purp	
prior:ss	0.162393	0.162393	0.162393	0.179487	0.34188	0.581197	
prior:sa	0.162393	0.162393	0.162393	0.179487	0.34188	0.581197	
concur:ss	0.162393	0.162393	0.162393	0.179487	0.34188	0.581197	
concur:sa	0.162393	0.162393	0.162393	0.179487	0.34188	0.581197	
subseq:ss/a	0.17094	0.17094	0.153846	0.188034	0.350427	0.57265	
interrupt:ss/a	0.478632	0.478632	0.461538	0.649573	0.65812	0.649573	
quick:ss/a	0.487179	0.487179	0.470085	0.504274	0.666667	0.487179	
prior:ds/a	0	0	0.017094	0.17094	0.179487	0.512821	
concur:ds/a	0	0	0.017094	0.17094	0.179487	0.512821	
subseq:ds/a	0.017094	0.017094	0	0.188034	0.196581	0.495726	
nmd	0.17094	0.17094	0.188034	0	0.162393	0.683761	
nmlz:agt	0.179487	0.179487	0.196581	0.162393	0	0.615385	
nmlz:purp	0.512821	0.512821	0.495726	0.683761	0.615385	0	

The R package cluster() is used to build a hierarchical cluster model (Maechler et al. 2022). An agglomerative hierarchical cluster model starts from the assumption that all clause-linkage types are their own cluster. Then, it groups each clause-linkage construction into larger clusters based on how similar they are. For instance, the first agglomeration of clusters would group the prior and concurrent same-subject clauses into the same group {prior:ss, prior:sa, concur:ss, prior:sa} because they are maximally similar with respect to variables used in this study. The algorithm would then join the cluster {prior:ss, prior:sa, concur:ss, prior:sa} with the {subseq:ss/a}, because this is the shortest distance from the second cluster 0.008547. The prior and concurrent different-subject clauses would also group together since they have a relative distance of 0. Then, the {prior:ds/a, con-

cur:ds/a} cluster would merge with [subseq:ds/a] because the distance is the next lowest at 0.017094. Agentive nominalizers would then merge with the noun-modifying construction because the distance is the next lowest 0.162393. The different-subject clauses {subseq:ds/a, prior:ds/a, concur:ds/a} would then merge with the cluster that contains noun-modifying and agentive-nominalizing constructions {nmd, nmlz:agt}. Figure 2 is a dendrogram that represents the clustering process. The nodes in the tree represent clusters. The y-axis represents their relative distance the cluster have from one another.

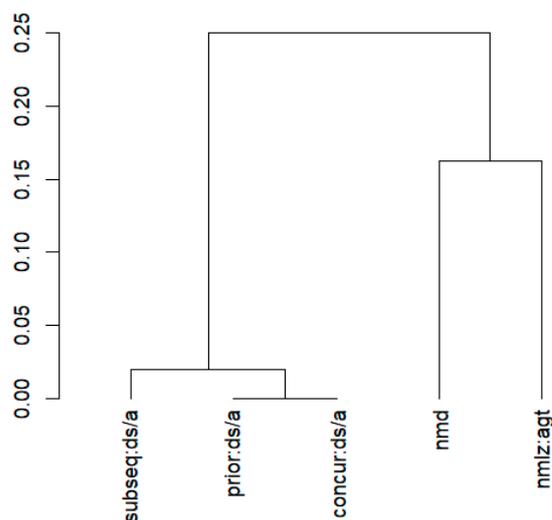


Figure 2. A dendrogram showing the agglomeration of different subject clauses with nominalized and noun-modifying clauses.

The clustering process continues until all clusters are merged into a single cluster. The dendrogram classifying all the dependent clauses in Chácobo is provided in Figure 3 (de Vries and Ripley 2022 for the R package).

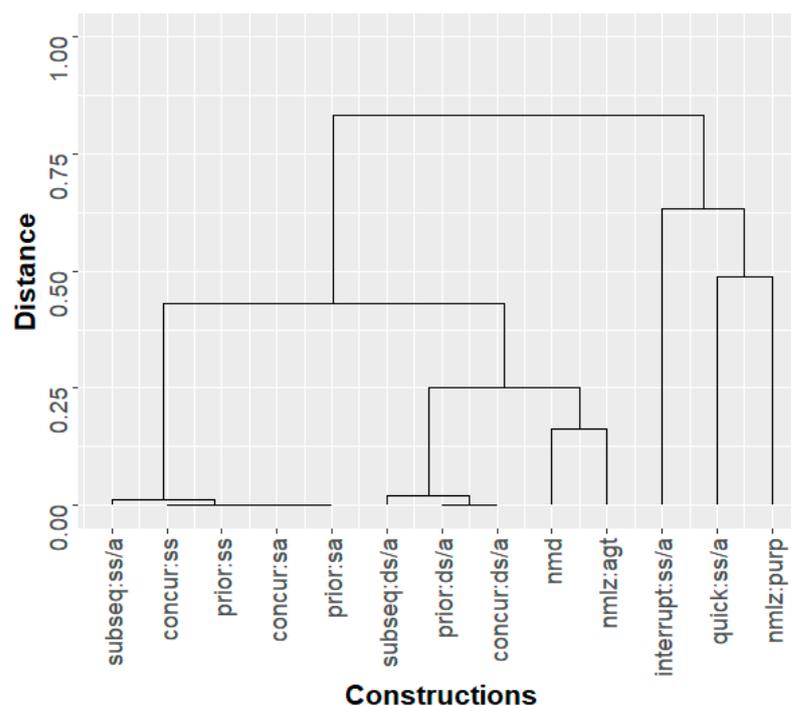


Figure 3. Dendrogram for Chácobo-dependent clauses using all coded variables (see the Supplementary Materials).

Figure 3 shows a split with the quick-succession asyndetic clause, the same subject interruption clause, and the nominalized purpose clause in the one cluster, and the rest of the clauses on the other at the highest partition. This is because the asyndetic same subject clause and the purpose clause share a number of structural properties, not shared by other clause-linkage strategies. Neither of these clauses allow for temporal distance markers (T-MARK), but all other dependent clauses do (Section 4.10). Both of these clauses are unique among Chácobo clause-linkage constructions in banning extraction of any NP arguments out of their dependent conjuncts (Section 4.6). Both of these clauses are unique in not containing their own information structurally important position independent of the main clause (Foc). Furthermore, compared to the rest of the constructions, these three strategies are relatively *non-finite* in the sense of having less categories overall that can be expressed in them compared to the other dependent clauses. It is the combination of these properties that they share not shared by the rest of the dependent clauses that is responsible for them being grouped together. These constructions group together despite the fact that, overall, they fall on opposite ends of the continuum from coordination to subordination. Out of the clause-linkage strategies, the asyndetic quick succession clause construction could be considered the most coordinate-like. It has a fixed position with respect to the main clause and it bans the asymmetric extraction of core arguments out of any of the conjuncts (see the coordinate structure constraint; Ross 1967, *inter alia*). Despite its relative similarity to the asyndetic construction, the purpose clause has more subordinate-like patterns: illusionary operators cannot scope over it (it cannot be questioned material), and while asymmetric extraction is allowed in purpose constructions, it can only occur out of the main clause, which is what one would expect if it was an adjunct clause (Bošković 2020).¹³

Thus, the first partition may not reflect the best candidates for the distinction between coordination and subordination. If most Chácobo clauses were structurally intermediate between these two types (see Section 5), this may be expected. This general idea can be observed if we attempt to rank clauses in terms of the coordinate–subordinate distinction.

If we recode the data in terms of integer values, where 1 is provided to the more subordinate-like value, and 0 is the more coordinate-like value for a given property, a non-finiteness value is calculated by taking the average value of all of the TAAMME values. We can thus construct a subordination metric for each construction by summing over the variables. Higher values are more subordinate in terms of the variables of the study.

If we plot the constructions in terms of their subordination value, we see that the partition above could be seen as corresponding to a distinction between coordinate and subordinate constructions.

One important point to make in relation to the graph below, however, is that agentive nominalizations and the nominal modification clauses are nearly the same as same subject clauses in terms of the subordination metric respectively. We may wonder whether the precise dividing line between coordination and subordination is arbitrary given the intermediate status of same and different subject clauses (see Figure 4).

6.2. Simulated Null (Testing the Coordination–Subordination Distinction)

Cluster models cannot be used as an inferential technique by themselves but are rather tools of exploratory data analysis. In order to make an argument about groupings from a cluster analysis, we need to minimally construct a type of null hypothesis against which to gauge the results. Otherwise, we may fall into the “clustering tendency” fallacy, which involves seeing groups in arbitrary partitions of the data (Jain and Dubes 1988). A clustering model will always find groups tautologically. The question is whether these groups represent some surprising result from what we would expect if the data did not, in fact, cluster.

