

Aspect Splits and Parasitic Marking*

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Aspect splits can affect agreement, Case, and even preposition insertion. This paper discusses the functional ‘why’ and the theoretical ‘how’ of aspect splits. Aspect splits are an economical way to mark aspect by preserving or suppressing some independent element in one aspect. In formal terms, they are produced in the same way as coda conditions in phonology, with positional/contextual faithfulness. This approach captures the additive effects of cross-cutting splits. Aspect splits are analyzed here from Hindi, Nepali, Yucatec Maya, Chontal, and Palauan.

Keywords: split ergative, nepali, mayan, palauan, contextual markedness

1 Introduction

There is no standard theory of aspect splits and, in fact, aspect splits are seldom discussed in the theoretical literature. Yet the existence of aspect splits is well-known in the typological literature. The most often cited example is the split in the distribution of ergative Case in Hindi and related languages, where ergative Case is restricted to the perfective aspect:

- (1) a. Ram-ne gari cala-ta (hai). [Hindi/Urdu]
 Ram-ERG car drive-PERFECTIVE be.PRES
 ‘Ram has driven a/the car.’

* I would like to thank the audience at DEAL II at the University of Leiden for their valuable comments and discussion. I would also like to thank those who did the fieldwork to gather the interesting and important data used in this paper.

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- b. Ram gari cala-yi (hai).
 Ram.NOM car drive-**IMPERFECTIVE** be.PRES
 ‘Ram drives/is driving a car.’ (Butt and Deo 2005 (6-7))

The task of accounting for aspect splits has been largely left to those linguists who work on a language that happens to manifest such a split. The few accounts that have been proposed are designed for one type of aspect split, and these accounts do not easily extend to other types of aspect splits in other language families. Aspect splits are not limited to Case, nor do they have any inherent connection to ergativity. Aspect splits can involve agreement (Yucatec Maya), and even preposition insertion (Palauan).

The goal of this paper is to develop a general theory of aspect splits, one which addresses not only the question of exactly how such splits are produced by the formal grammar, but also the functional question of why they occur at all.

Taking the functional question first, I argue that aspect splits have an interesting and important function. Aspect splits provide an economical way of marking (or redundantly marking) aspect without adding anything to the clause. Instead, they mark aspect indirectly by blocking the use of an otherwise expected element in one aspect. I call this phenomenon *Parasitic Marking*. A real life example of Parasitic Marking is the ‘shirts and skins’ method that boys use to mark team membership when they play sports informally without uniforms: the boys on one team remove their shirts, while the boys on the other team keep their shirts on. The presence of an ordinary shirt thus comes to mark one team, while its absence marks the other team.

Parasitic marking is economical because it never adds anything. Parasitic marking is parasitic because it involves manipulating the distribution of some independent element which has no inherent connection with what is being marked.

Parasitic marking in language is not quite as perfect as in the shirts and skins example, where the distribution of shirts is manipulated for both teams. In linguistic examples, it is as if one team removes their shirts, but the members of the other team do nothing (and may or may happen to be wearing a shirt). That is, in parasitic marking in language, an element is blocked in one context (e.g. one aspect), but unaffected in the opposite context. For example, in Hindi, ergative Case is prohibited in the imperfective aspect, but the distribution of Cases in the perfective aspect is unaffected. The presence of ergative Case is a reliable indicator of perfective aspect in Hindi because ergative Case is only allowed in the perfective aspect; yet, the absence of ergative Case does not, by itself, reliably indicate imperfect aspect: it is only when ergative Case fails to occur on the subject of a verb that is known to license ergative Case that one can reliably conclude that the aspect is imperfective in Hindi.

Though imperfect, parasitic marking is cheap since it never involves adding anything, and instead involves removing some element, often a marked element. Sometimes aspect is only marked parasitically in a language, in at least some contexts, but in other situations, the parasitic marking of aspect by an aspect split only redundantly marks aspect. This is what occurs in Hindi where aspect is marked with aspect morphemes as well.

Turning now to the formal grammar of aspect splits, I will argue that the formal means for producing aspect splits already exists in the linguistics literature, just not in the syntax literature, but rather in the phonological literature. Although they are not called splits, similar contextual restrictions are observed in phonology. A well-known example is the situation in which [+voice] consonants are prohibited in codas but allowed in syllable onsets. Phonology has a means of analyzing such contextual restrictions using Optimality Theory (Prince and Smolensky 1993, 2004). This phenomenon is analyzed in Beckman 1998 as involving positional faithfulness; that is, [+voice]

is protected in syllable onsets from the effect of a general ban on [+voice] consonants that applies elsewhere. However, the contexts that may be involved in such ‘splits’ are not limited to positions: Smith 2001 shows that the protected environment can be nouns, as opposed to verbs. Thus I will use the more general term, *contextual faithfulness*, to refer to this phenomenon.

In contextual faithfulness, a contextually restricted version of an independently motivated faithfulness constraint protects a marked element from an opposing markedness constraint that would otherwise eliminate it. I extend this approach to the aspect split in Hindi by formulating a contextually restricted version of the independently motivated faithfulness constraint that preserves ergative Case, established in Woolford 2001, 2007. The contextually restricted version of this constraint preserves ergative Case only in the perfective aspect. Elsewhere, the (very marked) ergative Case is eliminated by the markedness constraint *ERGATIVE.

Those readers who do not work in Optimality Theory may be thinking that a better approach would be to simply place a language-specific condition on the head that licenses ergative Case in Hindi. In fact, such an approach is proposed for Hindi in Davison 2004. Under her account, the aspect head licenses ergative Case in Hindi, and only if that aspect head has the feature [+perfective]. The problem is that this approach makes the wrong prediction when it comes to the behavior of overlapping splits in related languages. Nepali is like Hindi in allowing ergative Case in the perfective aspect, but Nepali also has an overlapping split such that ergative Case is allowed with individual-level predicates, regardless of the aspect of the clause (Butt and Poudel 2007). The pattern of overlapping splits is additive, as predicted by the contextual faithfulness approach: an element can be preserved in two overlapping contexts by the combined effect of two different contextual faithfulness constraints.

