

# Theoretical approaches to alignment, with special reference to split/fluid-S systems

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## 1. Introduction

### 1.1. Key concepts

It is possible to identify three basic grammatical roles in any language: “S”, the only argument of a single-argument clause; and “A” and “P”, respectively the most agent-like and most patient-like arguments of a multi-argument clause (Payne 1997:133). The *alignment* of a linguistic system refers to the way in which these roles are grouped by morphosyntactic marking such as case (where the relationship is marked on the arguments themselves, prototypically on nouns or pronouns) or agreement (where the relationship of the arguments is indicated in the markers of their person, gender or number on the verb).

The two most common systems of (overtly) marking case or agreement in the world’s languages are: (i) (*nominative-*)*accusative*, in which S is associated with the same marking as A, while P receives distinct marking (example (1)); and (ii) *ergative(-absolute)*, in which S and P are associated with the same marking with distinct marking for A (example 2):

#### (1) Latin

a. *serv-us laborat*

slave-NOM works

“the slave (S) is working”

b. *serv-us femin-am amat*

slave- NOM woman-ACC loves

“the slave (A) loves the woman (P)”

#### (2) Yup’ik (Eskimo, Alaska)

a. *Doris-aq ayallruuq*

Doris-ABS travelled

“Doris (S) travelled”

b. *Tom-am Doris-aq cingallrua*

Tom-ERG Doris-ABS greeted

“Tom (A) greeted Doris (P)”

(Payne 1997:135)

The case which marks both S and A is conventionally called “nominative”; that which marks both S and P will here generally be called “absolute”, though it too can also be referred to as “nominative”. The case which (of the “core arguments” S, A and P) marks only A is called “ergative”; that which (again of the core arguments) marks only P is called “accusative”. The cases which mark the core arguments can be referred to collectively as the “core cases”.

In a third alignment type, *tripartite*, S, A and P are all associated with distinct marking:

(3) Wangkumara (Pama-Nyungan, Australia)

a. *kaŋa-ia palu-ŋa*

man-NOM die-PAST

“the man (S) died”

b. *kaŋa-ulu kalka-ŋa ʔiʔi-ŋaŋa*

man-ERG hit-PAST dog-ACC

“the man (A) hit the dog (P)”

(Song 2001:145-6)

A fourth type, known by various names including *split-S*, *active(-inactive)*, *active-stative*, *agentive(-patientive)* and *split intransitive* (Dixon 1994:83), distinguishes two sorts of intransitive argument S: typically one (“S<sub>a</sub>”) which is associated with the same marking as A, and one (“S<sub>p</sub>”) associated with the same marking as P:

(4) Central Pomo (Pomoan, USA)

a. *ʔa· q<sup>h</sup>adé·čʻ*

1SG.AGT fight

“I (S<sub>a</sub>) fight”

b. *ʔa· mú·ʔu ʔé·čyad iw*

1SG.AGT 3SG.PAT chased\_away

“I (A) chased him (P) away”

c. *ʔo· ló·ya*

1SG.PAT fell

“I (S<sub>p</sub>) fell”

d. *mu·l ʔo· ʔé·čyad iw*

3SG.AGT 1SG.PAT chased\_away

“He (A) chased me (P) away”

(Mithun 1991:518-9)

Here, S<sub>a</sub>/A case or agreement will be generally referred to as “agentive” (AGT in glosses) and S<sub>p</sub>/P case or agreement as “patientive” (PAT in glosses), although other terms are also found in the literature. Other variants of the split-S system do exist: e.g. Yawa (isolate, Papuan) has one set of markers for S<sub>p</sub> and P, a second set for S<sub>a</sub> and a third set for A (Jones 1986:42).

*Fluid-S* systems can be considered a subtype of split-S systems in which a significant number of intransitive verbs may be associated with either S<sub>a</sub> or S<sub>p</sub> marking:

(5) Eastern Pomo (Pomoan, USA)

a. *há· ba·téčki·*

1SG.AGT got\_bumped

“I (S<sub>a</sub>) got bumped (on purpose)”

b. *wí ba·téčki·*

1SG.PAT got\_bumped

“I (S<sub>p</sub>) got bumped (accidentally)” (McLendon 1978:3)

Other alignment types also seem to exist, e.g. hierarchical (Siewierska 2011) and a type that groups A and P together, with distinct marking for S (Song 2001:146). These types, which are rare, will not be considered here.

Note also that languages very frequently show mixed behaviour of two or more of the four main types discussed above. Common “split ergative” patterns include: accusative case morphology on pronouns with ergative morphology on full noun phrases (and similar person/animacy-based splits); accusative alignment in some tenses/aspects, with ergative in others (Coon 2012 argues that these can be reduced to an aspectual basis alone); and accusative case co-existing with ergative agreement. In many languages split-S marking also coexists with other patterns.

*1.2. Outline of argument*

The main purpose of this dissertation will be to evaluate various of the theoretical approaches to alignment that have been proposed in the literature and decide which, with extensions as necessary, provides the most promising account of cross-linguistic variation in alignment. Section 2 will examine a number of approaches, including consideration of how they account for or might be extended to account for tripartite systems, and select certain as particularly promising.

A secondary purpose, which naturally derives from and impacts the first, is to attempt to account theoretically for split/fluid-S systems. This will be the focus of sections 3, 4 and 5. Section 3 will make some preliminary arguments, relevant to the subsequent sections, to the effect that these systems should be considered a variant on ergative systems. Section 4 will evaluate a proposed analysis of

these languages in terms of the phenomenon of unaccusativity, in order to consider the viability of incorporating this analysis into the theories previously selected as promising. Section 5 will propose an alternative analysis to split/fluid-S systems based in the cartographic approach to syntax, before employing this as a further diagnostic for choosing between the theories selected as most viable in section 2. Section 6 will conclude.

## **2. Existing theoretical approaches to alignment**

### *2.1. Case and agreement*

Whilst cross-linguistic variation in case alignment has been treated substantially in the theoretical literature, few researchers have approached agreement alignment in any depth (one notable exception is Woolford (2000, 2006a, 2008)). Partly for this reason, and partly for reasons of space, the analysis here will concentrate primarily on case alignment. However, agreement cannot be overlooked entirely, particularly as split/fluid-S systems (to be discussed in depth in sections 3, 4 and 5) seem to manifest more frequently in agreement rather than in case (Dixon 1994:76; Comrie 2011a,b; Siewierska 2011).

Jelinek (1984:43-4) argues that “agreement” morphemes in some languages are actually case-marked pronouns and function as arguments of the verb. Not dissimilarly, Baker (1996:86, 190) argues that agreement morphemes in some languages “absorb” the cases which would otherwise be assigned to their co-referents. This sort of approach can provide a provisional account of split/fluid-S agreement, to be adopted here, by positing that it reflects case directly. Baker’s proposal is in fact based primarily on evidence from a split-S language, Mohawk. It should be noted, however, that neither Jelinek nor Baker claim that this sort of analysis is true of agreement in all languages, and so its general applicability to split/fluid-S agreement should be viewed with caution.

One objection to this type of analysis might be that there exist languages where split/fluid-S agreement co-exists with other types of case marking, e.g. Kewa (Trans-New Guinea) has split-S agreement with ergative-absolutive case, and Koasati (Muskogean, USA) has split-S agreement with nominative-accusative case (Comrie 2011a, Siewierska 2011). One way of allowing for the argument that “agreement” morphemes actually take case in these languages is to posit that they have a type of person/animacy-based split whereby the agreement morphemes are associated with one type of case marking and full noun phrases with another. This is in fact the analysis of Jelinek (1984:44-6) for Warlpiri (Pama-Nyungan, Australia), the claim being that agreement morphemes are pronouns that take nominative-accusative marking whereas full noun phrases take ergative marking.