In order to investigate the possibility that there may simply be a continuum between coordination and subordination, we see whether the data are being split into two types better than chance in the hierarchical cluster model. In order to do this, we simulate vectors of the clause-linkage variables of our study where the values are assigned randomly (see Supplementary Materials for details and code).

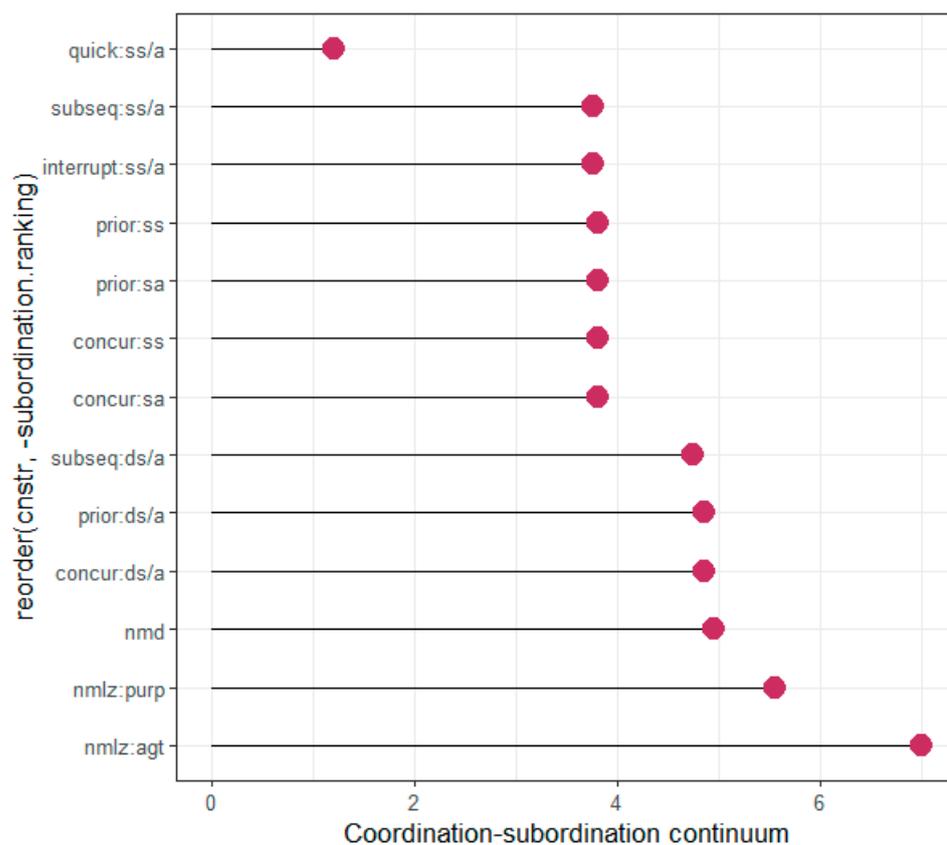


Figure 4. Strip plot for Chácobo-dependent clauses ranking them on a scale from coordination to subordinate like by recoding all variables that are relevant for this distinction as 0 = coordination-like and 1 = subordination-like values and summing the values for each dependent clause (see the Supplementary Materials).

The notion of “chance” and the randomness requires some comment here. As stated above, the cluster model is designed to find patterns (groups) in the data regardless of whether these are natural or meaningful. A hierarchical model will group clause-linkage constructions into two groups at its highest level regardless of whether these are meaningful. A first question that can be asked to assess the meaningfulness of the groupings found in the data is how likely such patterns are to occur even if our hypothesis about the bipartite division of clause-types was false. One way of doing this is to compare our data to a hypothetical distribution (a null hypothesis) simulated to correspond to a situation where there is no meaningful bipartite pattern. Such a technique is commonly used across the sciences to make inferences about the validity of quantitative hypotheses (see Spanos 2013).

There is more than one way to construct a null hypothesis. We could, for instance, assume that all values for any given variable are just as likely to occur and build a simulated null hypothesis from that. In this study, I will sample from the Chácobo data themselves to construct a null distribution. This means that, for instance, for a given variable, if a value *val* occurs in 2 out of 13 clause-linkage constructions, then *val* will be sampled with a 2/13 (=0.15) probability. To create a null distribution, we sample “random languages” from the Chácobo clause-linkage data. The difference between the actual data and the simulated data is that there is no reason to expect that variables will covary with one another in a random language except those patterns that appear due to chance relations that will appear between variables (Roberts and Winters 2013).

Note that, when we compare with our null distribution, we will not be concerned with how many clusters are found per se. Rather, we will be concerned with the distance between the two largest clusters after the first partition. This is based on the assumption that, if a coordination–subordination distinction is to be found, it will be the highest partition

in the data, a position which follows logically insofar as clause-linkage variables are relevant for making the distinction between coordination and subordination. This of course assumes that the variables we chose are the right ones for assessing this question. Future research may find that one or more of the variables ought to be removed from consideration or that there are yet more relevant variables that have not been coded.¹⁴

To create a null distribution, I simulated 1000 random languages and measured their cophonetic distance and the relative height of their first partition of each of the simulated languages. The cophonetic difference is a measurement of how well a given hierarchical cluster model fits the data points (see Sokal and Rohlf 1962; Rohlf and Fisher 1968 for explanation). This measurement tells us how well the data cluster into the groups of the cluster model overall. The reason I present this is to point out that the dendrogram is capturing actual groups in Chácobo, regardless of whether those reflect a bipartite division.

Probability density distributions for random/simulated cophonetic correlations and random/simulated height differences between the first and second partition are provided in Figure 5 below. The red dot over each of these distributions is where the value is for the actual data. The cophonetic correlation of the real data is 0.9138, showing a strong tendency for clause-linkage constructions in Chácobo to cluster with respect to the clause-linkage variables. However, the tendency for clause-linkage constructions to cluster into two groups is 0.1989.

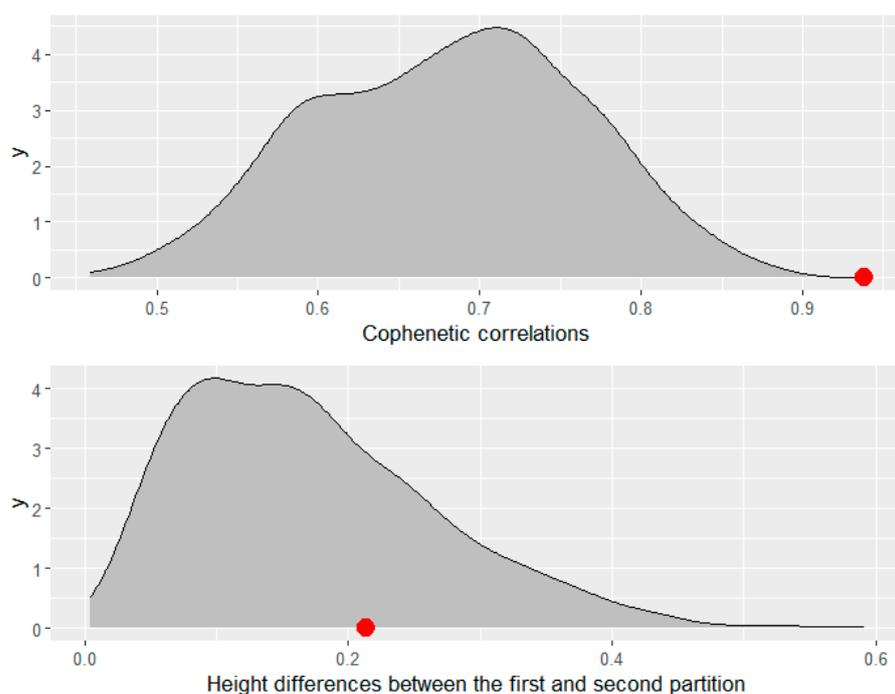


Figure 5. The probability density distributions of cophonetic correlations and height differences between the first and second partitions of simulated hierarchical cluster models based sampled randomly from the clause-linkage data of Chácobo. The red dots represent the values for the hierarchical cluster over the actual data.

The first density distribution shows that the Chácobo clause-linkage data tend to show clustering relatively well. None of the simulated values occur with a value this extreme. This is not too surprising. The clause types can be classified into different groups and the hierarchical cluster meaningfully captures that.

The second density distribution shows that Chácobo clause-linkage strategies do not tend to group into just two clusters better than chance. A total of 33% of the simulated values have stronger first (binary) partitions than the actual data or, stated another way, 33% of the time, a language created through randomly sampling from the data would

cluster as well or better into two groups than the actual data. This may indicate a weak tendency to cluster into two groups, and overall, the distinction is not well supported. It is possible that further refinement of the variables may provide support for such a distinction.

