Lexically driven patterns of contact in alignment systems of languages of the northern Upper Amazon

Gijn, E. van; Case, J.T.; Bruil, M.; Claassen, S.A.; Grzech, K.; Julmi, N.P.

Research Article

Rik van Gijn*, Justin Case, Martine Bruil, Simon A. Claassen, Karolina Grzech, and Nora Julmi

Lexically driven patterns of contact in alignment systems of languages of the northern Upper Amazon

Abstract: Despite ample attention in the literature for alignment patterns and case frames more generally, we know very little about how these elements of grammar spread from one language to another in a contact situation. Achieving a better understanding of this will help explain areal patterns in alignment and grammatical relation marking. In this contribution, we zoom in on a contact situation in the foothills of North-West Amazon, where languages of the Quechuan and Tukanoan families are in contact, and where previous authors have suggested that grammatical relation marking shows many potential contact effects. We find that, despite the absence of loanwords, abstract lexico-grammatical information associated with individual lexical items may spread from one language to another, especially within the class of sensation predicates. These can be characterized as lexically driven diffusion patterns, without formal borrowing, consistent with an overall characterization of the area's sociolinguistics as loanword-avoiding.

Keywords: north-west Amazon, verb classes, case frames, alignment, Quechuan, Tukanoan, language contact

1 Introduction

Morphosyntactic alignment can uncontroversially be called one of the classic topics in linguistic typology. Possibly because of its development in the early stages of Greenbergian typology in the 1970s (e.g., Anderson 1976, Comrie 1978, Dixon 1979), it is traditionally associated with holistic language classification, i.e., languages are said to be of a nominative–accusative or absolutive–ergative type. These holistic characterizations of languages assume that intransitive and transitive verbs behave more or less uniformly with respect to the morphosyntactic encoding of their arguments.[1] At the same time, another line of inquiry within typology (e.g., Hopper and Thompson 1980, Tsunoda 1981) highlighted the fact that case frames are,

---

[1] Lexical (and other) exceptions, if they constitute a large enough group, and/or if the group of exceptions has a systematic character, have led to the postulation of the so-called split alignment systems.

---

* Corresponding author: Rik van Gijn, LUCL, Leiden University, Reuvensplaats 3-4, Leiden, 2311 BE, Netherlands, e-mail: e.van.gijn@hum.leidenuniv.nl
Justin Case: Department of Linguistics, University of Ottawa, Ottawa, Canada, e-mail: jcase058@uottawa.ca
Martine Bruil: LUCL, Leiden University, Leiden, Netherlands, e-mail: m.bruil@hum.leidenuniv.nl
Simon A. Claassen: LUCL, Leiden University, Leiden, Netherlands, e-mail: s.a.claassen@hum.leidenuniv.nl
Karolina Grzech: Departamento de filología española, University of Valencia, Valencia, Spain; Department of Linguistics, Stockholm University, Stockholm, Sweden, e-mail: karolina.grzech@uv.es
**Nora Julmi:** LUCL, Leiden University, Leiden, Netherlands, e-mail: n.julmi@hum.leidenuniv.nl

to a large extent, lexically determined, though not entirely unpredictable: the further removed a verbal concept is from a prototypical transitive event, the more likely it is that it will show nonprototypical morphosyntactic behavior.

Several authors (e.g., Comrie 1978, Dixon 1979, Hopper and Thompson 1980, Tsunoda 1981, DeLancey 1981) have proposed functional explanations for systemic and lexical preferences in alignment systems in individual languages and cross-linguistically. What has been understudied, however, is the role of individual lexical items in the historical development of alignment systems, and more particularly, the role of contact in shaping the patterns of case marking and verbal indexing in languages.

In this contribution, we explore the extent to which lexical items play a role in the spread of alignment (sub)patterns. We do this by moving away from holistic characterizations of languages and toward a more nuanced perspective, taking into account the behavior of individual lexical items. We do this by comparing the case frames of verbs on the basis of a verbal concept list (Hartmann et al. 2013, Malchukov 2015) that is claimed to be representative of the verbal lexicon and applicable across languages. We have classified these verbal concepts into different semantic classes based on a cross-linguistic framework proposed by Malchukov (2005), in which he classifies verb concepts according to the deviation of their arguments from prototypical A and P arguments. This has three advantages. First, it allows us to systematically assess which parts of the verbal lexicon are most sensitive to contact-induced innovations. Second, it provides a perspective on the extent to and manner in which contact-induced innovations spread through the lexicon based on semantic commonalities. Third, it allows for the comparison between languages with similar alignment systems, by looking at the question where the prototypical accusative marking pattern starts to break down.

We focus on a particular case study, which involves the contact between Quechuan and Tukanoan languages in the western part of the North-West Amazon (NWA), which we will refer to as the NWA-foothill area. There are three main reasons for this choice. In the first place, the people in this area have a history of intense interaction, which included exogamy (e.g., Kohlberger 2020, 57), (forced) migrations (e.g., Wise 2011, 315), and language shifts (e.g., Muysken 2021). This has led to several patterns of contact-induced changes in the languages, as noted by several authors (e.g., Wise 2011, Valenzuela 2015, Kohlberger 2020, Muysken 2021), including the patterns of marking grammatical relations (see, e.g., Wise 1999, 320–1). Despite considerable advancements in these matters, the extent of these contact-induced effects in the area, however, is still underexplored, and this article seeks to contribute to this line of inquiry. A second reason to focus on Tukanoan and Quechuan languages is that the distribution of these languages provides a naturally occurring laboratory for the study of areal effects in the NWA-foothill area because both families have members inside and outside the area of interest, as shown in Map 1.
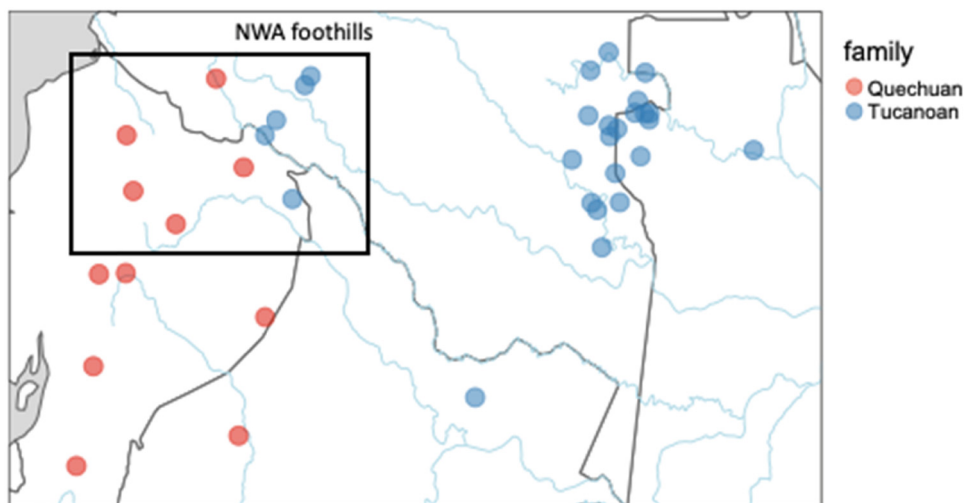
Map 1: The distribution of Quechuan and Tukanoan languages in the NWA.

Third, the results of our study can be embedded in the wider areal context of the NWA, which extends much further into the Amazon and which includes many contact situations (see, e.g., Aikhenvald, 2002, Stenzel 2005, Seifart 2015, Chacon 2017).

This article is structured as follows: in Section 2, we give a brief introduction of the linguistic ecology of the NWA, including a brief discussion of the salient features of the alignment patterns found in the area (Section 2.1), followed by an overview of the Tukanoan and Quechuan families (Section 2.2). Section 3 introduces our sample and outlines our methodological approach to the question of determining contact-induced changes. In Section 4, we discuss our findings with respect to case frames in the languages of our sample. Section 5 discusses our findings in the context of the sociolinguistic profile(s) of the area. Section 6 concludes this article.

2 The areal and genealogical contexts

It is hard to state exact boundaries of the NWA, but the area can be roughly delimited by the Upper Rio Negro to the north-northeast, the Marañon River in northern Peru to the south, and the northern Andes to the western border. The eastern boundary is more diffuse but can be drawn from about the longitude of the Upper Rio Negro to the confluence of the Putumayo River and the Amazon River. In Section 2.1, we present a brief overview of the linguistic ecology of the region (the languages and their affiliations, identified contact situations). Section 2.2 zooms in on the Quechuan and Tukanoan language families and what is known about contact between them.

2.1 The linguistic ecology of the NWA, with special attention to the foothill area

The NWA is characterized by a high linguistic (genealogical) diversity, comprising a number of small language families and (near) isolates, as well as (branches) of larger language families. Map 2[2] indicates the genealogical units of the area, with each isolate counted as a separate genealogical unit.

Three larger families are represented in the area: Tukanoan, Quechuan, and Arawakan. We zoom in on the former two languages in the next section and briefly introduce Arawakan here. Arawakan is one of the major language families of the continent, with an enormous geographical spread, spanning almost the entire northern part of the continent, with languages spoken between the Caribbean islands and southern meso-America to northern Argentina and southern Brazil, and from the Atlantic coast to the foothills of the Andes. The branch that is represented in the NWA is the Japura-Colombia branch in the classification of Hammarström et al. (2021), based on Aikhenvald (1999), with some 15 known languages. Where contact between Tukanoan and Quechuan has been understudied in the literature, there is extensive literature on contact between Arawakan and Tukanoan (e.g., Aikhenvald 2002, Stenzel 2015, Chacon 2017).

In addition to these larger families, a number of smaller families and isolates are represented in the NWA. The Chicham or Jivaroan family consists of five languages: Aguaruna, Wampis, Shuar, Achuar, and Shiwiar spoken in both Peru and Ecuador. This family has a relatively large number of speakers, with Shuar having over 60,000 and Aguaruna over 55,000 speakers (Kohlberger 2020, 15). The Zaparoan family (de Carvalho 2013) is a highly endangered language family with six known members located in Ecuador and northeastern Peru, of which three are extinct, and the remaining three nearly extinct (Hammarström et al. 2021). The Kawapanan (Cahuapanan) family of northeastern Peru (Valenzuela 2011) has two known languages, both of which are still spoken today, but also endangered to varying degrees. In addition, the area

---

2 The Map was created with the Glottospace (Norder et al., 2022), a newly created R package for the visualization and analysis of languages in space.
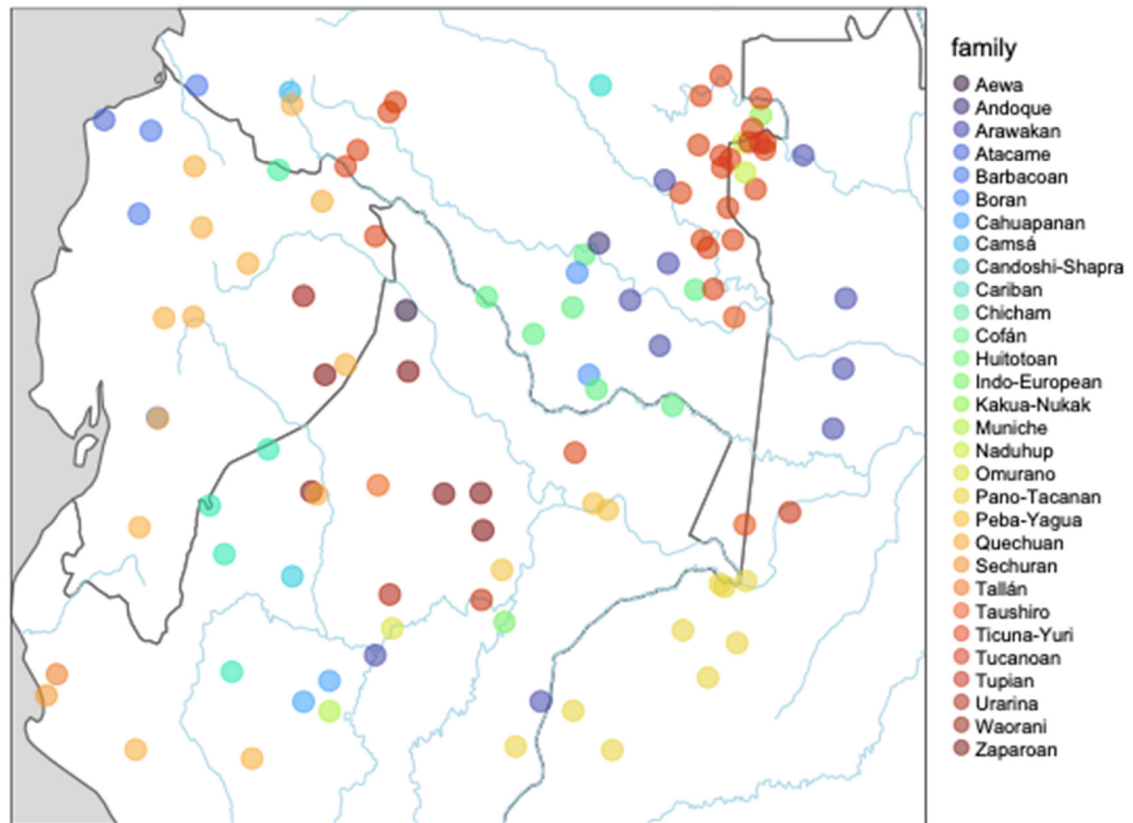
Map 2: The languages of the NWA and their linguistic affiliations.

harbors a number of isolate languages including Camsá of southern Colombia, A'ingae (Cofán), spoken in Colombia and Ecuador, Urarina of northern Peru, and Wao Tededo (Waorani), an Ecuadorian language. This shows a linguistically diverse landscape with various potential contact scenarios in the NWA-foothill region. Naduhup, Witotoan, Barbacoan, Peba-Yaguan, and Ticuna-Yuri are small families at the fringes of the NWA. Tupian and Cariban are large families with a minor presence at the periphery of the NWA.

There are various subareas of intense contact within the NWA area that are mentioned in the literature. These include the Vaupés area (Aikhenvald 2002), the larger Upper Río Negro area, which includes the Vaupés area (Epps and Stenzel 2013), and the People of the Centre area (Gasché 2009). The best studied of these subregions is the Vaupés, which houses diverse communities living along the river system straddling the central Colombia–Brazil border area. There are roughly a dozen languages represented in this subregion, classified as belonging to five separate families: Tukanoan (namely, Eastern Tukanoan varieties), Arawakan, Nadahup, Kakua-Nukak, and a growing Tupí-Guaranían presence with the growth of Nheengatú populations (Epps and Michael 2017). According to most studies (Aikhenvald 1999, Epps and Stenzel 2013, among others), the Vaupés is classified as a zone of intense contact and cultural-linguistic diffusion across and within these families. This relationship of cultural and linguistic exchange in the Vaupés has likely been active for centuries, predating the arrival of the Spanish in the region, as sociopolitical shifts caused certain nonriverine communities to migrate to such fluvial zones (Chacon 2013).

Another NWA subregion which has received attention is subsumed under the label the People of the Centre (Gasché 2009). The groups that populate this region along the southern Colombia-northern Peru border speak languages belonging to the Witotoan family, the Boran family, and various southern Arawakan varieties. Although there are some works on the specific contact situation of this area (Seifart 2011, 2012, 2015), this area is more consistently described as a sociocultural contact area (Echeverri 1997, Gasché 2009).

The focus of this article is on the NWA-foothill area, which has been mentioned as a possible contact area (e.g., Wise 2011, Valenzuela 2015, Kohlberger 2020). The languages that have probably been in contact since before the colonial documentation in this area include the Western Tukanoan, Chicham, Zaparoan, and Kawapanan languages and the isolates A'ingae (Cofán) and Wao Tededo. Amazonian Kichwa probably developed in the colonial period (Muysken 2000). Although there are only a few lexical borrowings in the area (see, for instance, Velie 2008, 29 for Quechua borrowings in Máíhìkì), there are some structurally reoccurring similarities observed, such as the habitual construction as exemplified in (1) and the deontic construction as exemplified in (2):

(1)   a.   Shiwiar [CHICHAM], Kohlberger 2020, 29
       t͡ʃuú ut͡ʃĩríhʲãĩ nakúriɲ ármiaji.

t͡ʃuú	ut͡ʃi-ríN = hʲãĩ	nakúr-inʲ
woolly.monkey + GEN	child-1PL/2PL/3.P = COM	play-**AG.NMLZ**

       á-r-mia-ji
       COP-PL-DIST.PST-3SG + DECL
       'They used to play with the woolly monkey babies.'

   b.   Salasaka Kichwa [QUECHUAN], Muysken 2011, 141 in Kohlberger 2020, 30

ʃamu-k	ka-ni
come-**AG.NMLZ**	**COP**-1SG.SBJ

       'I usually come.'

   c.   Ecuadorian Siona [TUKANOAN], Martine Bruil fieldnotes
       De'wa-ka-i-**ko-a-o**
       tidy.up-BEN-IPFV-**AG.NMLZ-COP**-3SG.F.ASSRT
       'She normally tidies up.'

(2)   a.   Shiwiar [CHICHAM], Kohlberger 2020, 30
       jamáikʲa nuŋgá puhustíɲuitʲmɨ tamá nú.

jamái = kʲa	nuŋká	puhu-s-tínʲu = itʲ-mɨ
now = TOP	ground + LOC	live-PFV-**AS.NMLZ** = **COP**-2SG.SBJ + DECL

t-a-má	nú
say-IPFV-NSBJ > SBJ	ANA

       'Now you have to live on the ground,' he said.

   b.   Salasaka Kichwa [QUECHUAN]: Muysken 2011, 143, in Kohlberger 2020, 30

ri-na	ga-ni
go-**AS.NMLZ**	**COP**-1SG.SBJ

       'I have to go.'

   c.   Ecuadorian Siona [TUKANOAN], Bruil 2014, 217

hã-ɨ-bi	zoa-je	ba-'i-hi
DEM.DIST-CLS:ANIM.M-SBJ	wash-**AS.NMLZ**	**be**-IPFV-3SG.M.PRES.ASSRT

       'He has to wash
       (something).'