## 2.2. Early approaches

A number of early approaches to ergativity assumed that ergative and absolutive arguments could be analysed uniformly as either subjects or objects (Aldridge 2008a:969). This section will summarise some of the discussion of this issue given in Aldridge (2008a:969-74). Marantz (1981, 1984) and Levin (1983) analyse absolutes as subjects: accusative and ergative languages differ in that the assignment of semantic/grammatical roles is reversed, as shown in table 1:

	<b>Accusative languages</b>	<b>Ergative languages</b>
<b>Agents</b>	External arguments θ-role assigned by predicate	Internal arguments θ-role assigned by VP
<b>Themes/patients/goals</b>	Internal arguments θ-role assigned by VP	External arguments θ-role assigned by predicate

*Table 1: assignment of roles in different language types according to Marantz (1981, 1984) and Levin (1983).*

Aldridge (2008a:970) criticises this approach on the grounds that in the “vast majority” of ergative languages A arguments function as syntactic subjects, e.g. by anteceding reflexives and functioning as imperative addressees. Baker (1997:80-2) provides similar arguments against this approach: e.g. that even in languages with a high degree of “syntactic ergativity” only P arguments can be incorporated into the verb.

Others have treated absolutes as objects, for instance Bobaljik (1993) argues that the functional head AgrS assigns one case (ergative/nominative) and AgrO assigns another (accusative/absolutive), and that languages are parametrised by whether AgrS or AgrO is employed as a case assigner in intransitives. These approaches, however, do not account well for the “subject” properties of absolutes, for instance the A'-movement restriction whereby S and P can be relativized but A is not eligible (Aldridge 2008a:974) – in accusative languages with a similar restriction, it is “subjects” (S and A) that can be relativized and P that cannot (Keenan & Comrie 1977).

Another problem with such approaches is that they are not easily extended to tripartite systems. Tripartite languages by definition have three “core” cases, one each for S, A and P, which the two-case approaches discussed above cannot account for, at least not without significant revision. Assuming – reasonably – that a unified theory of alignment is desirable, these approaches can therefore probably be rejected, and they will not be considered here again.

### 2.3. Aldridge and Legate

Aldridge (2004, 2007a, 2008a, 2008b, 2012) and Legate (2002, 2006, 2008) present similar proposals according to which in addition to the “structural” nominative (or absolutive) and accusative cases there is also a separate, “inherent” ergative case<sup>1</sup>. Note also that Goddard (1982) presents a similar approach to Legate’s.

Both Aldridge and Legate assume the standard Probe-Goal-Agree model of case assignment in accusative languages, as given in Chomsky (2000). They also assume a type of ergative languages where “absolutive” (which can also be called “nominative”) case is uniquely assigned by the functional head T (Aldridge 2008b:1444fn., Legate 2008:56). The two approaches differ slightly in regard to a second type of ergative language. For Aldridge, intransitive T and transitive *v* both assign “absolutive” case in this type; for Legate, these are separate structural cases (“nominative” and “accusative”) that share a common morphological realisation. The approaches also differ on whether transitive T has a case feature to assign: Aldridge argues it does not, Legate that the feature exists but is not valued on any argument.

These approaches are summarised in table 2 below. A dash (–) signifies that a head does not assign case; *trans* and *intrans* are abbreviations for “transitive”/ intransitive”.

	nominative type	ergative type I	ergative type II	
			Aldridge	Legate
$T_{trans}$	nominative	absolutive	–	nominative (not assigned)
$T_{intrans}$	nominative	absolutive	absolutive	nominative (realised as “absolutive”)
$v_{trans}$	accusative	ergative (inherent)	ergative (inherent), absolutive	ergative (inherent), accusative (realised as “absolutive”)
$v_{intrans}$	–	–	–	–

Table 2: case assignment in three language types according to Aldridge and Legate.

Both approaches might easily be extended to tripartite case marking. One of the ways in which languages are (micro-)parametrised in Aldridge’s theory is into those in which (transitive) *v* assigns

<sup>1</sup> Definitions of “inherent” case vary, but diagnostics identified by Woolford (2006b:117-23) that distinguish it from “structural” cases like nominative and accusative include preservation under movement – e.g. in raising constructions – and preservation in the external subject position, and a close connection with thematic roles. The orthographic distinction between abstract/structural “Case” and inherent/morphological “case” is not employed here as it adds little to the discussion and as the status of a given Case/case as one or the other is sometimes unclear: e.g. analyses differ in their characterisation of ergative.

accusative, and those in which it assigns (inherent) ergative. It might also be expected that there are languages in which transitive *v* can assign both these cases: this would account for tripartite systems. Extension of Legate's approach is even simpler: these languages can be analysed as possessing "ergative type II" systems in which the morphological syncretism of the nominative and accusative does not occur.

Both these proposals for analysing tripartite languages make clear predictions regarding them: as T is not involved in case assignment in transitive clauses, both ergative- and accusative-marked arguments can be expected to appear in transitive non-finite clauses; however, assuming non-finite T cannot assign case, "nominative" would not be expected on intransitive arguments in non-finite clauses.

In sum, these approaches appear to be very successful at accounting for a range of different language types. Their possible relevance to a further type, that of the split/fluid-S languages, will be considered below. Because of the similarity of the approaches, and the difficulties in choosing between them, they will primarily be treated as variants of a single approach from now on, referred to as the "Aldridge/Legate" approach or similar.

#### 2.4. *The dependent case approach*

Baker (2012), based on Marantz (1991), presents a schema of dependent case assignment, where XP, R, ZP and WP are "parameters for variation":

- (6) "If XP bears c-command relationship R to ZP in local domain WP, then assign case V to XP." (Baker 2012:8)

The following parametrisations of the above schema are relevant to the current discussion (Baker 2012:10-13):

- (7) "If XP is c-commanded by ZP in local domain WP, then assign accusative to XP."  
– accusative languages
- (8) "If XP c-commands ZP in local domain WP, then assign ergative to XP."– ergative languages
- (9) "If XP c-commands ZP in local domain WP, then assign ergative to XP and accusative to ZP." – tripartite languages
- (10) "If XP c-commands ZP in local domain WP, then [do nothing]." – "neutral" languages

A "default case" is available to arguments not case-marked by their c-command relation to another argument (Baker 2012:13). This is the origin of "nominative" and "absolutive" case.

One clear advantage of this approach is its ability to account reasonably elegantly for a number of different case systems, including accusative, ergative and tripartite. Alongside the Aldridge/Legate model, it can be considered one of the most promising approaches to case alignment variation. The question of split/fluid-S alignment and its relation to these theories will be the focus of sections 3, 4 and 5.

### *2.5. The split ergativity problem*

A key difficulty posed for theoretical approaches to alignment is to account for the observed split ergativity patterns. This subsection will demonstrate that these phenomena are somewhat problematic for both the Aldridge/Legate approach and Baker (2012), and that they therefore cannot be employed as a diagnostic for choosing between them.

First consider person/animacy-based splits. Aldridge (2007b) manages to find a possible explanation for these not in terms of her own framework, but only by employing a slight variation of Legate's theory. This does provide a fairly good account of the phenomenon, as it can be attributed to purely morphological variation, although it might be objected that this does not really solve the problem but merely moves it to a different domain. Baker's approach can also account for this variation by stipulating that different types of "XP" are differently parametrised, although this again is not a "deep" explanation.

A good theory should also account for aspect-based split ergativity. Aldridge and Legate's approach might account for this with a stipulation that *v* only assigns ergative in certain aspects, but this is somewhat arbitrary and does not explain why it is always past or perfective contexts that are ergative in languages with such a split (Dixon 1994:99). Baker (2012:53) suggests that AspP may be one of the local domains that affects case assignment, thus explaining this type of split, but does not go into detail.

A number of other attempts have been made to account for split ergativity, although perhaps none is fully satisfactory. The analysis of Coon & Preminger (2012), for example, relies heavily on the positing of covert functional layers for which it is not clear if there is much independent motivation. It is possible that person/animacy-based splits are linked to the phenomenon of "differential object marking", where the case-marking of a direct object may vary according to factors such as animacy and definiteness (Aissen 2003:436), but this does not in itself constitute an explanation.

It is also not immediately clear how, if at all, the approaches of Aldridge/Legate and Baker (2012) might be extended to split/fluid-S systems. These systems will be the focus of the next three sections.