We will see another overlapping split pattern in Mayan languages. Yucatec Maya has an aspect split involving agreement, which is restricted to intransitive clauses. The related language Chontal has this same pattern overlaid with another agreement split in positive vs negative clauses, which is also neutralized in transitive clauses (Knowles-Berry 1987). I argue that these patterns involve contextually restricted DEP constraints, in contrast to the Hindi/Nepali patterns which involve contextually restricted IDENT constraints. This is because agreement is not present in the input to syntax proper (the argument structure level or vP phase), in contrast to ergative Case (inherent Case) which is licensed at that prior level. DEP constraints prohibit elements that are not present at the prior level. The additive effect of two DEP constraints is the opposite of the additive effect of two IDENT constraints: the context in which agreement is allowed is reduced instead of increased. As for the odd restriction of these splits to intransitive clauses, this falls out automatically in this OT approach.

The third aspect split to be discussed in this paper occurs in Palauan. This split involves the way that ‘marked objects’ are marked: Palauan uses preposition insertion in the imperfective aspect, but object shift (with resulting clitic doubling) in the perfective aspect. Because inserted prepositions are not present in the input to syntax proper, this split is also governed by a contextually restricted DEP constraint.

All three of these aspect splits are produced by contextually restricted faithfulness constraints, and the context is always [+perfective].

This paper is organized as follows. Section 1 presents the data and analysis of the aspect split in Hindi. Supporting evidence from the interacting split in Nepali is presented in section 2. Section 3 deals with the aspect split in Palauan where aspect determines how ‘marked objects’ are to be marked. Palauan shows that aspect splits are not confined to ergative languages. In

addition, Palauan is a language in which the perfective aspect is never marked in Palauan by an aspect morpheme, but only marked by the parasitic marking of this aspect split. In section 4, we turn to the aspect split involving agreement in Yucatec Maya. The analysis of this split is complicated by a controversy over whether the Mayan languages have a covert ergative Case system. I will give two solutions, one assuming a nominative-accusative abstract Case system and one assuming an ergative system. The general form of the solutions is similar. Section 5 is a discussion of typological predictions of the contextual faithfulness approach to aspect splits proposed in this paper.

2 The Ergative Aspect Split of Hindi

In Hindi and many related languages, ergative Case is limited to the perfective aspect (e.g. DeLancey 1981, Butt and Deo 2005).¹

- (2) a. Ram-ne gari cala-ta (hai). [Hindi/Urdu]
 Ram-ERG car drive-PERFECTIVE be.PRES
 ‘Ram has driven a/the car.’
- b. Ram gari cala-yi (hai).
 Ram.NOM car drive-IMPERFECTIVE be.PRES
 ‘Ram drives/is driving a car.’ (Butt and Deo 2005 (6-7))

Perfective aspect does not license ergative Case however. Ergative Case is licensed cross-linguistically by verbs that take an external argument.² Languages

¹ I have omitted gender and number in the glosses of these Urdu/Hindi examples.

² Ergative is an inherent Case, as the dative is, and inherent Cases are licensed in connection with theta-licensing at the vP phase or argument structure level that precedes syntax proper. Ergative Case is licensed by the head that licenses external arguments (Woolford 2006). Agents are always external arguments, but subjects with a range of other theta-roles are also mapped to the external argument position, with the exact range depending on the language (Woolford 2006). Not all subjects are external arguments. Hindi also has experiencer subjects marked with dative Case, and theme/unaccusative subjects marked with nominative Case.

such as Basque mark all external arguments with ergative Case, but Hindi and many related languages restrict this Case to the perfective aspect.

The question is, how is this aspectual restriction encoded in the formal grammar? The kinds of answers one might propose depend on one's assumptions about how cross-linguistic differences are coded in general. Narrowing the question to cross-linguistic differences involving Case, many frameworks assume that if a particular language such as English lacks ergative Case, it is either because the lexicon lacks an ergative Case morpheme (the lexical gap approach) or that the head that licenses ergative Case (little *v*) lacks that ability in the language in question (the licensing approach). Since ergative Case clearly exists in Hindi, the lexical gap approach will not help here, but an account of the Hindi aspect split using the licensing approach has been proposed by Davison 2004, who argues that the aspect head licenses ergative Case in Hindi, if it carries the feature [+perfective]. As it stands, this approach overgenerates since it would allow any verb to take an ergative subject in the perfective aspect; however, one could modify this approach to overcome this problem, say by requiring little *v* to combine with an aspect head carrying the feature [+perfective] in Hindi (but not in Basque) in order to license ergative Case. The real problem with this approach is the fact that it maintains that ergative Case cannot be licensed in the imperfective aspect in languages that manifest this aspect split, but this is inconsistent with Nepali. As we will see in section 2, Nepali shares this aspect split, but nonetheless ergative Case can be used in one context in the imperfective aspect in Nepali, because of the presence of an additional overlapping ergative split of a different kind.