7. Conclusions

This paper has provided the first detailed description of clause-linkage strategies in Chácobo. The variables described in the work of Bickel (2010) were used and expanded on and applied to each of the clause types with data from naturalistic speech where available and data from elicitation where necessary. Contextualizing the Chácobo data with respect to that in Bickel's (2010) sample shows that most Chácobo clause-linkage strategies do not fall into candidate "prototype" subordinate or coordinate clusters, to the extent that such notions can be validly inferred from Bickel's (2010) database to begin with. One may defend the coordinate–subordinate distinction in Chácobo on language-internal grounds. Indeed, such a distinction is made in Tallman's (2018a) descriptive grammar of the language. However, a detailed overview of the variables and an attempt to motivate the distinction using all of these rather than simply cherry-picking a few shows that such a language-internal classification may do more to obfuscate rather than clarify the differences and similarities between Chácobo's clause-linkage strategies. The clustering and simulation methods suggest as much. This paper thus provides an example where comparative work can help clarify issues in language description.

One of the methodological innovations of autotypology (Bickel and Nichols 2002; Witzlack-Makarevich et al. 2021) is to build variables from the bottom-up and capture linguistic variation at the finest degree of detail. In this approach, typologically informed research on individual languages should go beyond simply coding the results of a pre-defined questionnaire. Rather, when it is noticed that a variable may give ambiguous or uncertain results, the descriptive linguist seeks to refine and expand the variables accordingly, fracturing them into new variables, if necessary to capture the language-specific details. In this study, I have expanded the variables for center-embedding, extraction, and added a few variables such as nominal modification and referentiality. Future research should try to code these variables in more languages, where possible, and also expand the variables further.

Some of the new variables require commentary as issues of comparability arise. First, this paper experiments with quantizing the finiteness variable. This is achieved by taking all the grammatical categories that can be expressed in each dependent clause and assigning each clause-linkage strategy a relative value on a scale of 0 to 1 for how finite they are, where 0 is no categories can be expressed and 1 is all categories can be expressed. This is a very rough metric that burries some potential variation. Future research may treat every marker separately, rather than aggregating them in this fashion. The problem with this proposal, however, is that languages vary in terms of their TAME systems¹⁵ and thus issues of comparability could arise. Perhaps a quantized assessment of finiteness requires positing a typological inventory of explicitly defined TAME variables.

The extraction variables may also suffer from issues of comparability but for other reasons. Extraction or filler-gap constructions are not always an easily applicable diagnostics because their assessment needs to be mediated by what types of null elements are posited in the language. I pointed out that the availability of null third person object pronouns made some claims about NP-extraction difficult to assess. Some strict criteria perhaps need to be put in place so that filler-gap constructions can be interpreted consistently from one language to another. Another issue is that extraction constructions are typically subject to degrees of acceptability. Eventually, the typological researcher needs to find some way of systematically coding the graded nature of acceptability.

This paper has operated under a relatively simple hypothesis about the distinction between coordination and subordination. I assumed that the clause-linkage variables above were relevant to making this distinction. I assumed that a coordination–(adjunct) subordination would arise as clusters because coordination and subordination are typological

prototypes or “attractor points”.¹⁶ However, the “fitness landscape” for clause-linkage constructions is likely more complex than this. A more sophisticated typology of clause-linkage constructions is likely required (e.g., Croft 2001).

A question arises as to what explains the clause-linkage patterns that do exist in Chácobo. We saw in Section 5 that same-subject and different-subject constructions tend to cluster together even while clause-linkage constructions of other languages were more dispersed across the NeighborNet. One potential reason for this is that same/different subject clauses may come from the same basic diachronic source construction. It has been posited that switch reference in some Pano languages may derive from clausal nominalizations (Valle and Zariquiey 2019), and indeed many of the same/different subject markers seem to derive from postpositions (Valenzuela 2003). Drawing the link between the diachronic development of same/different subject clauses in Pano and the properties they display as clause-linkage strategies may be the next step, but this will require the relevant clause-linkage properties to be documented in other Pano languages.

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Conflicts of Interest: The author declares no conflict of interest.

Appendix A Supplementary Data and Discussion

Appendix A.1 Null Pronouns and the Interpretation of Asymmetric Extraction of NP Constituent Interrogatives in Chácobo

There is an analytic issue that potentially confounds the interpretation of asymmetric extraction in Chácobo. Third-person Chácobo objects are null and Chácobo has null third person pronouns as well. This can be observed in the following sentence:

100. \emptyset \emptyset *kiis-a* =*ki*
 3SG:NOM 3SG:ABS cut-TR =DECL:PST
 “S/he cut it/her/him/them.”

If, however, there is an overt object, speakers will reject the sentence unless it also has an overt subject, as shown in¹⁷. Stated another way: when the object is overt, the subject must also be overt.

101. *mii/i* **ha* *kiis-a* =*ki*
 branch 3SG:NOM cut-TR =DECL:PST
 “S/he cut the branch.”

This generalization does not hold of same-subject clauses, however, which can never have their own subject independent of the main clause. Furthermore, in different-subject clauses, subjects must be overt.

There is no evidence for or against Chácobo allowing object pronominal resumptive in the case of constituent interrogative extraction (e.g., What did you tell him to eat **it?**); however, if such an analysis is permitted of null anaphora, then NP extraction in same-subject clauses cannot be meaningfully assessed. For instance, the gaps could be analyzed as null (resumptive or resumptive-like) pronouns. I have no way of discarding such an analysis, in principle, when dealing with third-person objects. This makes the assessment

of some NP-extraction in same-subject and different-subject clauses difficult because the construction already places constraints on the coreferentiality of subjects and thus we cannot extract NP subjects either.

102. *haw_i* *kako=’* _{*i*} *kopi=ʔáʂ* *oʂa=ʔá*
 what_{*i*} Caco=ERG _{*i*} buy=PRIOR:SA sleep=INTER:PST
 “What did you Caco buy and then slept?”
103. *haw_i* _{*i*} *ʃiná=ʔi* *kako* *oʂa=ʔá*
 what_{*i*} _{*i*} think=CONCUR:SS Caco buy=INTER:PAST
 “What did Caco think about when he slept?”

Finally, another analytic issue arises here as well. In cases such as those above, it is unclear whether we are dealing with extraction per se because fronting internal to a same subject clause is permissible (see Section 4.6). Thus, it is not clear whether the fronting in the examples above constitute fronting over a clause boundary or not. In addition to the possibility of positing null resumptive pronouns, the issue of clause-internal movement makes the assessment of NP extraction in same-subject clauses difficult to assess. These caveats suggest that perhaps future research may require reformulation of the extraction variables into concepts whose coding is not so heavily mediated by other auxiliary hypotheses or assumptions.

All cases where extraction is allowed could be reanalyzed as cases where there is a null resumptive pronominal element. While such an analysis is difficult to refute conclusively, the problem with it is that it would be unclear why the null resumptive pronoun would not be available in cases where extraction is apparently banned, either completely or non-locally. If a null resumptive pronoun is available, why can it not be posited in examples such as 74? Another reason for rejecting a null resumptive pronoun analysis involves the possibility of extracting subject NPs non-locally from different-subject clauses. Different-subject clauses are normally rejected if they do not contain an over subject. However, if the subject is extracted to the initial position, the sentence is accepted, even if it crosses a main clause in doing so. If null resumptive pronouns are confounding, it is unclear why the subject pronoun *ha* results in ungrammaticality even while overt subjects are otherwise *obligatory* in different-subject clauses.

104. *tsowi_i=’* *kará* *haw_i* *ʔakí* *pístia* *háʔa* =*kí*
 who_{*i*}=ERG EPIS 3SG:GEN child small run =DECL:PST
 _{*i*}’**ha* *kamá* *tʃoif-a* *=kína*
 _{*i*}/3SG jaguar shoot-TR =PRIOR:DS/A
 “Who could have shot the jaguar before its little child ran away?”

The important issue is perhaps not whether these are definitely cases of extraction *sensu stricto*, but rather, whether in applying the test as we have done here we are capturing meaningful typological variation. Even if we claim that some resumptive null pronouns confound our interpretation, we will still have to posit that null resumptive pronouns are allowed in some cases but banned in others and still could be formulated as variable for clause-linkage constructions as well (it involves just as much stipulation).

Cases of local extraction are even more difficult to assess due to the possibility that the constituent interrogative does not actually cross a clause boundary, and the fronting applies clause-internally. I would suggest that future research should reformulate these variables in less theory-bound ways.

Appendix A.2 Across-the-Board Extraction of NP-Constituent Interrogatives

Across-the-board (ATB) extraction has been identified as one of the criteria for identifying coordinate structures (Ross 1967; Bošković 2020). Coordinate structures cannot un-

dergo asymmetric extraction whereby an element is extracted out of just one of the conjuncts, but if the same element is extracted or appears gapped out of both, then the extraction is permitted. Illustrative examples of this ungrammaticality are provided below. But the extraction of both of these elements from the conjunct is permissible. An illustrative example is provided below.

- 105. *Whom_i did Caroline wish to meet ____i and talk to Mery in La Paz?
- 106. *Whom_i did Caroline wish to meet Mery and talk to ____i in La Paz?
- 107. Whom_i did Caroline wish to meet ____i and talk to ____i in La Paz?

