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**Clitics and Agreement in Competition:
Ergative cross-referencing patterns¹**

Ellen Woolford

University of Massachusetts

Clitics and agreement are in competition as alternative devices for cross-referencing arguments. A small set of constraints developed in work on OT Syntax to account for aspects of agreement and clitic behavior in nominative-accusative languages, when reranked, predicts the existence not only of simple ergative cross-referencing patterns (e.g. as in Selayarese), but also complex split ergative patterns (e.g. as in Yimas). An ergative agreement pattern occurs whenever clitics are the favored cross-referencing device, but clitics are limited to one per clause. This exciting result indicates that the OT approach to clitics and agreement is on the right track, and it provides further support for the claim in Woolford 1997, 2001 based on Case, that nothing special has to be added to the theory to account for ergative languages.

Does ergativity require any special linguistic devices? The most interesting answer to this question is a simple, unqualified no. If the theory we develop to account for nominative-accusative patterns predicts the existence of ergative patterns as well, that is an exciting result, which greatly increases our confidence in the soundness of our theory. In this paper, we will see that exactly this result is achieved by an approach to cross-referencing within Optimality Theory (Prince and Smolensky 1993, for an overview see McCarthy 2002), using constraints developed to account for the behavior of clitics and agreement in nominative-accusative languages in work in OT syntax such as Bresnan 2001; Grimshaw 1997, 2001; and Legendre 1996, 1998, 1999, 2000a,b, (to appear). Reranking these constraints actually

¹I would like to thank the audience at the Optimality Syntax Workshop at Rutgers University, April 21, 2000 for interesting and helpful discussion of the issues in this paper. In particular, I would like to thank Jane Grimshaw, Alan Prince, Mark Baker, and Géraldine Legendre. In addition, I would like to thank John McCarthy and the editors of this volume for helpful discussion and comments.

Ellen Woolford

predicts the existence of not only simple ergative patterns, but also complex split ergative cross-referencing patterns.²

The intuitive idea of this approach is simple. Languages want to cross-reference arguments, using agreement or a (doubling) clitic, but they also want to keep things simple, by avoiding the use of such elements. Particular languages differ in whether they consider the goal of cross-referencing arguments to be worth the markedness violation incurred by the use of each of the competing cross-referencing devices (agreement and clitics), and they differ in which of these cross-referencing devices they prefer to use. However, the more complex cross-referencing patterns result from the interaction of these forces with alignment. Alignment constraints (McCarthy and Prince 1993) are used by Legendre 1996, 1998, 1999, 2000a,b, (to appear) and Grimshaw 1997, 2001 to account for both the position and linear order of clitics. Not only does alignment provide a unified solution to those two problems, but adding clitic alignment constraints to the theory makes an additional prediction: some languages will limit their number of clitics to one. The reason is that, although a single clitic can always be positioned such that it obeys the clitic alignment constraints, a second clitic cannot occupy the very same position at the same time, so it must necessarily violate some alignment constraint. Whether or not a language tolerates such violations determines whether it will allow more than one clitic.

The competition among cross-referencing devices (clitics and agreement) and the competition among arguments for access to cross-referencing devices is the key to understanding the ergative patterns that are the focus of this paper.³ When clitics are the preferred cross-referencing device, but clitics are limited to one per clause because of alignment, a classic ergative cross-referencing pattern results. This pattern occurs in languages such as Selayarese (Indonesia). This same situation holds in the complex split-ergative pattern found in languages such as Yimas (Papua New Guinea), but it is complicated by the operation of person alignment constraints which cause the pattern to look nominative-accusative in some contexts, but ergative in others.

This paper is organized as follows. Section one is a discussion of background assumptions used here concerning the source and status of cross-referencing clitics and

²I will use the term *cross-referencing* as a general term for verbal agreement, in order to reserve the term agreement for what one might call true agreement (an agreement affix), as distinct from cross-referencing by clitic (doubling). (See sections 1.2 and 1.3.)

³This paper focuses on ergative cross-referencing patterns that occur in languages without ergative Case. In languages with ergative Case such as Hindi, the agreement pattern is actually the same as the agreement pattern of English or Icelandic: only nominatives agree. It is only in constructions with a dative or ergative subject and a nominative object that the agreement pattern looks ergative. That sort of ergative agreement pattern is termed Case-based by Primus 1999. Although a covert ergative Case system is sometimes posited to account for ergative cross-referencing patterns in languages without overt ergative Case, these ergative cross-referencing patterns are actually quite different, and there is good reason to believe that no language has a completely covert ergative Case system (Woolford 2000).

Clitics and Agreement in Competition

agreement. The constraints used in this paper are defined in section two, along with some examples of how they operate in nominative-accusative languages. The analysis of ergative patterns begins in section three, showing that ranking the constraints in a particular way produces the simple ergative cross-referencing pattern of Selayarese. In section four, we will see that a slightly different ranking produces the complex split ergative pattern of Yimas, where different cross-referencing morphemes are controlled by different arguments in different circumstances.

1. Background Assumptions

This section sets out the assumptions used here concerning agreement, clitics, the input, and the candidate set.

1.1 Agreement

I follow the standard assumption in syntax that in the process of building syntactic structures, functional heads are projected above VP which may have agreement features (person, gender, number). I will refer to these agreement heads as AgrS and AgrO for convenience, although they may be argued to be other, independently motivated heads such as Tense and Aspect which may also contain agreement features. For the purposes of this discussion, I will assume that the position of subject and object agreement morphemes are fixed in each language by syntactic and/or morphological factors outside the scope of this discussion.

Very restrictive standard assumptions will be maintained as to which DP can match features with which agreement head. In the data considered here, AgrS can only match features with the subject (highest argument), and only the highest object can control AgrO. No parameters or constraints can alter the normal mapping between arguments and agreement heads, say by forcing the subject to agree with AgrO and/or the object with AgrS.

Although there are various syntactic factors can prevent a particular argument from agreeing (e.g. its Case or syntactic position), I will consider here only constructions in which both subject and object can potentially agree.⁴

⁴This paper will not consider constructions where the subject or object has lexical Case since arguments with lexical Case typically cannot agree. We will also not consider constructions where agreement or clitic doubling is disallowed or degraded because the argument remains inside VP. See Samek-Lodovici 2000 for discussion.