In the approach to Case that I have developed (Woolford 2001, 2006, 2007) ergative Case is potentially licensed by little *v* in any language; there are no language-specific differences in the Case licensing abilities of syntactic

heads.³ Instead, in situations where there is more than one Case that could be licensed on a particular argument, the choice is determined by the relative ranking of a small set of universal, but violable markedness and faithfulness constraints. Markedness constraints simply rule out the more marked Cases, e.g. *ERGATIVE. Faithfulness enters the picture when inherent Case is involved because inherent Cases are licensed at a level prior to that of syntax proper (the CP phase); that prior level can be called the argument structure level or the vP phase. It has been a part of syntactic theory since Chomsky 1981 that inherent Cases are licensed at a level prior to the level where structural Cases are licensed; but it was also assumed that any Case licensed at this prior level had to be preserved. In OT terms, the assumption was that faithfulness to inherent Cases was inviolable. What I alter is this assumption of inviolability. The violable faithfulness constraint IDENT(ergative) preserves all instances of ergative Case at the level of syntax proper, while the marked constraint *ERGATIVE removes them all. The relative ranking of these two constraints alone produces languages such as Basque where all external arguments get ergative Case, and languages such as English where the ergative Case is discarded in favor of the less marked nominative. But these two extremes are not the only ergative patterns that occur. In Woolford 2007, I discuss a ‘last resort’ use of ergative Case in languages that have the English ranking above and normally manifest a nominative-accusative pattern. In such languages, a higher ranking Case locality constraint is relevant when object shift occurs, and it favors the preservation of ergative Case.

In Hindi, we have another situation in which only some ergatives are preserved. Following work on OT phonology such as Beckman 1998 on contextually

³ The exception to this is the few truly idiosyncratic lexical Cases that are selected only by a few verbs for their theme argument. (See Woolford 2006 for a discussion of the difference between the more predictable inherent Cases and the unpredictable lexical Cases.)

restricted faithfulness, I propose that the aspect split in ergative Case in Hindi is the result of the following contextually restricted version of the IDENT (ergative) constraint. This faithfulness constraint preserves ergative Case in the perfective aspect:

- (3) IDENT_{perfective} (erg) Preserve ergative Case in the perfective aspect.

This constraint will produce the Hindi aspect split if it is ranked above the markedness constraint that eliminates ergatives, which is, in turn, ranked above the general faithfulness constraint that preserves all ergatives. This ranking will preserve ergative Case in the perfective aspect, but eliminate ergatives in any other context (unless some additional high ranking constraint intervenes):

- (4) Hindi constraint ranking

IDENT_{perfective} (ergative) >> *ERGATIVE >> IDENT (ergative)

These constraints apply in syntax proper (or the CP phase), whose input is the argument structure level (or the vP phase). The tableau below shows that the high ranking contextually restricted faithfulness constraint eliminates any candidate that does not preserve an ergative Case from this input level. (I ignore here candidates with other structural Cases; see Woolford 2001).⁴

- (5) An External Argument in the Perfective Aspect in Hindi

input: DP-ergative	IDENT _{perfective} (erg)	*ERGATIVE	IDENT (erg)
☞ a. DP-ergative		*	
b. DP-nominative	*!		*

For internal arguments, which are never licensed for ergative Case, this high ranking faithfulness constraint does nothing, and the markedness constraint,

⁴ In situations where there is a choice of structural Cases that can be licensed on a subject, markedness constraints such as *accusative remove all but the least marked of these (Woolford 2001).

*ERGATIVE, (or the general ban on unlicensed Cases) rules out any candidate to which ergative Case has been added.

(6) An Internal Argument in the Perfective Aspect in Hindi

	input: DP-	IDENT _{perfective} (erg)	*ERGATIVE	IDENT (erg)
	a. DP-ergative		*!	
☞	b. DP-nominative			*

In the imperfective aspect, the contextually restricted constraint also has no effect, but for a different reason: the context is not satisfied. But the result is the same: *ERGATIVE eliminates all candidates containing an ergative Case.

(7) An External Argument in the Imperfective Aspect in Hindi

	input: DP-ergative	IDENT _{perfective} (erg)	*ERG	IDENT (erg)
	a. DP-ergative		*!	
☞	b. DP-nominative			*

Although this OT approach is fairly simple and captures similarities between syntax and phonology, given the data accounted for so far, one could argue that this OT approach does not really outperform an approach in which these cross-linguistic differences in Basque, English, and Hindi result from (parametric) differences in the licensing capabilities of little *v* (the head that licenses external arguments and ergative Case). One could say, for example, that English little *v* lacks this ergative Case licensing capability, but the Basque little *v* has it, and the Hindi little *v* has it only when the feature [+perfective] is present.⁵ As this paper progresses, we will see a series of language examples to

⁵ The ‘parametric licensing’ approach described here is similar to that proposed for Hindi in Davison 2004, except that she treats ergative Case as a structural Case licensed by the aspect head when it carries the feature [+perfective].

which it would be difficult, if not impossible, to extend such a parametric licensing approach. The first of these occurs in Nepali.

3 Nepali and Overlapping Splits

Nepali shares the aspect split just described for Hindi, but Nepali also has another cross-cutting split involving ergative Case. Nepali allows ergative Case, even in the imperfect aspect, when the predicate is individual-level (as opposed to stage-level); Butt and Poudel (2007) illustrate this additional ergative split in Nepali with the following examples. In (8), the fact that Ram knows English is a property of Ram (individual-level); it is not confined to a particular stage of time. Here Ram takes ergative Case even though the aspect is imperfective.

- (8) Raam-le (#aajaa) angreji jaan-da-cha. [Nepali]
 Ram-ERG today English know-IMPF-NONPAST.MASC.3.SG
 ‘Ram knows English (#today).’ (Individual-level predicate)

In contrast, the event of Ram speaking in (9) will occur in one particular stage of time and thus the predicate is stage-level. Here Ram does not take ergative Case.

- (9) Raam (aajaa) angreji bol -da-cha. [Nepali]
 Ram today English speak -IMPF-NONPAST.MASC.3.SG
 ‘Ram will speak English (today).’ (Stage-Level predicate)

Thus Nepali has two overlapping ergative splits. Moreover, the effects of these splits are additive, so that ergative Case is preserved in all contexts except in stage level predicates in the imperfective aspect:

(10) Overlapping Additive Ergative Splits in Nepali

	perfective aspect	imperfective aspect
individual level	Ergative	Ergative
stage level	Ergative	no ergative

This pattern is the result of ‘adding up’ the contexts in which ergative Case is allowed under each of these two splits.