Since ATB extraction has been identified as a diagnostic for coordinate status, it is worth seeing whether it can be applied as a typological variable to the Chácobo clause-linkage constructions.

Before attempting to do this, I will briefly describe why ATB extraction is hard to apply as a diagnostic to Chácobo in practice. First, in Chácobo, third-person pronominal object arguments have null realizations, as described in Section 4.6. Due to this, we cannot use the extraction of a P argument to test ATB extraction. To illustrate this, consider the following sentence:

- 108. *háwi* ____i *aşa=şó* *mi* ____i/∅_i *pi* =ʔá
 what ____i roast=PRIOR:SA 2SG:NOM ____i/3:ABS_i eat =INTER:PST
 “What_i did you roast ____i and then eat ____i?”

We do not know whether the gap in the second conjunct is phonetically null because the interrogative constituent *hawí* “what” moved from this position or whether it is a third-person object, because the latter are null. As stated in Section 4.6, if, however, there is an overt object, the subject is now obligatorily overt as is repeated again below.

- 109. *míiʔi* **ha* *kíis-a* =*ki*
 branch 3SG.NOM cut-TR =DECL:PST
 “S/he cut the branch.”

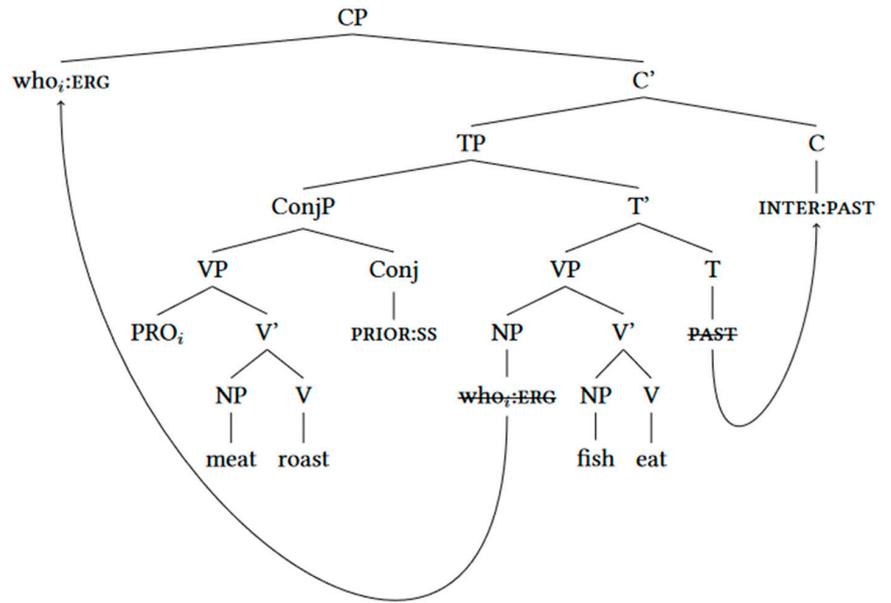
Due to this property, we could potentially test ATB-extraction by extracting the subject but with overt object arguments in both conjuncts, since these are generally disallowed. However, it is not clear whether same-subject clauses can be tested. While we can extract the subject of the main clause to the first position of the sentence, it is not clear whether this constitutes ATB extraction, because same-subject clauses cannot have an overt subject anyway.

To illustrate the problem, consider the following sentence, which constitutes an attempt to elicit ATB extraction. The sentence is considered ungrammatical. Thus, we may claim that ATB extraction does not apply to prior same-subject clauses.

- 110. **tsowi*_i= ____i *nami* *aşa=şó* ____i *sanino* *pi* =ʔá
 who_i=ERG ____i meat barbeque=PRIOR:SA ____i fish eat =INTER:PST
 “Who_i ____i roasted the meat and then ____i ate the fish?”

However, given that subjects cannot be overt in the same-subject clause anyway, we may suppose that same-subject clauses are control structures perhaps with an obligatory PRO element in subject position, as depicted here. Rather than being an instance of ATB extraction, we simply have extraction over the same-subject clause which has a null PRO element.¹⁸

111.



Thus, it seems that ATB extraction may be unavailable as a diagnostic for core arguments in Chácobo, at least for same-subject clauses. For completeness, I include cases wherein the subject is extracted in this fashion for same-subject clauses anyway. Concurrent same-subject clauses are marginally acceptable. Asyndetic clauses allow for the extraction of the subject in the first position. The same subject interruption clause also allows for the extraction of the subject.

112. *?tsowi_i=’* ____i *hĩni* *aša=ki* ____i *sanino* *pi* =*ʔá*
 who_i=ER ____i meat barbeque=CONCUR:SA ____i fish eat =INTER:PST
 “Who_i ____i ate fish while ____i barbaqueing meat?”

113. *tsowi_i=’* ____i *waka* *kifi* *atf-a* ____i *hawi* *taʔi*
 who_i=ERG ____i cow leg grab-TR ____i 3SG:GEN foot
niš-a =*ʔá*
 tie-TR =INTER:PST
 “Who_i grabbed the cow’s leg and tied his trotter?”

114. *tsowi_i=’* ____i *atsa* *pi=pama* ____i *nami*
 who_i=ERG ____i yuca eat=INTRMP:SS/A ____i meat
mif-o =*ʔá*
 burn-INTR =INTER:PST
 “Who_i while ____i roasting the yuca ____i burnt the meat?”

115. *tsowi_i=’* ____i *atsa* *pi=pama* ____i *nami*
 who_i=ERG ____i yuca eat=INTRMP:SS/A ____i meat
mif-o =*ʔá*
 burn-INTR =INTER:PST
 “Who_i while ____i roasting the yuca ____i burnt the meat?”

ATB extraction cannot easily be assessed for different-subject constructions for the simple reason that the conjuncts require different subjects. If we attempt to extract the subject, the sentence is grammatical, but not under an interpretation where the subjects are coreferential. Rather, the sentence must be understood as asking a question about two distinct subject participants (i.e., “who ... ” and “who else ...”). An example is provided here. This is true of all the different-subject constructions.

116. *tsowi=’ atsa ima=kí tsi nami*
 who=ERG yuca roast=PRIOR:DS/A LNK meat
pi =ʔá
 eat =INTER:PST
 “Who_i ____i roast yuca and who else ate the meat?”
 *”Who_i ____i roast yuca and ____i ate the meat?”

Nominalized and nominal modifier clauses behave in the same way. The fronted constituent interrogative cannot function as a coreferential subject of both of the conjuncts.

117. *tsowi=’ atsa ima=ʔái=ka nami*
 who=ERG yuca roast=NMLZ=REL meat
pi =ʔá
 eat =INTER:PST
 “Who_i ____i was roasting yuca and who else ate the meat?”
 *”Who_i ____i roast yuca and ____i ate the meat?”

Since in other contexts, nominalized and nominal-modifying clauses can have the same subject as the subject of the main clause, the example above shows that ATB extraction is not permitted in these clauses. ATB extraction appears to be permitted in purpose clause constructions.

118. *tsowi_i=’ tapaya=’=ka ____i orikiti inia=tí*
 who_i=ERG Alto.Ivon=SPAT-REL ____i food sell=NMLZ:PURP
 ____i aros kopi =ʔá
 ____i fish buy =INTER:PST
 “Who bought rice to sell in Alto Ivon.”

If we were to decide that the ATB extraction was the only relevant criterion for distinguishing different clause-linkage types, we may conclude that agentive nominalized and nominal-modifying clauses are subordinate in some sense. As for the nominalized purpose clause, it could be an adjunct clause which, like coordination, can display ATB extraction (Bošković 2020). However, we would not know how to characterize the rest of the clauses because the NP extraction cannot be easily applied. Future research on across-the-board extraction of adverbial elements is still required, however. This paper summarizes the results of attempting to apply ATB extraction to the clause-linkage variables in Chácobo. As stated above, this variable was not coded in the work of Bickel (2010).

Table A1. The results for the ATB-EXTRACTION variable applied to clause-linkage constructions.

Form	Gloss	VALUE
<i>ʔás(na)</i>	PRIOR:SS	not applicable
<i>só(na)</i>	PRIOR:SA	not applicable
<i>ʔi(na)</i>	CONCUR:SS	not applicable
<i>kí(na)</i>	CONCUR:SA	not applicable
<i>’noʂparí</i>	SUBSEQ:SS/A	not applicable
<i>pama(ʔás)</i>	INTERRUPT:SS/A	not applicable
<i>(asyndetic)</i>	QUICK:SS/A	not applicable
<i>kí(no)</i>	PRIOR:SS/A	not applicable (disjunct interpretation)
<i>’no</i>	CONCUR:SS/A	not applicable (disjunct interpretation)
<i>’noʂparíno</i>	SUBSEQ:SS/A	not applicable (disjunct interpretation)
<i>ʔái(ka(to)/na)</i>	NMD:ANT	banned (disjunct interpretation)
<i>ʔáii(ka(to)/na)</i>	NMLZ:AGT	banned (disjunct interpretation)
<i>tí</i>	NMLZ:PURP	ok

Appendix A.3 TAME Marking Supplementary Data

Appendix A.3.1 Tense and Temporal Distance Marking and Scope

In Chácobo, tense is coded on the clause-type marker. Clause-type markers are not marked on dependent clauses (by definition). Apart from tense, Chácobo has another category of temporal distance. Temporal distance markers code the degree of remoteness of an event from the utterance time or from a temporal reference time (Tallman 2018a; Tallman and Stout 2016).