Ellen Woolford

1.2 Clitics

There is an enormous literature on the subject of clitics and one central question has been whether clitics are generated in argument position and then moved, or base-generated in their surface position and linked to the (usually) empty argument position in some way.⁵ The base-generated approach easily handles instances of clitic doubling, where both the clitic and the argument appear, but the movement approach makes it easier to account for the fact that the clitic matches the features of the argument, and often cannot double the argument. Fortunately, changes in the theory of movement in Chomsky 1995 make it possible to capture the advantages of both approaches, as pointed out by de Lacy 1998. In the copy theory of movement, movement is broken down into several separate processes, copying, deletion, and placement (merging). To move an element, one first makes a copy of it, then places that copy somewhere else in the tree. The original argument may or may not be deleted. Under this view, a clitic need not be considered to be the argument, but rather the next best thing, a partial copy of the argument. Coindexing between the clitic and the argument, as well as feature matching, can be achieved during this copying process.

Either the copy or the original element can optionally be deleted. Clitic doubling occurs when neither is deleted. Why languages block or allow clitic doubling in different syntactic constructions is a fascinating and complex topic, but one that is beyond the scope of this paper. We focus here only on constructions that potentially allow clitic doubling.

Placement of the clitic copy is an interesting and complex problem. The standard view is that there are both syntactic and phonological restrictions on clitic placement. In this paper, we will not be directly concerned with the issue of clitic placement, except for the effects of alignment constraints on clitics.

Although clitics and agreement can be viewed as the same thing in the sense that both are devices for cross-referencing arguments, it is crucial for this approach that they be different, at least to the extent that constraints can refer to one but not the other. There do appear to be a number of differences between agreement affixes and clitics (see for example Zwicky and Pullum 1983). In addition to well-known differences such as the fact that clitics tend to move around whereas agreement does not, there are other, less often discussed differences. For example, true agreement appears to be limited to two arguments per clause, but as many as three or more arguments can be clitic doubled. Moreover, although it is unusual for arguments with lexical Case to agree, it is not uncommon for arguments with lexical Case to be clitic doubled. In the following example from Warlpiri, all three arguments are clitic doubled, even though all have lexical Case (ergative and dative). These clitics must occupy second position, along with a tense morpheme, despite the otherwise rather free word order (Simpson 1991).

⁵See for example Borer 1981, 1986, Everett 1996, Jaeggli 1980, Kayne 1975, Marantz 1989, van Riemsdijk 1999, Rivas 1977, Sportiche, 1996, 1999, Suñer 1988.

Clitics and Agreement in Competition

- (1) Ngajulu-rlu ka-rna-rla-jinta karli-ki warri-rni ngarrka-ku.
I -ERG pres-1sg.subj-3dat-3dat boomerang-DAT seek-nonpast man-DAT
I am looking for a boomerang for the man. (Simpson 1991 (370) from Hale 1973)

Similarly, it is unusual for PPs to agree, but clitics often double PPs, as in Romance.

These differences in clitics and agreement are less surprising if clitic and agreement have very different syntactic origins, despite their shared function as cross-referencing devices.

1.3 The Candidate Set

It is crucial for the analysis in this paper that candidates with and without agreement and with and without clitic doubling all compete. The candidate set consists of all syntactically legal patterns of cross-referencing the arguments, with clitics, agreement, both, or neither. Constraints and constraint ranking determine whether and with what device each argument is cross-referenced.

1.4 The Input

The assumption here is that while arguments (or at least their meaning features) are present in the input, clitics and agreement are not. Instead, these (or at least their features) are added to candidates in the process of generating the candidate set.⁶ However, the features that clitics and agreement will need to match are present in the input, on the arguments to be cross-referenced.

This assumption is consistent with a couple of different models of the relation between syntax and lexical insertion. It is consistent with a model in which the input to syntax does not contain the morphological form of any lexical items, but only meaning features and selectional features. But it would also be consistent with a model in which the input to syntax contains the lexical items of arguments and perhaps other elements but not agreement and clitics.

2. The Constraints

The constraints to be used in this paper are of a quite restricted and simple sort. All they can do is determine whether and where clitics and agreement appear. In this section, we will focus only on the constraints that determine whether clitics and agreement appear. These

⁶Since this paper is about cross-referencing, the only clitics (or agreement) that will be discussed are those that double or cross-reference an argument (null or overt). If there are also clitics or agreement morphemes that do not double an argument, but actually are the argument (and are thus present in the input in some form), these are not the focus of this paper.

Ellen Woolford

include constraints that require clitics or agreement and constraints that disallow clitics or agreement. These constraints will be defined and the typological predictions of their possible rankings will be spelled out. In the next section, we will add consideration of the effect of alignment constraints.

2.1 Constraints Favoring Clitics and/or Agreement

The first constraint to be discussed here is actually the only one that does not already appear in some form in the literature on OT syntax (to my knowledge), but which has many precedents in the general syntactic literature. There is good evidence for a constraint that requires AgrS, the subject agreement morpheme, to be realized. Moreover, this requirement often holds *even when there is nothing for this morpheme to agree with*. Languages often require default agreement (typically 3rdsg.) in sentences where AgrS does not match features with any argument. This occurs in languages such as Icelandic, where only nominative arguments agree. Contrast the plural agreement with the plural nominative subject in (2) with the default 3rd singular agreement that occurs with the plural dative subject in (3a) and with the first person plural lexical accusative subject in (3b).

(2) Þessir stólar voru keyptir.
these chairs-nom were bought.

(3) a. Konunum var bjargað.
the.women-dat was saved.

b. Okkur vantar pening.
Us-acc needs(3sg) money-acc
We need money. (Jónsson 1996:151)

I will call the constraint that requires AgrS to be realized, simply AgrS.⁷

(4) AgrS Realize AgrS.

[A default form of agreement appears if no feature checking takes place.⁸]

Adding AgrS to the theory, while motivated by default agreement, has two additional desirable consequences. First, we will see that, regardless of where it is ordered, AgrS prevents any language from having only object agreement but no subject agreement, yet it

⁷There is no evidence for a constraint requiring AgrO to be realized, but object cross-referencing can be favored by the constraint XRef to be introduced next.

⁸Although the constraint AgrS could be satisfied by default agreement without feature matching with the subject, the constraint XRef, defined in (5), even when low ranked, will eliminate a candidate without feature-matching in favor of one with feature-matching.

Clitics and Agreement in Competition

allows that pattern in a certain subset of constructions within a language. Second, depending on where it is ranked, AgrS can force subject agreement to appear even when agreement in general is considered too marked.

