The Syntax of Alignment: An Emergentist Typology*

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1. Introduction
Among the many advantages that speech confers on humans is the ability to convey thoughts by inflecting and arranging words in particular ways.\(^1\) Explaining precisely how this is done has always been the first goal of language science. Progress has been uneven, of course, replete with false leads and dead ends, but various research priorities can be identified with some degree of confidence.

One such priority involves the phenomenon of alignment, which defines a fundamental divide in the morphosyntax of natural languages, as illustrated in Figure 1. Norman & Campbell (1978) describe the contrast as follows.

*In nominative/accusative languages, subjects of transitives and subjects of intransitives are handled in the same way, while transitive objects are handled differently. In absolutive/ergative languages, transitive objects are accorded the same treatment as intransitive subjects, transitive subjects being handled differently.* (Norman & Campbell 1978:141)

![Figure 1: Two language types](image)

The study of alignment lies at the heart of the field of typology, an area to which Lyle Campbell has made many important contributions, including a remarkable overview of South America’s 108 language families (Campbell 2012). Indeed, Campbell was among the first scholars to posit an

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\(^*\) I am grateful to Lyle Campbell, Raina Heaton, Miho Choo and the editors of this volume for their helpful comments and advice.

\(^1\) I deliberately use representations that are as simple and spare as possible for reasons of practicality as well as for reasons of principle (emergentist approaches to syntax typically reject the need for ‘tree structures.’)

There are essentially two approaches to the typology of alignment. One body of work considers the phenomenon from a functional perspective, with reference to the classic notions of subject and direct object (e.g., Norman & Campbell 1978, Comrie 1981, Campbell & Kaufman 1985, Dixon 1994, Payne 1997, among many others). Another line of inquiry seeks to characterize alignment and its consequences in more abstract terms, usually within the framework of generative grammar (e.g., Aldridge 2008, Deal 2015, Polinsky 2017, and the many references cited there).

I seek here to break a third path by outlining an approach to alignment that draws on an emergentist explanatory framework, whose key elements will be laid out in abbreviated form in the next section. Sections 3 through 6 consider a series of phenomena (case marking, word order, agreement and relativization) that help shed light on the nature of alignment and on the profound consequences that it has for a language’s morphosyntax. The chapter ends with some brief concluding remarks.

2. The basics of emergentism

A defining tenet of emergentism is that complex systems of all types – the universe, rush-hour traffic, the weather, cognition, language, to name but a few – are alike in at least one important way: their properties reflect the interaction of simpler and more basic forces. The challenge for linguistics is to identify those forces and to determine how their interaction contributes to the properties that define language.

A key component of the version of emergentism adopted here (dubbed ‘natural syntax’ by O’Grady 2021) is that fundamental properties of language bear the mark of processing pressures.

Processing determinism

The properties of language are shaped by the need to minimize processing cost.

As we will see as we proceed, processing determinism favors representations and operations that are maximally efficient. Indeed, on the view that I put forward here, all of syntax emerges from the maximally simple argument-structure template depicted below. The template consists just of a predicate position (PRED) and a position for a single argument, which I will call the ‘base argument’ (represented as β).

The semantic base

\[
\text{PRED} \\
\langle \beta \rangle
\]

*The base argument is semantically unspecified. Depending on the choice of predicate, it could be an agent, a patient or some other argument type. Moreover, depending on the language and

*The several sentences that follow, in a font that differs from the one used for the rest of this chapter, reflect a post-publication revision to this essay.
the context, the base argument might be either overtly expressed or null; it might be used to convey new or old information; it might be definite or indefinite; and so on.

However, this does not mean that the base argument has no distinctive properties. By virtue of its privileged status as the minimal necessary argument in a sentence of any type, it takes on a certain prominence that can be signaled in a variety of ways: it may carry special case marking, it may occupy a particular position relative to the verb, it may be commonly associated with a feature such as topicality, and so on. As we will see as we proceed, these properties are typically retained by the base argument even when additional argument positions are called for in order to meet the demands of communication.

Alignment offers an excellent starting point for exploring this line of thought, both because it makes a fundamental contribution to the morphosyntax of language and because a number of its important properties are already well described, if not understood. I will focus here on two broad questions.

i. Why are there alignment contrasts?

ii. Why do these contrasts have the particular morpho-syntactic consequences that they do?