These constructions show possible convergence among Tukanoan, Quechuan, and Chicham languages of the NWA.[3] Morphosyntactic influence on Ecuadorian Quechua from Wao Tededo, Barbacoan and Chicham languages has also been suggested (see, e.g., Muysken 2011, Zúñiga 2015, Floyd 2022).

---

3 It is possible that the existence of these parallel structures (and especially the habitual constructions in example (1)) did not come about as a result of language contact but present a case of parallel developments in the three languages. Furthermore, we do not want to make a claim about the direction of this possible contact-induced change, and we merely want to show structural similarities that are suggestive of potential regional convergence. Both the habitual and the deontic constructions are found

If we take a bird's eye view of the alignment patterns found in the NWA-foothill area, we see that the area is dominated by nominative–accusative alignment systems (with the exception of Kawapanan languages),[4] expressed in most languages by a combination of flagging and indexing.[5] This resembles the dominant Andean pattern more than the surrounding Amazonian patterns, where ergativity and/or split-intransitivity are commonly found.[6] In addition, differential argument marking seems to be a feature of the area. A number of languages (Western-Tukanoan, Witotoan, Kawapanan, and Zaparoan) have optional subject case markers, and Chicham and Witotoan languages have conditional object case marking depending on the person of the subject (Wise 1999, Overall 2007, Kohlberger 2020); object case marking in Tukanoan languages interacts with various factors: specificity (Kotiria – Stenzel 2013) and definiteness (Tukano–Bonfim Duarte and de Oliveira Lopes 2020). It is also possible that the lack or reduction (compared to southern varieties) of object indexing on the verb in northern Quechuan languages is a contact (substrate) effect. These elements, summarized in Table 1, suggest contact-induced diffusion of elements of alignment patterns in the languages of this area. In Section 2.2, we zoom in on the Tukanoan and Quechuan languages.

2.2 Tukanoan and Quechuan

One of the larger families that is confined to the NWA is the Tukanoan family (Tucanoan in the map),[7] consisting of about 29 languages of which about 8 are not spoken anymore (Chacon 2014, 275). There is a major split between Eastern and Western Tukanoan languages, Eastern Tukanoan being the larger branch and Western Tukanoan being the branch that falls within the NWA-foothill area, the area of focus in this study. Eastern Tukanoan is concentrated in the eastern portion of the NWA, roughly between the Apoporis and Vaupés Rivers. The Western Tukanoan branch currently consists of Koreguaje, Siona, Sekoya, and Máíh ̀ìkì and shows its main concentration in the foothill area between the Upper Caquetá and Upper Putumayo Rivers, and with geographical outlier Máíh ̀ìkì in northeastern Peru. The branching within the family is shown in Figure 1.

In the previous classifications (Mason 1950, Waltz and Wheeler 1972, Barnes 1999, 209), Kubeo and, in some cases, Retaurã and Tanimuka were analyzed as a separate branch, because they differ more from other Eastern Tukanoan languages. Mason (1950) analyzes Kubeo as forming a middle or central branch, because it has communalities with both Eastern and Western Tukanoan languages. However, as Gomez-Imbert (2011) points out, the "Middle" languages Kubeo and Retaurã (and Tanimuka) may differ from the other Eastern Tukanoan languages, because they have undergone more contact-induced changes due to their contact with Arawakan languages. Therefore, the deviation is not due to an earlier language split, but due to a specific contact situation. Furthermore, as Chacon (2014, 283) points out, previous classifications based their analysis on both retentions and innovations, whereas only shared innovations should be taken into account. When this is done, the central branch languages should be grouped into the Eastern Tukanoan branch.

---

throughout the Quechuan family (see, for instance, Parker 1969, 49, 55 on Ayacucho Quechua). It is not clear if these constructions are widespread in the Tukanoan and Chicham families.

4 Kawapanan languages display ergative alignment in their case marking system, but accusative alignment in their verbal indexing systems (Rojas-Berscia 2019, Valenzuela 2011).

5 Some of the Zaparoan languages use word order, which also follows a nominative-accusative pattern (Michael 2009).

6 Although ergativity (and related patterns such as split ergativity and split intransitivity) is a minority pattern globally speaking (Comrie 2013, Siewierska 2013), it is relatively common in Amazonia (Monrós Marin 2004, Queixalós and Gildea 2010, Birchall 2014). Even in Amazonian areas close to the Andes, pure accusative systems seem to be rarer than in the Andes (van Gijn 2014).

7 The categories in Map 1 are based on the labels provided by Glottolog (Hammarström et al. 2021); therefore, the labels used in the text can deviate from those labels.

Table 1: Distribution of relevant typological features across the NWA-foothill area

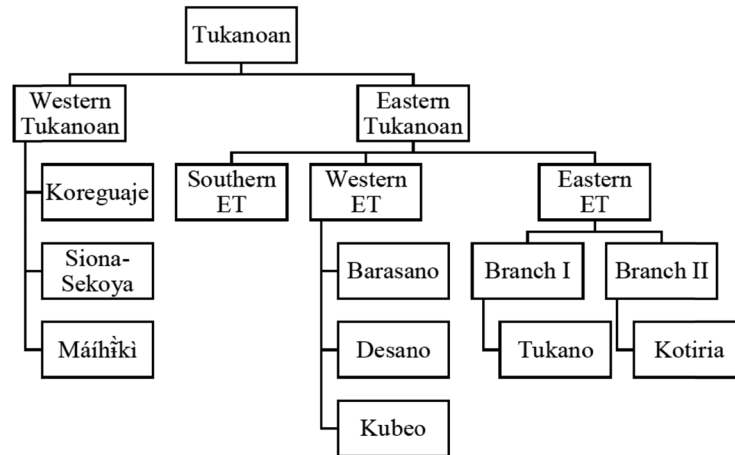|	N. Quechuan				W. Tukano			Chicham			Kawapanan		Witotoan	
	Imbabura	Napo	Tungurahua	Cañar	Siona	Majïki	Koreguaje	Aguaruna	Shiwiar	Wampís	Shawi	Shiwilu	Murui	Ocaina
Accusative alignment (flagging)	+	+	+	+	+	+	+	+	+	+	−	−	+	−
Accusative alignment (indexing)	+	+	+	+	+	+	+	+	+	+	+	+	+	+
A marking	−	−	−	−	+	−	+	−	−	−	+	+	+	+/−
DAM (pragmatic)	−	−	−	−	+	−	+	−	−	−	+	+	+	−
DAM (coarg sensitivity)	+/−	−	−	−	−	−	−	+	+	+	+	+	−	−
Lack of obj agreement	+/−	+/−	+/−	+	+	+	+	−	−	−	−	−	+	+

Figure 1: A simplified version of the Tukanoan family classification by Chacon (2014, 282).[8]

Although there is no clear-cut outcome to the study of the geographical origin of the Tukanoan people, it seems that they are from the NWA area. Aikhenvald (2012, 225) suggests that the Tukanoan people came originally from the Andes based on the nominative–accusative alignment system found in the Tukanoan languages. Chacon (2013, 2014) suggests the homeland of the Tukanoan family to be situated in the center of NWA from where they have spread westward and northeastward. This analysis is based on linking archeological patterns with common Tukanoan cultural patterns and on linguist reconstruction of vocabulary for basic material cultural elements.

Another language family that is found in the NWA-foothill area is the Quechuan family. The Quechuan family is originally an Andean language family that is predominantly spoken along the mountain range, from northern Chile and Argentina in the south to southern Colombia in the north. The more distant varieties might be mutually unintelligible, and the overall number of Quechuan dialects is still only approximately known (Adelaar and Muysken 2004, 168). The most widely applied classification of Quechuan languages was put forward by Torero (1964). It divides the family into Quechua I (Torero 1964), spoken in the highlands of central Peru, considered to be 'the homeland of Proto-Quechua' (cf. Adelaar and Muysken 2004, 180–1; Mannheim 1991, 9–12) and Quechua II (Torero 1964), including all the remaining varieties (Figure 2).

Since Quechuan languages are spoken predominantly in the Andean highlands, Quechua is generally regarded as connected to Andean identity (Adelaar and Muysken 2004, 180–3). However, in Peru, Ecuador, and southern Colombia, Quechuan languages are also spoken in the Amazonian foothills of the Andes, and even well into the lowlands. Uzendoski and Whitten Jr. (2014, 1) estimate that there are about 150,000 speakers of Amazonian Quechuan varieties in Ecuador. Although there is no consensus about how Quechua spread into the foothill and lowland areas, Quechua seems to have been used in this area at least since the colonial era (Muysken 2000), and since this time, Quechuan varieties have become the identity language of various peoples.

Tukanoan and Quechuan languages are not only found in the same area but also some of the languages from these families are in close contact for at least half a century. For instance, the Siona and Sekoya and Amazonian Kichwa people live in neighboring villages on the Aguarico River, and there are various inter-marriages. These close contacts started at least in the middle of the last century (Ligia Criollo and Jaime Tangoy Pers. Comm.). There is also contact between the Quechuan Inga and Colombian Siona communities, which are on the same river. There is also some evidence for even older contact. Languages from both

---

8 In addition to the simplification, there is a small change with respect to the proposed classification by Chacon (2014): Siona and Sekoya are presented as a dialect continuum based on Bruil (2014, 11–2). Only languages studied in this article were represented in the tree.
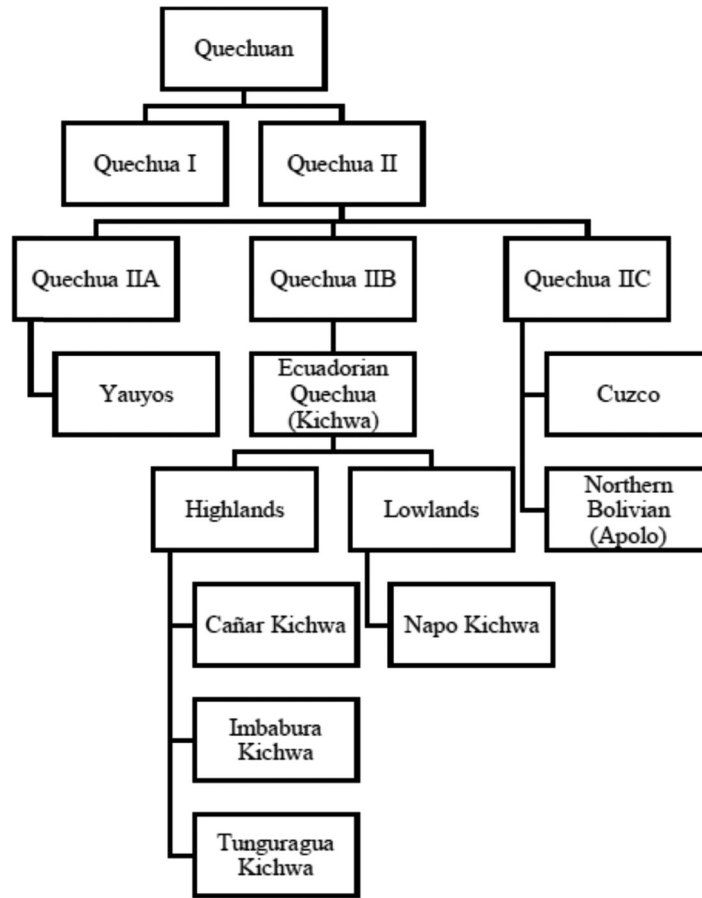
Figure 2: An adapted version of the Quechuan family classification by Adelaar and Muysken (2004, 184).[9]

families were used as general languages of conversion during the Spanish colony. Siona was the general language used by the Spanish in the Putumayo, Napo, and Caquetá areas (Triana y Antorveza 1987, 171–2). A variety of Quechua was more generally used as a language of conversion and was used in this capacity in the area where Western Tukanoan languages were spoken as well. Some evidence for this is the complaint by a Siona leader from the middle of the eighteenth century that the Siona people were taught Quechua to be sold into slavery, as reported in Chantre y Herrera (1901, 392), cited in Vickers (1976, 43). Additional evidence can be found in a colonial document, which includes grammatical information on a Western Tukanoan (WT) variety, a vocabulary WT-Spanish, and a doctrina cristiana in the WT variety and in *Ynga* (Quechuan), suggesting that both languages were used together in the same area (Cipolletti 1992, Floyd et al. 2021). So it seems that Western Tukanoan languages and Quechuan varieties have been in contact at least since Quechuan entered the NWA-foothill area, which probably happened before the Spanish conquest (Obrem 1980, cited in Muratorio 1998, 72–5).

Tukanoan and Quechuan show similar alignment patterns. The languages from both families show a nominative–accusative alignment system. As mentioned earlier, this is cross-linguistically the most common canonical marking pattern found around the world, but these systems are scarcer in South America and are found in the Andes and adjacent areas (Aikhenvald 2012, 225). Tukanoan languages show this alignment system in two ways: (1) both S/A are obligatorily cross-referenced on the verb and (2) objects can be marked with the object case marker *-re*. This object marker is not used on all objects,

---

9 The varieties of Quechuan that are used in this study were explicitly added to Adelaar with Muysken's classification (2004, 184). Their classification is taken from Torero's work (1964).

because these languages show differential or optional object marking, speakers can opt for the case marker *-re* or can leave the object unmarked. This same marker is used to flag indirect objects across the board in the Tukanoan family. All Western Tukanoan languages, with the exception of Máíhɨ̀kì, exhibit an additional object marking *-ni*, in alternation with *-re*, which is mainly restricted to animate objects.

Quechuan languages exhibit very similar behavior with respect to marking alignment. Both S and A show obligatory agreement on the verb, and the language has an object, or accusative case marker *-ta*. Quechuan languages also show differential object marking on some levels. In the case of some predicates, it is possible to use either the accusative marker *-ta* or the dative/allative marker *-man*. An example of these predicates is the motion predicates, which can both have an accusative marked goal or a dative marked goal. Quechuan languages, in addition, show some type of object indexing on the verb. This marking is in most languages restricted to speech act participants; however, in Ecuadorian Kichwa and closely related varieties, this marking is reduced to first person objects.

3 Approach

3.1 Framework

To consistently compare verbal lexicon across languages, we rely on the framework provided by the Valency Patterns Leipzig (ValPaL) project (Hartmann et al. 2013, Malchukov 2015), in combination with a cross-linguistically applicable semantic map of verb classes (Malchukov 2005). The ValPaL project identified 70 verb meanings that were taken to be representative of the verbal lexicon across languages (Malchukov 2015, 29). For each predicate, a set of the so-called microroles and macroroles is associated with each participant that the predicate introduces. Consider the following example of a typical transitive predicate concept that introduces two core participants[10]:

> **EAT:** A [microrole:*eater*] eats P [microrole:*eaten food*]

In this case, the macroroles are A (referring to the agent-like participant) and P (the patient-like participant). As can be seen in the aforementioned example, microroles are predicate specific in recognition of the potential for language-particular encoding patterns at the level of the individual predicate, rather than simply relying on traditional labels for the roles for each participant. However, by using the original terminology from the ValPaL project, traditional role-related labels are elaborated into the set of macroroles, which group microroles together into broader classes and allow for higher level analyses. By separating these two levels, the ValPaL approach presents an attractive means of arranging our data to search for lexical-level patterns as well as drawing broader conclusions regarding the alignment patterns in the area under discussion.

In the case of our project, we extend the ValPaL paradigm by categorizing each predicate entry a priori on the basis of its semantic type, following Malchukov (2005).

Malchukov proposes a hierarchy of verb types specifically for the purposes of cross-linguistic comparison, which is designed to predict the likelihood that a verb has a case frame that deviates from the canonical transitive case frame. At the same time, it aims to group verb types that are likely to show similar case frames, based on the semantic comparability of verb arguments. Malchukov's proposal in fact contains three hierarchies, which all highlight different semantic deviations from the prototypical transitive

---

10 Note that the ValPaL project also provides fringe microroles per predicate concept – for instance, associated with EAT are *eating instrument, eat beneficiary, and eat location*; however, these were disregarded for the purposes of the current study.

situation type. On the basis of Hopper and Thompson's (1980) characterization of transitive events, a prototypical transitive event has:[11]

1. **Prototypical agent:** visible, salient, volitional, controlling agent cause, which initiates the event.
2. **Prototypical patient**: visible, salient, nonvolitional, noncontrolling patient effect, which registers the bulk of change associated with the event.

Based on these prototypical A and P arguments, Malchukov initially proposes two dimensions or subhierarchies that represent different types of deviations from these prototypes, as shown in Figure 3.
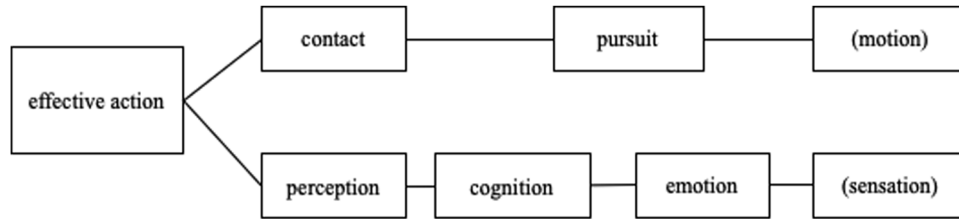

Figure 3: Two-dimensional verb hierarchy (adapted from Malchukov 2005, 81).