The other constraint that favors agreement or clitics is the one that requires languages to cross-reference all arguments.⁹

- (5) XRef Cross-reference all arguments. (cf. Legendre (to appear) AGREE-CASE and Legendre and Rood 1992 M)

An argument is cross-referenced when its features are matched by the features of an agreement morpheme or clitic.

This constraint makes no reference to which device should be used for such cross-referencing (agreement or clitic), but only to the need to cross-reference arguments.

2.2 Constraints Disallowing Clitics or Agreement

The markedness constraints that disallow clitics or agreement morphemes are *clitic and *agreement:

- (6) *clitic Don't have clitics. (Bresnan 2001)
(7) *agree Don't have agreement. (cf. Bresnan2001 *af)

The relative ranking of these two constraints determines which cross-referencing device is preferred in a particular language. If *clitic >> *agree, then the language will disfavor clitics, while the ranking of *agree >> *clitic disfavors agreement. However, in order for a language to have cross-referencing at all, *clitic and/or *agree must be outranked by one of the constraints that favors clitics or agreement, XRef and AgrS. Let us briefly look at the typological predictions of the ranking possibilities of the constraints discussed so far, before we introduce the complications of alignment constraints.

2.3 Predicted Cross-Referencing Systems

The four constraints introduced so far, when ranked in all possible orders, can produce only five different types of cross-referencing systems.¹⁰ These constitute all the major types of

⁹Some languages have non-argument clitics, but these will not be addressed here.

¹⁰These predictions are based on the assumption that both subject and object are eligible to be cross-referenced. Since languages may place additional restrictions on agreement and clitic doubling (e.g. requiring clitic doubled elements to be definite), so that even if the general pattern allows subject or objects to be cross-referenced in a particular way, it may turn out that only some arguments are actually eligible.

Ellen Woolford

nominative-accusative pattern cross-referencing systems in the languages of the world.

(8) Predicted Types of Cross-Referencing Systems (based on these 4 constraints):

- (i) all eligible arguments cross-referenced with agreement (e.g. Swahili),
- (ii) all eligible arguments cross-referenced with clitics (e.g. Warlpiri),
- (iii) just subject agreement (e.g. English),
- (iv) subject agreement plus object clitic(s) (e.g. Spanish), and
- (v) no cross-referencing at all (e.g. Chinese).

Reranking these constraints cannot produce the following non-occurring types of cross-referencing systems, for a language as a whole. However, we will see in the section on ergativity how a language can allow such patterns only in certain constructions, due to the additional effects introduced by alignment constraints.

(9) Non-occurring logically possible types (not generated by these 4 constraints):

- (i) just object agreement¹¹
- (ii) subject clitic and object agreement

To see these predictions, let us examine the results of ranking these four constraints in the 24 possible different ways that they could be ranked ($4! = 4 \times 3 \times 2 \times 1 = 24$).

Let us begin with the rankings that result in no cross-referencing at all. This pattern is produced whenever the two constraints that suppress cross-referencing (*clitic and *agreement) are ranked above the two constraints that favor cross-referencing (XRef and AgrS), and in one more ranking noted below. The following tableau lists the relevant candidates (abbreviated to just include the manner of cross-referencing of the subject, followed by the manner of cross-referencing of the object), and shows how these candidates fare with respect to the four constraints. We see that the combination of *clitic and *agree (regardless of which is ordered first) removes all candidates from consideration except the last one, with no cross-referencing at all. The lower two constraints have no chance to affect the outcome:

¹¹These constraints exclude a language where only objects agree, but it does not necessarily exclude the possibility of a language where there is only an object clitic. If a language allows just one clitic (due to the alignment constraints to be discussed below), nothing in this proposal so far will determine which argument that clitic will cross-reference.

Clitics and Agreement in Competition

(10) Rankings Producing No Cross-Referencing

input: transitive clause subj object	*clitic	*agree	XRef	AgrS
a. AgrS AgrO		**		
b. AgrS CL	*	*		
c. CL AgrO	*	*		*
d. CL CL	**			*
e. AgrS		*	*	
f. AgrO		*	*	*
g. CL	*		*	*
h. CL	*		*	*
i.			**	*

To simplify the remainder of this demonstration of the types predicted by reranking these constraints, and eliminate the need for additional tableaux, let us follow Samek-Lodovici & Prince 1999 and pull out the Order Structure implicit in the above tableau. The Order Structure lists the candidates that are favored by each constraint, from most to least favored:

(11) Order Structure Implicit in (10)¹²

Constraint:	*clitic^	*agree^	XRef^	AgrS^
Favors:	a,e,f,i	d,g,h,i	a,b,c,d	a,b,e
Over:	b,c,g,h	b,c,e,f	e,f,g,h	c,d,f,g,h,i
Over:	d	a	i	

Since each constraint that applies shrinks the candidate set to which the next lower constraint applies (Samek-Lodovici and Prince 1999), we can abbreviate tableaux by simply noting how the candidate set progressively shrinks down to the optimal candidate as the constraints apply:

¹²To emphasize that we are focusing on the order properties of the constraint C_i, we refer to it as C_i^o (Samek-Lodovici and Prince 1999:7).

Ellen Woolford

(12) Five Rankings Select Outputs with No Cross-Referencing (candidate(i) in tableau (10))

- i,ii. *clitic >> *agree >> XRef, AgrS
a,e,f,i i
- iii,iv *agree >> *clitic >> XRef, AgrS
d,g,h,i i
- v. *agree >> AgrS >> *clitic >> XRef (AgrS disfavors d,g,h,i all equally
d,g,h,i d,g,h,i i since none have subject agreement.)

Pattern (d), where both subject and objects are cross-referenced with clitics, is produced whenever the clitic is the preferred cross-referencing device (*agree >> *clitic, AgrS) and the language considers it worth the cost to use clitics to achieve cross-referencing (XRef >> *clitic).

(13) Five rankings produce subject and object cross-referencing with clitics (candidate (d) in (10))

- i,ii. XRef >> *agree >> *clitic, AgrS
a,b,c,d d
- iii,iv. *agree >> XRef >> *clitic, AgrS
d,g,h,i d
- v. *agree >> AgrS >> XRef >> *clitic (AgrS disfavors d,g,h,i all equally.)
d,g,h,i d,g,h,i d

Pattern (a), with subject and object agreement, is produced whenever agreement is the preferred cross-referencing device (*clitic >> *agree) and the language considers it worth the markedness cost to use agreement in order to achieve cross-referencing (XRef >> *clitic). Here the ranking of AgrS is irrelevant, since it can only reinforce the urge to cross-reference the subject with agreement.