Although it is rare in naturalistic speech, same-subject clauses can have temporal distance markers. An example is provided below with a prior-event same-subject clause.

119.	<i>ha</i>	<i>βo=ʔita=ʔá=ka</i>	<i>tfaʔa</i>	
	3	carry.away=RECPAST=NMD:ANT=REIF	feather.head.band	
	<i>sawi=roʔá</i>	<i>kiá</i>	<i>raka=roʔá</i>	
	put.on=LIMIT	REPORT	lie.down=LIMIT	
	<i>kitóma</i>	<i>kiá</i>	<i>hatsi</i>	<i>naa</i>
	patio	REPORT	then	DECL DEM:PROX
	<i>a(k)=ʔita=ʔás</i>	<i>hatsi</i>	<i>ʂo</i>	<i>naa</i>
	do=RECPST=PRIOR:SS	then	DECL	DEM:PROX
	<i>i</i>	<i>kiá</i>		
	say	REPORT		

“After he (the man) brought the feather head band, she (the panther) put it on and she (the panther) was lying in the patio, this (the panther) was the one who killed him (the man).” 0056:0140

Despite being rare in natural speech, same-subject clauses with temporal distance markers are fairly easy to elicit as seen below.

120.	<i>yonoko</i>	<i>=itá/=yamitá</i>	<i>=ʂó</i>	<i>tsi</i>
	work	=RECPAST/=DISTPAST	=PRIOR:SA	LNK
	<i>tafi=’</i>	<i>anó</i>	<i>tsayaki</i>	
	Tashi=ERG	taitetu	see=DECL:PST	

“After he had worked (the day before/a week before), Tashi saw the taitetu.”

121.	<i>ʂoβo</i>	<i>tsaya</i>	<i>=fari</i>	<i>=kí</i>	<i>tsi</i>
	house	see	=CRAS	=CONCUR:SA	LNK
	<i>anó</i>	<i>tsaya</i>	<i>tafi=’</i>	<i>=wa</i>	<i>=ki</i>
	agouti	see	Tashi=ERG		

“Tashi visited the house the day after seeing the agouti.”

122.	<i>ʂoβo</i>	<i>tsaya</i>	<i>=fari</i>	<i>=pama</i>	<i>tsi</i>
	house	visit	=CRAS	=INTRMP:SS/A	LNK
	<i>tafi</i>	<i>pakí=ki</i>			
	Tashi	fall=DECL:PST			

“Tashi wanted to see the house the day after he fell. (he wasn’t able to visit the house as a consequence of falling).”

123.	<i>yonoko</i>	<i>=ʂí</i>	<i>=ʔi</i>	<i>tsi</i>	<i>tafi</i>
	work	=REMFUT	=CONCUR:SS	LNK	Tashi
	<i>tsaʔó</i>	<i>=ki</i>			
	sit	=DECL:PST			

“Tashi sat down in order to think about working in the future.”

Prior same-subject clauses =ʔás(*na*) and =ʂó(*na*) cannot occur with future/posterior temporal distance markers such as =fari “tomorrow” and =ʂí “remote future”, and concurrent same-subject clauses ʔi(*na*) and kí(*na*) cannot combine with past tense/anterior temporal distance markers =ʔitá “recent past” and =yamit “distant past”. No same-subject clause can

be marked by the remote past =*ní*. Asyndetic (same-subject) clauses cannot occur with temporal distance markers.

I have no examples in my corpus of different-subject markers clauses being marked by temporal distance markers. I tested whether temporal distance markers could appear in different-subject clauses. Only different-subject clauses marked with =*kí* “prior, different S/A” can appear with a temporal distance marker. And the only temporal distance markers which are compatible with this clause are =*ítá* “recent past” ~ =*yamítá* “distant past”, as seen below.

124. *šoβo* *tsaya* *awini=* *wa*
house see wife=ERG TR
=*íta*/*yamíta* =*kí* *tsi* *tafi=*
=**REC**PST/**-DIS**TST =PRIOR:DS/A LNK Tashi=ERG
raaʔá =*kí*
scold =DECL:PST
“After his wife visited the house (the day before/the week before),
Tashi scolded her.”

Nominalized and noun-modifying clauses marked with =*ʔá(na)* and =*ʔái(na)*, respectively, can be marked by the temporal distance markers. A dependent clause marked with =*ʔá(na)* can be marked by the past tense/anterior temporal distance markers. The nominalized clause marked with =*ʔái(na)* can be marked with the posterior/future tense temporal distance markers. Examples with =*ʔái(na)*-marked clauses are provided below.

125. *mi* *a=fari=ʔái=ka* *ʃina=ʔá*
2SG do=**CRAS=NMLZ**=REL think=**INTER:ANT**
mí-a
2SG-EPEN
“What are you thinking of doing tomorrow?”1835:0099
126. *naa* *naʔa=ʃó* *iarí* *pi=ka(s)=fari=ʔái=ka*
DEM:PROX nest=A 1SG-too eat=**want=CRAS=NMLZ**=REL
a(k)=wí
do=**IMPER**
“Roast this which I will eat in my nest.”0483:1109
127. *naa* *no* *wisti* *yói=ka* ...
DEM:PROX 1PL one bad=REL ...
pakí=noʃparí *no* *rišo=ʃi=ʔái=ka*
fall=**SUBSEQ:SS/A** 1PL kill=**REMFUT=NMLZ**=REL
o *no* *rišo=tí=ka* *βári*
OR 1PL die=**NMLZ:PURP**=REL day
yói=ka ... *saípí* *nokí* *a=tí=ka*
bad =REL ... machete 1PL-ACC do=**NMLZ:PURP**=REL
maní *o* *rono=* *nokí* *tíʃa=tí=ka*
CONJECT OR snake=ERG 1PL-ACC bite=**TR=NMLZ:PURP**=REL
o ... *mi* *naama=ní*
CONJECT ... 2SG dream=**NMLZ:REMPST**
Jimá *naama=ʔái* *híma=*
Jema=**VOC** dream=**INTER:NONPAST** Jema=**VOC**
tóa=kato
DEM:**DIST**=REL
“When one of us due to something bad, we fall, that we will die, or the day
or our death, or something bad, that a machete would cut us, that a snake
could bite us, Jema, have you ever dreamed of this, Jema, have you ever
dreamed of this?”1851:150

128.	<i>toa</i>	<i>mí</i>	...	<i>mí</i>	...
	DEM:DIST	2SG	...	2SG	...
	<i>naama=ʔáina</i>		...	<i>i</i>	...
	dream=NMLZ		...	1SG	...
	<i>mi</i>	<i>oʂa=ʔái=ka</i>		<i>hawí</i>	...
	2SG	sleep=NMLZ-REL		3SG:GEN	
	<i>yonoko=fari=ʔái=ka</i>	<i>mi</i>		<i>naama=ʔái=ka</i>	
	work=CRAS=NMLZ-REL	2SG		dream=NMLZ-REL	
	...	<i>toβi</i>		<i>ní</i>	<i>mí</i>
		DEM:DIST:DEIC		INTER	2SG
	<i>naama=ʔáina</i>				
	sleep=NMLZ				

“Are you dream of this? or when you are dreaming, what work you will do tomorrow, or what are you dreaming about?” 1838: 208

Examples with ʔá(na) “noun modifying anterior”-marked dependent clauses marked with temporal distance markers are provided below.