At the left end of Figure 3, effective actions (e.g., break, cut) involve a prototypical (controlling, volitional) agent acting on a prototypical (noncontrolling, affected) patient. The top line of the figure represents degrees of deviations away from the prototypical patient. Contact verbs (e.g., hit, pinch) involve a patient that is attained, but not necessarily affected in the sense that it undergoes a change of state. The next step on the top line is pursuit verbs (e.g., look for, aim at) which involve an even less prototypical patient, in that it is not (necessarily) attained. The nonagentive argument is more like a Goal, semantically. Motion verbs, finally, are typically one-place predicates, optionally taking an oblique second argument.

The bottom line depicts deviations away from the prototypical agent. This hierarchy is more complex than the one involving decreased patienthood, since a number of cases not only involve a nonprototypical agent but also a nonprototypical patient. A case in point is a verb like *to see*, which involves not only an Experiencer agent but also a nonaffected patient. Nevertheless, the main parameter structuring the lower hierarchy is decreased agenthood, which we focus on in the remainder of this paragraph. Perception and cognition verbs can involve a volitional, controlling agent (e.g., in verbs denoting conscious acts of perception or cognition, like *to look* (*for*), *to listen* (*for*), *to actively remember or think*), but often the A-like participant is semantically an Experiencer, as in *to see, hear, forget,* etc. The group of emotion predicates represent a step further away from the prototypical agent, in that it is not only a noncontrolling and nonvolitional agent but also arguably an (emotionally) affected one. This is also true (perhaps more so) for sensation predicates, which tend to be monovalent, but which, unlike motion verbs, are more likely to have a noncanonically marked Experiencer.

Malchukov (2005) makes further suggestions to expand the map, so that it can incorporate a greater part of the verbal lexicon. The full map is depicted in Figure 4.

First, an important addition is a third line, going from effective actions to reflexives, middles, and spontaneous events. The parameter governing this particular route is the relative distinguishability of the Agent and Patient participant, following the work of Kemmer (1993) on middle semantics. Kemmer's (1993) semantic map is more fine-grained, but for the purposes of cross-linguistic comparison, Malchukov recognized three classes along this dimension: syntactic reflexives (I hit myself), semantic middles, and inherent reflexives and body actions including verbs of grooming, nontranslational motion, body posture, as well as symmetric predicates like 'meet'. Spontaneous events are those events that occur seemingly without any

---

[11] Hopper and Thompson (1980) also mention a number of characteristics relating to the verb (relating to TAM specifications), but they are irrelevant to Malchukov's hierarchies, and so we will ignore them here.
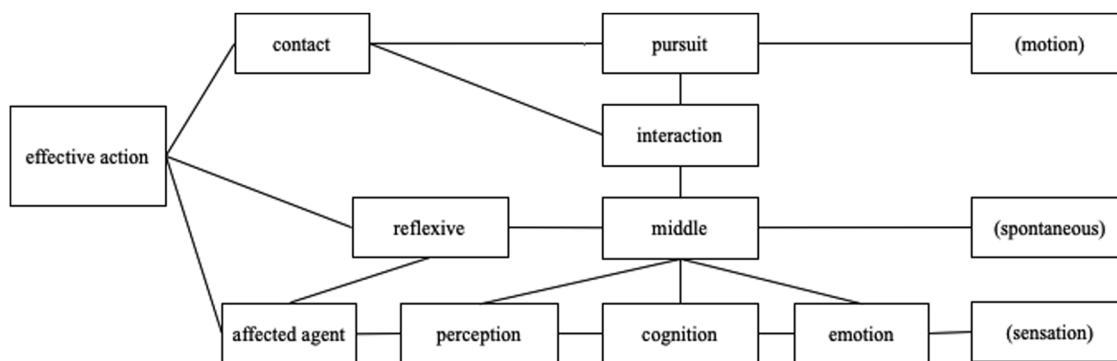
Figure 4: Three-dimensional verb hierarchy (Malchukov 2005, 113).

identifiable agentive force (e.g., burst, explode). Two further types were added to the basic, two-dimensional map that was based on Tsunoda's (1981) work: verbs involving affected agents and interaction verbs. The former are prototypical transitives in the sense that there is a volitional, controlling agent, and an affected patient, but the agent is also affected by performing the action. This group contains verbs of consumption (eat, drink) as well as other verbs like 'put on' or 'take' (Malchukov 2005, 111). Finally, Malchukov proposes a separate class of interaction verbs, broadly conceived, including verbs of communication (speak, converse, shout at) and social interactions of different kinds (marry, follow, agree). The lines between the different verb classes represent affinities between them. For instance, middle verbs, apart from connections on the transitivity scale to reflexives on the one hand and spontaneous events on the other, are connected to perception, cognition, and emotion predicates, which are cross-linguistically also often part of a group of middle verbs where the agent–patient distinction is collapsed (cf. Kemmer 1993),[12] and they connect to verbs of interaction, which are, or can often be, symmetrical.

3.2 Database structure, language sample, and methodology

For the purpose of tracing the distribution of (non-)canonical case frames on the basis of lexical items, the organization of our database was inspired in large part by the ValPaL framework as outlined earlier. We adapted the original ValPaL model in two main ways to search for lexical patterns and to implement these data in testing whether Malchukov's observations regarding semantic verb types and concomitant patterns of case frame selection hold for the languages of our sample. First, we expanded the total number of predicates from roughly 70 to 112 to have a representative number of predicates for each semantic class as per the extended semantic map presented in Malchukov 2005, replicated in Figure 4. The next and most crucial update that we made to the original model was to attribute each predicate to one of Malchukov's types, independent of our language-particular analysis: for instance, EAT was classified as being of the "affected agent" type on the basis of the semantics of the verbal concept. A list of verbal concepts and their classification into the semantic classes, inspired by Malchukov 2005, is given in the appendix of this article. Up until this point, the top–down nature of this database is retained, and the modified ValPaL model could in theory be applied to any set of languages without further manipulation. With this groundwork in place, the database skeleton was ready, and we could begin to populate the charts with language-particular data sets.

 　　When the database is populated with language-particular data sets, alignment patterns naturally emerge. Where each role is flagged in the expected way for a given predicate, the predicate is deemed to

---

12 Kemmer (1993, 202) positions cognition and emotion predicates in between prototypical reflexives and prototypical passives, both of which are directly adjacent to the middle semantic domain.

have a canonical case frame. Deviations from the canonical case frame can arise where any of its core participants does not receive the flag (or other relevant morphosyntactic operations) that it does in the context of a canonical frame. As has been explained earlier, the fact that we can pinpoint on which participant the deviant pattern arises is indispensable to connect shared patterns of noncanonical flagging or indexing to the parameter of the prototypical transitive properties associated with the participant given the semantics of the concept.

Data sets for each relevant language within our sample were developed on the basis of grammars and dictionaries and/or elicitation sessions with language consultants. As mentioned earlier, our sample focuses on Quechuan and Tukanoan languages of the NWA-foothill area. In addition, we sampled Quechuan and Tukanoan languages that fall outside this area as control languages, which help to distinguish genealogical and areal patterns. The selection of languages for our project was constrained in part by the availability of solid grammatical materials as well as the specialties of the researchers involved. Where possible, we aimed to supplement and reinforce the information available in the literature via elicitation with language consultants. These elicitation sessions consisted of translation tasks from Spanish to the language of interest. The sentences used in these translation tasks were preconceived using the set of stimulus sentences provided by ValPaL, extended with similar sentences for verbs not found in the original ValPaL list. We needed to add various concepts to the original list, such as *be hungry* and *be sleepy* because these were hypothesized to be relevant to alignment patterns in the region. In total, our study considered alignment patterns from 15 languages.

Table 2: Language sample for current study

Language name	Language family	In interest area?	Consulted materials
Cañar Kichwa	Quechuan	Yes	Fieldwork
Imbabura Kichwa	Quechuan	Yes	Fieldwork, Cole 1982
Upper Napo Kichwa	Quechuan	Yes	Fieldwork
Tungurahua Kichwa	Quechuan	Yes	Fieldwork
Cuzco Quechua	Quechuan	No	Fieldwork, Cusihuáman 1976
Bolivian Quechua	Quechuan	No	Fieldwork, Lastra 1968
Ecuadorian Siona	Western Tukanoan	Yes	Fieldwork, Bruil 2014, Criollo Quintero 2011
Koreguaje	Western Tukanoan	Yes	Cook and Criswell 1993, Cook and Gralow 2001, Cook 1999
Máíhɨ̃kì	Western Tukanoan	Yes	Michael et al. 2012, Michael et al. 2013, Farmer 2015
Kubeo	Eastern Tukanoan	No	Morse and Maxwell 1999, Morse et al. 1999, Chacon and Genetti 2019
Kotiria	Eastern Tukanoan	No	Waltz 2007, Stenzel 2013
Desano	Eastern Tukanoan	No	Alemán et al. 2000, de Lima Silva 2012, Miller 1999
Barasana	Eastern Tukanoan	No	Jones and Jones 1991, 2013
Tukano	Eastern Tukanoan	No	Ramirez 1997, West 1980, Bonfim Duarte and de Oliveira Lopes 2020

Table 2 enumerates the languages in our sample, classified as either falling within our interest area or not (i.e., the latter acting as a control in our study), along with the grammatical materials and dictionaries consulted to build up our datasets where applicable. Map 3 plots the geographical distribution of these languages.
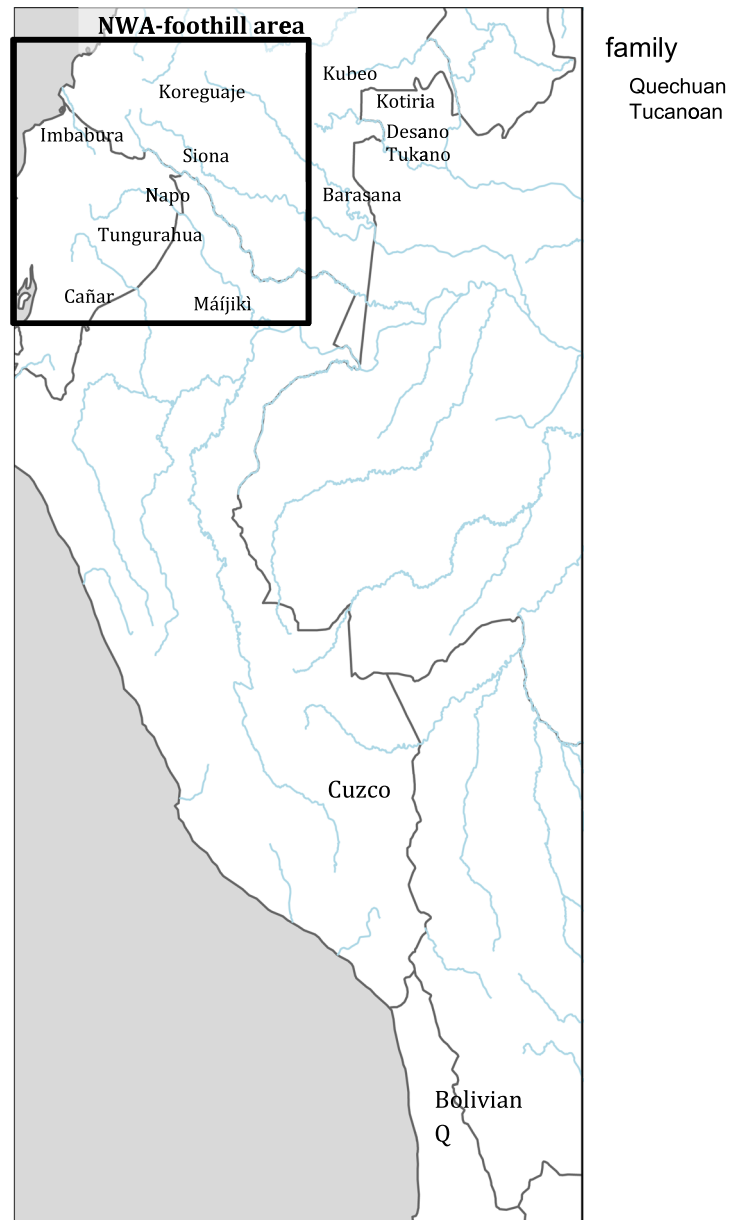
Map 3: The geographical distribution of our language sample.

For each language in our sample, the first step was to find the relevant lexical item(s) for each of the predicates in our database. These forms were entered into a centralized mastersheet so that cognates and candidates for lexical borrowing could be identified away from the noise associated with language-particular flagging/indexing analyses. Once the lexical items had been found and entered into the corresponding cell in the mastersheet, the next step was to analyze the predicates for each language on an individual basis and in a separate analysis workspace. On the basis of pertinent examples or relevant descriptions in the pre-existing literature, and/or elicited examples, we identified the dependent marking pattern (i.e., the case frame) and the verbal indexing pattern associated with each core participant for every predicate within a given language's analysis workspace. In certain instances where relevant examples could not be procured, alignment patterns were inferred as a last resort to level our analysis across the entire sample.

Once all of the data had been collected following the strategy outlined earlier, the goal of our analysis was to trace the distribution of noncanonical flagging patterns across the predicates and verb types in our data sets. In each language-particular workspace, we grouped predicates on the basis of their verb type and identified the flagging pattern used on A-like participants as well as P-like participants.[13] In turn, we determined the percentage of predicates per type in our data set, which assign a noncanonical flag to the A-like participant and/or the P-like participant. In tandem with this type-level analysis, we also retained a list of predicates which exhibit deviant alignment behavior to determine whether these represent candidates for lexical borrowing.

4 Results

Our discussion of the results is shaped by the semantic map in Malchukov 2005 and the tracking of the marking patterns of P-like participants, discussed in Section 4.1, and marking of A-like participants, discussed in Section 4.2. In the text that follows, we focus our attention on flagging patterns. We do not discuss indexing here, since there were essentially no surprising facts regarding indexing patterns beyond what is already noted in Section 2. Namely, A/S arguments control verbal agreement across Tukanoan and Quechuan, whereas O indexing is optionally present in Quechuan and unavailable in Tukanoan. In both language families, as is cross-linguistically common, impersonal predicates engender default 3SG subject indexing.

4.1 Marking of P- and R-like participants across semantic classes

Figure 5 exhibits the percentage of accusative flagging found on the P-like argument against the semantic classes in Malchukov 2005 for our Tukanoan sample, separated by the languages within and outside of the NWA-foothill area (i.e., labeled "interest" and "control," respectively). Certain concepts also invoke an R participant (i.e., Recipient or other indirect argument participant), and these are considered where relevant
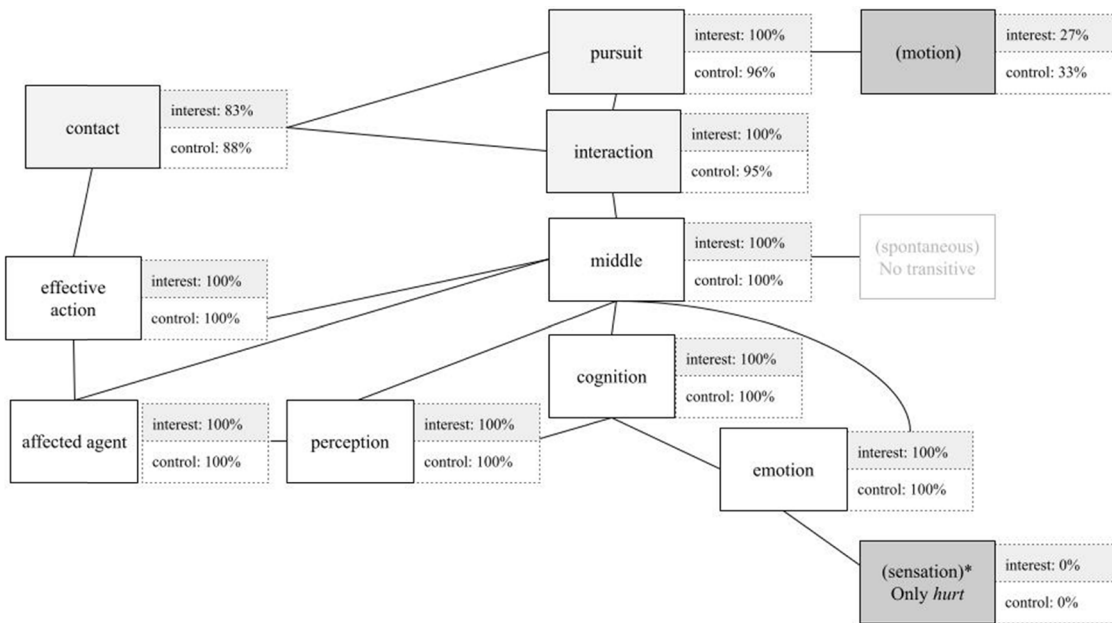

Figure 5: Accusative marking on P/R participant in Tukanoan per verb type.
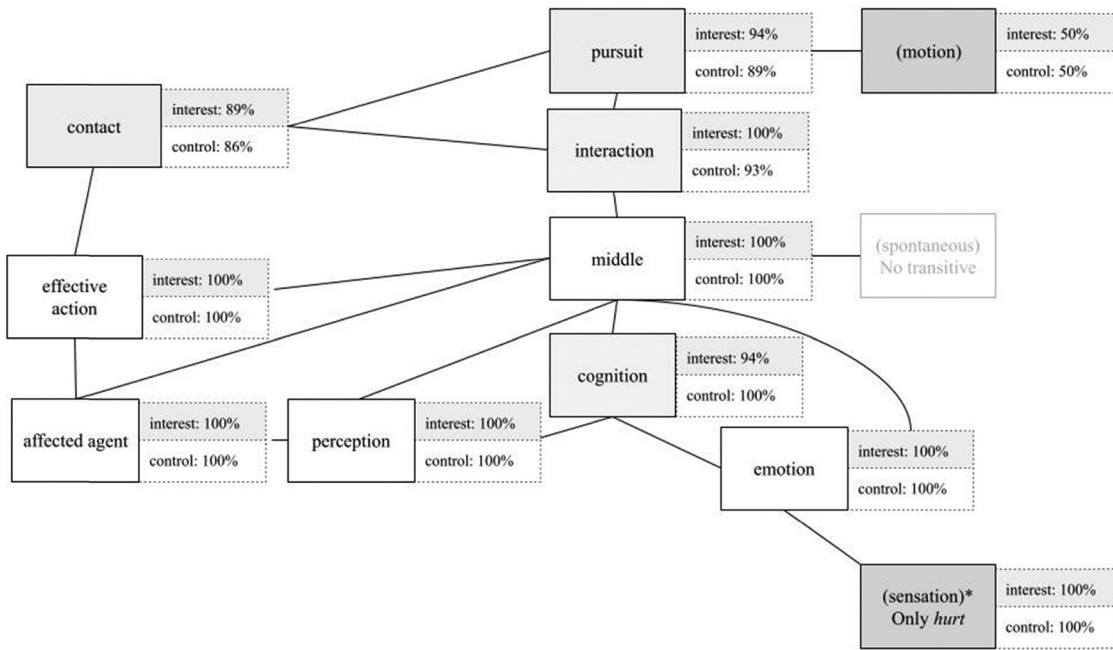
to our discussion. Interestingly, across both families figuring in our core discussion, these participants tend to pattern together as regards their flagging patterns. We discuss certain deviations from this generalization in what follows. In the following figure, and the others like it to follow, we have replicated the general configuration Malchukov's tables, where the degree of shading indicates the extent to which we find deviancy from the expected flagging pattern. The percentage figures are presented separately for those languages within the putative contact area, namely, "interest" languages from the NWA-foothill region, and for those located outside of this area, namely, the "control" languages for our study. Table 2 presents a list of "interest" and "control" languages for both Tukanoan and Quechuan in our sample.