### 3. Split/fluid-S systems: preliminaries

#### 3.1. Extending the approaches

Unlike the split ergativity patterns just discussed, the viability of extending the approaches of Aldridge/Legate or Baker (2012) to split/fluid-S systems does provide a potential diagnostic for selecting one approach over the other. The most appealing analysis will be one which takes the way these approaches account for a particular alignment type already discussed and extends it in some slight way. Two main possibilities of this type present themselves:

- (11) Split/fluid-S languages are basically similar to *nominative-accusative languages*; however, *accusative* (or an accusative-like case) can be assigned to certain arguments of intransitive verbs subject to clearly defined conditions.
- (12) Split/fluid-S languages are basically similar to *ergative-absolutive languages*; however, *ergative* (or an ergative-like case) can be assigned to certain arguments of intransitive verbs subject to clearly defined conditions.

The next two subsections will discuss motivations for preferring analysis given in (12) over that in (11). Arguments will be made firstly from a general typology of case marking morphology and secondly from the specific morphological facts of a single language (Georgian).

#### 3.2. Typology of case marking

The following generalisations can be drawn with regard to morphological case marking patterns (Dixon 1994:57):

- (13) If a nominative-accusative language has overt morphological marking for only one of nominative or accusative, it will be the accusative which has this marking.
- (14) If an ergative-absolutive language has overt morphological marking for only one of ergative or absolutive, it will be the ergative which has this marking.

These can both be summarised in (15), although this cannot be extended to split-S languages:

- (15) If a language has overt morphological marking for only one of its core cases, it will be the case used for the S argument that lacks overt marking.

In languages with split-S case marking that can be analysed as having only two core cases, one of which is morphologically unmarked, it seems generally (possibly always) to be the case used for A and S<sub>a</sub> that is morphologically overt. Languages for which this is true include Basque, Lhasa Tibetan and Laz.

In Basque, the “absolutive” is marked with a zero ending and the “ergative” with an ending *-k* in certain aspects (Trask 1997:92, Saltarelli 1988:146-7, Coon & Preminger 2012:7). The “ergative” can be considered an agentive case in those dialects where it is found with the arguments of some semantically intransitive verbs (Aldai 2009:785-6):

(16) a. *Peru-k sagarr-a jan du*  
 Peter-AGT apple-DET eaten has  
 “Peter has eaten the apple”

b. *Peru-k dantzatu du*  
 Peter-AGT danced has  
 “Peter has danced”

c. *Peru-Ø erori da*  
 Peter-PAT fallen is  
 “Peter has fallen”

In Lhasa Tibetan, the “absolutive” (patientive) is marked with zero and (on first person arguments) the “ergative” (agentive) with *-s*, although it is optional in imperfective and future contexts (DeLancey 1984:132-3):

(17) a. *ŋa-s stag-Ø bsad-payin*  
 1SG-AGT tiger-PAT kill-PERF.VOL  
 “I killed a tiger”

b. *ŋa-s ŋus-payin*  
 1SG-AGT cry-PERF.VOL  
 “I cried”

c. *ŋa-Ø śi-byuŋ*  
 1SG-PAT die-PERF.INVOL  
 “I died”

In Laz (Kartvelian, Turkey/Georgia), likewise, the “narrative” (agentive) case used for  $S_a$  and  $A$  is marked with *-k*; the case used for  $S_p$  and  $P$  is unmarked (Harris & Campbell 1995:241):

(18) a. *amu-k t'ufeyi-Ø doxazyu*  
 3PS:MASC-AGT gun- PAT prepared  
 “he prepared a gun”

b. *joyo-epe-k-ti lales*  
 dog-PL-AGT-also bark  
 “the dogs barked”

c. *bee-Ø dirdu*  
 child- PAT grow  
 “the child grew”

Recall that in ergative case systems, it is the ergative (the case used for A arguments) which is more likely to take overt morphological marking. In split-S languages, too, it appears that where one of the agentive and patientive cases takes overt marking, this marking goes to the agentive (the case used for A arguments, and also in these languages for S<sub>a</sub>). Such marking is what would be expected if the agentive is best analysed as basically an ergative case or some sort of variant on it. By contrast, if the agentive were a nominative case, and the patientive basically an accusative or something similar, the latter might be expected to take the overt marking. No systems of this type are known to the author.

### 3.3. Georgian

Georgian has a split system which is analysed by Harris (1981) as nominative-accusative in “Series I” and “Series III” and split-S in “Series II” (these labels refer to various groups of tense/mood/aspect paradigms: see Harris 1981:46-7 for details). The distribution of cases in this system, using the case labels given by Harris (1981:243-4), is as follows:

	<b>Series I, III</b>	<b>Series II</b>
<b>S<sub>a</sub></b>	nominative	ergative
<b>S<sub>p</sub></b>	nominative	nominative
<b>A</b>	nominative	ergative
<b>P</b>	dative	nominative

*Table 3: case assignment in Georgian according to Harris (1981).*

Two noteworthy points can be made here. Firstly, the same case (“nominative”) is used for S/A in Series I/III as for S<sub>p</sub>/P in Series II. Note that in Aldridge’s and Legate’s approach, nominative and absolutive can (in some languages) be considered to be essentially the “same” case at an underlying featural level, because they are both seen as the structural case assigned by T. This suggests the “nominative” case in Series II is basically an absolutive, used in opposition to a case which is similar

to the ergative but which can, however, occur on  $S_a$  arguments. Secondly, if Harris's "dative" is taken to be an instantiation of accusative case (as suggested by the fact that of the core functions it is used only for P), then it is notable that this case does not occur for any of the core functions in Series II, again suggesting that this series does not have a variant on a nominative-accusative system. It can be concluded therefore that Series II in Georgian represents the same type of system as that seen for the languages considered in subsection 3.2, suggesting again that at least some split-S systems can be best analysed as variants of ergative systems in some way.

### *3.4. Theoretical consequences*

The findings of this section suggest that split/fluid-S systems are best analysed as a variant on ergative ones. Therefore, it is sensible to seek an analysis that is either a variant on the Aldridge/Legate analysis of ergative languages presented in subsection 2.3, or one that is a variant of Baker's (2012:11) parametrisation of the case assignment schema for ergative languages, reproduced as (19) below:

(19) "If XP c-commands ZP in local domain WP, then assign ergative to XP."

If the Aldridge/Legate analysis is adopted, it is possible that split/fluid-S systems may be variants on either type I or type II ergative systems. The identification which of these to which a given language belongs will not be a goal here; cross-linguistic variation is possible if not likely.

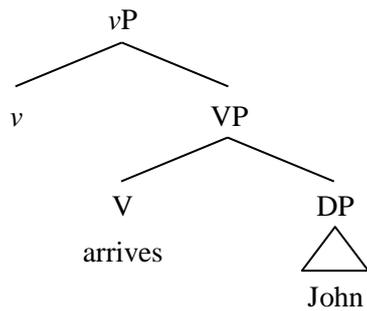
## **4. Split/fluid-S and unaccusativity**

### *4.1. The unaccusative hypothesis*

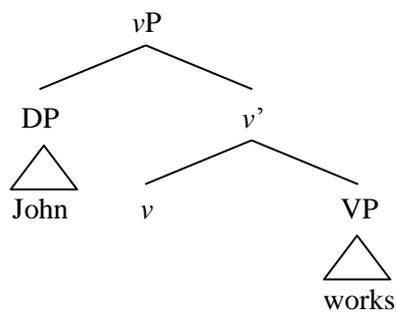
This section will consider the proposal that split- and/or fluid-S marking can be connected to the "unaccusativity" of the verbs in question. If this proposal were correct, it would be natural to attempt to integrate it into more general models of alignment in some way.

The "unaccusative hypothesis" was first formulated in the framework of Relational Grammar by Perlmutter (1978) and later re-expressed in standard generative terms by e.g. Burzio (1986). The claim of the hypothesis in these latter terms is that the argument of some intransitive verbs is base-generated as the complement of the verb – "unaccusative" verbs as in (20) – whereas for other intransitive verbs the argument is base-generated in a higher position, e.g. the specifier position of  $vP$  – "unergative" verbs as in (21). Unaccusative arguments therefore parallel the objects of transitive verbs and unergative arguments their subjects.