129.	<i>naa</i>	<i>i</i>	<i>βoti=yamit=(ʔ)á=ka</i>	<i>inoma</i>
	DEM:PROX	1SG	descend=DISTPST=NMD:ANT-REL	CONTRAST
	<i>motoro =</i>		<i>i</i>	<i>βoti=yamit=(ʔ)á=ka</i>
	motor=SPAT		1SG	descend=DISTPST=NMD:ANT-REL
	<i>pi</i>	...	<i>hini= =ka</i>	<i>hawí</i>
	ANX	...	water=SPAT=REL	3SG:GEN
	<i>ʂoβá</i>	<i>iá</i>	<i>atf-a=yamí(t)=ki</i>	<i>iwí</i>
	with	1SG-ACC	grab-TR-DISTPST=DECL:PST	you.know

“When I went down, when I went down in the motor in the water, it grabbed me, you know.” 1849:0258

130.	<i>wiakí</i>	<i>kiá</i>	<i>hawí</i>	<i>iwatí</i>	
	tomorrow	REPORT	3SG:GEN	gra.mo	
	<i>tii-wa</i>	<i>=ʔita</i>	<i>=ʔá</i>	<i>=ka</i>	<i>a(k)</i>
	sweet-VBLZ	=RECPST	=NMD:ANT	=REL	drink
	<i>=yáma</i>	<i>=ki</i>	<i>mi-a</i>		
	=NEG	=DECL:PST	2SG-EPEN		

“Tomorrow, after your grandmother has made chicha, you are not going to drink to.” 635:699

Clauses marked with the purpose nominalizer =tí cannot occur with any temporal distance markers. For instance, a conceivable purpose clause such as *tsaya=ʔita=tí* “to have seen yesterday” is ungrammatical (does not occur in my corpus and is not accepted by speakers in elicitation). Note that the absolute tense of a clause is provided by the clause-type morpheme of the main clause =ki “declarative past”. The temporal distance marker =ʂí “remote past” encodes the relative past with respect to the absolute tense established by the clause-type marker of the main clause. This is illustrated in the example below from elicitation.

131.	<i>ʂoβo</i>	<i>tsaya</i>	<i>=ʂí</i>	<i>=ʔái</i>	<i>=ka</i>
	house	see	=REMFUT	=NMLZ	=REL
	<i>yoʂa =</i>	<i>hini</i>	<i>a(k)=ki</i>		
	woman=ERG	chicha	drink=DECL:PAST		

“The woman that had plans to see the house in the future, made chicha.”

The example above shows that markers of absolute tense of the main clause always scope over dependent clauses. The same is true of temporal distance markers of main clauses as well. For example, the dependent clause *imaʂó* “after roasting” takes on the temporal distance of the main clause, coded by the marker =ní “remote past”.

132.	<i>ʒima</i>	= <i>ʒó</i>	<i>tsi</i>	<i>no</i>
	roast	=PRIOR:A	LNK	1PL
	<i>ho</i>	= <i>ní</i>	= <i>ki</i>	
	arrive	=REMPST	=DECL:PST	
	"We roasted and then we returned." 0027:0025			

Appendix A.3.2 Aspect Marking

Chácobo has a number of aspectual markers. In this section, I will discuss =*yó* "completive", =*pao* "habitual", =*βaʒiná* "during the day", =*finá* "at night, while dreaming", *tiki(n)* "frequentive, iterative". Below, I assess which of these can occur with which dependent clause.

=*yó* "Completive"

The marker =*yó* encodes that the event of the verb it modifies is complete. If the verb is transitive, it encodes that the P argument is completely affected. If the verb is intransitive, it encodes a universal quantifier over the subject translated as "all". The marker =*yó* can occur in all dependent clauses. Examples of the completive occurring as a prior-event same-subject clause are provided here.

133.	<i>matos</i>	= <i>yo</i>	= <i>ʒó</i>	<i>tsi</i>	<i>no</i>
	dice	=CMPL	=PRIOR:SA	LNK	1PL
	<i>hiní</i>	<i>páʒa</i>	<i>no</i>	<i>βi</i>	= <i>ki</i>
	chicha	raw	1PL	grab	=DECL:PST
	"After dicing everything, we brought water up." 1156:0089				

134.	<i>toa</i>	<i>a(k)</i>	= <i>yo</i>	= <i>ʒaʒ</i>	<i>tsi</i>
	DEM:DIST	do	=CMPL	=PRIOR:SS	LNK
	<i>kiá</i>	<i>niáma</i>	= <i>ka</i>	<i>honi</i>	<i>tisibó</i>
	REPORT	far	=REL	man	other=PL/ASSOC
	<i>ʒoβo</i>	<i>witsa</i>	= <i>ka</i>	= <i>βo</i>	<i>ho</i>
	house	other	=REL	=PL/ASSOC	come
	= <i>yo</i>	= <i>ní</i>	= <i>ki</i>		
	=CMPL	=REMPST	=DECL:PST		
	"After doing this (making all the chicha), the men from far away from other clans, all arrived." 0013:0111				

The completive can also occur in nominalized clauses, as seen below.

135.	<i>afina ='</i>	<i>kiá</i>	<i>tʒiʒi</i>	= <i>yá</i>	<i>i</i>
	Ashina=ERG	REPORT	fire	=COMIT	see
	= <i>pao</i>	= <i>ní</i>	= <i>ki</i>	<i>rikiβa='</i>	
	=HABITUAL	=REMPAST	=DECL:PST	ancestors=ERG	
	<i>finó</i>	<i>βari</i>	<i>hana</i>	= <i>ʒó</i>	= <i>roʒá</i>
	monkey	sun/day	leave	=PRIOR:SA	LIMIT
	<i>píi</i>	= <i>pao</i>	= <i>ní</i>	= <i>ki</i>	
	eat	=HABITUAL	=REMPAST	=DECL:PAST	
	<i>ʒokóβo</i>	<i>kiá</i>	<i>riʒo</i>	= <i>yo</i>	= <i>ʒáina</i>
	children	REPORT	die	=CMPL	=NMLZ
	"Only Ashina had fire, back then our ancestors only put the monkey in the sun (to dry), and after that all the children died of hunger." 0780:0139				

Dependent clauses with =*yó* are accepted in elicitation contexts for all types of dependent clauses.

=paó “Durative, Habitual”

The marker =paó encodes durative or habitual aspect. It can occur with nominalized or noun-modifying clauses and from spontaneous speech.

136.	<i>yonoko</i>	<i>yonoko</i>	= <i>paó</i>	<i>ʔá</i>	<i>tsi</i>
	work	work	= DUR	= NDM:ANT	LNK
	<i>no</i>	<i>ho</i>	= <i>tiki(n)</i>	= <i>ni</i>	= <i>ki</i>
	1PL	come	=again	=REMPAST	=DECL:PST
	“We worked for a years and then came again.” 0582:0016				

137.	<i>foa</i>	<i>hasi=yá</i>	<i>no</i>	<i>raka</i>	= <i>ni</i>
	Benicito	mutun=COM	1PL	stay	=REMPST
	= <i>ki</i>	<i>raka</i>	<i>raka</i>	= <i>paó</i>	<i>no</i>
	=DECL:PST	stay	stay	= DUR	1PL
	= <i>ʔá</i>	= <i>kato</i>			
	= NMLZ	=REL			
	“On the Benicito, in the place on the mutun, we lived and we lived there for a long time.” 0055:0031				

The durative is not compatible with the purpose/instrumental nominalized clauses marked with =tí (e.g., *tsaya=paó=tí* see=DUR=NMLZ:PURP “to look for a long time” is ungrammatical). Although they do not occur in my corpus, speakers accept prior same-subject and different-subject clauses with the durative marker.

138.	<i>haβá</i>	<i>haβá</i>	= <i>paó</i>	= <i>ʔó</i>	<i>tsi</i>
	run	run	= DUR	=PRIOR:SA	LNK
	<i>tafi=</i>	<i>anó</i>	<i>tsáya</i>	= <i>ki</i>	
	Tashi=ERG	paca	see	=DECL:PST	
	“After running for some time, Tashi saw a paca.”				

139.	<i>haβa</i>	<i>haβa</i>	= <i>paó</i>	<i>awí</i>	= <i>ki</i>
	run	run	= DUR	woman	=PRIOR:DS/A
	<i>tsi</i>	<i>tafi=</i>	<i>raaʔá</i>	= <i>ki</i>	
	LNK	Tashi=ERG	scold	=DECL:PST	
	“After his wife ran for some time, Tashi scolded her.”				

The marker =paó “habitual, durative” cannot occur with asyndetic same-subject clauses. This is not surprising because these clauses are associated with fast succession. The durative cannot be marked on any concurrent same subject clauses either. Illustrative examples are provided here.

140.	* <i>haβa</i>	<i>haβa</i>	= <i>paó</i>	= <i>ʔi</i>	
	run	run	= DUR	=CONCUR:SS	
	<i>tsi</i>	<i>tafi</i>	<i>tsaʔó</i>	= <i>ki</i>	
	LNK	Tashi	sit	=DECL:PST	
	Intended: “Running for some time he sat down.”				

141.	* <i>haβa</i>	<i>haβa</i>	= <i>paó</i>	= <i>pama</i>	
	run	run	= DUR	=INTRMP:SS/A	
	<i>tsi</i>	<i>tafi</i>	<i>paki</i>	= <i>ki</i>	
	LNK	Tashi	fall	=DECL:PST	
	Intended: “Tashi was running for some time and then fell.”				

=*finá* “at Night, while Dreaming”

The marker =*finá* “at night, while dreaming” combines with clauses to mark them as taking place at night or while the subject participant of the verb is dreaming. Examples of the morpheme occurring in dependent clauses are provided here.