This additive pattern is unexpected under Davison’s account of the aspectual split in Hindi, because it maintains that ergative Case is not licensed in the imperfective aspect. One might be able to accommodate a cross-cutting split that further reduced the contexts in which ergative Case is licensed, but the additive pattern we see in Nepali, where the contexts in which ergative Case occurs increases, is unexpected.

In contrast, this additive pattern is just what we expect if such splits are the result of contextually restricted faithfulness constraints. These constraints state a context in which ergative Case must be preserved. When there are two such constraints that are active in a language, there will be two contexts in which ergative Case is preserved.

These constraints preserving ergative Case will be active in a language if they are ranked above *ERGATIVE. The formulation of these constraints is the same except for the context restriction. Both are IDENT constraints, requiring identity between the input and output levels. Here the output level is syntax proper (the CP phase), and its input is the argument structure level or vP phase where ergative Case is licensed.

(11) IDENT_{perfective}(ERG) Preserve ergative Case in the perfective aspect.

(12) IDENT_{individual-level}(ERG) Preserve ergative with individual-level predicates.

Not all splits involve ergative Case however. In the next section we turn to Palauan, a language which manifests a very different sort of aspect split involving preposition insertion.

4 The Aspect Split in Marked Objects in Palauan

Palauan (Austronesian) also manifests an aspect split between the perfective and imperfective aspect; but the Palauan aspect split is very different from what we see in Hindi and Nepali. The Palauan split involves choosing between two different ways of marking ‘marked objects’, with the choice being determined by aspect. Marked objects are a well-known typological phenomenon in which objects with particular features (e.g. specific, human) are ‘marked’ in one of several ways. They can be marked with an inserted preposition, as in Spanish, or they can move out of the VP, often with a concomitant change in Case and/or agreement, as in Turkish and Hindi (Comrie 1989, Woolford 1995, Aissen 2003).⁶

Palauan is unusual in using both of these methods of marking ‘marked objects’ and for selecting between these methods on the basis of aspect. In the imperfect aspect, Palauan follows the Spanish method, ‘marking’ objects that are human and/or individuated (specific and singular) with an inserted preposition:

- (13) A sensei a mengelebed **er** a rengalek. [imperfective aspect]
 teacher hit **P** children
 ‘The teacher is hitting the children.’ (Georgopoulos 1991: 35)

⁶ I put aside here the thorny question of why an object with marked features cannot simply remain morphologically unmarked in its base position. There are two formal proposals within OT for the analysis of marked objects. Building on Diesing 1992, I argue in Woolford 1995 that objects with certain features are disallowed within the VP, just as consonants with certain features are disallowed in coda position in some languages. In that paper, I proposed what are essentially contextual markedness constraints to prohibit objects with such features in their base position inside VP; it might now be preferable to reformulate these constraints as contextual faithfulness. Aissen 2003 takes a very different approach to marked object, formalizing the iconic approach of Silverstein 1976 wherein morphological case serves as a flag to mark an object with features that are atypical for objects. Aissen’s approach uses constraint conjunction to penalize objects with certain features if those objects lack morphological case (where case is interpreted broadly to include prepositions).

In the perfective aspect, Palauan follows the Turkish strategy in that it moves objects with those features out of the VP. Although the Case of the shifted object does not change as in Turkish or Hindi, the fact that the object is no longer in its base position means that it must be clitic-doubled, as in many Romance languages and in Chichewa (Bresnan and Mchombo 1986). The syntactic clitic is suffixed to the verb:

- (14) Ak mils-**terir** a retede el sensei. [perfective aspect]
 I saw-**3.PL.CLITIC** three teacher
 ‘I saw three teachers.’ (Josephs 1975: 43)

In contrast, objects that are neither human nor individuated (specific and singular) remain ‘unmarked’ in their base position.

- (15) Ng- milengelebed a bilis.
 3sg- IMPERF.hit dog
 ‘He/she hit a dog /the dogs /some dogs.’ (Georgopoulos 1991: 29)

Both movement and preposition insertion are ‘last resort’ operations. When they are not needed, they are not used, because both have a ‘cost’. This cost in OT terms is a violation of the constraints that prohibit them. Movement violates *TRACE or STAY (Grimshaw 1997).⁷ Preposition insertion violates a DEP constraint, DEP (P).

- (16) DEP (P) No preposition insertion.
 A preposition in the output must be present in the input.

DEP constraints, developed in OT phonology, require that the output depend on the input; that is, nothing can be inserted in the output that is not already present in the input. The relative ranking of *TRACE and DEP (P) determines the basic

⁷ In more recent work, Grimshaw 2006 argues that the *trace (*t) or STAY constraint may not be needed because (simplifying here) movement usually creates additional structure which leads to additional violations of independently motivated constraints.

preference in a language among these two ‘last resort’ options (or in Minimalist terms, which is last resort and which is last last resort).

The situation in Palauan is more complex because aspect determines which of these ‘last resort’ devices will be used to ‘mark’ a marked object. I argue that there is a contextually restricted version of the faithfulness constraint DEP (P), whose application is limited to the perfective aspect.

(17) DEP_{perfective} (P) No preposition insertion in the perfective aspect.