As can be seen, accusative marking is the clear majority pattern in all classes except those at the fringes of Malchukov's map (motion, spontaneous, and sensation concepts), which are overwhelmingly intransitive cross-linguistically. In the case of sensation concepts, there is an exceptional concept, namely, *hurt*, which we analyze as taking an Experiencer A and a Stimulus P underlyingly. These concepts are considered in detail in Section 4.2, where we discuss the flagging patterns associated with Experiencer A arguments. The differences between the languages under investigation and the control languages are generally small. In our discussion of the differences between foothill Tukanoan languages and the control languages, we focus on the top line of the semantic map. Nonetheless, we begin by noting a few marginal instances of nonaccusative case marking on the P/R participant with the interaction predicates from various Tukanoan control languages. The examples in (3) demonstrate the flagging patterns found with *talk* in Desano and Kotiria, where the person spoken to is encoded with the comitative marker (i.e., roughly "with" in English).

(3)   a.   Desano [TUKANOAN], Alemán et al. 2000, 64 - *wereniguiri* (talk)
          pa-gɨ-sɨma-rã-pɨ   **po-rã-mera**
          parent-CLS.M-vagina-PL.ANIM-CONTR   offspring-PL.ANIM-COM
          were-nigui-ma
          tell-stand-3PL.IPFV
          'The parents are talking with their children.'

     b.   Kotiria [TUKANOAN], Waltz 2007, 106 - *durucu* (talk)
          pahi-mehne   du-rucu-ro   ni-na
          priest-COM   talk-stand-3SG.IRR   be-3SG.VIS.IPFV
          'He's talking with the priest.'

Besides these marginal instances in the control languages, the P and/or R argument occurs with accusative flagging as predicted with all other verb classes where they are associated with prototypical transitive participants – for instance, with effective action, affected agent, perception, and cognition predicates. This pattern is pervasive across both the interest and the Tukanoan control languages in our data. Before discussing the variation that takes place at the top line of the semantic map, we compare the distribution of accusative flagging with P/R participants in Quechuan in Figure 6. The picture in Quechuan is largely similar, with slightly more instances of nonaccusative marking.

As is the case with Tukanoan, the majority of transitive predicates belonging to classes that are not along the top line in Malchukov's semantic map select for a nominative–accusative case frame. So, the languages of both families generally follow the patterns predicted by the Malchukov model. Despite this general tendency to select a canonical nominative–accusative case frame on transitive predicates, we note a few discrepancies in the case of Quechuan. First, on par with Desano and Kotiria, we observe an instance of the interactive concept *talk* choosing a slightly different frame where the individual spoken to is encoded with comitative marker in Cuzco Quechua.

---

13 Note that we did not dedicate our elicitations to the subtleties of differential argument marking patterns for the sake of this project, as these details exceed the scope of this investigation. Rather we focused on predicate-level alignment patterns, accepting the fact that there may be surface variation with respect to the surface manifestation of the case forms involved.

Figure 6: Accusative/dative marking on P/R participant in Quechuan per verb type.

(4)   Cuzco Quechua [QUECHUAN], fieldnotes - *rimay* (talk)[14]
      chay   pasñacha   **maqt'acha-wan**   allqon-manta   rima-ri-n
      DEM.PROX   girl   boy-COM   dog-ABL   talk-PST-3SG.SBJ
      'The girl talked with the boy about her dog.'

In the case of Quechuan, it is also relevant to note that, although the accusative marker *-ta* can extend to indirect objects in most cases (particularly where the referent is animate), just like the pattern which is noted for Tukanoan earlier, it is also possible in some varieties to mark the R participant with the dative/allative marker *-man* (or its cognate). This fact marks a stark contrast with Tukanoan where only the accusative marker *-re* can be used with the R participant, even in languages with a dedicated "goal" marker such as Siona and Koreguaje.

Another marginal instance of a nominative–oblique case frame arises in Upper Napo Kichwa. In fact, just as in the interaction predicates discussed earlier, there appear to be two case frames that can be selected for the concept *think* (*about*) – one where the entity or concept which is thought about is encoded typically with the accusative marker *-ta*, and another where it receives the ablative marker *-manta*. The sentences in (5) exemplify these two case frames.

(5)   a.   Upper Napo Kichwa [QUECHUAN], fieldnotes - *iyana* (think)
           pay-guna   iya-ria-nushka   **ñuka-ra**
           3-PL   think-PROG-3PL.ANT   1SG-ACC
           'They had been thinking about me.'

      b.   Upper Napo Kichwa [QUECHUAN], fieldnotes - *iyana* (think)
           ñukanchi   **wawa-guna-manda**   iya-ri-sha   tarba-shun
           1PL   child-PL-ABL   think-ANTIC-COR   work-2PL.HORT
           'Thinking of our children, let's work!'

---

14 This particular example was elicited, and there is possible influence from Spanish in this instance. Other such instances are found elsewhere in the literature, so we have included this in our analysis as is.

Besides these instances of deviation from the canonical nominative–accusative case frame in Quechuan, just as is the case with Tukanoan, the majority of concepts found in the lower portions of Malchukov's model select for the canonical frame as predicted by their prototypical transitive semantics.

We now shift our discussion to the semantic classes, which are less prototypically transitive and thus more naturally select for noncanonical case frames, namely, contact, pursuit, and motion predicates. It is not always clear whether a given concept is better classified as a contact or a pursuit predicate based on Malchukov 2005 (and others discussed in Section 3.1), so we discuss particular lexical entries in turn before returning to a general discussion of the patterns. Turning first to the Tukanoan languages, both foothill and control languages have verbs that were classified as contact verbs that take a nominative–oblique pattern; note that we have tracked the behavior of R participants in ditransitive verbs in Figure 6. These concern the same verb types across all languages in our sample: *lean on*, *load*, *throw at*, and *stick to*. These verbs do not necessarily pattern in the same way in each language within the sample, e.g., *lean on* takes the instrumental case in Kubeo, exemplified in (6a), but the locative case in Desano as in (6b). *Stick to* takes its goal-like argument in the locative case in Kotiria as in (6c), whereas it takes the goal marker in Siona as in (6d). Note that the case suffixes in (6a-b) are quite likely cognates. Although it might be because of this cognacy that these two languages feature different case patterns for this verb, this is beyond the scope of this article, and this claim is therefore neither made nor explored further here.

(6)   a.   Kubeo [TUKANOAN], Morse et al. 1999, 282 - *tutute* (lean)

            abodo-que   tutute-bi   bɨcɨcɨ

            stick-INST/COM lean-3SG.M.EXPER.REC.PST elderly.man

            'The elderly man leaned on a stick.'

    b.   Desano [TUKANOAN], Alemán et al. 2000, 57 - *tua* (lean)

            yɨhɨ   **tiarica-gue**   tua-doa-a

            1SG   wall-LOC   lean-sit-PRF

            'I'm sitting, leaning against the wall.'

    c.   Kotiria [TUKANOAN], Waltz 2007, 59 - *wahã* (stick (to))

            to   masɨ   na-ri   pũ   wahã-na   **sohõ-i**

            ANA   picture take-NMLZ sheet.of.paper stick-3SG.VIS.IPFV DEM.DIST-LOC

            tiharica-i

            wall-LOC

            'The photograph sticks to the wall there.'

    d.   Siona [TUKANOAN], Bruil 2014, 170 - *si'a* (stick (to))

            (...) hãĩ-dɨ   si'a-ɨ-jã

            (...) hammock-CLS:HAMMOCK stick-2/3SG.M.PST.NASSRT-REP

            ĩ-ɨ   **hehte-na**

            DEM.PROX-CLS:ANIM.M   back-GOAL

            '(...) the hammock stuck onto his back.'

A particularly interesting case of divergent case frames on the same predicate in Tukanoan is found with *throw* (*at*). Contrast the instance in Kotiria in (7a), where the thrown object is encoded with an accusative flag and the goal of the throwing action takes the locative marker, and the frame in Tukano in (7b), where the thrown object takes an instrumental flag and the target of the throwing action is flagged with the accusative marker.

(7)   a.   Kotiria [TUKANOAN], Waltz 2007, 59 - *cohã* (throw)

            pjaa   pohcari-re   cohã-jihna   **sopaca-pɨ**

            form.PL   trash.PL-ACC throw-HORT   door-LOC

            'Let's throw the trash out of the door (lit: *at the door*)!'

    b.   Tukano [TUKANOAN], Ramirez 1997, 40 - *doke* (throw)

            ĩtâ-ga-me'ra   **diâyɨ-re**   doke-mí

            stone-CLS:ROUND-INST   dog-ACC   throw-3SG.M

            'He throws (with) a stone at the dog.'

With regard to Quechuan languages, for contact verbs, the same verbs deviate from the nominative–accusative pattern as in the Tukanoan languages. This is across the board: in both the foothill languages and the control languages. In most Quechuan languages, either the locative or allative/dative case marker is used to mark the P/R participant. This is illustrated in (8) for Tungurahua Kichwa – note that this variety aligns its case frame selection for the predicate *throw* (*at*) with Kotiria (with accusative marking on the thrown object rather than the goal like in (7a)), as compared with the strategy shown for Tukano in (7b). For the sake of comparison, however, (9) demonstrates an instance from Upper Napo Kichwa with *stick* (*to*) where the animate goal-like P receives the accusative flag.

(8)   Tungurahua Kichwa [QUECHUAN], fieldnotes
    a.   **chi**   **pirka-pi**   kimiri-rka-ni   (ñuka)
         DEM.DIST   wall-LOC   lean.on-PST-1SG.SBJ   1SG
         'I leaned on that wall.'
    b.   chi   hari   **antawa-pi**   apari-rka
         DEM.DIST   man   car-LOC   load-PST
         'The man loaded the truck.'
    c.   ñuka   sobrino   shu   rumpa-ta   **ñuka-mu**   shita-rka
         1SG   nephew   one   ball-ACC   1SG-DAT   throw-PST
         'My nephew threw the ball at/to me.'

(9)   Upper Napo Kichwa [QUECHUAN], fieldnotes
    angu   llaki   lluta-ri-shka   **apama-ra**
    type.of.insect   much   stick-ANTIC-ANT   woman-ACC
    'The insect(s) stuck onto (that) woman.'

As suggested earlier, it is not always clear how to best classify these verbal concepts. For this reason, we have expanded what we found for each language across the four verbs that fed the variation discussed in the preceding examples with explicit role-marking correspondences for reference in Table 3. In the interest of unifying the

Table 3: P/R flagging for "load onto," "stick to," "lean on," "throw at" per language

	Load onto (the man loaded the hay onto the truck)		Throw at (the man threw the ball at the boy)		Stick to (the gum stuck to the chair)	Lean on (the man leaned on the stick)
	P (hay)	R (truck)	P (ball)	R (boy)	P (chair)	P (stick)
Cañar	ACC (-*ta*)	LOC (-*pi*)	ACC (-*ta*)	ALL (-*ma*)	LOC (-*pi*)	INST (-*wan*)
Imbabura	ACC (-*ta*)	LOC (-*pi*)	ACC (-*ta*)	ALL (-*man*)	LOC (-*pi*)	LOC (-*pi*)
Tungurahua	ACC (-*ta*)	LOC (-*pi*)	ACC (-*ta*)	ALL (-*mu*)	LOC (-*pi*)	LOC (-*pi*)
Upper Napo	ACC (-*ta*)	ALL (-*ma*)	ACC (-*ta*)	ALL (-*ma*)	LOC (-*pi*)	LOC/ACC (-*pi*/-*ta*)
Bolivian Q	ACC (-*ta*)	ALL (-*man*)	ACC (-*ta*)	ALL (-*man*)	LOC (-*pi*)	LOC (-*pi*)
Cuzco Q	ACC (-*ta*)	ALL (-*man*)	ACC (-*ta*)	ALL (-*man*)	—	LOC (-*pi*)
Siona	ACC (-*re*)	ALL (-*na*)	—	—	ALL (-*na*)	—
Koreguaje	ACC (-*re*)	ALL (-*na*)	ACC (-*re*)	ALL/ACC (-*na*/-*re*)	ALL (-*na*)	—
Máíh̃k̃ì	ACC (-*re*)	ALL (∅/-*re*)	ACC (-*re*)	ALL/ACC (∅/-*re*)	ALL (∅/-*re*)	—
Kubeo	ACC (-*re*)	INST (-*ke*)	ACC (-*re*)	LOC (-*i*)	INST (-*ke*)	INST (-*ke*)
Kotiria	ACC (-*re*)	—	ACC (-*re*)	LOC (-*i*/-*pʉ*)	LOC (-*i*/-*pʉ*)	LOC (-*i*/-*pʉ*)
Desano	ACC (-*re*)	—	ACC (-*re*)	ACC (-*re*)	LOC (-*ge*)	LOC (-*ge*)
Barasana	ACC (-*re*)	—	ACC (-*re*)	ACC (-*re*)	ACC (-*re*)	ACC (-*re*)
Tukano	ACC (-*re*)	—	INST (-*me'ra*)	ACC (-*re*)	LOC (-*pi*)	LOC (-*pi*)

terminology for our discussion of these predicates, we chose to collapse some sets of related markers under a single label where syncretism was observed, namely, ALL ('allative') subsumes dative, goal, and allative or directional marking, whereas INST ('instrumental') subsumes both instrumental and comitative marking.

To conclude our discussion of case-marking patterns associated with the P-like element, we shift to consider motion predicates. As per Malchukov's semantic map, motion predicates are the least prototypically transitive semantic class as regards the prototypicality of their goal-like P argument, and this is where we ought to expect to find the highest proportion of noncanonical case frames. As Figures 5 and 6 demonstrate for the Tukanoan and Quechuan families, respectively, this fact is borne out in our data. Although motion predicates tend to select for noncanonical case frames in both families as predicted, there are notable differences between these families with regard to flagging patterns for these concepts. This fact is immediately clear when considering the distribution of accusative marking with motion predicates in Tukanoan (27% of instances in the foothill languages, and 44% of instances in the control languages) and those in Quechuan (50% for all varieties). Further details regarding the crucial differences across these language families are discussed later in this article.

To begin with the languages of interest in the Tukanoan family, the Western Tukanoan languages Siona and Koreguaje have a dedicated goal (or allative) marker *-na*. As discussed in Section 2, this marker is used differentially along the lines of differential subject/object marking in these languages, as well as used with all predicates that take a goal-like P, such as *go*. In addition, these languages also have a dedicated source (or ablative) marker *-bi*,[15] which is used with motion predicates like *leave*. The same rich case system and marking patterns are found in the closely related Western Tukanoan language Sekoya (Johnson and Levinsohn 1990, 45–9). In the case of Máíhĩ̀kì, which has a reduced case inventory compared with the other Western Tukanoan languages, such goals are typically left unmarked altogether. The accusative marker arises where the goal is animate. However, it is not clear whether there is additional semantics associated with this role and whether it should therefore be treated separately, as in "I am going to (see and speak with) X" (Neveu 2012). For this reason, we included duplicate entries for these predicates to represent both patterns in our sample. Taken together, typical destination goal-like Ps with motion predicates do not straightforwardly receive the canonical flagging pattern associated with prototypical P-like arguments in any of the Tukanoan languages within the interest area.