(14) Eight rankings produce subject and object agreement (pattern (a) in tableau (10))

- i, ii. XRef >> *clitic >> *agree, AgrS
a,b,c,d a
- iii. XRef >> AgrS >> *clitic >> *agree
a,b,c,d a,b a
- iv. AgrS >> XRef >> *clitic >> *agree
a,b,e, a,b a

Clitics and Agreement in Competition

- v,vi. *clitic >> Xref >> *agree, AgrS
 a,e,f,i a
- vii. *clitic >> AgrS >> Xref >> *agree
 a,e,f,i a,e a
- viii. AgrS >> *clitic >> Xref >> *agree,
 a,b,e a,e a

We have now seen 18 of the 24 logically possible rankings of the four constraints under consideration. The remaining 6 rankings produce patterns with subject agreement alone, or subject agreement and an object clitic. Subject agreement alone is produced in languages with a basic ranking that does not favor any cross-referencing (*agree,*clitic >>XRef), except that AgrS is ranked high enough (above *agree) to make subject agreement an exception.

(15) Three rankings that produce subject agreement alone (candidate e in tableau (10))

- i. AgrS >> *clitic >> *agree >> XRef (*agree disfavors a, with 2 agreements
 a,b,e a,e e more than e, with 1 agreement)
- ii. *clitic >> AgrS >> *agree >> XRef
 a,e,f,i a,e e
- iii. AgrS >> *agree >> *clitic >> XRef (*agree disfavors a, with 2 agreements
 a,b,e b,e e more than b,e with 1)

A language will cross-reference subjects with agreement, but use clitics to cross-reference other arguments, when the language in general favors cross-referencing with clitics (*agree >>*clitic), but AgrS is ranked high enough (above *agree) to make subjects the exception.

(16) Three rankings that produce subject agreement and an object clitic (candidate b in (10))

- i. AgrS >> XRef >> *agree >> *clitic
 a,b,e a,b b
- ii. XRef >> AgrS >> *agree >> *clitic
 a,b,c,d a,b b
- iii. AgrS >> *agree >> XRef >> *clitic
 a,b,e b,e b

Ellen Woolford

We have now seen how these four constraints produce five familiar nominative-accusative cross-referencing patterns. Other patterns, such as ones with a single clitic, result when these constraints interact with independently motivated alignment constraints, as we will see below. But there is no way under this approach to produce languages with object agreement but no subject agreement (although we will see that this approach correctly predicts that certain constructions within a language can exhibit such a pattern).

2.4 Alignment Constraints

Clitic alignment constraints are explored in detail in work such as van der Leeuw 1995, Legendre 1996, 1998, 1999, 2000a,b, (to appear), and Grimshaw 2001.¹³ Clitic alignment constraints can determine the position of clitics, aligning them to the edge of some category such as V.

- (17) $CL[V]$ Align(clitic, Right; V, Left)

The right edge of a clitic must be aligned with the left edge of the verb.

Alignment constraints can also determine the linear order of several clitics by aligning a feature such as person to the edge of some category (see Grimshaw 2001).

- (18) a. $1^{st}[V_{stem}]$ Align(1^{st} , Right; Vstem, Left)

The right edge of a first person morpheme must be aligned with the left edge of the verb stem.

- b. $2^{nd}[V_{stem}]$ Align(2^{nd} , Right; Vstem, Left)

The right edge of a second person morpheme must be aligned with the left edge of the verb stem.

An example of a language that orders its object clitics using these person alignment constraints is Haya (Duranti 1979: 40). Object clitics in Haya align themselves with the left edge of the verb stem. They are strictly ordered by person, with the higher person closer to the verb stem, even though this makes sentences ambiguous as to which object is cross-referenced by which clitic.

- (19)a. a-ka-mu-n-deet-ela
3-TNS-3-1-bring-appl

He brought him to me. or He brought me to him.

- b. *a-ka-n-mu-deet-ela (bad because order of object clitics is reversed)

¹³For a general description of Edge Alignment constraints, see McCarthy 2002:17-19.

Clitics and Agreement in Competition

(20)a. a-ka-ku-n-deet-ela
 3-TNS-2-1-bring-appl
 He brought you to me. or He brought me to you.

b. *a-ka-n-ku-deet-ela (bad because order of object clitics is reversed)

(21)a. a-ka-mu-ku-deet-ela
 3-TNS-3-2-bring-appl
 He brought him to you. or He brought you to him.

b. *a-ka-ku-mu-deet-ela (bad because order of object clitics is reversed)

Because the clitic with the lower person cannot be perfectly aligned with the verb stem (the closer clitic intervenes), it is violating the alignment constraint, as shown for candidate (22b) below. But this violation is tolerated because that is the best candidate.

(22) Haya object clitic ordering

input: (1 st pers 2 nd pers)	XRef	1 st [V _{stem}]	2 nd [V _{stem}]	*clitic
a. 1 st CL+V _{stem}	*!			*
b. 2 nd CL+1 st CL+V _{stem}			*	**
c. 1 st CL+2 nd CL+V _{stem}		*!		**

XRef is ranked high enough so that it is more important to cross-reference all (null) objects than it is to avoid violations of the alignment constraints.¹⁴

But besides placing and ordering clitics, clitic alignment constraints can also limit the number of clitics to one. If the clitic alignment constraint is ranked above XRef, no clitic alignment violation is tolerated, even if that means not cross-referencing all of the arguments. Since only one clitic can be perfectly aligned, only one can occur.

(23) Ranking producing a one clitic limit: CL_[V] >> XRef

¹⁴Only null objects are cross-referenced in Haya, presumably because of an additional high ranking constraint that prevents clitic doubling of an overt argument.

Ellen Woolford

(24) A one-clitic limit

	CL _[v]	XRef	*clitic
a. CL CL	*!		**
b. CL		*	*
c.		**!	