This DEP constraint prevents preposition insertion in the perfective aspect. However, it has no effect on base-generated prepositions. Base generated prepositions occur in both aspects in Palauan. In the following example, we see a base-generated preposition in a perfective clause. This clause does not use an inserted preposition for the marked object because the aspect is perfective:

(18) Ak mils-a a Droteo er a party. [perfective]
 I saw-3.sg.clitic Droteo at party.
 ‘I saw Droteo at the party.’ (Josephs 1975, p. 324)

What remains is to rank these constraints properly to produce the pattern we observe in Palauan. I claim that Palauan is like Spanish in that there is a general preference for using preposition insertion to ‘mark’ objects (*TRACE >> DEP (P)), but preposition insertion is blocked in the perfective aspect by the higher ranked contextually restricted version of this DEP constraint:

(19) Palauan Constraint Ranking

DEP_{perfective} (P) >> *TRACE >> DEP (P)

Let us look at some tableaux to see how these constraints, in this ranking, produce the Palauan pattern. Let us first look at what happens with a human object in the perfective aspect. This object is prohibited from simply remaining in the VP by a higher ranking constraint not discussed here which requires

human objects to be ‘marked’ in some way. The tableau shows candidates with the two possible ways of ‘marking’ such objects, inserting a preposition (candidate a) or moving the object out of the VP (with associated clitic doubling) in candidate b. With a clause in the perfective aspect, insertion of a preposition is barred by the highest constraint shown in the tableau, eliminating candidate a. This leaves candidate b as the winner.

(20) Pattern for a human object in the perfective aspect

input: ... V DP _[+human]	DEP _{perfective} (P)	*TRACE	DEP (P)
a. ... V [P DP]	*!		*
☞ b. ... DP V-cl t		*	

Now let us turn to what happens to human objects in imperfective clauses. In the imperfective aspect, DEP_{perfective} (P) has no effect. The decision is made by the next highest constraint, *TRACE, which rules out candidate (b) where the object has moved out of the VP. This leaves candidate (a), with preposition insertion, as the winner:

(21) Pattern for Human Objects in the Imperfective Aspect

input: ... V DP _[+human] imperfective aspect)	DEP _{perfective} (P)	*TRACE	DEP (P)
☞ a. → ... V [P DP]			*
b. ... DP V-cl t		*!	

To sum up this section, the aspect split in Palauan can be analyzed like the aspect split in Hindi, in the sense that both involve contextually restricted versions of an independently motivated faithfulness constraint. Moreover, the context that is specified in both languages is [+perfective]. The languages differ only in which type of faithfulness constraint is involved, IDENT or DEP, and what these constraints apply to, ergative Case or prepositions.

From a functional point of view, this parasitic marking of aspect in Palauan is the only way that aspect is marked in the perfective. And unless a marked object is involved, perfective aspect is not marked at all. In the imperfective aspect, there is an aspect morpheme, so the parasitic marking of aspect by preposition insertion marks aspect redundantly.

We will now turn to the third type of aspect split to be discussed in this paper, a split that involves agreement in Yucatec Maya. I will argue that this split is the result of a DEP constraint that applies to agreement.

5 Yucatec Maya

Yucatec Maya also manifests an aspect split, but this one involves agreement. There is an additional complication in that this aspect split is limited to intransitive clauses (Nida and Romero 1950, Bricker 1981, Krämer and Wunderlich 1999, Bohnemeyer 2004).

Let us begin with transitive clauses for comparison, and to get an idea of what the basic agreement pattern looks like. In both aspects, the subject of a transitive clause is cross-referenced with an agreement series traditionally labeled ‘Set A’, while the object is cross-referenced with a form from ‘Set B’. The use of these neutral labels is related to the fact that there is a controversy as to whether the Mayan languages are ergative or not. Fortunately, the formal analysis of the aspect split that I will propose is not crucially affected by this controversy. At the end of this section, I will show how the analysis would differ if Yucatec Maya is ergative, but I will assume until then that it is an ordinary nominative-accusative language, cross-referencing its transitive arguments much as in Romance languages, with true agreement for subjects and syntactic clitics for objects. I have reglossed the ‘Set A’ and ‘Set B’ forms accordingly. The true agreement forms (Set A) precede the verb and attach either to a higher

functional node, or prefix to the verb. The syntactic clitics (Set B) suffix to the verb. As we see in the following transitive examples, the pattern is the same in both the perfective and imperfect aspect:

- (22) Táan uy- il -ik -en [imperfective aspect]
 DUR 3rdAGR-see-IMPERF-1stCL
 ‘He is seeing me.’ (Bricker 1981 (1), reglossed)

- (23) T- inw- il- ah -eč [perfective aspect]
 COMPL- 1stAGR-see-PERF-2ndCL
 ‘I saw you.’ (Bricker 1981 (2), reglossed)

Intransitives in the imperfective aspect cross-reference their subjects in the same way as transitive clauses, with true agreement (Set A), regardless of what verb is used.

- (24) Táan in- k’uč -ul. [imperfective aspect]
 DUR 1stAGR-arrive-IMPERF
 ‘I am arriving.’ (Bricker 1981 (4), reglossed)

- (25) K -in meyah. [imperfective aspect]
 INCOMPL -1stAGR work
 ‘I am working.’ (Krämer and Wunderlich 1999 (1c), reglossed)

The surprise comes when one examines intransitives in the perfective aspect. Here, we see the manifestation of the aspect split: all intransitive subjects are cross-referenced by syntactic clitics (Set B forms) in the perfective aspect.

- (26) H- k’uč -ø -eč [perfective aspect]
 COMPL- arrive-PERF -2ndCL
 ‘You arrived.’ (Bricker 1981 (4), reglossed)

- (27) H- meyah-n-ah -en
 COMPL work-N -PERF -1stCL
 ‘I have worked.’ (Krämer and Wunderlich 1999 (1d), reglossed)

We thus need to account for two different dimensions of this pattern, the aspect split itself, and the fact that this aspect split is neutralized in transitive

clauses. Let us begin with the transitivity effect, because it is the result of independent factors.