Some of the control languages from our Tukanoan sample exhibit a comparable pattern with motion predicates to that discussed earlier for foothill varieties. Each of the Eastern Tukanoan languages studied presented a dedicated locative marker (or one of several such markers) on the P-like argument of motion predicates like *go*. These markers do not exhibit the same differential distribution as noted in the case of Siona and Koreguaje. Interestingly, Kotiria, Tukano, and Barasana optionally permit the specificity marker (identical in shape to the accusative maker *-re*, or perhaps the object marker itself) to appear stacked after the locative marker in such instances. Miller (1999, 61–2) also discusses a more restricted set of locative-accusative stacking in Desano. Such a stacking pattern is not noted in any of the Western Tukanoan varieties considered here. Stenzel (2014, 140) suggests that the particular configuration of the locative, in Kotiria *-pɨ*, and the optional *-re* marker might best be treated as encoding the allative case, and not as accusative marking as is found with more prototypical transitive verb classes. We encoded all languages with such patterns as selecting for a nominative–oblique frame with these predicates. In the case of Desano, most goal-like P arguments are flagged with the locative marker, as in (10a), whereas in certain marginal instances, this P is flagged with the accusative, as in (10b).

---

15 Interestingly, this is presumably the same marker that is used in both languages to overtly mark subjects in the context of differential subject marking discussed briefly in Section 2. For the purposes of this article, this fact is presumed to be a historical accident, and these should be treated as two separate functions of this marker.

(10)   a.   Desano [TUKANOAN], Miller 1999, 59

       iri   **conferencia-re**   Jaime   eha-bĩ

       DEM.PROX   conference-ACC   J   arrive-3SG.M

       'Jim arrived at this conference.'

   b.   Desano [TUKANOAN], Miller 1999, 60

       (…)   piʔri buʔa-bɨ   pare   **finka-ge**

       after go.down-N3.PST   finally   farm-LOC

       '(…) after [this] we went down to a farm (our final destination).'

With respect to motion verbs, the picture is slightly different in Quechuan languages than in Tukanoan languages. The P-like argument associated with motion predicates can be encoded in two ways. As mentioned in Section 2.2, either the goal-like P receives the canonical accusative marker *-ta* as found with more prototypically transitive verb types or it can be marked with an oblique, namely, the dative/allative marker *-man*. The extension of accusative marking to goal-like Ps is common to all varieties of Quechuan (Adelaar 2017). As Adelaar (2017, 654) explains "characteristically [of Quechan and Aymaran generally], a verb selects an accusative case for the object or goal that is typical for its meaning, regardless of whether the latter is a direct object, an indirect object or a geographical goal." In other words, the accusative case marking pattern in Quechuan extends into the class of motion verbs, which is unusual from a cross-linguistic perspective, although languages like English marginally allow for this pattern as well (as in *to enter* or *to leave*). Given that both a nominative–accusative and a nominative–oblique frame can be chosen in the Quechuan varieties figuring in this study, each relevant predicate received two entries; hence, the percentage representing the proportion of canonical flagging patterns with Quechuan motion predicates ends up as notably higher than those noted for the Tukanoan languages (comparing Figures 5 and 6, respectively).

4.2 Marking of A-like participants across semantic classes

When we zoom in on the flagging on the A-like participant, the languages in our sample very consistently mark A-like participants with a nominative marking pattern. This is true for both Tukanoan and Quechuan languages. Focusing first on the Tukanoan languages, Figure 7 neatly displays how they attribute structural
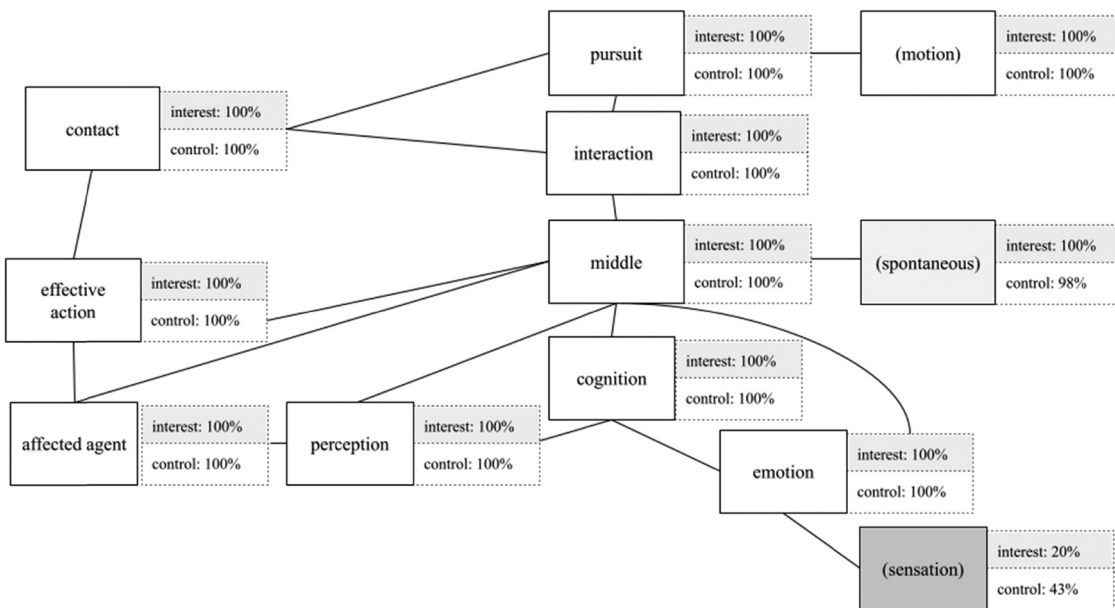

Figure 7: Nominative marking on A participant in Tukanoan sample per verb type.

nominative flagging to the A-like participant across all verb types, with the notable exception of sensation predicates, which are discussed at length later in this section. This pattern holds for languages within the putative contact area, namely, the Western Tukanoan varieties collapsed under the label "interest" in Figure 7, as well as for the Eastern Tukanoan languages considered as "controls."

The only nonsensation predicate where a noncanonical flag was found on the A participant in our Tukanoan sample is noted for a spontaneous predicate *fall asleep* in the control language Kotiria. This is an example of what we will later call a "suffer"-type predicate, also found in sensation predicates (see the following table).

(11)   Kotiria [TUKANOAN], Waltz 2007, 309[16]

yoa-ri	pja	to	yahu-chɨ	wɨjo	purĩ-yɨhdɨ-a-re
be.long-NMLZ	time	ANA	explain-DS	sleep	hurt-INTS-AFFT-3SG.VIS.PFV

yɨhɨ-re
1SG-ACC
'When he was explaining for so long, I fell asleep.'

For the sake of comparison, Figure 8 demonstrates the distribution of nominative marking patterns across the Quechuan varieties in our sample. Just as in the case of P-like participants discussed in Section 4.1, the pattern is more or less the same as in the case of Tukanoan, save for a few outlier predicates. Again, it appears that Quechuan has more, albeit only slightly more, outliers than does Tukanoan.
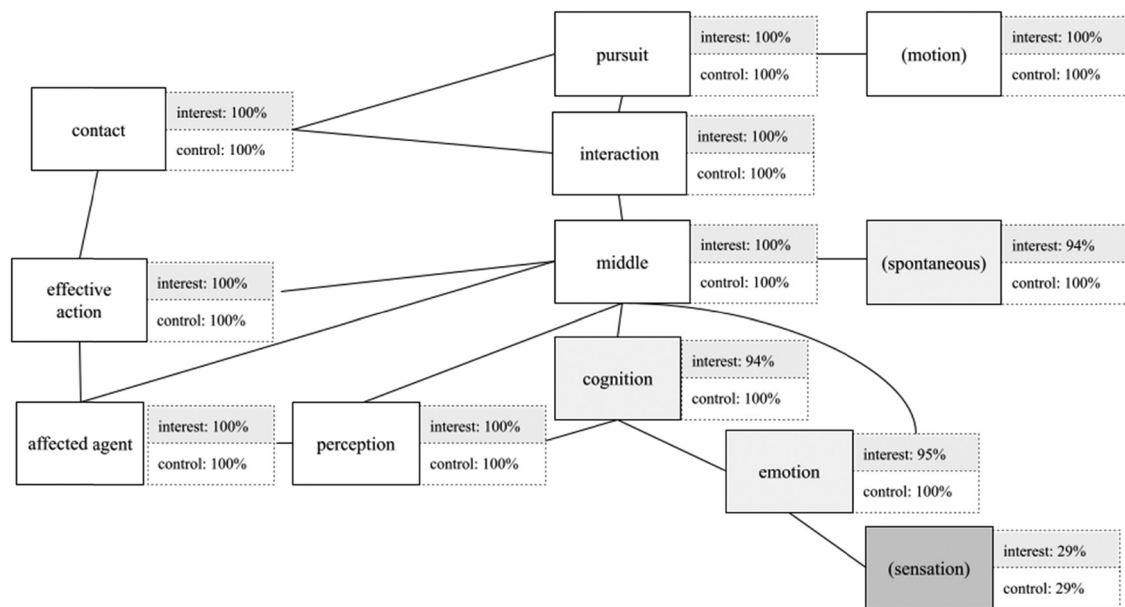

Figure 8: Nominative marking on A participant in Quechuan sample per verb type.

There are marginal patterns of noncanonical A marking with emotion and cognition predicates in Cañar and Upper Napo Kichwa, where the A-like participant is flagged with the accusative marker. First, consider the construction used in Upper Napo Kichwa as a natural translation for the cognition predicate *remember*.

---

16 Note that Waltz 2007 provides multiple Spanish equivalents for the construction "wɨjo purĩna" in his Kotiria-Spanish dictionary: *adormecerse* (fall asleep), *tener sueño*, *estar somnoliento*, and *somnolienta* (be tired). This first translation is not explicitly recognized or exemplified in the other Kotiria text consulted, namely, Stenzel 2013, who only recognizes the sensation semantics. The glossing is our own since the original did not provide glossed examples.

(12) Upper Napo Kichwa [QUECHUAN], fieldnotes - *iyay tiana/iyay charina* (~remember)

shina	asha-ra	**ñuka-ra**	mana	iya-y	tia-wa-n
like.this	COP-COR-ACC	1SG-ACC	NEG	think-OBJ.NMLZ	exist-PROG-1OBJ-3

'With things as they are, I don't remember.'

Next, we turn to the case of the emotion predicate *gushtana* (like) as found in both Cañar and Imbabura Kichwa. In the case of Cañar Kichwa, it is possible to mark the A-like Experiencer with accusative *-ta* as shown in (13a), and this is the preferred strategy. In this case, both the lexical item and the case frame are borrowed from Spanish. However, it is also possible to mark the P-like stimulus argument with accusative marking using the canonical case frame (see 13b). This is the exclusive means of encoding the cognate predicate in the case of Imbabura Kichwa as shown in (14).

(13) a. Cañar Kichwa [QUECHUAN], fieldnotes

kay	ayllullakta	**ñuka-ta**	gushta-n-mi
this	community	1SG-ACC	like-3-EVID

'I like this community.'

b. Cañar Kichwa [QUECHUAN], fieldnotes

chay	**longo**	gushta-shka	mushuk	pugllana-ta
this	boy	like-PFV	new	toy-ACC

'This boy likes the new toy.'

(14) Imbabura Kichwa [QUECHUAN], Cole 1982, 79

ñuka(-**pash**)	kamlla-ta	gushta-ni;	(y)	**ñuka**	**pani**(-**pash**)
1S-ADD	toasted.corn-ACC	like-1SG.SBJ	and	1SG	sister-ADD
kamlla-ta	gushta-n;	(y)	**ñuka**	wawki(-**pash**)	
toasted.corn-ACC	like-3SG.SBJ	and	1SG	brother-ADD	
kamlla-ta	gushta-n				
toasted.corn-ACC	like-3SBJ				

'I like toasted corn, my sister likes toasted corn, and my brother likes toasted corn.'

Returning to Cañar and Upper Napo Kichwa varieties, the same two languages present instances of noncanonical marking on the A-like participants of spontaneous events:

(15) a. Cañar Kichwa [QUECHUAN], fieldnotes - *rupana* (burn)

wasi-ta	rupa-rka
house-ACC	burn-PST

'The house caught fire.'

b. Cañar Kichwa [QUECHUAN], fieldnotes - *kimllana* (blink)

(**ñuka-ta**)	kimlla-ku-n	ñawi
1SG-ACC	blink-PROG-3	eye

'I am blinking.'

c. Upper Napo Kichwa [QUECHUAN], fieldnotes - *rapiyana* (blink)[17]

ñuka	**ushi-ta**	ashkata	rapiya-n
1SG	daughter-ACC	a.lot	blink-3

'My daughter blinks a lot.'

Conversely, it is relevant to acknowledge that Figure 8 shows no instances of nonnominative marking on A participants with nonsensation predicates in the control languages in the Quechuan sample of our

---

17 Note that a direct equivalent for blinking with "eye" overtly expressed is found in Napo Quechua: *nuka-ra ñawi rapiya-(wa-)n* (1S-ACC eye blink-PROG-3) 'I am blinking'.

study. On a general level, Quechuan languages, like Tukanoan and Chicham languages in the area, opt for the structural case marking strategy on the A-like participant.

In clear contrast to the other verb types, sensation predicates show the most deviant patterns with respect to noncanonical marking of A-like participants. This is again in line with Malchukov's (2005) observation that sensation predicates are the most likely candidates for deviant encoding on the A-like participant (see also Section 3.1). This fact is borne out in our data in the case of all Tukanoan and Quechuan varieties found within our interest area and, although with less consistency, in our control languages.

To begin with, we consider the case frame associated with the exceptional sensation concept *hurt*. The valency of this predicate is unique when compared with the other sensation concepts in our study, since it presents both an Experiencer A *and* a Stimulus P. The remainder of the sensation predicates are intransitive, following the transitive-intransitive continuum in Malchukov 2005 (see Sections 3 and 5 for a brief discussion). We observed a split in encoding strategies of these predicates across our sample. Tukanoan languages are unanimous in flagging the A participant with the accusative marker, leaving the P argument unmarked, whereas all Quechuan varieties in our sample extend accusative marking to both the A and the P arguments. These observations are illustrated in the examples in (16).

(16) a. Koreguaje [TUKANOAN], Cook and Criswell 1993, 55 - *asi* (hurt)
          sího-pɨ   asi-kʰɨ   aso-mɨ   **repa-i-re**
          head-CLS:ROUND hurt-SIM.SG.M   say-SG.M   DEM.DIST-SG.M-ACC
          'He said that his head hurt.'
      b. Barasana [TUKANOAN], Jones and Jones 2013, 111 - *wɨa* (hurt)
          yɨɨ   gɨdajoa   bɨto   wɨ̃a-ja   **yu-re**
          1SG   stomach   much   hurt-3SG.INAN   1SG-ACC
          'My stomach hurts (me) very much.'
      c. Imbabura Kichwa [QUECHUAN], fieldnotes - *nanana* (hurt)[18]
          (ñuka-ta-ka)   washa-ta-mi   nana-ju-n
          1SG-ACC-TOP   back-ACC-EVID   hurt-PROG-3SG
          'My back hurts.'
      d. Cañar Kichwa [QUECHUAN], fieldnotes - *nanana* (hurt)
          lomito-ta   **(ñuka-ta)**   nana-n
          back-ACC   1SG-ACC   hurt-3SG
          'My back hurts.'

We now shift our attention to the remainder of the sensation concepts, where we find the highest degree of variation across the languages studied. In our data, we note three competing strategies that dominate the formation of sensation predicates in our sample: the underived predicate strategy, the desiderative experiencer strategy, and the "suffer"-type experiencer strategy. It is important to note that none of these strategies require a noncanonical case frame in all cases. In addition, it is worth recognizing the fact that a language may exhibit more than one strategy, even for lexicalizing the same verbal concept, thereby forming (near) synonymous lexical pairs. This fact is explored in detail later in this subsection.

The first strategy refers to certain sensation predicates, which are best analyzed as having their own dedicated lexical items just like most predicates of other verb types. The lexical item associated with these

---

18 There is more variation in case frame structures especially in Ecuadorian Highland Quechuan varieties than we discuss here. As Floyd (2022, 27–31) points out, the experiencer verbs in some of these varieties show an egophoric pattern in which similar constructions are used in first person declarative and in second person interrogative sentences. These patterns seem to be recent innovations and are not found across all persons and sentence types. Therefore, in this article, we only take into consideration the flagging patterns that are found across most persons and sentence types across the Quechuan languages to uncover similarities with Tukanoan languages in the general marking patterns, which are most likely representative of earlier stages of the Quechuan family. A comparison of more specific patterning would be an interesting endeavor for future research.

predicates does not recruit any additional derivational morphology or straightforwardly combine with a light verb to represent the verbal concept. We simply refer to this as the underived predicate strategy. A handful of illustrative examples with accusative-marked experiencer A participants are presented in (17a) and (17b) and then with nominative experiencers in (16c).

(17)   a.   Kubeo [TUKANOAN], Morse et al. 1999, 97 - *cũiñó* (thirsty)

cũiñó-i-vɨ	**yɨ-re**
be.thirsty-STAT-3SG.INAN.EXPER.PRES.CONT	1SG-ACC

'I am thirsty.'

      b.   Bolivian Quechua [QUECHUAN], Herrero and Sánchez de Lozada 1978, 293 - *yarqha* (hungry)

wawa-s-ta	yarqha-sa-n (...)
child-PL-ACC	be.hungry-PROG-3SG

'The children are hungry (...).'

      c.   Koreguaje [TUKANOAN], Cook 1999, 103 - *chɨ'rɨ* (get.cold)

chɨ'rɨ-sõ-si'-kɨ-a'-mɨ	**chɨ'ɨ**	rɨa
get.cold-INTS-NMLZ.AG.M.SG-VBLZ-M.SG	1SG	much

'He was feeling very cold.'