(20) Unaccusative



(21) Unergative



One potential analysis of split-S alignment in at least some languages is that the arguments of unaccusative verbs receive “patientive” marking (whether through case assignment or verbal agreement or both) and the arguments of unergative verbs receive “agentive” marking. Fuller discussion of this hypothesis will be the focus of this section.

Evidence of a connection between unaccusativity and split-S systems comes from those languages, such as Waurá (Arawak, Brazil), which have a split-S system manifested in terms of word order. In Waurá, *S<sub>a</sub>* and *A* precede the verb, while *S<sub>p</sub>* and *P* follow it (Dixon 1994:77):

(22) a. *wekihi katumala-pai*

owner work:3SG-STATIVE

“the owner worked”

b. *usitya ikítsii*

catch\_fire thatch

“the thatch caught fire”

c. *yanumaka inuka p-itsupalu*  
jaguar kill:3SG your-daughter  
“the jaguar killed your daughter”

Other languages with similar word-order patterns include Tolai (Austronesian, Papua New Guinea) (Dixon 1994:76) and Ambonese Malay (Malay-based creole, Indonesia) (Donohue 2008:28). A possible analysis of this pattern is that internal (unaccusative) arguments do not move out of VP in these languages.

A number of authors have explicitly connected split-S patterns to unaccusativity. Harris (1981:235ff.) does so with regard to Georgian; Harris (1982:292) with regard to Laz, Eastern Pomo, Hidatsa (Siouan, USA), Dakota (Siouan, USA), Mohawk (Iroquoian, USA/Canada) and other languages. Rice (1991) connects split-S to unaccusativity in Slave (Athabaskan, Canada), and Legendre & Rood (1992) do the same for Lakhota (Siouan, USA).

#### 4.2. *Unaccusativity and existing theories*

An analysis of split/fluid-S that makes reference to unaccusativity might be incorporated into the Aldridge/Legate approach by stipulating that, in some languages, *v* may assign ergative case to external arguments in intransitive as well as transitive clauses (assuming, as argued in section 3, that split/fluid-S marking is to be treated as a variant on the ergative type). Unergative verbs would then be associated with agentive and unaccusative with patientive marking.

The dependent case approach cannot so obviously account for case differences between intransitive clauses, as one argument must exist in some sort of relation to another if a case other than the default is to be assigned. However, if the unaccusative analysis is adopted, Baker’s schema for the assignment of ergative case might also be applied to external arguments of unergatives provided the “cognate object” analysis of Hale & Keyser (1993) is also adopted. According to this analysis, unergatives arise from incorporation of an underlying nominal with a light verb. It can be hypothesised therefore that split-S systems differ from ergative ones only in that case assignment is sensitive to these underlying nominals in the former but not the latter.

It will be assumed that “agreement” reflects case assignment as discussed in section 2.1. The following subsections will test the viability of accounting for split/fluid-S systems in terms of unaccusativity.

#### 4.3. *The Auxiliary Selection Hierarchy*

Sorace’s (2000) Auxiliary Selection Hierarchy (ASH), formulated on the basis of languages from the Romance and Germanic families, ranks verbs on the basis of semantic factors regarding the probability of their taking the verbs otherwise translated as *be* or *have* as auxiliaries in the perfect

tense. Verbs at one end of the hierarchy select *be* and those at the other select *have*; those in the middle may be associated with either or both depending on the language. Languages differ on where they make the cut-off point between *have*- and *be*-selecting verbs. Used with intransitives, auxiliary *be* is generally taken to be diagnostic of unaccusativity in these languages, and auxiliary *have* of unergativity. The ASH is shown in Table 4, with examples from each class of verbs included. Verbs toward the top of the hierarchy are most likely to take auxiliary *be*, those toward the bottom most likely to take auxiliary *have*.

BE	Change of location	<i>come, arrive, leave, fall ...</i>	
↑ ↓	Change of state	<i>rise, become, decay, die, be born, happen, grow ...</i>	
	Continuation of a pre-existing state	<i>stay, remain, last, survive, persist ...</i>	
	Existence of state	<i>be, belong, sit, seem, be useful, please, depend on ...</i>	
	Uncontrolled process	<i>tremble, catch on, skid, cough, rumble, rain ...</i>	
	Controlled process (motional)	<i>swim, run, walk ...</i>	
	HAVE	Controlled process (non-motional)	<i>work, play, talk ...</i>

Table 4: the Auxiliary Selection Hierarchy (Sorace 2000).

The ASH provides one possible method of testing the hypothesis that split/fluid-S patterns are connected to unaccusativity. The prediction is that verbs which take one marking should all occur towards one end of the hierarchy, and verbs which take the other toward the opposite end, without overlap (except for verbs which can take both types of marking, as in “fluid” systems). Specifically, the proposals presented here suggest that verbs toward the unergative end of the hierarchy will be associated with agentive marking and those toward the unaccusative end with patientive marking.

Certain objections may be made to this approach. It can be argued that the ASH accounts for only one diagnostic of unaccusativity, which is relevant only in a restricted number of languages (all related or geographically contiguous). The ASH does, however, appear to be applicable to *ne*-cliticisation in Italian, and possibly also to quantifier floating in Japanese (where strong grammaticality judgements are found only with the “core” verbs – change of location verbs and non-motional processes) and diagnostics other than auxiliary selection in French (which again lead to stronger judgements with core verbs) (Sorace 2004:263-4). Sorace (2004:268) admits, however, that further research is needed in this area.

It is not necessarily to be expected that the results of one unaccusativity diagnostic will be the same as those of another. There are several examples of “unaccusativity mismatches” in the literature. In Dutch, verbs like *blijven* “stay” and *bloeden* “bleed” disallow prenominal past participles, like prototypical unergatives, but take *be* as a perfect auxiliary and do not permit impersonal passivisation, like unaccusatives (Alexiadou, Anagnostopoulou & Everaert 2004:9). 36 out of 100 randomly

selected verbs in Halkomelem (Salish, Canada) allow only causatives or only desideratives, in spite of the generalisation that unaccusatives allow neither and unergatives allow both; the exceptional forms are not completely semantically predictable (Gerds 1991).

It is possible, however, that some proposed criteria may not be valid diagnostics of unaccusativity at all. Kiparsky (2010:4-5), for example, argues that impersonal passivisation is not in fact a diagnostic of unaccusativity in Dutch, but sensitive to other factors. Therefore, while recognising that the applicability of the ASH to unaccusativity more generally cannot be taken for granted at this stage, it will be presumed here. This is in the spirit of the Universal Alignment Hypothesis (Perlmutter & Postal 1984:97), which entails that the unaccusative/unergative status of semantically equivalent verbs will be the same in all languages.

#### 4.4. *Split-S languages and the ASH*

Table 5 gives English translations of the verbs (as given in the sources from which they are taken) of six split-S languages, ordered according to the ASH.<sup>2</sup> (The languages selected are those on which sufficient data is available; no areal or genetic controls have been made.)

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<sup>2</sup> In tables 5, 7 and 8 **bolded** forms represent agentive verbs; *italicised* forms represent patientive verbs; ***bold italic*** forms have variable marking. Verbs in brackets are not mentioned directly by Sorace (2000); their column placing may in some cases be debatable. Yawa forms marked with question marks are not directly attested but, assuming they exist in the language, are agentive by implication of Jones (1986:43): see subsection 4.4.2.