The clitic alignment constraint eliminates candidate (24a) because both clitics cannot simultaneously be aligned to the verb. XRef makes the final decision, preferring candidate (24b) because it cross-references one argument, whereas candidate (24c) cross-references none. Examples of nominative-accusative languages that limit their object clitics to one include Chichewa (Bresnan and Moshi 1990) and SiSwati (De Guzman 1987).¹⁵

We have now seen a range of constraints that are motivated by the behavior of languages with a nominative-accusative pattern. In the next two sections, we will see that certain rerankings of these constraints produce ergative cross-referencing patterns.

3. A Simple Ergative Agreement System: Selayarese

We have seen that a language may prefer clitics over agreement for cross-referencing (if *agree >> *clitic). We have also seen that a language may limit its number of clitics to one (if CL_[v] >> XRef). If a language has both of these properties, plus a particular ranking of the other constraints discussed above, it will produce an ergative cross-referencing pattern of the following sort:

(25) An ergative cross-referencing pattern:

	Subj	Obj.
intransitive:	CL	
transitive:	AgrS	CL

A language is called ergative if it treats intransitive subjects like transitive objects, but treats transitive subjects differently (Dixon 1979). This pattern fits the definition since clitics cross-reference intransitive subjects and transitive objects, but agreement cross-references transitive subjects.

¹⁵Bresnan and Moshi 1990 conclude that whether a language limits its objects clitics to one or allows multiple clitics is not related to other aspects of the language such as whether it has a symmetric or asymmetric passive.

Clitics and Agreement in Competition

In this section, we will see that a particular ranking of the constraints discussed above produces exactly this ergative pattern, which occurs in the Selayarese language.

3.1 The Prediction

Abstracting away from the particular location of clitics in the language (using a generic clitic alignment constraint $CL_{[x]}$), the following ranking produces the ergative pattern described above:

(26) $XRef, CL_{[x]} \gg *agree \gg *clitic, AgrS$

In this ranking, XRef is ranked high enough to require all arguments to be cross-referenced (above *agree and *clitic). Although clitics are the preferred mode of cross-referencing (due to the ranking of *agree above *clitic), ranking clitic alignment above *agree makes it preferable to use the less preferred mode, agreement, rather than two clitics in transitive clauses. Finally, even ranked as low as it is here, AgrS will insure that the agreement cross-references the subject rather than the object. But AgrS must be ranked below *agree or it will force subject agreement even in intransitives, changing the pattern to nominative-accusative.

Let us see how this works in the tableaux in (27). Let us begin with intransitives. The candidates are as follows: (27a) has cross-referencing using agreement, (27b) has a clitic, and (27c) has no cross-referencing at all. Candidate (c) is eliminated by the high ranked XRef. The clitic alignment constraint has no effect because a single clitic can always be aligned correctly (candidates with an improperly aligned clitic would be eliminated at this point). The decision is thus made by *agree, which eliminates candidate (27a), leaving (27b) with the clitic as the winner.

(27) Intransitives:

input: Subj	XRef	$CL_{[x]}$	*agree	*clitic	AgrS
a. AgrS			*!		
b. CL				*	*
c.	*!				

Now observe what happens in transitive constructions. As above, XRef will eliminate all candidates where both arguments are not cross-referenced. Let us consider only the remaining candidates shown in the tableau in (28). Candidate (a) has agreement with both subject and object, (b) has subject agreement and an object clitic, (c) has object agreement and a subject clitic, and (d) has two clitics.

Ellen Woolford

(28) Transitives:

input: Subj Obj	CL _x	*agree	*clitic	AgrS
a. AgrS AgrO		**!		
b. AgrS CL		*	*	
c. CL AgrO		*	*	*!
d. CL CL	*!		**	*

The candidate with two clitics in (28d) is eliminated because both clitics cannot simultaneously be perfectly aligned. Then *agree eliminates the candidate with two agreements in (28a), but does not discriminate between (28b) and (28c) with one violation each. That leaves the two candidates (28b) and (28c) each with one agreement and one clitic. *clitic does not distinguish between these, but AgrS makes the decision, selecting the candidate (28b) with subject agreement.

Selayarese is a language that has exactly this ergative cross-referencing pattern. Selayarese has both a series of agreement morphemes and a series of clitics, as shown in (29). In intransitives, a clitic cross-references the intransitive subject, as in (30), but in transitives, the same clitic series is used to cross-reference the object (if it is definite), and agreement is used to cross-reference the subject (Finer 2000).

(29)	agreement	clitic	(Finer 1997: 679)
	1 st ku-	-a	
	2 nd mu-	-ko	
	3 rd la-	-i	

(30)a. ak-kelong-ko
int-sing-2nd
You sang. (Finer 1991 (3d))

b. aʔ-jógeʔ-i pundoʔ-ijjo
int-dance-3rd monkey-det
The monkey dances. (Ceria 1993 (10c))

(31)a. la-keo'-ko i Baso'.
3rd-call-2nd det Baso
Baso called you. (Finer 1995 (14a))

b. mu-pallu-i jukuʔ-ijjo ri koron.
2nd-cook-3rd fish-DEF in pan
You cooked the fish in the pan. (Finer 2000 (11))

Clitics and Agreement in Competition

The pattern in the above examples is ergative in that the same morpheme, e.g. the second person clitic *-ko*, cross-references the subject in the intransitive construction in (30a) but the object in the transitive construction in (31a). In contrast, when the second person occurs as a transitive subject as in (31b), it is cross-referenced with an agreement morpheme, *mu-*. We see the same ergative pattern with the third person cross-referencing morphemes: The third person transitive subject in (31a) is cross-referenced with the agreement morpheme *la-*, in contrast to the third person intransitive subject in (30b) and the third person object in (31b) which are both cross-referenced with the third person clitic *-i*.

We can clearly distinguish agreement from clitic in Selayarese by positional behavior. The subject agreement morpheme occurs in a fixed position, prefixed to the verb.¹⁶ The clitic is suffixed to whatever is the first element of the clause (Finer 2000). In the normal VOS (or VSO) word order, this is the verb, but when something else occurs to the left of the verb, the clitic attaches to that constituent. Contrast the position of the third person *-i* in the normal verb initial word order in (32a) with its position attached to the fronted PP in (32b).