Conversely, the desiderative experiencer strategy refers to a derivational operation where a dedicated desiderative marker is attached to the verbal (and sometimes nominal) root. In the case of many sensation predicates in the languages of our sample, this strategy is used to provide a natural translation for lexical concepts like "to be hungry," "to be thirsty," "to be sleepy," etc. Below are examples of the desiderative experiencer construction with an accusative-marked Experiencer A participant in Tukanoan (18a) and Quechuan (18b), contrasted with a desiderative construct in Kotiria that does not trigger deviant marking on the experiencer A in (18c), for the sake of illustration:

(18)   a.   Siona [TUKANOAN], Bruil 2014, 163

ai-reba	ãĩ-ɨa-hi	**ji'-re**
big-INTS	eat-DES-3SG.M.PRES.ASSRT	1SG-ACC

'I am very hungry.'

      b.   Upper Napo Kichwa [QUECHUAN], Nilo Licuy Andy, pers. comm.

ñuka-ra	miku-ña-n
1SG-ACC	eat-DES-3

'I am hungry.'

      c.   Kotiria [TUKANOAN], Stenzel 2013, 287 - *chɨ* (eat) + desiderative

yɨ'ɨ´	chɨ-dua-ka
1SG	eat-DES-ASSRT.IPFV

'I want to eat (it).'

The third strategy that is recruited for lexicalizing sensation predicates, which we have labeled the "suffer"-type experiencer strategy, makes reference to a set of sensation predicates that are lexicalized via the combination of a sensation element (sometimes this is clearly a verbal root, whereas in other cases, it may also be nominal) and a verbal head with a meaning along the lines of "suffer/hurt," "be.sick," and "die/kill," This construction type is commonly found in the Tukanoan languages of our sample. Languages differ with regard to whether these constructions select for (non-)canonical marking on the A-like experiencer participant. The following examples demonstrate instances where the experiencer A is flagged with the accusative marker, as in (19), and others where it receives the canonical nominative flagging pattern, as in (20):

(19)   a.   Kubeo [TUKANOAN], Morse and Maxwell 1999, 30 - *ã* (hungry) + *ihi* (hurt)

ã-wɨ'e	ihi-wɨ	**ji-re**
be.hungry-NMLZ	hurt-N3	1SG-ACC

'I am hungry.'

    b.   Kotiria [TUKANOAN], Waltz 2007, 119[19] – *jɨca* (hunger) + *purĩ* (hurt)

maha-no-cã	yɨ	chɨ-ri	baha-ro	jɨca	purĩ-ca	**yɨhɨ-re**
be.small-SG-DIM	1SG	eat-NMLZ	be.after-SG	hunger	hurt-ASSRT.IPFV	1SG-ACC

        'Shortly after eating, I am hungry.'

(20) a.   Aguaruna [CHICHAM], Overall 2007, 284 - *kahĩ* (sleep) + *maa* (kill)

kahĩ	maa-ma	ʃinta-kũ	iwa
sleep:PERT:1PL/3	kill+IPFV-NON.A>S	wake+IPFV-SIM+3:SS	be.awake

tipa-ĩ			
lie+IPFV:1SG/3-DS			

        'When he got sleepy (lit: *when his sleepiness was killing him*), waking up and lying awake.'[20]

    b.   Tukano [TUKANOAN], Ramírez 2019[1997]: 192 - *ihá* (hunger) + *boâ* (die)

yi'i ihá	boâ-go'	weé-sa'	tiíta+pũrikã	wa'î	wehe-gi´	wa'â-gi-ti'
1SG hunger	die-IPFV-SS	AUX-PRES	so	fish	fish-M.SG	go-M.SG-FUT

        'I am hungry - so, I will go fishing.'

As demonstrated in example (20a) from the neighboring Chicham language Aguaruna, the 'suffer'-type strategy extends beyond the primary languages considered in this sample. Further research is required to determine the extent of the distribution of this strategy in other areas throughout South America and elsewhere.

It is also worth noting that there may well be a miscellaneous category of nonproductive constructions that signal the meanings of the sensation predicates and select a noncanonical frame. Consider the following instances of clear (near-)synonyms with the aforementioned sensation predicates in our sample, but which do not form part of a commonly found pattern across the region. We collapse such constructions under the label "other" for the sake of the discussion at hand.

(21)   Koreguaje [TUKANOAN], Gralow and Cook 1984, 23

ãu	cúha-mɨ	**chu'ɨ-re**
hunger	alleviate-3SG	1SG-ACC

      'I am hungry (lit: *hunger alleviates me*).'[21]

Taken together, the points earlier demonstrate the complexity associated with the class of sensation predicates. Although it is not always the case that the predicates from this class select for a noncanonical case frame, there is certainly a high proportion of predicates which do in fact assign nonnominative flagging to the A-like Experiencer participant. Table 4 traces the precise distribution of the strategies alluded to in the discussion earlier (and their comitative case frames) across the languages in our sample.

In unpacking the variation captured in Table 4, the first striking fact is the sheer variety of constructions across and within the language families.[23] There are essentially as many instances of derived predicates as there are underived predicates that serve as natural translations to the predicates at issue in the current study. Below, we discuss the distribution and details surrounding each of the major derivational strategies found in the area in turn.

First, regarding the "suffer"-type strategy, Table 4 shows that it is not found within our Quechuan sample. This type of lexicalization for sensation concepts appears to exhibit varying degrees of productivity

---

19 Here, Waltz (2007, 119) notes that the subject of the verb always takes the marker that is typically assigned to the object – namely, accusative case marking with –*re*.

20 Although the A argument is not overtly expressed here, the indexing pattern is suggestive of a canonical case frame with a nominative experiencer rather than a deviant flagging/indexing pattern.

21 The Spanish in the original translation for this sentence reads "tengo hambre (literalmente: comida me alivia a mí)."

22 Instances with the symbol + (e.g., D+) refer to causativization alternatives with different case frames.

23 Table 4 does not capture the full variation found in these languages. Some languages, such as Imbabura Kichwa, may show egophoric patterns with respect to these predicates (see Floyd 2022, 27–31). A second type of variation not captured by the table is the fact that Tukanoan languages display differential case marking, which strictly speaking leads to two different types of construction. However, using the nondefault marking patterns for these predicates is extremely rare. This additional variation falls outside the scope of this article.

Table 4: Distribution of strategies for expressing sensation predicates; [22]U = underived, D = desiderative, S = 'suffer'-type, O = other; X* = nonnominative on experiencer

	Hungry	Thirsty	Sleepy	Sick	Warm	Cold
Cañar	U*	D*	D/D*	O	O	U
Imbabura	U*	D*	D*	O	U*	U*
Tungurahua	U*/U+	D*/D+	D*/D+			U*
Upper Napo	D*/D+	D*/D+	D*	U	U*	U*
Bolivian	U*			U		
Cuzco	U*	U*	D*	U	U*/U	U*
Siona	D*/S	D*/S	—	U	U*	U*
Koreguaje	O*	D*	D*	—	U*	U*
Máíhɨ̃kì	D*	D*	D*	U/D*	D*	U*
Kubeo	S*	O*	S*	U*	U*	U*
Kotiria	S*	O*	S*	U	U*	U*
Desano	S	O*	O	U	U	U
Barasana	O*	O*	O*	U	U*	U*
Tukano	O	O	O	U	U	U

across the languages of the sample. The concept *be sick* often involves a sensation verb, which selects for an accusative-flagged Experiencer. It seems that the bare predicate does not take an accusative A; an exception is Kubeo, as shown in (22a). The only other accusative-flagged A found with the natural translation of the concept *be sick* is found in Máíhɨ̃kì, exemplified in (22b). However, this instance combines the sensation of feeling sick with another generic sensation predicate. It is likely the case that the generic sensation verb is the culprit for triggering noncanonical flagging on the A participant, as discussed later.

(22) a. Kubeo [TUKANOAN], Chacon and Genetti 2019, 402
          yɨ-re   ihi-wɨ
          1SG-ACC   hurt-3SG
          'I feel sick.'
      b. Máíhɨ̃kì [TUKANOAN], Farmer 2015, 30
          yì-rè   hùì   gɨá-hĩ
          1SG-ACC   be.sick   feel-3SG.M.PRES
          'I feel ill.'

Turning now to the desiderativization strategy, we note several crucial differences with respect to the "suffer"-type strategy. First, the desiderativization strategy is found in both Quechuan and Tukanoan languages, although, in the case of the latter family, this pattern appears to be restricted to the foothill languages. For the most part, this strategy is only found with the concepts *be hungry, be thirsty, be sleepy*, and not with the concepts *be hot, be cold*. A notable exception is found in Máíhɨ̃kì, where the desiderative is found with certain body-external concepts like *be hot*, as exemplified in (23).

(23) Máíhɨ̃kì [TUKANOAN], Michael et al. 2013, 9[24]
      yì-rè   kwàrù-gɨá-hĩ
      1SG-ACC   be.hot-DES-3SG.M.PRES
      'It is hot to me.'

---

24 Note that Farmer (2015) glosses *-gɨá* as FEEL, in line with the glossing found in example (21b). Given that this form is cognate with the desiderative marker in other Western Tukanoan languages and found in most of the same sensation environments as natural translations, we gloss it as DES (desiderative) for the sake of uniformity.

In fact, the strategy of desiderativization goes beyond the sensation concepts discussed here and appears to be a productive process in many Tukanoan and Quechuan languages. Consider the following cases from two of the foothill Tukanoan languages where the desiderative is used with nonsensation concepts, and the A-like participant is marked with the accusative.

(24) a. Koreguaje [TUKANOAN], Cook and Criswell 1993, 92

wa-ɨ-re	mai	ia	aso-mɨ	na'i-kɨ-na
brother.in.law-CLS:ANIM.M-ACC	go.up	desire	say-3SG.M	get.late-3SG.M-DS

'As it was getting dark, his brother-in-law wanted to go up (to town).'

b. Siona [TUKANOAN], fieldnotes

ñaa-ia-hi	**yɨ'-re**	ĩ-re
see-DES-3SG.M.PRS.ASSRT	1SG-ACC	DEM.PROX-ACC

'I would like to meet him.'

c. Imbabura Kichwa [QUECHUAN], Hermon 2001, 152

ñuka-ta-ka	aycha-ta	miku-naya-rka
1SG-ACC-TOP	meat-ACC	eat-DES-PST.3SG

'I want/desire to eat meat.'

d. Huanca Quechua [QUECHUAN], cited in Hermon 2001, 171

yaqa-ta	tushu-na-ykaa-ma-n
1SG-ACC	dance-DES-PROG-OBJ-3SG

'I desire to dance.'

For the sake of clarity, we reiterate (18c) in (25) to demonstrate an instance of a productive desiderative morpheme in an Eastern Tukanoan control language Kotiria, where the A participant does not receive accusative flagging. Similar patterns are found in the other Tukanoan control languages.

(25) Kotiria [TUKANOAN], Stenzel 2013, 287

yɨ'ɨ´	chɨ-dua-ka
1SG	eat-DES-ASSRT.IMPRF

'I want to eat (it).'

Despite the fact that such desiderative morphemes, exemplified by Kotiria in (25), are not cognate with the marker -*ia* found in the Western Tukanoan languages, the story does not end here. In fact, several Eastern Tukanoan languages do have a cognate verbal item with the meaning *want* or *desire* (i.e., *iá* in Tukano per Ramírez 2019[1997], 92, 96; *i* in Kubeo per Morse and Maxwell 1999, 71), just like Siona has a main verb *yɨ'yɨ* (want), and none of these trigger accusative marking on the A-like participant. This fact is suggestive of the desiderative lexeme *ia* itself being a retention from an earlier variety of Tukanoan, whereas the desiderativization strategy with noncanonical A flagging, discussed earlier, is likely a more recent Western Tukanoan innovation. In light of the fact that this strategy appears to be commonplace across all varieties of Quechua, and restricted only to the Western Tukanoan languages within the putative foothills contact area, we suggest that the D⋆ strategy found in Siona, Koreguaje, and Máíhĩ̀kì (following Table 4) is a plausible candidate for Quechua-Western Tukanoan structural convergence. Siona presents a particularly interesting case where this strategy competes with the 'suffer'-type lexicalization strategy that is common to all Tukanoan languages in our study, where the same A-like participant is accusative-marked in the former case, but canonically nominative-marked in the latter.

5 Discussion

With respect to potential contact-induced signals, the main salient pattern that emerges from our study is the propensity to flag experiencers of sensation predicates with an accusative marker. Before zooming in on these patterns in more detail, it is worth pointing out that sensation predicates in a way are relative outsiders to the transitive–intransitive system. This becomes clear when we take another look at Malchukov's map, this time with transitivity and intransitivity included (the latter is part of the map in the original, see Malchukov 2005, 113) at either end of the continuum.

As shown in Figure 9, the semantic classes are by and large caught in the middle between transitive and intransitive. The degree to which languages extend their transitive constructions or intransitive constructions is subject to cross-linguistic (though constrained) variation. The arrow that originates from the sensation predicates box indicates that, in many languages, sensation predicates present a third way to mark arguments, which assimilates neither to the canonical transitive nor to the intransitive pattern.
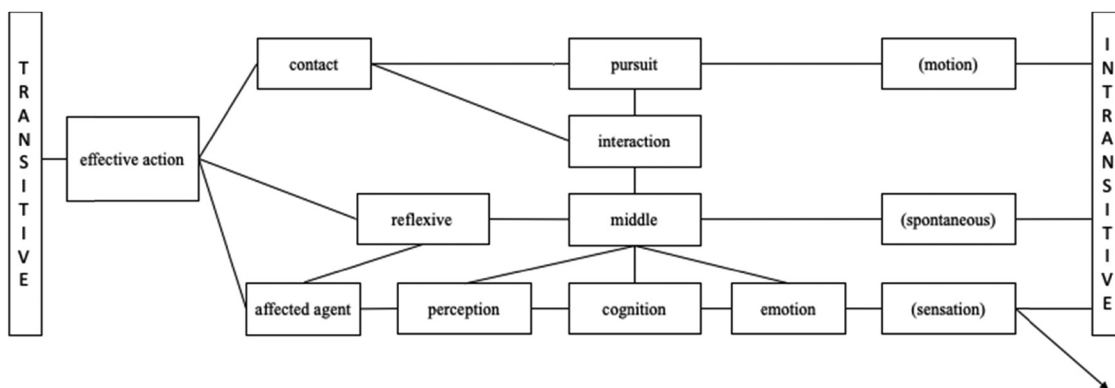
Figure 9: Malchukov's semantic map and the transitive–intransitive continuum.

On the basis of observations in the contact literature starting with Weinreich (1953), we can hypothesize that lexically determined contact effects will most likely be found with verbs that have nonprototypical A or P participants. This is because these verbs tend to be less entrenched in the dominant system of alignment than more prototypical action verbs. Therefore, they are less likely to affect it, leaving the main system intact. We can term these lexical items *fringe vocabulary*. In nominative–accusative systems, nonprototypical P participants will simply be marked with oblique patterns, thus assimilating to the transitive prototype, but nonprototypical A participants may fall outside the system in that they respond to competing pressures of having a structurally assigned nominative S argument versus a more semantically informative case. One could argue that this makes sensation predicates in nominative–accusative languages more open to contact-induced influence.

Seifart (2012) discusses a case of massive borrowing into the Arawakan language Resígaro from Witotoan Bora (both spoken in the NWA). He notes that, although Resígaro has many borrowed classifiers, other morphosyntactic subsystems in the language are virtually unaffected. He explains this by introducing the principle of morphosyntactic subsystem integrity: "Borrowing of paradigmatically and syntagmatically related grammatical morphemes is easier than borrowing of the same number of isolated grammatical morphemes" (ibid.: 475). This principle applies to matter (form) borrowing of grammatical morphemes, but in this article, we argue that this may also be extended to the borrowing of patterns within a group of semantically related concepts, even if this does not involve matter borrowing, but rather borrowing of patterns associated with lexical items.

A cursory look at the forms of sensation predicates across the languages of our sample suggests that, although there is considerable family-internal variation, cognate candidates are also abundant, both in Tukanoan (Table 5), and especially in Quechuan (Table 6). Across the Tukanoan and Quechuan tables, however, there are no likely candidates for direct borrowing.

Table 5: Word forms for sensation predicates (roots) in the Tukanoan sample languages

	Siona	**Máíhɨ̀kì**	**Koreguaje**	**Kubeo**	**Kotiria**	**Desano**
Be thirsty	ohko'ɨaje	ókógɨ'àjɨ'	oko ɨamɨ	cũiñóivɨ	ñahma yapiora	
Be hungry	ãĩ'ɨaje	ãõ gɨ'àjɨ'	ãucuhamɨ	ãvɨé ijivɨ	jɨca purĩca	oaboari
Be warm	uuje	kwàrùgɨ´ájɨ´	asumɨ	toaijivɨ	sira	cũñuri
Be cold	sɨhsɨje	sɨ´sɨ´jɨ´	jɨ^jɨsɨmɨ	jɨjɨvɨ	yɨsɨara	yɨsɨari
Be sick	hũ'ĩñe	jùìyì		yaiɨ́	Dohatira	dorecɨri
Be sleepy		bɨ́ógɨajɨ	okɨamɨ	vɨo ijicɨ	wɨjo purĩna	wɨja ɑ̃rĩri
Hurt	ãsije	áchíjɨ/dɨàjɨ/bàràyi	asimɨ	ijivɨ	Purĩna	pũrĩri

Table 6: Word forms for sensation predicates (roots) in the Quechuan sample languages

	Cañar Kichwa	**Upper Napo Kichwa**	**Cuzco Quechua**	**Imbabura Kichwa**	**Tungurahua Kichwa**	**Bolivian Quechua**
Be thirsty	yakuna(ya)na	upiñachina/ upiñana/ yarkana	ch'akiy	yakunayana	yakunayana	ch'akiy
Be hungry	yarkana	mikuñana/ yarka(chi)na	yarkay	yarjana	yarikana	yarqhay
Be warm	ruparina	rupachina	kholay	rupana	ruparina	k'ajay
Be cold	chirina	chirichina	chiriy	chirina	chirina	chiriy
Be sick	ungushka kana	ungushka tiana/sirina	onqoy	irki kana	wañukuna	unqusqa kay
Be sleepy	suñuna(ya)na	puñunayana	puñunayay	puñunayana	puñunayana	
(feel) hurt	nanana	nanana	nanay	nanana	nanana	nanay

We must conclude, then, that if this is indeed a contact-induced pattern, it is diffusion of patterns rather than matter (Matras and Sakel 2007).