	Unaccusative ←			→ Unergative			
	Change of location	Change of state	Continuation of a pre-existing state	Existence of state	Uncontrolled process	Controlled process (motional)	Controlled process (non-motional)
Georgian	<b>fall</b> <i>fall, go</i>	<i>grow, happen, be born</i>	<i>remain</i>	<i>be</i>	<b>cough</b>	<b>swim, run, walk</b>	<b>play, talk</b>
Yawa	<b>?go, ?fall</b>	<b>?die, ?grow</b>		<i>(be sad, be happy, be exhausted, be husky)</i>	<b>(cry)</b> <i>(remember, forget, snore)</i>	<b>walk</b>	<b>?play, ?talk</b> <i>(think, expect/ look forward to)</i>
Mohawk	<i>(go away)</i>	<b>grow, appear, die</b> <i>appear</i>		<b>(be strong, be tall, be ugly)</b> <i>(be sick, be full, be tired)</i>	<b>cough</b> <i>sneeze, tremble</i>	<b>swim</b>	<b>talk</b> <i>work</i>
Central Pomo	<b>arrive, go</b> <i>fall</i>	<i>die</i>		<b>(be alive, be careful)</b> <i>(be cold, be sick)</i>	<i>sneeze, tremble</i>	<b>swim</b>	<b>play, talk</b>
Lakhota	<b>come, arrive</b> <i>fall</i>	<i>die</i>		<b>be</b> <i>(be cold, be good, be sick)</i>	<b>cough, sneeze</b>	<b>swim, walk</b>	<b>play</b>
Guaraní	<b>arrive, come, go, fall</b>	<b>die</b>		<i>(be strong, be sick, be sleepy)</i>	<b>(get lost, get stuck)</b>	<b>swim, run</b>	<b>play</b>

Table 5: distribution of agentive and patientive verbs against the ASH in six languages. Data from Harris (1981:261-7) (Georgian), Mithun (1991) (Mohawk, Central Pomo, Lakhota and Guaraní), Jones (1986:41-3) (Yawa), Baker (1996:197, 212-3) (Mohawk) and Legendre & Rood (1992:383-4) (Lakhota).

The distribution of verbs in Caddo (Caddoan, USA) is closely similar to that in Central Pomo (based on data from Mithun 1991:526-7).

Of these languages, only Georgian's agentive/patientive distinction seems clearly to reflect an unaccusativity distinction. Although this conclusion could be an artefact of the patterning shown by the particular verbs on which data is available, Harris (1981:261-7) does provide a considerable list of Georgian verbs and the classes into which they fall, and this list does not appear to invalidate this position. (It should be noted, however, that Harris's split-S analysis of Georgian, adopted here, has been disputed – most prominently by Hewitt (1995), who argues for a more traditional ergative analysis.)

In the other languages correlation between the ASH and the agentive/patientive distinction is not so strong, although some similarities can be noted: for instance “controlled processes” seem nearly always to be agentive, as would be expected if agentive marking arose from unergativity, and typically unaccusative verbs such as *fall* and *die* are usually patientive in split-S languages. *fall* is also patientive in the Mandan (Siouan, USA) and Slave languages (Kennard 1936:9, Rice 1991:66), on which however there are not enough data for a fuller analysis – though note that both *arrive* and *go* are agentive in Mandan (Kennard 1936:9).

Particularly problematic are the data for Mohawk and Yawa (isolate, Indonesia). Certain categories of verb also do not fall where the ASH might predict in other languages. Each of these problems will now be considered in turn.

#### 4.4.1. Mohawk

Mohawk appears to have “agentive” and “patientive” verbs at most points of the hierarchy, although data is lacking in some instances: most particularly it is limited for change of location verbs. This suggests that the split-S system of this language has no connection to unaccusativity.

This is also the conclusion of Baker (1996). There are several separate tests for unaccusativity in Mohawk, for example only unaccusatives can incorporate their arguments and only unergatives allow benefactive forms with transitive agreement (Baker 1996:213-4). Other tests include the interpretation of the adverbial *ēso*, which varies between the two groups, causative morphology (with is found with unaccusatives but not unergatives) and the purposive morpheme (found with unergatives but not unaccusatives) (Baker 1996:214). The results of these tests do not align with the use of “agentive” or “patientive” morphology: both unergative and unaccusative verbs are found in both groups, as shown in Table 6 (*appear* appears twice because this meaning occurs with two different lexical items, each of which takes different agreement marking):

	Unaccusative	Unergative
Agentive agreement	<i>fall, grow, break, appear, stink, be big, be lazy, be black</i>	<i>plant, cry, eat, sing, sit down</i>
Patientive agreement	<i>appear, be jealous, be heavy, be angry, be healthy, be wet, be hard</i>	<i>work, yell, eat one's fill, laugh</i>

Table 6: unaccusativity and split-S marking in Mohawk (Baker 1996:212-13).

#### 4.4.2. Yawa

In Yawa “[t]he vast majority of intransitive verbs are of the active type” (Jones 1986:43). The small number of patientive verbs listed by Jones – the only ones available in her data – seem to cluster toward the unergative end of the hierarchy, rather than the unaccusative end as might be expected if a correlation between split-S and unaccusativity existed in this language. Verbs not in this list can be assumed to be agentive, provided they exist in the language. Although Yawa does have agentive verbs that appear to be unergative, such as *-andupana* “walk” (Jones 1986:41), overall the data is again severely problematic for the connection of split-S marking to unaccusativity, at least for this language.

#### 4.4.3. Change of location verbs

Contrary to the prediction made, in most of the languages considered the verbs *go*, *come* and *arrive* seem to pattern as agentive, though data is not available on all of these verbs in every language. Georgian may be an exception to this, although data is only available for *go*. Yawa also seems to be exceptional in that Jones (1986) does not list any of these verbs in her list of the dozen or so patientive verbs in that language. The only verb of this category listed for Mohawk in the sources consulted is the patientive *go away* (Mithun 1991:529).

The violations of the hierarchy are particularly problematic as Sorace (2000:860, 2004:258) considers the change of location verbs to be “core” unaccusatives: that is, those which are consistent in their unaccusative behaviour (for Sorace, in selecting auxiliary *be*). Two possible solutions might be presented, although neither is particularly satisfactory.

Firstly, given the semantic similarity of these verbs to the “motional controlled processes” (those meaning *walk*, *run* etc.) which Sorace places close to the unergative end of the hierarchy, it might be argued that is not implausible that the patterning of change of location verbs as unaccusative is a specifically Western European feature. In other languages they may pattern as motional processes (when controlled, as e.g. with *go*, *come* etc.) or else uncontrolled processes (e.g. *fall*) – though in this case *fall* would be ordered wrongly relative to *be* in Lakhota.

Secondly, whereas in Western European languages words which translated *go* etc. are inherently telic (presented as complete), some languages have atelic *go* verbs (e.g. Navajo (Athabaskan, USA) has both telic and atelic *go* verbs (Racy 2008:92)), leading to the possibility that this is also the case in the exceptional languages considered here; this is worth noting because telicity is one of the defining characteristics of the core unaccusatives mentioned by Sorace (2000:863).

Whilst either of these might potentially explain the apparent violations of the hierarchy, they are purely suppositional and there is an absence of convincing data in their favour. They will not be adopted here, therefore. The behaviour of these verbs thus again suggests split-S marking is not connected to unaccusativity in all languages.

#### 4.4.4. “Adjectival” verbs

The ASH does not directly account for verbs meaning *be sleepy*, *be happy* etc. as such concepts are typically expressed by adjectives in the Romance and Germanic languages. However, the natural place for them in the hierarchy seems to be in the “existence of state” category (note that Italian *servire* listed as part of this category by Sorace (2000:869) is translated by English *be useful*). If they are placed here, however, various problems arise. In Central Pomo, although some of these verbs are agentive, certain patientive verbs appear further to the unergative end of the scale, namely those denoting uncontrolled processes (*sneeze*, *tremble*). In Mohawk, which also has both agentive and patientive adjectival verbs, both agentive and patientive verbs appear on either side. In Guaraní (Tupian, Paraguay), where all such verbs are patientive, agentive verbs also appear on both sides – the agentive verbs closer to the unaccusative end are not restricted only to the volitional change of location verbs; they include, for example, *die* and *fall* (Mithun 1991:512). This violates the prediction that there should be no overlap between agentive and patientive verbs on the hierarchy except in the case of those which show “fluid” behaviour. Lakhota, which also has verbs of this type, is less problematic, although only if the change of location verbs are not considered.