142. *a-ʔ-á* =*finá* *ha* *wa=kí*
do-EPEN-do =ATNIGHT 3 TR=PRIOR:DS/A
tsi *kiá* *náa* *táʂa* *há*
LNK REPORT DEM:PROX sweep 3
a(k) =*ní* =*ki*
do =REMPST =DECL:PST
“After he (the cutuchi) worked all night, she swept there.” 2123:188
143. *oʂá* =*finá* *ha* =*ʔá* =*ka*
sleep =ATNIGHT 3 =NMD:ANT =REL
wiakí *tsi* *kiá* *ha*
next.day LNK REPORT 3
βoʔo =*i* *βo* =*kan* =*ní*
carry =CONCUR:SS GO:PL =PL =REMPST
=*ki*
=DECL:PST
“After sleeping, they went the next day, carry (it) to him.” 0028:0047

Although it is not attested in my corpus, in elicitation contexts speakers accept the marker =*finá* “at night, while dreaming” in all dependent clauses.

=*βaʔina* “all day, during the day”

The morpheme =*baʔina* “all day” expresses a durative aspect and that the action took place over the course of the whole day. It can occur in dependent clauses as in the examples below.

144. *wiakí* *ia=rí* *paʂna-ria=ʂó* *ʂoβo*
tomorrow 1SG-TOO be.hungry-AUG=PRIOR:SA house
tʂaʔo *tʂaʔo=βaʔina=ʔána* *iari* *wiakí*
sit sit=ALLDAY=NMD:ANT 1SG-AUG tomorrow
tana=i *ka=fari=kí=a*
fish=CONCUR:SS GO=CRAS=RECL:NONPAST =1SG
“Tomorrow, after being hungry, and sitting around all day at home, I will go fishing.” 1154:0054
145. *ho~ho* =*baina* =*ʔi* *tsi* *ʂaʔi*
come~come =ALLDAY =CONCUR:SS LNK ant.eater
ha *βitʂa* =*ní* =*ki*
3 meet =REMPST =DECL:PST
“When he was coming back home all day, then he met the anteater.” 0873:0083

These are the only two obvious cases where =*βaʔina* occurs in dependent clauses in the corpus of natural speech. Elicitation data show that =*βaʔina* “all day” can occur in all dependent clauses.

=*tapi* “punctual”

The morpheme =*tapi* encodes that an event occurred rapidly or in a rushed fashion. This morpheme is unattested in dependent clauses. In elicitation contexts, speakers reject the appearance of =*tapi* in all dependent clauses except agentive nominalized marked with =*ʔai(na)* “agentive nominalized” and noun-modifying clauses =*ʔá(na)* “noun modifier, anterior”.

=tikin “Again”

The morpheme *tiki(n)* encodes that an event had already taken place and that the same or a similar event is taking place again. It can occur in same subject clauses.

146.	<i>ka</i>	= <i>tiki(n)</i>	= <i>ʔás</i>	<i>media</i>	<i>ora</i>
	go	=again	=PRIOR:SS	half	hour
	<i>tsi</i>	<i>tʃani</i>	= <i>tiki(n)</i>	<i>hawíwa</i>	<i>pasí</i>
	LNK	speak	=again	mother	silence

“After half an hour his mother returned and asked again, and there was silence.” 0181:0069

The marker =*tikín* “again” can occur in different subject clauses.

147.	<i>í</i>	<i>pa</i>	<i>rási</i>	<i>βi</i>	= <i>tiki(n)</i>
	1SG	MIRATIVE	crouched	grab	=again
	= <i>no</i>	...	<i>áfiná=</i>	<i>átsa</i>	<i>i</i>
	=CONCUR:DS/A	...	Ashina=GEN	yuca	1SG
	<i>βi</i>	= <i>tiki(n)</i>	= <i>no</i>	<i>i</i>	= <i>kayá</i>
	grab	=again	=CONCUR:DS/A	do	=DO&GO:INTR
	<i>βo</i>	= <i>kan</i>	= <i>(ʔ)á</i>	= <i>ka</i>	<i>haβi</i>
	take.away	=PL	=NMD:ANT	=REL	surely

háskara
similar.to
“Ashina grabbed me crouching, while I was grabbing her yuca, and when she did this, they took me away in the same way.” 2123:0047

The morpheme can occur in nominal-modifying clauses and nominalized clauses.

148.	<i>ho</i>	= <i>tiki(n)</i>	= <i>ʔá</i>	= <i>ka</i>	<i>dos</i>
	come	=again	=NMD:ANT	=REL	two
	<i>βári</i>	<i>no</i>	<i>ka</i>	= <i>tiki(n)</i>	= <i>yáma</i>
	day	1PL	go	=again	=NEG
	= <i>ki</i>	<i>noβá</i>	<i>patiári</i>	<i>tsaya</i>	= <i>ʔána</i>
	=DECL:PST	1PL:GEN	chicken	see	=NMD:ANT

“After two days, we went again to see our chicken.” 1157:0017

149.	<i>šiki</i>	<i>ha</i>	<i>βi</i>	= <i>tikín</i>	= <i>(ʔ)ái</i>
	corn	3	grab	=again	=NMLZ
	= <i>ka</i>	<i>pi</i>	<i>hawi</i>	<i>šiko</i>	= <i>roʔá</i>
	=REL	ANXIETY	3SG:GEN	cob	=LIMIT
	<i>mapo</i>	<i>mapo</i>	<i>mapo</i>		
	put	put	put		

“When she grabbed corn, she put a lot of their cobs nothing more in a pile.” 0638:0273

In elicitation contexts, speakers accept =*tikín* in all dependent clauses.

Appendix A.3.3 Associated Motion

As with all Pano languages, Chácobo has a complex associated motion system. Associated motion markers are bound morphemes which add a motion event (often backgrounded) to the event of the verb that they modify (Tallman 2020). I have found no restrictions on the distribution of associated motion morphemes in dependent clauses in Chácobo. Associated motion markers can occur in all same-subject clauses.

150.	<i>ririi</i>	<i>ririi</i>	<i>i</i>	=kana	=ʔá
	IDEO	IDEO	say	=GOING:ITR/SG	=NMD:ANT
	<i>hawí</i>	<i>áni</i>	<i>a-ʔ-a</i>		=βona
	3SG:GEN	river	make-EPEN-make		=GOING:TR/PL
	=ʔas	<i>ha</i>	<i>ka</i>	=ʔá	=ka
	=PRIOR:SS	3	go	=NMD:ANT	=REL
	<i>naama</i>	=ʔáí	=kato		
	delay	=NMLZ	REL		

“When he was descending with the dounf riririri he was making the river and after some time he went.” 0181:0423

Associated motion markers can occur in all different subject clauses.

151.	<i>ha</i>	<i>nia</i>	=yáma	<i>ik</i>	=ita
	3	throw.away	=NEG	be	=RECPST
	=ʔá	<i>haβokí</i>	<i>hana</i>	=βayá	<i>ha</i>
	=NMD:ANT	now	leave	=DO&GO:TR/PL	3
	=kĩ	<i>tsi</i>	<i>kiá</i>	<i>naa</i>	<i>ha</i>
	=PRIOR:DS/A	LNK	REPORT	DEM:PROX	3
	<i>noʔíria</i>	<i>wítsa</i>	<i>pía</i>	<i>βi</i>	=só
	people	other	arrow	grab	=PRIOR:SA
	<i>tsi</i>	<i>kiá</i>	<i>yáwa</i>	<i>a(k)</i>	=ki
	LNK	REPORT	peccary	do	=DECL:NONPST

=a
=1SG

“After he had thrown it away the day before, he left and went, and grabbed an arrow of another person “I am going to kill the peccary”” 0014:0352

Associated motion markers can occur in nominal-modifier clauses and nominalized clauses.

152.	<i>pi</i>	=βona	=ʔá	<i>tsi</i>	<i>ka</i>
	eat	=DO&GO:TR/PL	=NMD:ANT	LNK	go
	=kí		<i>haβi</i>	<i>hini</i>	<i>a(k)</i>
	=CONCUR:SA		surely	water	
	=βona		=tsi	=ká(n)	=ki
	=DO&GO:TR/PL		=NOW	=PL	=DECL:NONPST

“After eating and drinking chicha they went.” 0116:0334

153.	<i>nawapaśáwa</i>	<i>nami</i>	=káss	=i	<i>kiá</i>
	Nahuapaxahua	kill	=VOL	=C	REPORT
	<i>tsios</i>	<i>tsios</i>	<i>tsios</i>	<i>tsi</i>	<i>kiá</i>
	IDEO	IDEO	IDEO	LNK	REPORT
	<i>gaʔi</i>	<i>tsipis</i>	=hona	=ʔáina	
	ant.eater	fart	=COMING:INTR	=NMLZ	

“They wanted to kill Nahuapaxahua “tsios tsios tsios”, the ant eater was coming farting.” 0783:0181

Appendix A.3.4 Modal and Evidential Markers

Chácobo has a number of modal markers. In this section, I will discuss **=kás** “volitional”; **kiá** “counterfactual”; **kará** “probably”; **pi** “abilitative”; **kiá** “reportative”.