The first question raises the obvious existential issue: why are there two major types of languages in the first place, one accusative and the other ergative? The second question focuses on three specific puzzles that arise in the study of alignment. (Here and elsewhere, I use the terms ‘subject’ and ‘direct object’ for descriptive convenience only to refer to a verb’s first and second arguments, respectively.)

i. Why do ergative and accusative languages differ with respect to which argument typically carries null case marking?

ii. Why do ergative languages typically manifest SOV or VSO order, while rejecting the SVO option that is so common among accusative languages?

iii. Why do processes such as agreement and relativization uniformly comply with the traditional accessibility hierarchy (subject > direct object > …) in accusative languages, but not in ergative languages?

Let us begin by considering the question of case marking.

**3. Case and Alignment**

There are two obvious ways to extend the semantic base in order to accommodate the encoding of events involving two participants – the hallmark of transitivity. One strategy is to add a second-argument position.
Addition of a second-argument position:
\[
\text{PRED} \quad \text{PRED} \\
<\beta> \Rightarrow <\beta>_>
\uparrow \\
\text{added argument position}
\]
The other option is to extend the semantic base in the opposite direction by adding a first-argument position.

Addition of a first-argument position:
\[
\text{PRED} \quad \text{PRED} \\
<\beta> \Rightarrow <_\beta> \\
\uparrow \\
\text{added argument position}
\]
Note that extension of the semantic base involves the addition of argument positions only, not actual arguments or thematic roles. Both strategies for building out the semantic base therefore yield exactly the same dyadic argument structure that is the hallmark of transitivity.

\[
\text{PRED} \\
<1 \ 2>
\]
However, the manner in which this is achieved turns out to be crucial, creating a contrast that underlies a good deal of the syntactic variation associated with alignment, including the morphosyntax of case.

As I see it, the role of case in signaling alignment is simply to track the base argument position, distinguishing it from whatever other position might be added to accommodate transitivity.

**Case marking**
- The base argument carries the language’s unmarked case (often zero).
- The added argument is marked by an overt case affix.

The use of null case for the ever-present base argument fits well with an established typological generalization: the most expected elements are expressed with a minimum of phonological complexity (e.g., Hawkins 2014:15-16).

**Expectedness**
- The expected argument is minimally marked compared to other arguments.

Let us turn now to the two case systems most commonly found in the world’s languages.

### 3.1 Accusativity
The first and most widely manifested option for extending the semantic base adds a second-argument position, thereby maintaining the association between the base-argument and first-argument positions.
Addition of a second-argument position:

\[
PRED \quad PRED
\]
\[
<\beta> \Rightarrow <\beta_2>
\]
\[
1 \quad 1 \quad 2
\]

In accordance with the case marking principle outlined above, the item in the base-argument position should be minimally inflected (usually left bare, in fact), whereas the added argument in the second position should be associated with an overt case marker.

Turkish works this way (e.g., Kornfilt 1997), with a null suffix (the so-called ‘nominative’) for its base argument in both intransitive and transitive sentences and an overt ‘accusative’ suffix (-ü or one of its allomorphs) on its added second argument. (Ø = null case marking)

Turkish (Nominative = Ø; Accusative = -ü)

a. Intransitive verb: LEAVE

\[
\begin{array}{l}
\text{Hasan} \quad \text{ayırıl-di.} \\
\text{Hasan.NOM} \quad \text{leave-Pst.3SG} \quad \text{Ø}
\end{array}
\]

‘Hasan left.’

b. Transitive verb: BUY

\[
\begin{array}{l}
\text{Hasan} \quad \text{öküz-ü al-di.} \\
\text{Hasan.NOM} \quad \text{ox-Acc buy-Pst.3SG} \quad \text{Ø-ü}
\end{array}
\]

‘Hasan bought the ox.’

A case system of this type is usually called ‘accusative,’ reflecting the name of the case associated with the added argument position.

Table 1. Case marking in a classic accusative language

<table>
<thead>
<tr>
<th>Argument</th>
<th>Case</th>
</tr>
</thead>
<tbody>
<tr>
<td>Base argument:</td>
<td>nominative (usually Ø)</td>
</tr>
<tr>
<td>Added (second) argument:</td>
<td>accusative (overt; -ü in Turkish)</td>
</tr>
</tbody>
</table>

### 3.2 Ergativity

As noted above, the second option for building out the semantic base involves adding a new first-argument position.

Addition of a first-argument position:

\[
PRED \quad PRED
\]
\[
<\beta> \Rightarrow <\beta_1>
\]
\[
1 \quad 1 \quad 2
\]

Here, the sole argument of an intransitive verb and the second argument of a transitive verb should be bare (‘absolutive’), since both are associated with the base-argument position. In contrast, the first argument in a transitive clause should carry an overt case marker, reflecting its association with the added position.
West Greenlandic works this way, with the suffix -p on the first argument of a transitive verb, but no marking on either the sole argument of an intransitive verb or the second argument of a transitive verb.