One potential way of dealing with this apparent problem is to abandon the classification of these verbs in the “existence of state” category, and place them somewhere else on the hierarchy. It is worth noting that adjectives in European languages may share certain properties with unaccusative past participles: in French, for example, they take the same agreement suffixes and both unaccusative past participles and adjectives form predicates with *be*:

- (23) *elles*     *sont*             *venu-e-s*  
           3PL.FEM be.3PL.PRES    come-FEM-PL  
           “they came”

(24) *elles*      *sont*      *intelligent-e-s*  
3PL.FEM   be.3PL.PRES   intelligent-FEM-PL  
“they are intelligent”

This might suggest that “adjectival” verbs and adjectives ought best be placed at the extreme unaccusative end of the hierarchy. Whilst it might seem strange not to consider these verbs as “existence of state”, it is also peculiar that change of location verbs are not considered motional processes, and yet this analysis (for European languages at least) seems unproblematic: more specific semantic or other factors seem able to override more general ones in determining the unaccusativity of a given verb.

However, this analysis is inadequate. It does not account for those languages, such as Central Pomo and Mohawk, where adjectival verbs can be either agentive or patientive – the former verbs will still violate the prediction. It may be simplest to argue that these verbs, too, provide evidence that this hierarchy, or consideration of unaccusativity in general, is not appropriate for understanding split-S systems.

#### 4.5. *Fluid-S languages*

The previous subsection showed that, while split-S marking may be linked in some languages to unaccusativity, this does not appear to be the case universally. The ASH also seems variably relevant to fluid-S languages. Based on the data provided by Dixon (1994:80), verbs in Acehnese (Malayo-Polynesian, Indonesia) seem to fit the scale quite well, as shown in Table 7:

	Unaccusative ←		→ Unergative				
	Change of location	Change of state	Continuation of a pre-existing state	Existence of state	Uncontrolled process	Controlled process (motional)	Controlled process (non-motional)
Agentive marking					<b>cough,</b> <b>(vomit,</b> <b>dream,</b> <b>like)</b>	<b>(get up)</b>	<b>think</b>
Variable marking				<i>(be</i> <i>disgusted)</i>	<i>(suspect,</i> <i>be</i> <i>obedient)</i>		
Patientive marking	<i>fall</i>	<i>(explode)</i>					

Table 7: distribution of verbs against the ASH in Acehnese.

It is not possible to draw strong conclusions for this language in the absence of further data, however; in particular, information on the verbs *go*, *come*, *arrive* etc. would prove useful given the patterns observed in other languages.

Verbs in Tsova-Tush (Northeast Caucasian, Georgia) fit the hierarchy rather less well:

	Unaccusative ←				→ Unergative		
	Change of location	Change of state	Continuation of a pre-existing state	Existence of state	Uncontrolled process	Controlled process (motional)	Controlled process (non-motional)
Always agentive	<b>come</b>			<b>(live)</b>		<b>run, (walk/ wander)</b>	<b>talk, play (say, swear, bark)</b>
Predominantly agentive	<b>(rise up)</b>					<b>(run very fast, sneak up on)</b>	<b>(come together/ gather/ collect, get undressed, wash, prepare)</b>
Agentive/patientive equally frequent	<b>fall</b>	<b>(lose weight, get fat, hide)</b>				<b>fall over, roll, slip/slide</b>	
Predominantly patientive		<b>die, (become poor, drown, suffocate, get tired, burn)</b>				[“Controlled processes” when used with the agentive, “uncontrolled processes” with the patientive.]	
Always patientive	<b>grow</b>		<b>(freeze)</b>	<b>(be confused, be ripe, be afraid)</b>	<b>tremble</b>		

Table 8: distribution of verbs against the ASH in Tsova-Tush. Data from Holisky (1987).

Whilst verbs towards the unergative end of the hierarchy seem more likely to be agentive, there is no absolute correlation, and verbs on all parts of the hierarchy seem able to occur with both patientive and agentive marking. Furthermore, some verbs towards the unaccusative end are in fact as likely to occur with agentive marking as patientive, or even to prefer agentive forms.

Some information from other fluid-S languages on which data availability is more limited may also be worth inclusion. In Spoken Tibetan, the verb meaning *go*, which appears at the extreme unaccusativity end of the ASH, can be associated with either agentive or patientive marking (Dixon 1994:80); the same is also true of Crow (Siouan, USA), although in this language *fall* only ever takes patientive and *run* only ever agentive marking (Dixon 1994:82).

Though the available data on fluid-S languages is limited, it would appear that the same sort of patterns are observed here as in split-S languages.

#### 4.6. *Summary*

These results suggest that, while split/fluid-S marking may sometimes be closely connected to unaccusativity, this is not always the case. Accordingly, the possible analyses of this alignment type presented in subsection 4.2 would not seem viable, at least not in all languages. The next section will present a potential alternative, which can also be seen as an extension of existing theories, and which furthermore acts as a diagnostic that allows a choice to be made between them.

### 5. A “cartographic” proposal

#### 5.1. *Background and general proposal*

This section will present a new proposal based in the findings of the cartographic approach to syntax. It will present the proposal (subsection 5.1), then discuss its application to specific languages (subsection 5.2). It will then consider some predictions of the proposal and provide some evidence in support of these (subsection 5.3), before also addressing an important outstanding issue regarding the facts of alignment typology (subsection 5.4) and some more general theoretical consequences (subsection 5.5). It will conclude by using the proposal as a diagnostic to select between different theories of alignment (subsection 5.6).

The cartographic approach posits a large number of functional heads that possibly occur universally and in a universal hierarchical order. Cinque (1999), on the evidence of the ordering of adverbs and grammatical morphemes, posits a partial approximation of the universal hierarchy of functional projections within “IP”, an updated version of which is provided in Cinque (2004:133):

(25) [Mood<sub>speech act</sub> [Mood<sub>evaluative</sub> [Mood<sub>evidential</sub> [Mod<sub>epistemic</sub> [T(Past) [T(Future) [Mood<sub>irrealis</sub>  
 [Mod<sub>alethic</sub> [Asp<sub>habitual</sub> [Asp<sub>repetitive(I)</sub> [Asp<sub>frequentative(I)</sub> [Mod<sub>volitional</sub> [Asp<sub>celerative(I)</sub> [T(Anterior)  
 [Asp<sub>terminative</sub> [Asp<sub>continuative</sub> [Asp<sub>retrospective</sub> [Asp<sub>proximative</sub> [Asp<sub>durative</sub> [Asp<sub>generic/progressive</sub>  
 [Mod<sub>obligation</sub> [Mod<sub>permission/ability</sub> [Asp<sub>completive</sub> [Voice [Asp<sub>celerative(II)</sub> [Asp<sub>repetitive(II)</sub>  
 [Asp<sub>frequentative(II)</sub> ...

The proposal to be made here is that variation in case assignment between languages arises as a result of variation in which of a large number of possible heads, as posited by the cartographic approach, are responsible for case in a given language. The specific details of this proposal are open to discussion, but in the interests of a restrictive theory arguments will be presented in favour of (26):

(26) Split/fluid-S case marking arises as a result of inherent case assignment to “agentive” arguments by a functional head with a given value.

This approach can be seen as basically an extension of the Aldridge/Legate type, in which however the possibility of assignment of inherent case to core arguments is not restricted to a single head (transitive  $v$ ) but instead shows some cross-linguistic variation. “Agentive” case, then, is an inherent case assigned in the manner of ergative case by certain functional heads when these have particular values (e.g. Mod<sub>volitional</sub> with the value [+volitional]); the particular head responsible for case assignment varies between languages. Recall section 3 for arguments in favour of a similarity between agentive and ergative. Ideally, the case-assigning heads identified will be those for which there exists an independent motivation. “Patientive” case is the same as absolutive, in whatever way the assignment of this case is formalised. Split/fluid-S agreement will be assumed to reflect case assignment in some way, as discussed in subsection 2.1.

If “agentive” is an inherent case, then this implies that agentive case-marked arguments are always introduced into the derivation by being merged into the specifier position of the case-assigning head: it follows that, cross-linguistically, a number of heads can introduce arguments in this way. Such variation might then also exist in languages without split/fluid-S marking, but this possibility will not be explored further here.