5.1 Why the Aspect Split is Neutralized in Transitives

To understand why the aspect split in Yucatec Maya is neutralized in transitive clauses, we need to return to the big picture discussion in the introduction of this paper regarding the nature of parasitic marking. Parasitic marking is possible only when the grammar allows a choice of elements in a particular context, so that parasitic marking can manipulate this choice in order to code something independent, such as aspect. In Hindi, the aspect split manipulates the choice between ergative and nominative Case for a subject in order to parasitically mark aspect; but for verbs that cannot license ergative Case to begin with, the aspect split is neutralized. In Palauan, aspect manipulates a choice of ways to deal with ‘marked objects’; in clauses where there is no object, or the object has unmarked features, parasitic marking of aspect is not possible. Thus the short answer to why the aspect split in Yucatec Maya is neutralized in transitive clauses is that there is no choice as to which series to select when cross-referencing a transitive subject.

Why is there no choice of cross-referencing forms for transitive subjects? The answer has to do with the nature of these cross-referencing forms and independent constraints on their use. (I will give an answer here based on the assumption that Yucatec Maya has a nominative-accusative abstract Case system, and that the Set A forms are true agreement and the Set B forms are syntactic clitics.) In a language with a nominative-accusative Case system, true agreement is restricted to nominatives/subjects. Thus in a transitive clause, there are only two options: either the subject is cross-referenced by true agreement and the object is cross-referenced by a syntactic clitic, or else both arguments are cross-referenced with syntactic clitics. The second option is ruled out in

Mayan languages because syntactic clitics are limited to one per clause. (This limitation is seen in other languages such as Chichewa and Selayarese.) That leaves only one option for the cross-referencing pattern of transitives in Yucatec Maya, the pattern we see: true agreement with the subject and a syntactic clitic cross-referencing the object.

The interesting question becomes then, why is there a choice of cross-referencing forms for an intransitive subject? The answer is that syntactic clitics are not limited to objects. Syntactic clitics can potentially cross-reference any argument (although they must match that argument in (abstract) Case). Although we don't see nominative clitics in languages that always use true agreement to cross-reference subjects, they do exist cross-linguistically. I argue that the syntactic clitics in Yucatec Maya (Series B), although they are not morphologically marked for Case, actually include forms with both nominative and accusative abstract Case.

Given this choice of cross-referencing forms that the grammar allows for intransitive subjects, parasitic marking can exploit this choice in order to code aspect.

5.2 The Formal Account of the Aspect Split in Yucatec Maya

In intransitive clauses, there is only one argument to cross-reference, but two series of cross-referencing elements to choose from, true agreement and syntactic clitics. Many familiar languages always choose true agreement. In those languages, there is a preference for using true agreement rather than a syntactic clitic, whenever possible. This preference is encoded in the constraint ranking that places the markedness constraint prohibiting syntactic clitics higher than the markedness constraint that prohibits true agreement: *CLITIC >> *AGREE. I argue that Yucatec Maya shares this basic ranking, but that there is a

referencing elements. Candidate (a), which adds no cross-referencing element, violates XREF, and is eliminated. Candidate (b) has a cross-referencing element, true agreement, but because the context is the perfective aspect, using true agreement is ruled out by DEP_{perfective} (Agr). That leaves candidate (c) with a syntactic clitic as the winner, even though it violates a lower ranked constraint, *CLITIC:

(30) Intransitives in the Perfective Aspect

Input: perfective V DP	XREF	DEP _{Perf} (Agr)	*CLITIC	*AGREE
a. V DP	*!			
b. Agr V DP		*!		*
☞ c. V Clitic DP			*	

Now, let us turn to the imperfective aspect. Here, the (a) candidate is eliminated for the same reason. But here the DEP constraint has no effect because the aspect is not perfective. So candidates (b) and (c) are still in the running. But *CLITIC then eliminates candidate (c) which has a syntactic clitic. This leaves candidate (b) with agreement as the winner.

(31) Intransitives in the Imperfective Aspect


Input: V DP	XREF	DEP _{Perf} (Agr)	*CLITIC	*AGREE
a. V DP	*!			
☞ b. Agr V DP				*
c. V Clitic DP			*!	

For completeness, let us examine the situation in transitive clauses. To simplify things, let us put aside all candidates that violate XRef because one or both of the arguments are not cross-referenced. There are only two possibilities for cross-referencing both arguments: one is to use two syntactic clitics, and the other is to use true agreement for the subject and a syntactic clitic for the object. The other two logical possibilities are ruled out under the assumption that I

maintain here that there is no true ‘object’ agreement and true (‘subject’) agreement can only cross-reference the nominative/subject. What makes the decision between the only two possible candidates in transitive clauses is an independently motivated constraint that prohibits more than one syntactic clitic per clause.⁸ I will refer to this constraint here (descriptively) as ‘limit one clitic’.⁹

In a transitive clause in the perfective aspect in Yucatec Maya, this ‘limit one clitic’ constraint outranks the contextually restricted dep constraint that would prohibit the use of true agreement in the perfective aspect. Thus the candidate in (a) with two syntactic clitics is eliminated before the contextually restricted DEP constraint has a chance to have an effect:

(32) Transitive (perfective aspect)

Input: ... V DP DP	Limit one clitic	DEP _{Perf} (Agr)	*CLITIC	*AGREE
a. ... V-CL-CL DP DP	*!		**	
 b. ... Agr-V-CL DP DP		*	*	*

The same candidate wins in the imperfective aspect as well, and this is why the aspect split is neutralized in transitives.

Now let us turn to a related language that combines the aspect split of Yucatec Maya with a cross-cutting negative split.