West Greenlandic (data from Manning 1996:3)

a. *Intransitive verb*: SLEEP
   
   Oli sinippoq. \( <\beta> \) (\( \beta = Oli \))
   Oli.ABS sleep.3SG \( \emptyset \)
   ‘Oli sleeps.’

b. *Transitive verb*: EAT
   
   Oli-p neqi neri-va. \( _{-}\beta > \) (added arg. = Oli; \( \beta = meat \))
   Oli-ERG meat.ABS eat-3SG.3SG -p \( \emptyset \)
   ‘Oli eats meat.’

A case system of this type is usually called ‘ergative,’ reflecting the name of the case marker that appears on the added first argument (the subject of a transitive verb).

Table 2. Case marking in a classic ergative language

<table>
<thead>
<tr>
<th>Argument</th>
<th>Case</th>
</tr>
</thead>
<tbody>
<tr>
<td>Base argument:</td>
<td>Absolutive (usually ( \emptyset ))</td>
</tr>
<tr>
<td>Added (first) argument:</td>
<td>Ergative (overt; -p in West Greenlandic)</td>
</tr>
</tbody>
</table>

3.3 The typology of case

There is nothing surprising about ergativity on the view I am outlining. Indeed, ergative systems of case marking are *expected*. That is because the addition of a new first-argument position, which is signaled by the ergative case marker, is simply one of two logical options for extending the semantic base in order to accommodate transitivity.

An intriguing side-effect of this approach to alignment is the revelation that the function of case is not to encode grammatical relations, contrary to the widely-held belief. By considering accusative languages only, it is easy to think that case serves as a marker of grammatical relations, with the nominative reserved for the subject and the accusative for the direct object. However, there is no such one-to-one mapping in ergative languages, where a single case form is used for the subject of an intransitive verb and the direct object of a transitive verb.

Recognizing that transitivity requires extending the single-argument semantic base and that this can be achieved in either of two ways offers a new way to think about case. In particular, it is now plausible to propose that case marking has essentially the same primary function in all languages, regardless of their alignment type.

Case functions:
- Null case is reserved for the base argument.
- Overt case is used for the added argument.
On this view, accusative and ergative languages each work in exactly the same way with respect to case marking, differing only in the location within the extended semantic base of the argument position that is needed to accommodate transitivity.

4. Word Order and Alignment
An intriguing feature of the syntax of alignment is that SVO languages are typically not ergative (Nichols 1992, Siewierska 1996, Mahajan 1994, 1997, Lahne 2008), a puzzle for which there is now a natural explanation. The key generalization can be stated as follows:

Sidedness Harmony
Base arguments have a uniform sidedness in a language’s canonical word order.

The intuition here is that just as base arguments share a uniform case marking (usually null), so they tend to have a shared positioning preference on either the left side or the right side of the verb.

Sidedness Harmony has different consequences for the two major types of alignment. In accusative languages, the subject of an intransitive verb and the subject of a transitive verb (which are associated with the base argument position in this language type) should either both precede or both follow the verb. This state of affairs is compatible with the three most commonly manifested word order patterns attested in the world’s languages. (In Table 3, the base argument is underlined and bold-faced.)

<table>
<thead>
<tr>
<th>Table 3. Harmonic word order patterns in accusative languages</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Intransitive:</strong></td>
</tr>
<tr>
<td><strong>Transitive:</strong></td>
</tr>
</tbody>
</table>

Here, in compliance with Sidedness Harmony, the subjects of intransitive and transitive verbs uniformly occur on either the left side of the verb (SOV and SVO languages) or on the right side (VSO languages).  

In ergative languages, in contrast, the subject of an intransitive verb and the direct object of a transitive verb (the base arguments in that system of alignment) should both either precede or follow the verb. As illustrated below, this requirement is met in verb-final and verb-initial languages, but not in SVO languages.

<table>
<thead>
<tr>
<th>Table 4. Harmonic word order patterns in ergative languages</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Intransitive:</strong></td>
</tr>
<tr>
<td><strong>Transitive:</strong></td>
</tr>
</tbody>
</table>

As the final column in Table 4 shows, Sidedness Harmony militates against SVO word order in an ergative language – the very result that has been reported in the typological literature.