=kas “volitive”

The volitive encodes that the subject participant wants to or tried to perform some action. It is compatible with same-subject concurrent clauses.

154.	<i>tfota</i>	=kas	=kí	<i>tsi</i>	<i>kiá</i>
	have.sex	=VOL	=CONCUR:SA	LNK	REPORT
	<i>hinará</i>	<i>raa=ta</i>	<i>ha</i>	<i>wa</i>	<i>=no</i>
	penis=ADMON	send=PNCT	3	TR	=CONCUR:DS/A
	<i>ririṣi</i>				
	head.bite				
	"Everytime he tried to have sex, as he would send his precious penis in, they (the snakes living inside the woman's vagina) would bite its head." 0483:0317				

The volitive can occur in nominalized clauses.

155.	<i>no</i>	<i>a(k)</i>	=kas	=ḡáí	=ka
	1PL	do	=VOL	=NMLZ	=REL
	<i>no</i>	...	<i>no</i>	<i>a(k)</i>	<i>=tíṣo</i>
	1PL	...	1PL	do	=OBLIG
	<i>naa</i>				
	DEM:PROX				
	"What we want to do is what we should do." 2153:0059				

The volitional is not very common in dependent clauses. Speakers do not accept sentences where the volitional is in prior same or different-subject clauses.

=kiá "Counterfactual" and **=pi** "Abilitative"

The marker **=kiá** encodes counterfactual semantics and the marker **=pi** encodes the subject ability or possibility. I have no examples in spontaneous speech of these markers occurring in naturalistic speech. However, speakers accept the counterfactual and the ablative in elicitation.

156.	<i>yonoko</i>	=kiá	=ḡi	<i>tsi</i>	<i>tafi</i>
	work	=CNTRFCT	=CONCUR:SS	LNK	Tashi
	<i>tsaḡó</i>	<i>=ki</i>			
	sit	=DECL:PST			
	"When he was about to work, Tashi sat down instead"				

157.	<i>yonoko</i>	=pi	=ḡi	<i>tsi</i>	<i>tafi</i>
	work	=ABIL	=CONCUR:SS	LNK	Tashi
	<i>tsaḡó</i>	<i>=ki</i>			
	sit	=DECL:PST			
	"If its the case that Tashi worked and sat down."				

The only dependent clause which cannot be marked with the counterfactual nor the ablative is the dependent clause marked with **=pama** "interrupted".

158.	<i>*ṣoḃo</i>	<i>tsaya</i>	=kiá	=pama	<i>tsi</i>
	house	see	=CNTRFCT	=INTRMP:SS/A	LNK
	<i>tafi</i>	<i>pakí</i>	<i>=ki</i>		
	Tashi	fall	=DECL:PST		
	Intended: "Tashi was watching the house and then fell."				

159.	<i>*ṣoḃo</i>	<i>tsaya</i>	=pi	=pama	<i>tsi</i>
	house	see	=ABIL	=INTRMP:SS/A	LNK
	<i>tafi</i>	<i>pakí</i>	<i>=ki</i>		
	Tashi	fall	=DECL:PST		
	Intended: "If Tashi was watching the house and then fell."				

=kiá “Reportative”

The reportative can occur adjacent to a dependent clause.

160.	<i>hatsi</i>	<i>kiá</i>	<i>yonoko=şó</i>	<i>tsi</i>	<i>tafi=’</i>
	then	REPORT	WORK-PRIOR:SA	LNK	Tashi=ERG
	<i>anó</i>	<i>tsáya=ki</i>			
	paca	SEE=DECL:PST			

“Then (it is said) after working, Tashi saw the paca.”

However, it is not clear whether the reportative can mark a dependent clause independent of a main clause. There is maximally one reportative marker for every main clause that is present. This suggests that dependent clauses are not marked independently for the reportative.

161.	<i>*hatsi</i>	<i>kiá</i>	<i>yonoko=şó</i>	<i>tsi</i>	<i>kiá</i>
	then	REPORT	WORK-PRIOR:SA	LNK	REPORT
	<i>tafi=’</i>	<i>anó</i>	<i>tsáya=ki</i>		
	Tashi=ERG	paca	SEE=DECL:PST		

“Then (it is said) after working, Tashi saw the paca.”

On the other hand, reportative markers scope over dependent clauses. The scope of the reportative markers appears to be mostly determined by context. Examples where the reportative scopes only over the main clause are provided here.

162.	<i>gas</i>	<i>tsi</i>	<i>kiá</i>	<i>toa</i>	<i>=ʔitá</i>
	gas	LNK	REPORT	explode	=RECPST
	<i>=ki</i>	<i>ha-ʔá</i>	<i>βiti</i>	<i>=kan</i>	<i>=(?)áina</i>
	=DECL:PST	3-LOC	cook	=PL	=NMLZ

“It is said that the gas exploded where they typically cook.’ (context: the speaker knows where they cook).” 2153:0225

163.	<i>ka</i>	<i>=şó</i>	<i>tsi</i>	<i>kiá</i>	<i>hima</i>
	go	=PRIOR:SA	LNK	REPORT	Jema
	<i>=ki</i>	<i>ha</i>	<i>yoa</i>	<i>=ʔitá</i>	<i>=ki</i>
	=DATIVE	3	tell	=RECPAST	=DECL:PAST

“After she (Bosi) went, (it is said) she (Bosi) told Jema.” (context: speaker knows that Bosi went somewhere, she saw her). 2153:0293

Notes

- 1 I thank a reviewer for calling this approach to my attention (see [Behme 2014](#) for discussion).
- 2 Note that “variable” is just what is traditionally referred to as a “diagnostic” in this perspective. The difference is that there is no assumption that diagnostics cue a priori Platonic categories, reified from traditional grammar in many confessional “generative” approaches. From a traditional perspective, this article is concerned with applying “diagnostics” to the clause-linkage constructions in Chácobo.
- 3 Note that I refer to “lexical items” rather than “words”, because it is not clear what words are in Chácobo ([Tallman 2021a](#)).
- 4 [Valle \(2017\)](#) and [Tallman \(2018a\)](#) reject the distinction between derivational and inflectional morphology. This does not mean that finiteness needs to be rejected per se in typological studies of clause linkage, but it does mean that it must be broken down into more fine-grained variables.
- 5 Intraclausal participant agreement occurs on adjuncts which are not full clauses. This type of agreement will become relevant in Section 4.7 on the asymmetric extraction of adverbial constituents.
- 6 Note that different subject clauses *require* an overt subject, which is not true of main clauses. If main clauses have a third-person S/A subject, this can be null.
- 7 I have found no evidence that Chácobo has any clauses which require identity with an P object of the main clause, which occurs in some other Pano languages ([Valle 2017](#); [Camargo Souza 2020](#)).

- 8 The topic perhaps requires more research. Some speakers accepted in situ interrogatives but stated that the sentences were odd and preferred to front them.
- 9 Note that there are cases where ATB extraction can occur with adjunct clauses (e.g., parasitic gap constructions) (Bošković 2020) and thus the criterion is not waterproof.
- 10 See the work of Tallman and Auderset (2023) for a similar methodology applied to assessing the morphology–syntax distinction.
- 11 Note that this section was expanded at the request of the editors. I am not of the opinion that every paper needs a tutorial introduction for the quantitative methods it uses, if these can be easily found elsewhere.
- 12 There is a significant amount of literature on clustering analyses (see Jain 2010 for a recent review; see Cysouw 2007 for a discussion oriented toward a linguistic audience).
- 13 It may seem somewhat paradoxical that the purpose clause is the only one where we have clear evidence of ATB extraction, which could be seen as a diagnostic for coordinative status. As Bošković (2020) argues, however, coordinative and adjunctive subordinative clauses both allow ATB extraction.
- 14 Note that the logic here is based on *testing* the presence of a certain type of distinction, not in proving that this distinction is uniquely responsible for any partition that may occur. We are thereby assume that, if a partition exists, it is related to the subordination–coordination distinction. However, it should be noted that, even if such a partition is found, it would not *prove* that a subordination–coordination distinction is valid in the language if a competing explanation could be found for the partition. This would require assessment of different predictions of competing hypotheses as well.
- 15 I thank a reviewer for pointing this issue out to me.
- 16 Another possibility that should be taken seriously is that clusters reflect formal universals which are causally related to the diagnostics (variables) that linguists use. This seems to be implicit in much generative literature.
- 17 The issue is somewhat more complicated because this generalization does not apply when we consider C-SUBJ constructions. Thus, *ámíno pí=ki* “S/he eats the capiwara” is an acceptable sentence. Furthermore, the presence of certain clitics such as =*yó* allows the subject to be dropped without dropping the object.
- 18 This tree is meant to be illustrative of the problem in assessing extraction in same-subject clauses. It is not meant to be a representation of a syntactic model applied to Chácobo clause structure.

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