(32)a. **mu-pallu-i** juku?-iŋjo ri koroŋ.
 2nd-cook-3rd fish-DEF in pan
 You cooked the fish in the pan.

b. ri koroŋ-**i** mu-pallu juku?-iŋjo
 in pan-3rd 2nd-cook fish-DEF
 In the pan you cooked the fish. (Finer 2000 (11))

The clitic will also attach to the NEG in first position, or to a fronted adverb:

(33) **gele-ko** la-keo? i Baso?
 neg-2nd 3rd-call Baso
 Baso didn't call you. (Finer 2000 (14b))

(34)a. **al-lari-ko** lassiri.
 INT-run-2nd fast
 You run fast.

b. **lassiri-ko** al-lari.
 fast-2nd INT-run
 You run fast. (Finer 2000 (13))

¹⁶This paper will not address the question of how the position of agreement morphemes is determined. The fact that agreement does not appear to move around the clause as clitics do suggests that if alignment plays a role, that role is restricted due to independent syntactic or morphological considerations (see the discussion in McCarthy and Prince 1993).

Ellen Woolford

Notice that the agreement morpheme, when present, is always in the same, fixed position, prefixed to the verb.

This ergative pattern of Selayarese cross-referencing is predicted by the analysis above (replacing the generic clitic alignment constraint with whatever constraint(s) place a clitic in second position¹⁷). Thus we see that an ergative system is predicted by reranking a set of simple constraints independently motivated for nominative-accusative systems. It is not necessary to resort to other devices that have been proposed to account for ergative cross-referencing systems, such as positing a covert ergative Case system¹⁸ and/or positing an unusual syntax such that intransitive subjects and transitive objects move to the same syntactic position (e.g. Murasugi 1992, Bobaljik 1993).¹⁹

This approach correctly predicts that if other factors block the cross-referencing of an object in a transitive construction, the subject cross-referencing will revert to a clitic. This occurs in Selayarese when the object is indefinite. Indefinite objects are not cross-referenced in Selayarese.²⁰

- (35) (a)ng-alle-ko doe?
 int-take-2nd money
 You took (some) money.

Although this is a transitive construction in the sense of having two arguments, only the subject is cross-referenced. As expected under this analysis, when only one argument is cross-referenced, a clitic is used. A complete analysis of the Selayarese cross-referencing system, taking into account this definiteness restriction, as well as changes that occur when arguments are fronted (see Finer 1997), is beyond the scope of this paper. The goal here has been to show that the small set of constraints motivated by nominative-accusative systems also automatically predicts the existence of ergative patterns of the type that occurs in Selayarese.

We have now seen how a particular ranking of a clitic alignment constraint with respect to the basic four constraints relevant to cross-referencing, XRef, *clitic, *agree, and

¹⁷See Legendre 1996, 1998, 1999, 2000a,b, (to appear) for an OT approach to second position clitic placement. See also Finer 2000 for an OT approach to the placement of the clitic in Selayarese.

¹⁸Arguments against positing a covert ergative case system in such situations appear in Woolford 2000.

¹⁹The generalization that Murasugi 1992 and Bobaljik 1993 try to capture is nonetheless correct, at least for ergative cross-referencing patterns: the cross-referencing device used to cross-reference transitive objects is also used to cross-reference intransitive subjects because something in the grammar gives this device priority over the device that cross-references transitive subjects.

²⁰Although the prefix in this example is glossed as an intransitivizer in work on Selayarese, Finer 1997 notes that it could also be argued to be an actor focus marker.

Clitics and Agreement in Competition

AgrS, can produce a simple ergative cross-referencing pattern. In the next section, we will see that a more complex ergative pattern, known as a split-ergative pattern can be produced when person alignment constraints are ranked in a certain way with respect to these other constraints.

4. A Split Ergative Pattern: Yimas

We saw the effect of person alignment constraints in Haya in section 2.4, where object clitics are aligned to the verb stem by their person features. So far in our discussion of the typological predictions of different rankings of the constraints relevant to cross-referencing, we have not considered person alignment constraints. In many instances, these person alignment constraints will have no empirical effect, but when more than one clitic occurs, person alignment constraints may play a role in determining the linear ordering of clitics (e.g. see Grimshaw 2001). In addition, if clitics are attached adjacent to agreement, the person features in both elements may be subject to person alignment. This pattern occurs in Yimas, a language of Papua New Guinea described in Foley 1991, where (I argue) clitics are aligned to the left edge of V while agreement morphemes occur as the first elements at the left edge within V.

(36) Clitic [_V AgrS + AgrO + Vstem]

In Yimas, the person alignment constraints can determine which argument will be cross-referenced with a clitic and which with agreement. As Foley points out, the argument with the higher person feature will have to be cross-referenced with the cross-referencing morpheme in the 'slot' that is located closer to the verb stem.

Yimas combines this Haya-like person alignment with the basic ergative pattern we saw in Selayarese. The result is a complex split ergative pattern wherein the person of arguments determines whether the cross-referencing pattern will appear to be nominative-accusative or ergative.

Let us begin our demonstration by listing the clitic and agreement forms of Yimas and noting how you can distinguish clitics from agreement in this language.

4.1 Clitic and Agreement Forms in Yimas

Up to 3 arguments can be cross-referenced at once in Yimas, two by agreement and one by a clitic. There is a strict morpheme order of clitic-AgrS-AgrO, although not all of these slots are necessarily filled.²¹

²¹The categories of clitic, AgrS and AgrO correspond to some extent to Foley's 1991 three categories of S, A, and O forms. In addition, there are number suffixes which will not be discussed here.

Ellen Woolford

Yimas Strict Morpheme Order: clitic + AgrS + AgrO + Vstem + ...

All three slots are filled in the following example, where the subject is cross-referenced with AgrS, the first object with AgrO and the second object with the clitic.

(37) uraŋ k +mpu +ŋa +tkam+
 coconut 3rdsg(classVI)CL+3plAgrS+1sgAgrO+show+perf
 They showed me the coconut. (Foley 1991:208)

The following table lists many of these forms (omitting duals, some of the noun classes, and the number suffixes), with free pronoun forms for comparison.

(38)	Clitics	AgrS	AgrO	Free Pronouns
	1sg ama	ka	ŋa	ama
	2sg ma	n	nan	mi
	3sg na	n	---	(deictics are used)
class:	VI k			
	VII p			
	IX wa			
	1pl ipa	kaykra	ipa	
	2pl ipwa	nankul	ipwa	
	3pl pu	mpu	—	(deictics are used)
	etc.			

Some of the differences between clitics and agreement in Yimas are as follows. Clitics can encode the noun class of an argument, but agreement cannot. Clitics must come first in the verbal complex and they compete for this initial slot with other types of clitics (negative, some modals). Clitics very closely resemble free pronouns, but the agreement forms do not. Clitics can cross-reference either subjects or objects (as in Selayarese) or even second objects, while the agreement forms are specific for subject or object and cannot cross-reference second objects.