2 However, Lyle Campbell (pers. comm.) reports that many rural dialects of Spanish in Latin America use VS order for intransitive clauses and SVO order for transitives, a nonharmonic pattern of word order given their accusative alignment.
A prediction now follows: ergativity should be permitted in SVO languages in which the basic order for intransitive patterns is VS, with the sole argument on the same side of the verb as the direct object in a transitive pattern – ensuring uniformity in the positioning of the base argument.

A sidedness pattern compatible with ergativity in an SVO language:

**Intransitive:** VS

**Transitive:** SVO

Interestingly, languages of this very type have been documented.

*For the vast majority of languages, the position of subjects is the same in intransitive clauses as in transitive clauses. However, there are a number of types of languages in which it is not. The first type are languages in which word order follows an ergative pattern.* (Dryer 2011)

The example below is from Muna (a Malayo-Polynesian language spoken on two islands off the coast of Sulawesi in Indonesia).

**Transitive** – subject to the left of the verb, direct object to right:

S V O

o katogha ne-mbolaku kenta topa.

ART crow 3SG.REALIS-steal fish dry

‘The crow stole the dry fish.’

**Intransitive** – subject to the right of the verb:

V S

no-tende tora dahu.

3SG.REALIS-run again dog

‘The dog ran again.’

(van den Berg 2013:150 & 163, cited by Dryer 2011)

Raina Heaton (pers. comm.) reports a similar pattern for Huastec, an ergative Mayan language of Mexico.

Another word order factor may be in play here too. Drawing on an observation by Beatrice Primus, Hawkins (2014:189) notes that the majority of object-initial languages (a highly unusual word order type) are ergative.

... *the majority of languages classified hitherto as object before subject [have] ergative-absolutive morphology, including OSV languages (Dyirbal, Hurrian, Siuslaw, Kabardian, Fasu) and OVS languages (Apalai, Arecuna, Bacairi, Macushi, Hianacoto, Hishkaryana, Panare, Wayana, Asurini, Oiampi, Teribe, Pari, Jur, Luo, Mangaraya).* (Hawkins 2014:189; see also Primus 1998, 1999)
The motivation for these particular word order patterns arguably reflects a uniform sidedness preference for base arguments. As Dryer (2011) notes, ergative OSV and OVS languages tend to place the sole argument of an intransitive verb to the left, thereby creating a uniform position for the base argument.

\[
\begin{align*}
\text{OSV} & \quad \text{SV} \\
\text{OVS} & \quad \text{SV}
\end{align*}
\]

The end result is a system in which base arguments systematically appear sentence-initially, on the left side of the verb, consistent with the requirements of Sidedness Harmony.

5. Agreement and alignment

5.1 Agreement in accusative languages

Agreement in languages with an accusative system of alignment typically targets the sole argument of an intransitive verb and the first argument of a transitive verb (the ‘subject’), as in the following examples from English and Turkish.

**English**

Intransitive pattern:

\[
\text{She work-}\text{s hard.}
\]

Transitive pattern:

\[
\text{She eat-}\text{s rice every day.}
\]

**Turkish**

Intransitive pattern:

\[
\text{Hasan ayrıl-\text{d}}. \\
\text{Hasan.NOM leave-PST.3SG}
\]

‘Hasan left.’

Transitive pattern:

\[
\text{Hasan iki öküz-\text{ü al-}\text{d}}. \\
\text{Hasan.NOM two ox-ACC buy-PST.3SG}
\]

‘Hasan bought two oxen.’

The preferred pattern of agreement in accusative languages can therefore be summarized schematically as follows.
**Agreement in accusative languages**

Intransitive: Transitive:

\[
\begin{align*}
\text{PRED} & \quad \text{PRED} \\
\beta & \quad \beta' \\
1 & \quad 1 2 \\
Agr & \quad Agr\rightarrow
\end{align*}
\]

Interestingly, there appear to be two ways of formulating an ‘accessibility hierarchy’ for this type of system.

The preferred agreement target is the first argument:

\((\text{First argument} > \ldots)\)

The preferred agreement target is the base argument:

\((\text{Base argument} > \ldots)\)

There is a good and obvious reason for this overlap: the base argument in an accusative language corresponds to the first argument and vice versa. The two cannot be teased apart.

**Accusative languages**

\[
\begin{align*}
\text{PRED} & \quad \text{PRED} \\
\beta & \quad \beta' \\
1 & \quad 1 2 \\
Agr & \quad Agr\rightarrow
\end{align*}
\]

As we will see next, the situation in ergative languages is quite different – with important consequences for our understanding of how agreement works.

**5.2 Agreement in ergative languages**

As noted in section 3, the semantic base in an ergative language is expanded by the addition of a first-argument position, leaving the base argument in the second position.