6 A Negative Split in the Related Language Chontal

Chontal is a Mayan language with the same aspect split that Yucatec Maya has, but Chontal also has an overlapping negative split. Chontal cannot use

⁸ Other Mayan languages limit syntactic clitics to one per clause, as does Selayarese (See Woolford 2003)

⁹ I have argued elsewhere that this limit of one syntactic clitic per clause is due to the fact that only one syntactic clitic can be perfectly aligned to some edge (whatever edge it is that clitics align to in the particular language).

agreement in negative intransitives, regardless of the aspect (Knowles-Berry 1987). We see this Chontal negative split in the following imperfective examples, where agreement is used in the positive form, but a clitic is used in the negative:

- (33) Ki t -e. [Chontal]
 1stAGR come -IMPF
 ‘I come.’ (Knowles-Berry 1987 (67), reglossed)

- (34) Mač ʔu t -on.
 NEG PT come -1stCL
 ‘I don’t come.’ (Knowles-Berry 1987 (68), reglossed)

The pattern that these two overlapping agreement splits produce in Chontal is shown in the table below:

(35) The Intransitive Pattern in Chontal

contexts	Positive	Negative
Perfective	syntactic clitic	syntactic clitic
Imperfective	agreement	syntactic clitic

This pattern is the result of the additive effect of two contextually restricted DEP constraints. One is the same as we saw above in Yucatec Maya; it blocks true agreement in the perfective aspect. The other blocks true agreement in negatives:

(36) Contextually Restricted DEP Constraints Active in Chontal

DEP _{perfective} (Agr)	Blocks agreement in perfective clauses ¹⁰
DEP _{neg} (Agr)	Block agreement in negative clauses

6.1 Why the Additive Patterns in Chontal and Nepali are Different

Unlike the situation in Nepali, where the two splits combined to *increase* the contexts in which ergative Case occurs, the two Chontal splits combine to *decrease* the contexts in which true agreement occurs. This difference is predicted by the nature of the elements involved in these splits, in combination with the nature of the contextually constrained faithfulness constraints that produce these splits.

Ergative Case is an inherent Case, present in the input to syntax proper, and the constraints that produce the two ergative splits in Nepali are IDENT constraints which preserve this inherent Case in syntax. The additive effect of two constraints that preserve the ergative Case in some context is to preserve ergative Case in more contexts, as we saw in Nepali.

In contrast, the splits in Chontal involve true agreement, which is *not* present in the input to syntax proper. The faithfulness constraints that produce the two agreement splits in Chontal are DEP constraints, which prohibit any agreement in syntax that was not present in the input, and thus prohibit all agreement in syntax. The additive effect of two DEP constraints that prohibit agreement in some context is to prohibit agreement in *more* contexts.

¹⁰ The technical effect of these DEP constraints is to require any use of agreement in syntax proper to have a correspondent in the input to syntax. Since agreement never has a correspondent in the input to syntax (which I take to be the vP phase or the argument structure level), the actual effect is to block all agreement.

6.2 Chontal Constraint Ranking and Tableaux

The two DEP constraints that block agreement in Chontal are active because they are both ranked above the markedness constraint *CLITIC which blocks the alternative to agreement, syntactic clitics. Like Yucatec Maya, Chontal requires all arguments to be cross-referenced in syntax; a high ranked XREF constraint enforces this. Thus, when true agreement is blocked in some context, a syntactic clitic must be used instead.

We see the action of these constraints for a negative intransitive in the imperfective aspect in the tableau below. XREF eliminates candidate (a), the candidate with no cross-referencing at all. Because the example is in the imperfective aspect, the DEP constraint that applies in the perfective aspect does nothing. The DEP constraint that applies in negative contexts does apply, eliminating candidate (b) because it has true agreement. This leaves candidate (c) with a syntactic clitic cross-referencing the intransitive subject as the winner. The decision is made before the lower ranked *CLITIC has a chance to apply.

(37) Chontal Intransitives (negative, imperfective aspect)

input: neg V DP imperfective aspect	XRef	DEP _{perf} (AGR)	DEP _{neg} (AGR)	*CLITIC	*AGREE
a. neg V DP	*!				
b. neg Agr V DP			*!		*
☞ c. neg V-CL DP				*	

The tableau for a positive intransitive in the perfective aspect is similar, except that it is the DEP_{perf}(AGR) constraint that eliminates candidate (b) with agreement.

In positive intransitives in the imperfect aspect, neither DEP constraint applies. The decision between candidates (b) and (c) is thus made by the lower ranked *CLITIC, which eliminates the candidate with a syntactic clitic in (c), leaving the candidate in (b) with true agreement as the winner.

(38) Chontal Intransitives (positive, imperfective aspect)

input: V DP imperfective aspect	XRef	DEP _{perf} (AGR)	DEP _{neg} (AGR)	*CLITIC	*AGREE
a. V DP	*!				
☞ b. Agr V DP					*
c. V-CL DP				*!	

Let us now turn to transitives in Chontal.

6.3 Neutralization of Splits in Transitives in Chontal

Transitives in Chontal work exactly as in Yucatec Maya. The effect of both splits is neutralized in transitives, for the same reason. Let us look at this effect again in detail with a tableau.

For the reasons given in the discussion of Yucatec Maya above, the theory allows only two possible patterns for cross-referencing both the subject and object in a clause with a nominative-accusative (abstract) Case pattern.¹¹ The violable ranked constraints are thus limited to selecting between these two options. As in Yucatec Maya, the ‘limit one clitic’ constraint is high ranking, and makes the decision before either of the split-producing DEP constraints have a chance to act.

(39) Transitive (perfective aspect)

Input: neg V DP DP	Limit	DEP _{Perf} (Agr)	DEP _{neg} (AGR)	*CLITIC
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¹¹ If the Mayan languages actually have a covert abstract ergative Case system, as is usually assumed in the literature, the account of these splits would have the same formal character, although the details of the identity of the forms and the exact formulation of the contextually restricted DEP constraints would change. The assumption that Mayan languages have covert ergative Case systems is based on the fact that the surface pattern of agreement in most Mayan languages fits the typological definition of an ergative pattern, and it is commonly assumed that this is not possible unless the abstract Case system is ergative. However, that common assumption is incorrect. In Woolford 2003 I show that a constraint ranking of ‘limit 2 clitics’ >> *agree >> *clitic produces a superficial ergative agreement pattern in a language with a nominative-accusative abstract Case system.

	perfective aspect	one clitic			
	a. neg V-CL-CL DP DP	*!			**
☞	b. neg Agr V-CL DP DP		*	*	*

This neutralization in intransitives depends on the high rank of ‘limit one clitic’, above both dep constraints. This is one of the bits of information that must be learned in the acquisition process. Let us now turn to a discussion of how these bits of information might be conceived of by someone used to thinking about cross-linguistic differences in terms of parameters.