Apart from the general structural similarities between languages regarding the marking of grammatical relations discussed in Section 2 and the areal distribution of sensation construction types that both suggest pattern borrowing, there is an intriguing (though not entirely straightforwardly interpretable) pattern of potential calques in the lexicon of sensation predicates in the NWA more widely speaking, whereby certain semantic connections recur in different languages. This is shown in Table 7.

Table 7 keeps track of whether a verb root for a particular concept in the class of sensation predicates is also used to encode a different concept.[25] As can be seen, these semantic extensions are shared across language families in the area, in particular between Tukanoan and Quechuan.[26] Although the extent of these phenomena, both within and outside the NWA, requires more research, the Quechuan control

---

25 In some cases, this involves the use of a root in combination with a derivational suffix, in line with the patterns discussed earlier.

26 An example of a recurring semantic extension concerns the lexical items for *eat* and *be hungry* in Ecuadorian Siona (*ãĩñe* vs *ãĩ'ɨaje*) and Pastaza Quichua (*miku-na* vs *miku-naya-na*), the latter of which is derived morphologically from the former in both languages. In some cases, there is no derivation, and the same term is used for different semantic concepts across languages, such as *be warm* and *burn* in Ecuadorian Siona (*uuje*) and Imbabura Kichwa (*rupana*). An interesting case concerns the items for *be sick* and *die* in Máíhɨ̀kì (*jùìyì* vs *júníjóyí*) and Tungurahua Kichwa (*wañukuna* vs *wañuna*), which are derived from each other in both languages, but in a different direction for each language.

Table 7: Semantic connections of sensation concepts

Language	Family	be thirsty ≈ drink	be hungry ≈ eat	be warm ≈ burn	be sick ≈ die	be sleepy ≈ fall asleep
Ecuadorian Siona	Tukanoan (W)	yes	yes	yes	yes	?
Máíhɨ̀kì	Tukanoan (W)	yes	yes	no	yes	?
Koreguaje	Tukanoan (W)	yes	yes	no	?	no
Kubeo	Tukanoan (E)	yes	yes	no	yes	no
Kotiria	Tukanoan (E)	no	no	no	no	yes
Desano	Tukanoan (E)	?	no	no	no	no
Barasana	Tukanoan (E)	yes	yes	no	yes	yes
Tukano	Tukanoan (E)	no	no	no	no	yes
Cañar Kichwa	Quechuan	no	no	yes	no	yes
Imbabura Kichwa	Quechuan	no	no	yes	no	yes
Upper Napo Kichwa	Quechuan	yes	yes	yes	no	yes
Tungurahua Kichwa	Quechuan	no	no	yes	yes	yes
Pastaza Quichua	Quechuan	yes	yes	?	?	?
Shiwilu	Kawapanan	yes	no	yes	no	no
Shawi	Kawapanan	no	no	no	no	no
Aguaruna	Chicham	no	no	no	yes	?
Shiwiar	Chicham	no	no	?	no	?
Wampís	Chicham	?	?	?	yes	?
Ocaina	Witotoan	?	?	no	no	yes
Murui	Witotoan	?	no	no	no	?
Arabela	Zaparoan	no	yes	?	yes	?
Iquito	Zaparoan	no	no	?	yes	?

languages of our sample do not have most of these patterns, except for the connection between *sleepy* and *fall asleep*, which, together with the distribution within the NWA, suggests that this pattern may have spread from Quechuan to other languages.

These more abstract contact effects are consistent with Epps's (2020) suggestion that the NWA, and possibly Amazonia more generally, may have been characterized by what she calls the 'Amazonian package': "a system of sharing space and resources with other humans (but also animals, plants etc.), hinging on the notion of alterity, the view that the overall reproduction of society is symbolically dependent on relations with the outside and otherness." Such a cultural code could arise in an environment of a relative power balance between the different groups, combined with an incentive to maintain identity markers, in particular language. This incentive could be linguistic exogamy, or cultural exchange, although Epps stresses that these are not necessarily the causes of the tendency toward identity preservation, but they do support the system.

A scenario of strong maintenance of linguistic codes, combined with intensive interaction between groups speaking different languages, is then argued to have led to the recurring situation in Amazonia that languages borrow very few forms from each other (as incorporating elements from another language goes against the policy of keeping languages apart), but the more unconscious parts of language, its more abstract organizational principles, are less open to conscious maintenance strategies, leading to convergence of abstract patterns. This is consistent with the findings in areal studies in Amazonia, where unconnected areas show similar patterns of structural convergence combined with low levels of borrowing (Epps and Michael 2017). In addition, a comparative survey of loanwords in hunter–gatherer languages (Bowern et al. 2014) showed that South American languages borrowed significantly less from their neighbors than

languages in other parts of the world.[27] If we apply this characterization to the NWA-foothill area, it seems that languages have followed a strategy of cooptation of existing forms, based on the pattern that exists in other languages. This would lead to the similar patterns of construction expansion and semantic extensions, without there being many formal overlaps across language families.

Summarizing, the languages of the NWA (foothills) show potential contact effects in the abstract organization of their coding strategies more generally, in the organization of sensation constructions, and potentially in the semantic extensions of certain predicates related to sensations. They do not, however, show patterns of formal (loanword) diffusion, in line with a more general culture of identity preservation suggested to have been prevalent in the NWA.

6 Conclusion

We started out this article with the question "To what extent do lexical items play a role in the spread of alignment (sub)patterns?" We conclude that there is lexical influence on the spread of case frames, but it seems to be mainly confined to the subsystem of sensation predicates, and it does not involve lexical borrowing of forms. The fact that contact-induced lexical influence is mainly confined to sensation predicates can be explained by making reference to fringe vocabulary (i.e., vocabulary that is at the fringes of a system, in this case the transitive–intransitive continuum) and therefore less deeply entrenched in the language systems. The fact that the contact-induced patterns involve the diffusion of more abstract information rather than forms can be connected to the prevalence of a policy of identity preservation in the area.

We have presented evidence that languages influence each other on the level of lexico-grammatical and constructional information associated with the lexeme, rather than the lexeme itself. The main mechanism involved seems to be cooptation of existing elements in the language according to a pattern found in the other language. This is, in other words, lexical borrowing without the lexeme. This is graphically depicted in Figure 10.

Figure 10 illustrates the examples in (26), a repetition of (18).
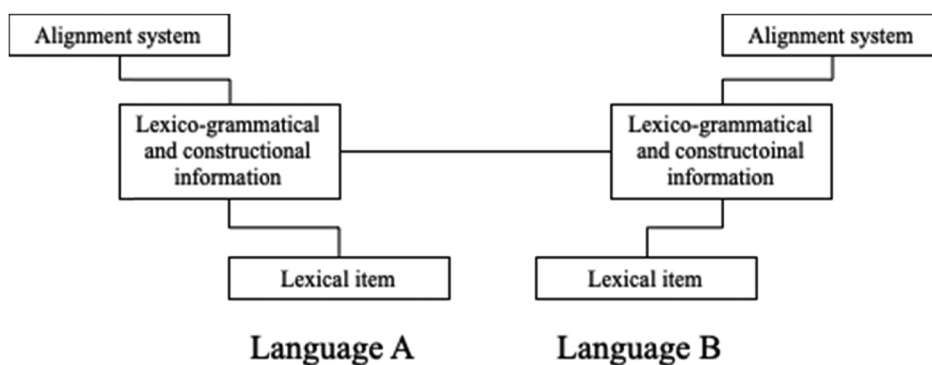
Figure 10: Contact patterns in the NWA-foothill area.

27 A potential general mechanism underlying these patterns is suggested by Matras (2011, 156), who argues that bilingual speakers, rather than having two neatly separated language systems to process their speech, have a multifacetted and intrinsic repertoire of linguistic structures, ranging from concrete (e.g., word forms) to more abstract elements, Constraints on language selection apply more easily to word forms than to more abstract constructional specifications. The latter, therefore, have a higher chance of being generalized across language systems.

(26) a.   Siona [TUKANOAN], Bruil 2014, 163
           ai-reba   ãĩ-ia-hi   **jĩ'-re**
           big-INTS   eat-DES-3SG.M.PRES.ASSRT   1SG-ACC
           'I am very hungry.'

      b.   Upper Napo Kichwa [QUECHUAN], Nilo Licuy Andy, pers. comm.
           ñuka-ra   miku-ña-n
           1SG-ACC   eat-DES-3SG
           'I am hungry.'

      c.   Kotiria [TUKANOAN], Stenzel 2013, 287 - *chɨ* (eat) + desiderative
           yu'ɨ́   chɨ-dua-ka
           1SG   eat-DES-ASSRT.IPFV
           'I want to eat (it).'

While Siona (West Tukano) and Upper Napo Kichwa clearly use different forms for the concepts of eating (*ãĩ-* versus *miku-*), as well as for wanting (*-ia* vs *-ña*), the constructions converge in that they license an accusative-marked experiencer, unlike in East Tukanoan Kotiria. We can translate this into a statement that Siona seems to have borrowed the constructional information associated with the combination of the word denoting 'to eat' and the desiderative that this combination combines with an accusative experiencer, without having borrowed any of the actual forms.

This would explain the spread of case frames associated with particular concepts. It is not clear how the systemic level is related to this. The most straightforward explanation is that Tukanoan and Quechuan languages inherited a nominative–accusative system from their respective ancestor languages, and the clearest contact patterns are found in a niche that is allowed to function relatively independently from the transitivity continuum, and where most variation can be found.

When looking at the area more broadly, however, we see other elements that may have spread through similar mechanisms. These include differential argument marking, subject flagging, double object constructions, and possibly the lack of object agreement and egophoric patterns. Detailed study of the distributions of these more refined aspects may well reveal more local patterns of contact and influence. Our goal, however, was to draw attention to a type of "lexical" borrowing without the lexical form and to show such a mechanism, schematized in Figure 10, is relevant to the area. We leave the study for more fine-grained patterns for further research.

Abbreviations

ABL	ablative
ACC	accusative
ADD	additive
AFFT	affected
AG	agent
ALL	allative
ANA	anaphor
ANIM	animate
ANT	anterior
ANTIC	anticausative
AS	action/state
ASSRT	assertive
AUX	auxiliary
BEN	beneficiary
CLS	classifier

COM	comitative
CONT	continuous
CONTR	contrastive
COP	copula
COR	coreferent
DAT	dative
DEM	demonstrative
DES	desiderative
DIM	diminutive
DIST	distal
DS	different subject
EVID	evidential
EXPER	experienced
F	feminine
FUT	future
GEN	genitive
GOAL	goal
HORT	hortatory
INS	instrument
INTS	intensifier
IPFV	imperfective
IRR	irrealis
LOC	locative
M	masculine
NA>S	non-A coreferent with-S
NASSRT	nonassertive
NMLZ	nominalizer
NSBJ	nonsubject
OBJ	object
P	possessive
PERT	pertensive
PFV	perfective
PL	plural
PRES	present
PROG	progressive
PRF	perfect
PROX	proximate
PST	past
REC	recent
SBJ	subject
SG	singular
SIM	simultaneous
SS	same subject
STAT	stative
TOP	topic
VBLZ	verbalizer
VIS	visual

References

Adelaar, Willem F. H. and Pieter C. Muysken. 2004. *The languages of the Andes*. Cambridge: Cambridge University Press.

Aikhenvald, Alexandra Y. 1999. "The Arawak language family." In *The Amazonian languages*, edited by Robert M. W. Dixon and Alexandra Y. Aikhenvald, p. 65–106. Cambridge: Cambridge University Press.

Aikhenvald, Alexandra Y. 2002. *Language contact in Amazonia*. Oxford/New York: Oxford University Press.

Aikhenvald, Alexandra Y. 2012. *Languages of the Amazon*. Oxford/New York: Oxford University Press.

Alemán, Tulio, Mario Miller, and Reinaldo López. 2000. *Wirã ya, peamasa ya wererituri* (*Desano-Español*) (*Diccionario bilingüe de 896 palabras*). Bogotá: Summer Institute of Linguistics.

Anderson, Stephen. 1976. "On the notion of subject in ergative languages." In *Subject and topic*, edited by Carol Justus and Charles Li, p. 1–24. New York: Academic Press.

Barnes, Janet. 1999. "Tucano." In *The Amazonian languages*, edited by Robert M. W. Dixon and Alexandra Y. Aikhenvald, p. 207–26. Cambridge: Cambridge University Press.

Birchall, Joshua. 2014. "Verbal argument marking patterns in South American languages." In *The native languages of South America: Origins, development, typology*, edited by Loretta Marie O'Connor and Pieter Cornelis Muysken, p. 223–49. Cambridge: Cambridge University Press.

Bonfim Duarte, Fábio and Braulio Brandão de Oliveira Lopes. 2020. "Differential object marking in Tukano." *Revista Letras* 101, 16–44.

Bowern, Claire, Hannah Haynie, Catherine Sheard, Barry Alpher, Patience Epps, Jane Hill, and Patrick McConvell. 2014. "Loan and inheritance patterns in hunter-gatherer ethnobiological systems." *Journal of Ethnobiology* 34(2), 195–227.

Bruil, Martine. 2014. *Clause-typing and evidentiality in ecuadorian siona*. PhD thesis, Leiden University.

Bruil, Martine. 2015. Possible Quechua influence on Ecuadorian Siona. *Paper presented at REELA Leiden University, September 7th*, 2015.

de Carvalho, Fernando O. 2013. "On Záparoan as a valid genetic unity: Preliminary correspondences and the status of Omurano." *Revista Brasileira de Linguística Antropológica* 5, 91–116.

Chacon, Thiago. 2013. "On proto-languages and archaeological cultures: Pre-history and material culture in the Tukanoan Family." *Revista Brasileira De Linguística Antropológica* 5(1), 217–45.

Chacon, Thiago. 2014. "A revised proposal of proto-tukanoan consonants and tukanoan family classification." *International Journal of American Linguistics* 80(3), 275–322.

Chacon, Thiago. 2017. "Arawakan and Tukanoan contacts in Northwestern Amazonia prehistory." *PAPIA: Revista Brasileira de Estudos Crioulos e Similares* 27, 237–65.

Chacon, Thiago and Carol Genetti. 2019. "Grammatical relations in Cubeo." In *Argument selectors: new perspectives on grammatical relations*, edited by Alena Witzlack-Makarevich and Balthasar Bickel, p. 399–432. Amsterdam: John Benjamins.

Chantre y Herrera, José. 1901. *Historia de las misiones de la Compañía de Jesús en el Marañón español 1637–1767*. Madrid: Imprenta de Avrial.

Cipolletti, María S. 1992. "Un manuscrito lucano del siglo XVIII: Ejemplos de continuidad y cambio en una cultura amazónica (1753–1990)." *Revista de Indias*, 52(194), 181–94.

Cole, Peter. 1982. *Imbabura Quechua*. [Lingua Descriptive Studies, Volume 5]. Amsterdam: North-Holland Publishing Company.

Comrie, Bernard S. 1978. "Ergativity." In *Syntactic typology: studies in the phenomenology of language*, edited by Winfred P. Lehmann, p. 329–94. Austin: University of Texas Press.

Comrie, Bernard S. 2013. "Alignment of case marking of full noun phrases." In *World Atlas of Language Structures*, edited by Matthew S. Dryer and Martin Haspelmath. Leipzig: Max Planck Institute for Evolutionary Anthropology.

Cook, Dorothy M. 1999. *Textos en Koreguaje*. Bogotá: Editorial Alberto Lleras Camargo.

Cook, Dorothy M. and Frances L. Gralow. 2001. *Diccionario bilingüe koreguaje-español, español-koreguaje*. Bogotá: Editorial Alberto Lleras Camargo.

Cook, Dorothy and Linda Criswell. 1993. *El idioma koreguaje (tucano occidental)*. Summer Institute of Linguistics (Bogotá).

Cusihuáman, Antonio. 1976. *Gramática Quechua Cusco-Collao*. Lima: Centro de Estudios Andinos 'Bartolomé de las Casas'.

DeLancey, Scott. 1981. "An Interpretation of Split Ergativity and Related Patterns." *Language* 57(3), 626–57.

Dixon, Robert M. W. 1979. "Ergativity." *Language* 55(1), 59–138.

Echeverri, Juan Alvaro. 1997. *The People of the Center of the World: A Study in Culture, History and Orality in the Colombian Amazon*. PhD thesis, New York School for Social Research, Faculty of Political and Social Science.

Epps, Patience and Kristine Stenzel. 2013. *Upper Rio Negro: Cultural and Linguistic Interaction in Northwestern Amazonia*. Rio de Janeiro: Museu do Índio-FUNAI.

Epps, Patience and Lev David Michael. 2017. "The Areal Linguistics of Amazonia." In *The Cambridge Handbook of Areal Linguistics*, edited by Raymond Hickey, p. 934–63. Cambridge: Cambridge University Press.

Epps, Patience. 2020. "Amazonian linguistic diversity and sociocultural correlates." In *Language Dispersal, Diversification, and Contact: A Global Perspective*, edited by Mily Crevels and Pieter Muysken, p. 275–90. Oxford: Oxford University Press.

Faller, Martina. 2002. *Semantics and Pragmatics of Evidentials in Cuzco Quechua*. PhD thesis, Stanford University.