**Ergative languages**

\[
\begin{align*}
\text{PRED} & \quad \text{PRED} \\
\beta & \quad \beta' \\
1 & \quad 1 2 \\
Agr & \quad Agr\rightarrow
\end{align*}
\]

As illustrated here, the first argument and base argument positions are dissociated in this type of argument structure. Not coincidentally, ergative languages manifest variation in agreement that is not seen in their accusative counterparts.

A first option, exemplified by Pashto, an Indo-Iranian language, targets the base argument – the sole argument of an intransitive verb and the second argument (the ‘direct object’) of a transitive verb.
Intransitive pattern:
\[\text{xaza do-daftar-na ray-a.}\]
woman Obl-office-from came-3FSG
‘The woman came from the office.’

Transitive pattern:
\[\text{ma xaza wəlid-a.}\]
I.Erg woman saw-3FSg
‘I saw the woman.’
(data from Babrakzai 1999:78 & 103)

This pattern of agreement can be summarized schematically as follows.

Pashto: Agreement targets the base argument.

Intransitive:  
Transitive:  
\[
\begin{array}{c}
\text{PRED} \\
\text{<} \beta \text{>} \\
\text{1} \\
\text{Agr-}: \text{(-a)} \\
\text{a)} \\
\end{array}
\begin{array}{c}
\text{PRED} \\
\text{<} \_ \beta \text{>} \\
\text{1 2} \\
\text{-Agr-}\text{a)} \\
\text{(-a)} \\
\end{array}
\]

A second option is found in Enga, a language of Papua New Guinea, in which agreement systematically targets the first argument in both intransitive and transitive patterns.

Intransitive pattern – agreement with the sole argument:
\[\text{nambá p-e-ó.}\]
I go-PST-1SG
‘I went.’

Transitive pattern – agreement with the first argument:
\[\text{namba-mé mená dóko p-i-ó.}\]
I-ERG pig DEF hit-PST-1SG
‘I hit (killed) the pig.’

This agreement pattern can be represented schematically as follows.
Enga: Agreement targets the first argument.

<table>
<thead>
<tr>
<th>Intransitive</th>
<th>Transitive</th>
</tr>
</thead>
<tbody>
<tr>
<td>PRED</td>
<td>PRED</td>
</tr>
<tr>
<td>(&lt;\beta&gt;)</td>
<td>(&lt;_\beta&gt;)</td>
</tr>
<tr>
<td>1</td>
<td>1 (_) 2</td>
</tr>
</tbody>
</table>

\(Agr\rightarrow\) \(\rightarrow Agr\)
\((-\delta)\) \((-\delta)\)

5.3 The typology of agreement

In sum, we end up with the following typology of agreement for the two alignment options most frequently instantiated in language – accusative and ergative.

- In accusative languages (e.g., English, Turkish), where the base argument and the first argument are one and the same, there is no variation. Agreement favors the first/base argument.

  First/Base argument > …

  In ergative languages, where the first argument and the base argument are dissociated in transitive patterns, there is the possibility of variation.

- In some languages (e.g., Pashto), agreement favors the base argument rather than the first argument.

  Base argument > …

- In other languages (e.g., Enga), agreement favors the first argument rather than the base argument.

  First argument > …

The three options share a fundamental property that helps shed light on why they exist in the first place. In all cases, the item most accessible to agreement is predictably and reliably present in essentially every sentence in the language. As depicted in the semantic representations below, all sentences – transitive or intransitive – have a base argument. Moreover, they all have a first argument, which may or may not also be the base argument (depending on whether the language is accusative or ergative).

The ubiquity of first and base arguments

<table>
<thead>
<tr>
<th>Intransitive</th>
<th>Transitive (accusative lg.)</th>
<th>Transitive (ergative lg.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>PRED</td>
<td>PRED</td>
<td>PRED</td>
</tr>
<tr>
<td>(&lt;\beta&gt;)</td>
<td>(&lt;_\beta&gt;)</td>
<td>(&lt;_\beta&gt;)</td>
</tr>
<tr>
<td>1</td>
<td>1 (_) 2</td>
<td>1 (_) 2</td>
</tr>
</tbody>
</table>

In sum, regardless of alignment type and regardless of the agreement option – first argument or base argument – the preferred target is consistently present and accessible. The end result is a
maximally uniform and efficient implementation of agreement that fits well with the careful curation of processing cost, in accordance with the principle of processing determinism.