The Yimas lexicon thus provides a wealth of cross-referencing devices. The question is, which are used in any particular situation and why? Let us now turn to the constraints and constraint ranking that determine this.

4.2 The Yimas Constraint Ranking

To produce the Yimas cross-referencing system, we start with the same constraint ranking that produced the simple ergative cross-referencing system of Selayarese (substituting a clitic alignment constraint that aligns clitics to the left edge of verbs):

Clitics and Agreement in Competition

(39) XRef, CL_[V] >> *agree >> *clitic, AgrS

We can produce the Yimas pattern if we rank the person alignment constraints, 1st_[Vstem] and 2nd_[Vstem], anywhere above AgrS, even right above AgrS:

(40) XRef, CL_[V] >> *agree >> *clitic >> 1st_[Vstem] >> 2nd_[Vstem] >> AgrS

Let us now see how this constraint ranking produces the Yimas patterns.

4.3 Intransitives

For intransitives, the result is the same as in Selayarese. The candidate with agreement is eliminated by *agree, leaving the candidate cross-referenced by a clitic. The lower ranked constraints have no effect.

(41) Intransitives:

input: Subj	XRef	CL _[V]	*agree	*clitic	1 st _[Vstem]	2 nd _[Vstem]	AgrS
a. AgrS			*!				
b. CL				*			*
c.	*!						*

However, intransitives in Yimas have an exciting twist that is not present in Selayarese. This analysis predicts that if some other clitic in the language were to usurp the position of the cross-referencing clitic, preventing the proper alignment of that clitic, CL_[V] would eliminate the (b) candidate and the (a) candidate with agreement would win. This happens in Yimas.

In Yimas, the negative is a clitic that is aligned to the same spot that the cross-referencing clitic wants. If the negative is aligned perfectly, there is a violation of the clitic alignment constraint, but if the clitic is aligned perfectly, there is a violation of the negative alignment constraint. But Yimas avoids either violation by using agreement instead of a clitic to cross-reference the subject.²²

(42) a. ama-wa-t b. ta-ka-wa-t
 1stCL-go-perf neg-1stAgrS-go-perf
 I went. I didn't go. (Foley 1991: 251)

²²This happens in first and second person, but in the third person, the negative and clitic appear to combine into a portmanteau form that is neutralized for number.

Ellen Woolford

(43) Negative Intransitive

	Neg _[v]	CL _[v]	*agree
a. ama-ta-[_v wa-t 1cl-neg-go-perf		*!	
b. ta-ama-[_v wa-t neg-1cl-go-perf	*!		
c. ta-[_v ka-wa-t neg-1sgAgrS-go-perf			*

This switch from clitic to agreement in the presence of another clitic is strong evidence for this OT approach and evidence against any simple linking between grammatical relations and cross-referencing forms.

4.4 Transitives

As in Selayarese, there is a limit of one clitic (because of the highly ranked clitic alignment constraint), and so transitives must also make use of agreement. But in contrast to Selayarese where transitive subjects always agree and transitive objects are cross-referenced with a clitic, the situation in Yimas depends on the person of the subject and object. The higher person is cross-referenced with agreement, the lower with a clitic:

(44) arguments		cross-referencing patterns:		
S	O	clitic	AgrS	AgrO
1 st	3 rd	3 rd	1 st	
2 nd	1 st	2 nd		1 st
2 nd	3 rd	3 rd	2 nd	
3 rd	1 st	3 rd		1 st
3 rd	2 nd	3 rd		2 nd

This is why Yimas is described as a split ergative pattern, sometimes having a nominative-accusative pattern, and sometimes an ergative pattern. If you look at intransitives and transitives with third person arguments, the pattern looks ergative. The same form, *pu*, cross-references the intransitive subject in (45) and the transitive object in (46a), while a different form, *mpu* cross-references the transitive subject as in (46b).

- (45) **pu**+tmuk+t
 3plCL+fall+PERF
 They fell down. (Foley 1991:197)

Clitics and Agreement in Competition

(46)a. **pu+ka+tay**
 3plCL+1sgAgrS+see
 I saw them. (Foley 1991:196)

b. **na+mpu+tay**
 3sgCL+3plAgrS+see
 They saw him. (Foley 1991:195)

But if you substitute a transitive form with a first person object, the pattern looks nominative-accusative. The same form, *pu*, marks both intransitive and transitive subjects

(47) **pu+tmuk+t** Sclitic
 3plCL+fall+PERF
 They fell down. (Foley 1991:197)

(48) **pu+ŋa+tay** Sclitic+AgrO
 3plCL+1sgAgrO+see
 They saw me. (Foley 1991:196)

Let us look at the tableaux that demonstrate the reasons for these patterns. To simplify the demonstration, let us assume that the highly ranked XRef has already eliminated all candidates that do not cross-reference both arguments. Thus our tableaux will contain only candidates where both subject and object are cross-referenced. In addition, our tableaux will not contain candidates that are ruled out by universal principles of syntax such as candidates where AgrO cross-references the subject.

Let us begin with the combination of a first person subject and a third person object. The winning candidate that surfaces has a third person clitic and 1st person subject agreement:

(49) **pu+ka+tay**
 3plCL+1sgAgrS+see
 I saw them. (Foley 1991:196)

Let us compare this winning candidate to the other possible candidates that cross-reference both subject and object. For reasons of space, I show only the cross-referencing elements and the Vstem in each candidate in the tableau below:

Ellen Woolford

(50) Transitives 1st subject, 3rd object:

input: 1 st S 3 rd O	CL _[V]	*agree	*clitic	1 st _[Vstem]	2 nd _[Vstem]	AgrS
a. 1 st AgrS 3 rd AgrO Vstem		**!		*		
b. 3 rd CL 1 st AgrS Vstem		*	*			
c. 1 st CL 3 rd AgrO Vstem		*	*	*!		*
d. 3 rd CL 1 st CL Vstem	*!		**			*

As in Selayarese, the high ranked clitic alignment constraint eliminates the candidate in (50d) with two clitics. That constraint is crucially ranked above *agree, which would otherwise declare (d) the winner. The candidate in (50a) with two agreements is then eliminated by *agree. Candidates (50b) and (50c) tie with respect to both *agree and *clitic, having one of each. The decision is made by the first person alignment constraint, selecting (50b) where the first person morpheme is adjacent to the verb stem. (We would the same result if the person alignment constraints were ranked higher, but this demonstration is designed to show that the person alignment constraints will have this effect even when relatively low ranked).