Farmer, Stephanie. 2015. *Establishing Reference in Máíhɨ̃kì*. PhD thesis, University of California, Berkeley.

Floyd, Simeon, Georgia Ennis, Joshua Homan and Nicholas Q. Emlen. 2021. *The lexicon as a window on Quechuan expansion in Amazonia*. A paper presented at Amazónicas VIII. https://www.youtube.com/watch?v=xBwhhR9dOa8.

Floyd, Simeon. 2022. "Ecuadorian highland quichua and the lost languages of the Northern Andes." *International Journal of American Linguistics* 88(1), 1–52.

Gasché, Jürg. 2009. "La Sociedad de La 'Gente Del Centro'." In *A Multimedia Documentation of the Languages of the People of the Center. Online Publication of Transcribed and Translated Bora, Ocaina, Nonuya, Resígaro, and Witoto Audio and Video Recordings with Linguistic and Ethnographic Annotations and Descriptions*, edited by Frank Seifart, Doris Fagua, Jürg Gasché and Juan Alvaro Echeverri, Nijmegen: DOBES-MPI. http://corpus1.mpi.nl/qfs1/media-archive/dobes_data/Center/Info/WelcomeToCenterPeople.html.

van Gijn, Rik. 2014. "The Andean foothills and adjacent Amazonian fringe." In *The Native Languages of South America: Origins, Development, Typology*, edited by Loretta O'Connor and Pieter C. Muysken, p. 102–25. Cambridge: Cambridge University Press.

Gomez-Imbert, Elsa. 2011. "La famille tukano." In *Dictionnaire des langues*, edited by Emilio Bonvini, Joëlle Busuttil, and Alain Peyraube, p. 1454–60. Paris: Presses Universitaires de France.

Gralow, Frances and Dorothy Cook. 1984. *Ko'rehuajɨ chɨ'ore cutuñu* (*Hablemos coreguaje: Un libro de aprendizaje del idioma coreguaje*) [Volume 1]. Summer Institute of Linguistics (Bogotá).

Grzech, Karolina. 2016. *Discourse enclitics in Tena Kichwa: A corpus-based account of information structure and epistemic meaning*. PhD thesis, SOAS: London.

Hammarström, Harald, Robert Forkel, Martin Haspelmath, and Sebastian Bank. 2021. *Glottolog 4.5*. Leipzig: Max Planck Institute for Evolutionary Anthropology, http://glottolog.org.

Hartmann, Iren, Martin Haspelmath and Bradley Taylor (Eds.). *Valency Patterns Leipzig*. Leipzig: MPI for Evolutionary Anthropology, 2013. http://vapal.info.

Hermon, Gabriella. 2001. "Non-canonically marked A/S in Imbabura Quechua." In *Non-Canonical Marking of Subjects and Objects*, edited by Alexandra Aikhenvald, R.M.W. Dixon and Masayuki Onishi, p. 149–176. Amsterdam: John Benjamins.

Herrerro, Joaquín and Federico Sánchez de Lozada. 1978. *Gramática Quechua: Estructura del Quechua Boliviano Contemporáneo*. Cochabamba: CEFCO/Editorial Universo.

Hopper, Paul J. and Sandra A. Thompson. 1980. "Transitivity in grammar and discourse." *Language* 56(2), 251–99.

Johnson, Orville E. and Stephen H. Levinsohn. 1990. Gramática secoya. [*Cuadernos Etnolingüísticos 11*]. Quito: Summer Institute of Linguistics.

Jones, Wendell H. and Paula S. Jones. 1999. *Barasano Syntax*. Arlington, USA: Summer Institute of Linguistics and the University of Texas at Arlington Publication in Linguistics.

Jones, Wendell H. and Paula S. Jones. 2013. *Diccionario bilingüe - Eduria & Barasana-Español, Español-Eduria & Barasana*. Bogotá: La Fundación para el Desarrollo de Pueblos Marginados.

Kemmer, Suzanne. 1993. *The Middle Voice*. Amsterdam: John Benjamins.

Kohlberger, Martin. 2020. *A Grammatical Description of Shiwiar*. PhD Thesis, Amsterdam: LOT Publications.

Lastra, Yolanda. 1968. *Cochabamba Quechua Syntax*. The Hague/Paris: De Gruyter Mouton.

de Lima Silva, Wilson. 2012. *A Descriptive Grammar of Desano*. PhD Thesis, University of Utah.

Malchukov, Andrej. 2005. "Case pattern splits, verb types, and construction competition." In Competition and Variation in Natural Languages: the Case for *Case*, edited by Mengistu Amberber and Helen de Hoop, p. 73–117. Amsterdam: Elsevier.

Malchukov, Andrej. 2015. "Valency classes and alternations: parameters of variation." In Valency Classes in the World's Languages - *Volume 1:* Introducing the Framework, and Case Studies from Africa and Eurasia [*Comparative Handbooks of Linguistics*], edited by Andrej Malchukov and Bernard Sterling Comrie, p. 73–130. The Hague/New York: De Gruyter Mouton.

Mannheim, Bruce. 1991. *The Language of the Inka since the European Invasion*. Austin: University of Texas Press.

Mason, John A. 1950. "The languages of South American Indians." In Handbook of South American Indians [*Volume 6:* Physical anthropology, linguistics and cultural geography of South American Indians], edited by Julian H. Steward, p. 157–317. Washington, DC: Smithsonian Institution Bureau of American Ethnology Bulletin 143.

Matras, Yaron. 2011. "Explaining convergence and the formation of linguistic areas." In *Geographical typology and linguistic areas*, edited by Osamu Hieda, Christa König, and Hirosi Nakagawa, p. 143–60. Amsterdam/Philadelphia: John Benjamins.

Matras, Yaron and Jeanette Sakel. 2007. Investigating the mechanisms of pattern replication in language convergence. *Studies in Language* 31(4), 829–65.

Michael, Lev. 2009. "Clause linking in Iquito (Zaparoan)." In *The Semantics of Clause Linking*, edited by Robert M. W. Dixon and Alexandra Y. Aikhenvald, p. 145–66. Oxford/New York: Oxford University Press.

Michael, Lev, Christine Beier, Stephanie Farmer, Kelsey Neely, Amalia Skilton, Greg Finley, John Sylak, and Grace Neveu. 2012. *Diccionario Bilingüe máíjìkì-castellano y castellano-máíjìkì*. Berkeley, CA: Proyecto Máíjìkì.

Michael, Lev, Christine Beier, Stephanie Farmer, Kelsey Neely, Amalia Skilton, Greg Finley, John Sylak, and Grace Neveu. 2013. *Diccionario Bilingüe máíjìkì-castellano y castellano-máíjìkì*. Berkeley, CA: Proyecto Máíjìkì.

Miller, Marion. 1999. *Desano Grammar*. Arlington, USA: Summer Institute of Linguistics & University of Texas at Arlington.

Monrós Marin, Eva. 2004. "L'ergativitat a Amèrica. Fitxes bibliogràfiques." In *Ergativity in Amazonia III*, edited by Francesc Queixalós, p. 189–278. Paris: CELIA-CNRS.

Morse, Nancy L. and Michael B. Maxwell. 1999. *Gramática del cubeo*. Bogotá: Editorial Alberto Lleras Camargo.

Morse, Nancy L., Neva F. West de Salser, and Jay K. Salser. 1999. *Diccionario ilustrado bilingüe: cubeo-español, español-cubeo*. Bogotá: Editorial Alberto Lleras Camargo.

Muratorio, Blanca. 1998. *Rucuyaya Alonso y la historia social y económica del Alto Napo*, p. 1850–1950. Quito: Abya-Yala.

Muysken, Pieter C. 2000. "Semantic transparency in Lowland Ecuadorian Quechua morphosyntax." *Linguistics* 38(5): 973–988.

Muysken, Pieter C. 2011. "Relative clauses in Ecuadorian Quechua." In *Subordination in Native South American Languages*, edited by Rik van Gijn, Katharina Haude and Pieter C. Muysken, p. 251–66. Amsterdam/Philadelphia: John Benjamins.

Muysken, Pieter C. 2021. "Substrate influence in Northern Quechua languages." In *Variation Rolls the Dice: A worldwide collage in honour of Salikoko S. Mufwene*, edited by Enoch O. Aboh and Cécile B. Vogouroux, p. 133–60. Amsterdam: John Benjamins.

Neveu, Grace. 2012. "Radial Directionals." In *Máíjìkì Project 2012 Modules and Text Sampler*, edited by Lev Michael, Stephanie Farmer, Amalia Skilton, Kelsey Neely, Grace Neveu and Christine Beier, p. 162–168 (unpublished). University of California Berkeley.

Norder, Sietze J., Robert Forker, Harald Hammarström, Hedvig Skirgard, Leonardo Arias, Simon Greenhill, Alena Witzlack-Makarevich and Rik van Gijn. 2022. *glottospace: R package for the geospatial analysis of linguistic and cultural data*. URL https://github.com/SietzeN/glottospace.

Obrem, Udo. 1980. *Los Quijos. Historia de la transculturación de un grupo indígena en el Oriente Ecuatoriano*. Otavalo: Instituto Otavaleño de Antropología.

Overall, Simon. 2007. *A grammar of aguaruna*. Bundoora, Victoria (Australia): La Trove University Press.

Queixalós, Francesc and Spike Gildea. 2010. "Manifestations of ergativity in Amazonia." In *Ergativity in Amazonia*, edited by Spike Gildea and Francesc Queixalós, p. 1–28. Amsterdam: John Benjamins.

Ramirez, Henri. 2019[1997]. *A Fala Tukano dos Ye'pâ-Masa*. [Volume 1: Grammar]. Manaus (Brazil): Inspetoria Salesiana Missionária da Amazônia/CEDEM.

Rojas-Berscia, Luis Miguel. 2019. *From Kawapanan to Shawi: Topics in language variation and change*. PhD thesis, Radboud University Nijmegen.

Seifart, Frank. 2011. *Bora loans in Resígaro: Massive morphological and little lexical borrowing in a moribund Arawakan language* [Cuadernos de etnolingüística, séria monografias 2], http://www.etnolinguistica.org/mono:2.

Seifart, Frank. 2012. "The principle of morphosyntactic subsystem integrity in language contact: Evidence from morphological borrowing in Resígaro (Arawakan)." *Diachronica* 29, 471–504.

Seifart, Frank. 2015. "Direct and indirect affix borrowing." *Language* 91(3), 511–32.

Siewierska, Anna. 2013. "Verbal person marking." In *World atlas of language structures online*, edited by Matthew S. Dryer and Martin Haspelmath. Leipzig: Max Planck Institute for Evolutionary Anthropology.

Stenzel, Kristine. 2005. "Multilingualism in the Northwest Amazon." *Revisited: Memorias del Congreso de Idiomas Indígenas de Latinoamérica II*. Austin: University of Texas at Austin: 27-29.

Stenzel, Kristine. 2013. *A reference grammar of Kotiria* (*Wanano*). Lincoln, USA: University of Nebraska Press.

Stenzel, Kristine. 2014. "Estrutura argumental em duas línguas da família tukano oriental: Kotiria (Wanano) e Wa'ikhana (Piratapuyo)." In *Sintaxe e semântica do verbo em línguas indígenas do Brasil*, edited by Luciana Storto, Bruna Franchetto and Suzi Lima, p. 131–66. Campinas, São Paolo: Mercado de Letras.

Torero, Alfredo A. 1964. "Los dialectos quechuas." *Anales Científicos de la Universidad Agraria* 2(4), 446–78.

Triana y Antorveza, Humberto. 1987. *Las lenguas indígenas en la historia social del Nuevo Reino de Granada*. Bogotá: Instituto Caro y Cuervo.

Tsunoda, Tasaku. 1981. "Split case-marking patterns in verb-types and tense/aspect/mood." *Linguistics* 19, 389–438.

Uzendoski, Michael and Norman E. Whitten Jr. 2014. "From 'Acculturated Indians' to 'Dynamic Amazonian Quichua-Speaking Peoples'." *Tipití: Journal of the Anthropology of Lowland South America* 12(1), 1–13.

Valenzuela, Pilar M. 2011. "Argument Encoding and Pragmatic Marking of the Transitive Subject in Shiwilu (Kawapanan)." *International Journal of American Linguistics* 77(1), 91–120.

Valenzuela, Pilar M. 2015. "¿Qué tan "amazónicas." son las lenguas kawapana? Rasgos centro-andinos y evidencia para una posible sub-área lingüística." *Lexis* XXXIX(1), 5–56.

Velie, Daniel. 2008[1975]. *Orejón: Bosquejo de la fonología y gramática*. Lima: Summer Institute of Linguistics.

Vickers, William T. 1976. *Cultural adaptation to Amazonian habitats: The Siona-Secoya of Eastern Ecuador*. PhD thesis, University of Florida.

Waltz, Nathan and Alva Wheeler. 1972. "Proto Tucanoan." In *Comparative studies in Amerindian Languages* [Volume 127], edited by Esther Matteson, Alva Wheeler, Frances L. Jackson, Nathan E. Waltz, and Diana R. Christian, p. 119–49. The Hague/New York: De Gruyter Mouton.

Waltz, Nathan. 2007. *Diccionario bilingüe: Wanano o Guanano-Español; Español-Wanano o Guanano*. Bogotá: Fundación para el Desarrollo de los Pueblos Marginados.

Weinreich, Uriel. 1953. *Languages in contact*. The Hague: Mouton.

West, Birdie. 1980. *Gramática popular del tucano*. Bogotá: Ministerio del Gobierno.

Wise, Mary Ruth 1999. "Small language families and isolates in Peru." In *The Amazonian Languages*, edited by Robert M. W. Dixon and Alexandra Y. Aikhenvald, p. 307–40. Cambridge: Cambridge University Press.

Wise, Mary Ruth. 2011. "Rastros desconcertantes de contactos entre idiomas y culturas a lo largo de los contrafuertes orientales de los Andes del Perú." In *Estudios sobre lenguas andinas y amazónicas: Homenaje a Rodolfo Cerrón-Palomino*, edited by Willem F. H. Adelaar, Pilar M. Valenzuela, and Roberto Zariquiey, p. 305–26. Lima: Fondo Editorial Pontificía Universidad Católica del Perú.

Zúñiga, Fernando. 2015. "How strong is the case for contact-induced grammatical restructuring in Quechuan?" *Linguistic Discovery* 13(2), 23–36.

APPENDIX – List of predicates and verb types used in this study

Verbal concept	Semantic class	Verbal concept	Semantic class
EAT	Affected agent	*GRILL*	Effective action
DRINK	Affected agent	*HIT*	Effective action
LAUGH	Affected agent	*SHAVE*	Effective action
TAKE	Affected agent	*DRESS*	Effective action
GET	Affected agent	*BUILD*	Effective action
GIVE BIRTH	Affected agent	*CUT*	Effective action
PLAY	Affected agent	*TEAR*	Effective action
KNOW	Cognition	*TIE*	Effective action
UNDERSTAND	Cognition	*FILL*	Effective action
THINK (*about*)	Cognition	*GRIND*	Effective action
FORGET	Cognition	*LIKE*	Emotion
TOUCH	Contact	*FEAR*	Emotion
FEEL	Contact	*BE FOND OF*	Emotion
LEAN (*on*)	Contact	*BE SAD*	Emotion
STROKE	Contact	*BE HAPPY*	Emotion
STICK (*to*)	Contact	*HATE/DISLIKE*	Emotion
LICK	Contact	*HELP*	Interaction
WASH	Contact	*MEET*	Interaction
HUG	Contact	*FRIGHTEN*	Interaction
BEAT	Contact	*TALK*	Interaction
PEEL	Contact	*ASK FOR*	Interaction
CARRY	Contact	*SHOUT AT*	Interaction
LOAD	Contact	*TELL*	Interaction
PUSH	Contact	*SAY*	Interaction
WIPE	Contact	*NAME*	Interaction
KILL	Effective action	*SHOW*	Interaction
COOK	Effective action	*GIVE*	Interaction
BREAK	Effective action	*SEND*	Interaction
BRING	Interaction	*DIG*	Pursuit
STEAL	Interaction	*BE THIRSTY*	Sensation
TEACH	Interaction	*BE HUNGRY*	Sensation
DEFECATE	Middle	*BE WARM*	Sensation
GET UP	Middle	*BE COLD*	Sensation
SCREAM	Middle	*BE SICK*	Sensation
SING	Middle	*BE SLEEPY*	Sensation
JUMP	Middle	*HURT*	Sensation
SIT DOWN	Middle	*VOMIT*	Spontaneous
HIDE	Middle	*DIE*	Spontaneous
LEAVE	Motion	*FALL ASLEEP*	Spontaneous
GO	Motion	*FAINT*	Spontaneous
ROLL	Motion	*SWEAT*	Spontaneous
RUN	Motion	*BURN*	Spontaneous
CLIMB	Motion	*FALL/SLIP*	Spontaneous
SEE	Perception	*RAIN*	Spontaneous
HEAR	Perception	*SINK*	Spontaneous
LOOK (*at*)	Perception	*COUGH*	Spontaneous

LISTEN (*to*)	Perception	*BLINK*	Spontaneous
SMELL	Perception	*BOIL*	Spontaneous
FOLLOW	Pursuit	*POSSESS*	Static
SEARCH (*for*)	Pursuit	*BE SIMILAR* (*to*)	Static
HUNT	Pursuit	*SIT*	Static
THROW (*at*)	Pursuit	*STAND*	Static
WAIT (*for*)	Pursuit	*LIE*	Static
PUT	Pursuit	*BE DRY*	Static
POUR	Pursuit	*BE A HUNTER*	Static
COVER	Pursuit	*LIVE*	Static