Indeed, the above observation opens the door to a new way of thinking about accessibility. Contrary to perspectives that associate the preferred argument with the subject, despite indications to the contrary in many ergative languages, an alternative now presents itself. The preferred target for an operation such as agreement need only meet one simple requirement: it should always be present and available, as illustrated in the tripartite schema above. In other words, the accessibility hierarchy can be reduced to just what its name implies – accessibility.

### 5.4 Uncommon forms of agreement

If the ideas that I have been outlining are correct, agreement systems target the sole argument in the semantic base and are built out from there, along the lines illustrated above. What is unexpected is a language in which a transitive verb agrees with just an added argument – the second argument in an accusative language or the first argument in an ergative language. Such patterns are aberrant, since the agreement operation fails to target the maximally accessible sole argument in intransitive patterns. Yet both types of pattern do seem to exist.

Agreement with just the second argument in Teiwa (Alor-Pantar); data from Fedden et al. (2013:48 & 35):

a. Intransitive pattern – no agreement:

   ha gi.

   you go

b. Transitive pattern – agreement with the added second argument:

   ha’an n-oqai g-unba’?

   you my-child 3SG-talk
   ‘Did you meet my child?’

Agreement with just the first argument of a transitive verb in the ergative language Halkomelem (Salish); data from Wiltschko (2006):

a. Intransitive pattern – no agreement:

   i:mex te Strang.

   walking DET Strang
   ‘Strang is walking.’

---

3 Of course, nothing rules out the possibility of agreement with the added argument *in addition to* a first or base argument. There is therefore nothing aberrant about the accusative language Swahili, in which the verb agrees with both its first argument and the added second argument (Deen 2006), or the ergative language K’iche, in which the verb agrees with both the base argument and the added first argument (Campbell 2000:239).
b. Transitive pattern – agreement with the added first argument:

\[
q\text{’}o\text{’}y\text{-}t\text{-}es \quad \text{te Strang} \quad \text{te sqelaw}.
\]

<table>
<thead>
<tr>
<th>kill-Tr-3SG.ERG DET Strang</th>
<th>DET beaver</th>
</tr>
</thead>
</table>

‘Strang killed the beaver.’

However, these types of agreement patterns are rare, and special provisos seem to apply.

In the few languages that allow only second-argument agreement, the phenomenon appears to have developed ‘by accident,’ through the reduction of clitic direct object pronouns to phonologically similar affixes. This is evident in several Alor-Pantar languages within the Papuan family, including Teiwa (Fedden et al. 2013, 2014), as well as in the Austronesian languages Palauan (Levin 2019) and Roviana (Schuelke 2020).

**Pronouns and direct object agreement in Palauan**

<table>
<thead>
<tr>
<th>SINGULAR</th>
<th>PRONOUN</th>
<th>AGREEMENT</th>
<th>PRONOUN</th>
<th>AGREEMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st person</td>
<td>ngak</td>
<td>-ak</td>
<td>kemam</td>
<td>-emam</td>
</tr>
<tr>
<td>2nd person</td>
<td>kau</td>
<td>-au</td>
<td>kemiu</td>
<td>-emiu</td>
</tr>
<tr>
<td>3rd person</td>
<td>ngii</td>
<td>-ii</td>
<td>tir</td>
<td>-(e)terir</td>
</tr>
</tbody>
</table>

(Levin 2019:173-74)

Languages in which agreement targets only the first argument of a transitive verb also seem to have a special property. In the absence of case marking, they use agreement to indicate the presence of an ergative system of alignment, with the overt agreement affix reserved for the added argument (the subject of a transitive verb). As illustrated in the Halkomelem example above, this strategy neatly parallels the use of overt marking for the added argument itself in ergative languages with case systems.

6. Relative Clauses and Alignment

Despite its various unique properties, relativization manifests the very type of syntax observed for agreement, with a degree of uniformity in accusative languages that is not found in ergative languages.

6.1 Relativization in accusative languages

In accusative languages, relativization invariably favors the first argument. Indeed, in Classical Arabic, that is the only argument that can be relativized (Keenan & Comrie 1977). I use a gap (_) to informally indicate the canonical position of the relativized argument.

\[
al \text{rajul \ [ala}d\text{i) saa\text{3ada \ [ \_ \ al sayyida]}
the man who help.Pst.3M.Sg the woman
\]

‘the man who helped the woman’

In many accusative languages, of course, it is possible to relativize more than just subjects, including direct objects, indirect objects and even obliques – as happens in English. However, even
in this situation, relativization of the first argument (the subject) seems to be favored: it manifests the least processing cost in adults (Hawkins 2004, chapter 7; Bornkessel-Schlesewsky & Schlesewsky 2009:22) and is acquired first by children (Kim & O’Grady 2016).