The situation is much the same with a second person subject and a third person object, except that the second person alignment constraint makes the decision.²³

- (51) pu+n+tay
 3plCL+2sgAgrS+see
 You saw them. (Foley 1991:201)

(52) Transitives 2nd subject, 3rd object:

input: 2 nd S 3 rd O	CL _[V]	*agree	*clitic	1 st _[Vstem]	2 nd _[Vstem]	AgrS
a. 2 nd AgrS 3 rd AgrO Vstem		**!			*	
b. 3 rd CL 2 nd AgrS Vstem		*	*			
c. 2 nd CL 3 rd AgrO Vstem		*	*		*!	*
d. 3 rd CL 2 nd CL Vstem	*!		**			*

When two third person arguments are involved, the two highest constraints eliminate the (d) and (a) candidates, as before, but now the person alignment constraints have no

²³Note that the first person alignment constraint is not violated if there is no first person to align.

Clitics and Agreement in Competition

effect.²⁴ The very low ranked AgrS makes the decision instead, eliminating (c) because it lacks subject agreement, thus leaving (b) as the last standing and thus winning candidate.

- (53) **na+mpu+tay**
 3sgCL+3plAgrS+see
 They saw him. (Foley 1991:195)

(54) Transitives 3rd subject, 3rd object:

input: 3 rd S 3 rd O	CL _[v]	*agree	*clitic	1 st _[Vste] _m	2 nd _[Vste] _m	AgrS
a. 3 rd AgrS 3 rd AgrO Vstem		**!				
b. 3 rd CL 3 rd AgrS Vstem		*	*			
c. 3 rd CL 3 rd AgrO Vstem		*	*			*!
d. 3 rd CL 3 rd CL Vstem	*!		**			*

In all of the Yimas examples analyzed so far, the subject has been equal to or higher than the object in person, and the subject agrees and the object is cross-referenced with a clitic. Since agreement is located closer to the Vstem than the clitic, the higher person takes the agreement. But let us now look at situations in which the object is higher than the subject in person. As expected, the higher person again takes the agreement (in most cases), but now it is the object that agrees. We see this with a second person subject and a first person object:

- (55) **ma+kra+tay**
 2sgCL+1plAgrS+see
 You saw us. (Foley 1991:206)

(56) Transitives 2nd subject 1st object:

input: 2 nd agent 1 st theme	CL _[v]	*agree	*clitic	1 st _[Vste] _m	2 nd _[Vste] _m	AgrS
a. 2 nd AgrS 1 st AgrO Vstem		**!			*	
b. 1 st CL 2 nd AgrS Vstem		*	*	*!		
c. 2 nd CL 1 st AgrO Vstem		*	*		*	*
d. 2 nd CL 1 st CL Vstem	*!		**			*

²⁴Even if we include a constraint aligning third person to Vstem, it would not distinguish between the four candidates in which one third person element (agreement or case) is aligned and the other is not.

Ellen Woolford

Here the (c) candidate wins, with a subject clitic and object agreement. The reason is again person alignment. As above, the highest constraints eliminate the (a) and (d) candidates, leaving (b) and (c) tied. The first person alignment constraint eliminates the (b) candidate because the first person morpheme is not aligned to the Vstem (the second person morpheme intervenes). That leaves (c) as the winner, even though it violates the second person alignment constraint; the violation is tolerated because we have run out of alternative candidates.

The situation is similar with a third person subject paired with a first or second person object. The person alignment constraints eliminate candidate (b) with subject agreement in favor of candidate (c) with a subject clitic, before AgrS has a chance to apply. This situation contrasts with Selayarese above, where the person alignment constraints are ranked below AgrS, and so they have no effect because AgrS forces the subject to agree, leaving the object to take the clitic. That is the primary difference between a simple ergative agreement pattern as in Selayarese and one that manifests person hierarchy effects as in Yimas.

A full account of the Yimas cross-referencing system has to deal with other complexities (including the fact that a portmanteau morpheme is sometimes the best solution when two elements cannot both be perfectly aligned), but a full analysis of the Yimas system is beyond the scope of this paper. The point here is only to show that the basic architecture of this split-ergative cross-referencing system is already predicted under the OT approach, because it is produced by one of the possible rankings of constraints that are independently motivated for nominative-accusative systems.

5. Conclusion

A small, simple set of universal violable constraints, proposed in the OT literature on clitics and agreement in order to account for common nominative-accusative patterns, are shown here to also predict the existence not only of classic ergative agreement systems, but also of complex split ergative cross-referencing patterns. The fact that nothing special needs to be added to this theory to produce ergative agreement patterns (cf. Woolford 1997, 2001 on Case) provides strong support for this approach.

The basic idea of this approach is that even when the subject and object are both in syntactic positions in which they are eligible to be cross-referenced by agreement or a (doubling) clitic, languages differ as to which device, if any, will be selected for cross-referencing each argument. There is a tension between avoiding complexity (by not using either clitics or agreement) and a need to cross-reference all arguments. In addition, languages differ as to which cross-referencing device is considered more marked. Alignment constraints can affect the outcome in various ways, not only by placing and ordering clitics, but also (in combination with other constraints) by limiting the number of clitics to one. This fact is the key to understanding ergative cross-referencing patterns in languages such as Selayarese and Yimas. In these languages, clitics are the favored cross-referencing device, but the number of clitics is limited to one. Thus intransitive subjects can be cross-referenced

Clitics and Agreement in Competition

by a clitic, but in transitives, one of the arguments must agree. In the complex split-ergative pattern of Yimas, the decision as to which argument is cross-referenced by a clitic and which by agreement is made by person alignment constraints that can override the requirement to realize AgrS.

All other factors being equal, languages prefer to use agreement to cross-reference the subject. A violable constraint requiring the realization of AgrS (subject agreement) unifies the fact that no language has object agreement without subject agreement with the fact that subject agreement often surfaces in a default form when nothing actually agrees. This paper shows how a grammatical universal (no object agreement without subject agreement) can follow from a violable constraint, and also why such a generalization that holds for each language as a whole can nevertheless be violated by certain constructions within a language.

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Ellen Woolford

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