7 Parameters and Constraint Ranking

For those who are used to thinking of cross-linguistic differences in terms of parameters, some of the effects discussed in this paper could be accomplished with parameters that turn constraints on or off in a particular language. For example, one could set the parameter for XREF to ‘on’ in Chontal, but ‘off’ in Chinese, which has no cross-referencing. In Chontal, we could set the parameter for XREF to ‘on’, and the parameter *AGREE to off. But this on/off parameter setting would not do all the work that is needed to account for the patterns we have seen. For example, in Chontal, the constraint *CLITIC is active/on in some contexts, but inactive/off in other contexts.

A different way of thinking about what parameters do is to view parameters as setting the crucial ranking between pairs of constraints. After all, these bits of information are what children learn when they acquire language, according to the OT approach. Moreover, although we necessarily list constraints from left to right in the tableau format, there is no crucial ordering between some constraints; good work in OT phonology includes a chart of the crucial orders among constraints – the orders for which there is empirical evidence in the particular language under discussion.

Under this pair-ordering view of parameter setting, the parameters that a child must set for Chontal with respect to cross-referencing are the following:

(40) Parameter Settings in Chontal (Crucial Constraint Rankings)

- a. *CLITIC >> *AGREE
- b. XREF >> *CLITIC
- c. DEP_{perf}(AGR) >> *CLITIC
- d. DEP_{neg}(AGR) >> *CLITIC
- e. LIMIT ONE CLITIC >> DEP_{perf}(Agr)
- f. LIMIT ONE CLITIC >> DEP_{neg}(Agr)

A slightly different approach to such parameter setting would combine this approach with the on/off view above, so that constraints that are never violated in the language would be set at ‘on’, while constraints that are always violated are set at ‘off’, and settings for crucial rankings would be limited to those constraints that are sometimes obeyed and sometimes violated. Under this view, the parameters for Chontal would be as follows:

(41) Parameter Settings in Chontal

- XRef: on (on = undominated, always obeyed)
- LIMIT ONE CLITIC: on
- *AGREE: off (off = inactive in the language)
- DEP_{perf}(AGR) >> *CLITIC
- DEP_{neg}(AGR) >> *CLITIC

This latter approach may be easier for readers who work in the Minimalist Program to take in, and it might be supported theoretically if it turns out that certain constraints are set at ‘on’ or ‘off’ in the initial state of language acquisition.¹² Using this latter method of expressing the parameters makes it easy to compare the settings for complex patterns in related languages. For

¹² An added dimension/problem for this or any parametric approach which allows constraints/principles to be set at ‘on’ or ‘off’, is that it technically allows conflicting constraints/principles to both be set to ‘on’. However, even if children had both constraints set to ‘on’ at some point in the acquisition process, they would reset one as soon as they observed a situation in which the constraints conflict and one is violated.

example, the parameter settings for Yucatec Maya are just like those for Chontal, except that DEP_{neg} (AGR) is ‘off’, or ranked below *CLITIC .

8 Kinds of Aspect Splits

What kinds of aspect splits does this approach predict should be possible? All of the (aspect) splits discussed in this paper have one thing in common: they all result from the operation of contextually restricted IDENT or DEP constraints.¹³ If this is true in general, then the range of such splits will be determined by the variety of contextually restricted faithfulness constraints that can occur. This is, in turn, predicted by the range of elements that can be ‘plugged in’ to the two variable spots in these contextually restricted faithfulness constraints. One of these variables is the context that the action of the constraint is restricted to, and the other variable is the element that the constraint applies to.

(42) Variables in Contextually Restricted Constraints: context and element

IDENT_{context} (element)

DEP_{context} (element)

The splits we have seen in this paper involve only three types of elements: Case, preposition, and cross-referencing element. The contexts that have been involved include perfective, negative, and stage-level predicate. What additional contexts or elements might be referred to by such constraints remains an open question.

¹³ Some of the splits that are typically mentioned in the typological literature do not occur in syntax; instead, they only affect whether or not a morpheme is spelled out at PF. An example is the fact that ergative Case is not spelled out on first and second person pronouns in Dyrbal. Such PF splits are examples of the classic markedness effect in which a marked feature is not spelled out in the presence of another marked feature. An example of this in English is the fact that gender is spelled out on third person pronouns, but not on first and second person pronouns. See Woolford 2008.

9 Conclusion

In this paper, we have examined three diverse types of aspect splits, one involving Case, one involving agreement, and one involving preposition insertion. I have suggested that the function of such splits is to parasitically mark aspect. By parasitically mark, I mean that these splits never involve the addition of anything to the clause to mark aspect; instead, they involve either the removal of something that would otherwise be in the clause, or the preservation of something from an earlier level that would otherwise be removed from the clause. That is, parasitic marking of aspect involves the manipulation of the otherwise expected distribution of an unrelated element in order to mark aspect.

In formal terms, we can capture this limitation on aspect splits by confining their cause to the same family of constraints that produces similar splits in phonology (e.g. Beckman 1998): contextually restricted faithfulness constraints. These include IDENT constraints which preserve an element (e.g. ergative Case) from the prior level, and DEP constraints, which prohibit the insertion of an element (e.g. a preposition) or the use of an element that is not present at the prior level (e.g. agreement). In phonology, such constraints can be restricted to hold in contexts such as the onset of a syllable or in nouns. For the three aspect splits we have examined here, the context is the perfective aspect, but we have also seen cross-cutting restrictions involving negatives and stage-level predicates.

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