This pattern of preferred relativization can be characterized schematically as follows.

\[
\text{PRED} < \beta > \quad \begin{array}{c}
\text{Pred} \\
1 \\
\text{Rel} \rightarrow \\
2 \\
\end{array}
\]

The next mostly likely target for relativization is the second argument.

The man [who the woman helped _]

Once again, there appear to be two ways of formulating an ‘accessibility hierarchy’ for this type of system.

The preferred target for relativization is the first argument:
First argument > Second Argument …

The preferred target for relativization is the base argument:
Base argument > Second Argument …

As in the case of agreement, the existence of competing formulations stems from the fact that the base argument in an accusative language corresponds to the first argument, and vice versa. Moreover, regardless of how it is characterized, that argument has a special status for a very good reason: it is present in every sentence of every language, thereby enjoying a level of predictability and accessibility far beyond that of any other argument.

6.2 Relativization in ergative languages

Matters are different in ergative languages, where the base argument is associated with the second-argument position in transitive patterns.

\[
\text{Ergative languages} \\
\text{PRED} < \beta > \quad \text{Pred} < \beta > \\
\text{1} \\
\text{Rel} \rightarrow \\
\text{2}
\]

As in the case of agreement, this opens the door to two possibilities. If relativization is fixed on the base argument, then the preferred target in transitive patterns will be the second argument. K’iche’ works this way, as documented by Campbell (2000).
Relativization in the ergative language K’iche’; data from Campbell (2000:253-54) and personal communication

a. Relativization of the base argument of an intransitive verb:
   ri išoq [ri š-O-kam-ik] DIE
   the woman REL ASP-3SG.ABS-die-INTR <β>
   ‘the woman who died’ Rel→

b. Relativization of the base (second) argument of a transitive verb:
   le išoq [le: š-O-u-kuna-x le: ačih] CURE
   the woman REL ASP-3SG.ABS-3SG.ERG-cure-TR the man <_β>
   ‘the woman whom the man cured’ Rel←

Relativization of the agent argument of a transitive verb in K’iche’ is generally possible only if the verb is detransitivized, leaving the agent as the sole core argument – and hence the base argument. (AF.ANTI = a morpheme that signals an antipassive-like operation often called ‘agent focus’ in the literature on Mayan.)

le išoq [le: š-O-u-kuna-n le: ačih ] CURE
the woman REL ASP-3SG.ABS-cure-AF.ANTI the man <_β …>
‘the woman who cured the man’ Rel←

This pattern of relativization is exactly what one would expect, if the default relativizing operation is restricted to the base argument.

On the other hand, if the preferred target of relativization is the first argument, then subject relative clauses will be favored. The Mayan language Kaqchikel works this way.4

Relativization in the ergative language Kaqchikel (Mayan):

a. Relativization of the first argument of an intransitive verb:
   ri achin [ri n-samäj ke la] WORK
   DET man who ASP-work there <β>
   ‘the man that works there’ 1 Rel→

b. Relativization of the first argument of a transitive verb:
   ri ala’ [ri ru-q’et-en ri xtän ] HUG
   DET boy REL 3SG.ERG-hug-PERF DET girl <_β>
   ‘the boy who is hugging/has hugged the girl’ 1 2 Rel→

---

4 The second argument of a transitive verb can also be relativized, although such patterns are significantly harder to elicit and more prone to errors; see Heaton et al. (2016). In this regard, Kaqchikel resembles many other languages with accusative systems of relativization, including English.
6.3 The typology of relativization

We end up with the following typology of relativization, which exactly parallels the syntax of agreement.

- In accusative languages such as English, where the base argument and the first argument are one and the same, there is no variation. The first/base argument is the preferred target for relativization.

  \[
  \text{First/Base argument} > \ldots
  \]

However, in ergative languages, where the first argument and the base argument in transitive patterns are dissociated, there is the possibility of variation.

- In some cases (e.g., K’iche’), the base argument rather than the first argument is the preferred target for relativization.

  \[
  \text{Base argument} > \ldots
  \]

- In other cases (e.g., Kaqchikel), the first argument is the target of choice.

  \[
  \text{First argument} > \ldots
  \]

In sum, a unifying logic underlies variation in the syntax of relativization in accusative and ergative languages, just as it does for the syntax of agreement. The preferred target – whether it is the first argument or the base argument – is predictably present in every single sentence (in every single language).

The ubiquity of first and base arguments:

<table>
<thead>
<tr>
<th>Intransitive</th>
<th>Transitive (accusative lg.)</th>
<th>Transitive (ergative lg.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>PRED</td>
<td>PRED</td>
<td>PRED</td>
</tr>
<tr>
<td>(\beta)</td>
<td>(\beta)</td>
<td>(\beta)</td>
</tr>
<tr>
<td>1</td>
<td>1 2</td>
<td>1 2</td>
</tr>
</tbody>
</table>

As noted in section 5.3, the accessibility hierarchy is therefore reduced to just what its name implies – availability. As the tripartite schema above illustrates, the preferred target for relativization, whether it is the first argument or the base argument, is uniformly and invariably present – hence accessible to the highest possible degree. This optimizes the efficiency of relativization, while at the same time aligning with the principle of processing determinism, a foundational tenet of emergentist typology. Put simply, key components of language are shaped by the need to minimize processing cost – a goal to which accessibility contributes in the way we have just seen.

The rationale underlying the typology of relativization departs quite fundamentally from the traditional logic of hierarchy-based generalizations, with their emphasis on standard grammatical relations. ‘Subject’ and ‘direct object’ are technical grammatical terms, not natural concepts, and therefore have no place in an explanatory theory of language that is constructed along emergentist lines. In contrast, notions such as ‘first argument’ and ‘base argument’ correspond to positions in
semantic representations that exist independent of syntax. As such, they are a natural part of cognition and fit well with the larger picture that I have been sketching.

7. Conclusion
Alignment is one of the most fundamental mechanisms in all of language, with consequences that can be seen in many different phenomena within and across individual languages. For that reason, it has received a great deal of attention in the technical literature, although nothing resembling a consensus has yet emerged from the many efforts to understand its properties.

The particular idea that I have explored is that alignment phenomena emerge from the effect of processing pressures that favor the projection of a simple semantic base, consisting of a predicate and a single argument, as the minimum foundation for any sentence.

\[
PRED
<\beta>
\]

As we have seen, there are two logically possible ways to build out the semantic base in order to accommodate more complex constructions. One is to add a second-argument position; the other is to add a first-argument position.

Options for extending the semantic base in order to accommodate transitivity
a. Addition of a second-argument position:
   \[
   \begin{align*}
   PRED & \Rightarrow PRED \\
   <\beta> & \Rightarrow <\beta\_>
   \end{align*}
   \]
b. Addition of a first-argument position:
   \[
   \begin{align*}
   PRED & \Rightarrow PRED \\
   <\beta> & \Rightarrow <\_\beta>
   \end{align*}
   \]

All languages appear to manifest a major asymmetry in their syntax: one of a verb’s arguments is more accessible than the others (or perhaps even solely accessible) to a variety of syntactic operations, including case marking, agreement, and relativization. The technical literature offers a slew of terms for this privileged argument – ‘pivot,’ ‘focus,’ ‘primary argument,’ ‘topic’ and ‘subject.’ I use a still different term – ‘base argument,’ but the choice of terminology is of no particular importance. The heart of my proposal lies in the search for answers to a series of questions about alignment and its syntactic consequences:

- Why are there two competing systems of alignment in the first place? (section 3)
- Why do some arguments have null case while others have overt case? (section 3)
- Why are the ergative case and the accusative case typically overt, while the nominative and the absolutive tend to be null? (section 3)
- Why is ergativity rarely found in SVO languages? (section 4)
• Why does the subject turn out to be the archetypal preferred target for agreement in accusative languages, but not in ergative languages? (section 5)
• Why are certain types of agreement systems rare, if not impossible? (section 5)
• Why does the subject turn out to be the archetypal preferred target for relativization in accusative languages, but not in ergative languages? (section 6)

Further inquiry must now proceed in two directions. On the one hand, it is important to develop ever more detailed and comprehensive analyses of individual languages so as to better assess the account of alignment that I have put forward. Second, it is essential to examine the manner in which the semantic base is expanded to accommodate constructions other than transitive clauses, including ditransitives and other three-argument patterns. It is perhaps not too unrealistic to think that these lines of inquiry will shed further light on the nature of alignment in natural language.
References


SIEWERSKA, ANNA. 1996. Word Order Type and Alignment Type. Sprachtypologie und Universalienforschung 49, 149-176.


List of abbreviations:
1 1st person
3 3rd person
Abs Absolutive
Acc Accusative
AF agent focus
Agr agreement
Anti antipassive
Art article
Asp aspect
Def definite
Det determiner
DO direct object
Erg ergative
F feminine
Intr intransitive
M male
Nom nominative
Obl oblique
Perf perfective
PRED predicate
Pst past
Rel relative clause marker
Sg singular
Tr transitive
B base argument