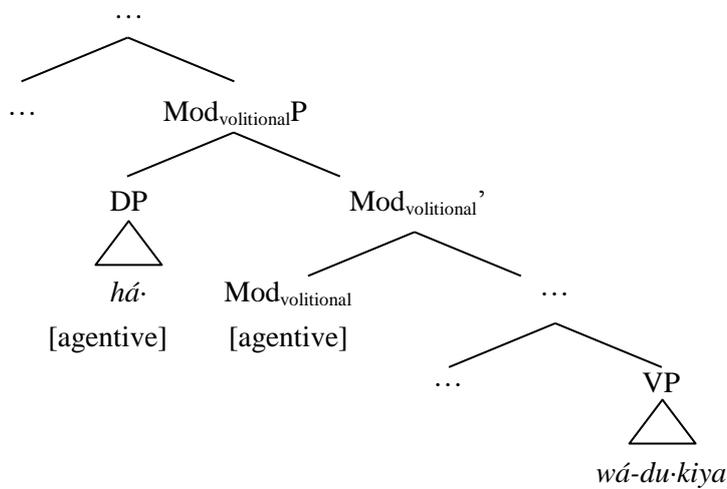
## 5.2. Applications to specific languages

### 5.2.1. Eastern Pomo

This proposal can be illustrated by means of examples. In Eastern Pomo, identified as a fluid-S language by Dixon (1994:81), case marking is sensitive to a semantic category described as “protagonist control” (McLendon 1978:4). This might reasonably be connected to the head Mod<sub>volitional</sub>, the existence of which can be justified on independent grounds, namely the ordering of adverbs and modals with volition meaning relative to other adverbs/modals, and the existence of

grammatical morphemes expressly marking volition in certain languages (Cinque 1999:81, 223). According to the proposal here, then, [+volitional]  $\text{Mod}_{\text{volitional}}$  assigns an “agentive” case to  $S_a/A$ , the argument merged in its specifier position, as it has a feature (here called [agentive]) which is valued on this argument. This can be illustrated in an intransitive clause as follows (“...” marks omitted levels of structure):

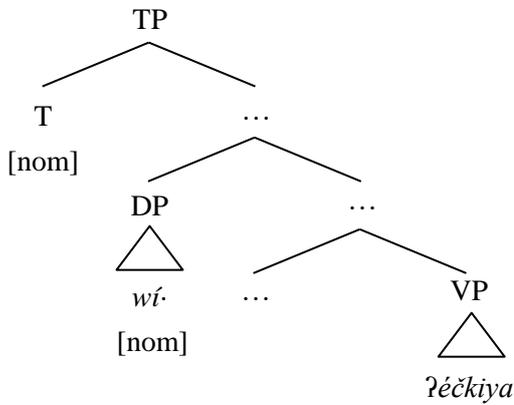
- (27) *há· wá-du·kiya*  
 1SG.AGT be\_going  
 “I’m going” (McLendon 1978:2)



$S_p$  and P arguments, however, receive “patientive” case, which is assigned in the same way as “absolutive” in ergative languages. In intransitive clauses, this case is available when [+volitional]  $\text{Mod}_{\text{volitional}}$  is absent. Following the Aldridge/Legate approach, then, patientive is assigned to  $S_p$  by T, and is underlyingly the same as “nom(inative)” – T possesses a [nom] feature and this is valued on the argument:

(28) *wí*      *ʔéčkíya*  
 1SG.PAT sneezed  
 “I sneezed”

(McLendon 1978:2)

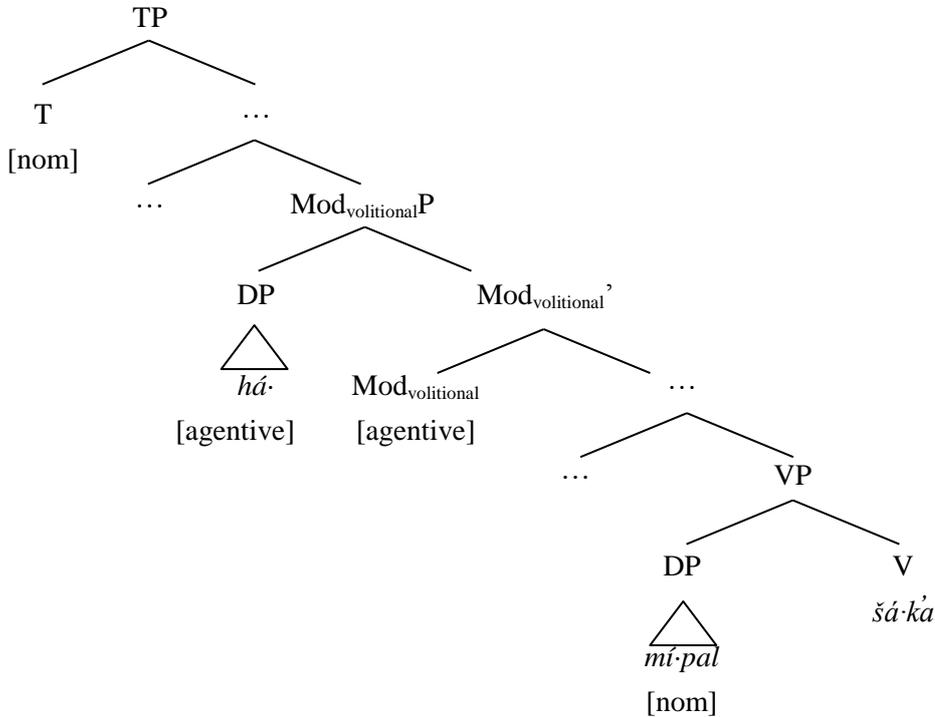


Some verbs may occur both with and without a [+volitional]  $\text{Mod}_{\text{volitional}}$  head, accounting for the fluidity of the marking.

In transitive clauses with separate marking of A and P, “agentive” is assigned by the [+volitional]  $\text{Mod}_{\text{volitional}}$  head to the argument in its specifier. The other argument receives “patientive”, assigned in the same way as absolutive. Aldridge and Legate between them suggest a number of different mechanisms for the assignment of absolutive in transitive clauses, and it is difficult to know which is correct in a particular split/fluid-S language – here, assume patientive/absolutive/nominative is again assigned by T:

(29) *há· mí·pal šá·ká*  
 1SG.AGT 3SG.MASC:PAT killed  
 “I killed him”

(McLendon 1978:2)



### 5.2.2. Georgian

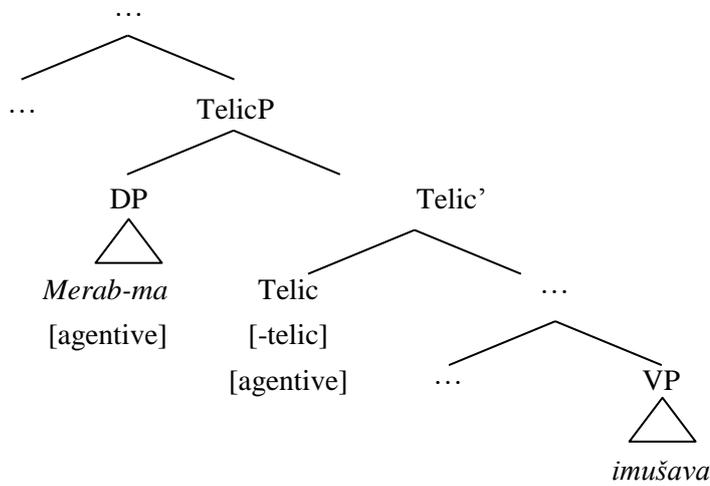
It is true that in many languages the split does not appear to be so easily tied to any of the heads in Cinque’s (1999) hierarchy. This is not necessarily problematic, however, as Cinque does not claim the hierarchy to be exhaustive and it is often possible to connect the split to a functional head proposed elsewhere in the literature; such heads might plausibly be incorporated into the cartographic approach. For example, Arkadiev (2008:105-7) connects split-S case-marking in Georgian to telicity. A telicity head (heading “TelicP” or similar) is posited by Kratzer (2004) and a number of other authors, such as Carnie (2011). Evidence for the existence of such a head also comes from the telicity-related morphology found in various languages: for instance Travis (2005, 2010:121) argues that the morpheme *ka-* in Tagalog encodes telicity; telicity is also reflected morphologically in Russian (Kratzer 2004:404). Under the current proposal, the head Telic can be taken to assign agentive case when it has the value [-telic]:

(30) *Merab-ma imušava*

Merab-AGT worked

“Merab worked”

(Harris 1982:298)



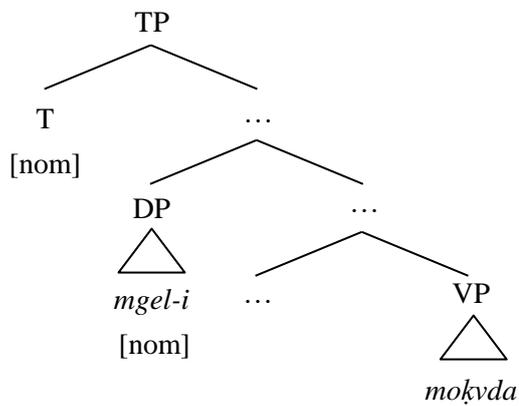
In patientive clauses [-telic] Telic is unavailable (*mgeli* could also be construed as a VP-internal argument):

(31) *mgel-i moḱvda*

wolf.PAT died

“the wolf died”

(Harris 1982:295)



Telicity has also been connected to unaccusativity in languages such as Dutch (van Hout 2004): note that, as shown in subsection 4.3, Georgian is one of the languages for which a connection between unaccusativity and split-S patterns holds up well. Some possible consequences of this proposal for the theory of unaccusativity will be discussed in subsection 5.5.

### 5.2.3. Guaraní

In Guaraní, the split-S system is connected to a semantic feature that Mithun (1991:524) calls [±event]. [-event] verbs correspond to those typically expressed by adjectival predicates in European languages, e.g. they are translated *be strong, be sick, be sleepy* etc.. [+event] verbs constitute the remainder, which tend to correspond to verbs in European languages – *go, fall, swim, work* etc. (Mithun 1991:512-14). Baker (2003) argues that a similar class of adjectival verbs in Mohawk is formed through the incorporation of an underlying adjective with a functional head Pred. If this analysis is extended to Guaraní, it might be argued under the present proposal that Pred is responsible for agentive “agreement” (which actually reflects case assignment) in those instances where it does not incorporate with the adjective. Pred also introduces the agentive argument into the derivation in these instances. Thus in examples like (32), it is Pred that is responsible for the “agreement” marking; in (33), this marking comes from elsewhere as Pred is not able to assign case:

(32) *a-xá*

1SG:AGENTIVE-go

“I go”

(33) *še-rasĩ*

1SG:PATIENTIVE-be.sick

“I am sick”

(Mithun 1991:511)

### 5.2.4. Central Pomo

A language which seems to have a more complicated split-S system is Central Pomo. Under Mithun’s (1991:518-24) analysis, case marking in Central Pomo is sensitive to [±event], as in Guaraní, but also to two other factors: [±control] and [±affect]. Agentive/patientive case marking is distributed among the arguments of intransitive verbs as follows:

[+event]	[+control]	Agentive	<i>jump, go, run</i>
	[-control]	Patientive	<i>hiccough, sneeze, vomit, fall, die, slip</i>
[-event]	[-affect]	Agentive	<i>be tall, be strong, be righthanded</i>
	[+affect]	Patientive	<i>be sick, be tired, be cold</i>

Table 9: case marking in Central Pomo according to Mithun (1991:518-24).

It may be possible to account for case marking in Central Pomo by positing that it is in some way sensitive to multiple heads. Considering the examples given in table 9 and others also provided by Mithun, it seems [ $\pm$ control] might plausibly be connected to the  $\text{Mod}_{\text{volitional}}$  head and [ $\pm$ affect] to the distinction between “stage-level” predicates (referring to transitory properties) and “individual-level” ones (non-transitory properties). Kratzer (1995) argues that stage-level predicates have an extra argument position in argument structure; this could reasonably be associated with an additional functional head involved in case assignment to  $S_a$ . It has already been suggested that [ $\pm$ event] may be connected to a Pred head. Case in Central Pomo is also sensitive to evidentiality and the speaker’s level of emotional involvement (Mithun 1991:521-2), which can override the use of patientive case for intransitive arguments in certain situations, suggesting the  $\text{Mood}_{\text{evidential}}$  and  $\text{Mood}_{\text{evaluative}}$  heads may also play a role.

In some way, then, it seems these heads may interact to produce the case marking patterns observed. How exactly this might occur is open to discussion. One possibility is that the case-assigning head inherits its case feature from another head. Svenonius (2002), Chomsky (2008) and Deal (2010) all present proposals wherein multiple heads are involved in case assignment that may be worth considering with regard to this issue.

#### 5.2.5. *Mohawk*

It is true that there are languages for which it presently seems very difficult to apply the current proposal. Mithun (1991:528-36) fails to find any consistent semantic basis for the split-S system of Mohawk, suggesting it may (to a degree) have an idiosyncratic lexical basis. Possibly, then, refinements are required to the present proposal to allow for this sort of system. Alternatively, it may be that the variation in Mohawk can indeed be connected to certain functional heads, but that it is not yet obvious what those heads might be.

#### 5.3. *Predictions*

The proposal given here does appear to present a promising analysis of split-S systems. It is also open to empirical verification in a number of ways. For example, the claim that agentive is an inherent case would predict, following Woolford’s (2006b) diagnostics, that it will be retained in raising constructions and that agentive subjects – in some languages – can co-occur with nominative objects (the latter borne out by the case marking facts in Georgian discussed above). Further, as agentive case is not held to be connected to the T head, it ought not to be dependent on finiteness and should still occur in non-finite clauses; the patientive is predicted to show the same finiteness-related behaviours as the absolutive (for discussion of these see Legate (2008:62-7)). These predictions alone, however, do not allow the agentive to be distinguished from the ergative.

Another prediction made by this analysis is that agentive case will be absent in certain transitive clauses where the necessary functional heads are not present. This is borne out by verbs in several split-S languages which take double patientive marking and lack any marking of the agentive, as in the following example from Central Pomo (Mithun 1991:523):

- (34) *t̥o·=wa m̥to ʔya·qan?*  
 1SG.PAT=Q 2SG.PAT remember  
 “do you remember me?”

Here, both arguments of the transitive verb take patientive forms. Under the analysis given above, this would be because there is no [+volitional] Mod<sub>volitional</sub> head to assign agentive case to the A argument *m̥to* “you” (although the question of how both arguments do still receive case remains open). Other languages with similar constructions include Eastern Pomo (McLendon 1978:3), Haida (isolate, Canada) (Mithun 1999:216), Lakhota and Caddo (Mithun 1991:517, 528).

This approach might also predict more fluidity in “split”-S systems than is usually noted by researchers. Note that English *walk*, which is prototypically atelic, can be telic when a specific destination is mentioned:

- (35) *John walked* (atelic)  
 (36) *John walked to London* (telic)

Similar effects in languages where telicity governs “split”-S marking might lead to a verb like *walk* occurring sometimes with an agentive and sometimes with a patientive argument. The possibility should be carried in mind that some languages may well exhibit more fluid-S behaviour than has been noted: if many languages seem not to have had a comprehensive survey of the factors governing their split-S behaviour at all, and others (e.g. Basque, Georgian) have been frequently wrongly identified as ergative, it would not be surprising if even in the better analysed languages if some verbs with some degree of fluid-S behaviour have not been identified as such. Some degree of fluidity has indeed been observed in “split”-S languages, for example in Central Pomo (Mithun 1991:520):

- (37) *ʔa· k'lu·k'lu·w*  
 1SG.AGT coughed  
 “I coughed (intentionally)”

- (38) *t̥o k'lu·k'lu·w*  
 1SG.PAT coughed  
 “I coughed (non-intentionally)”

Other “split”-S languages in which some degree of fluidity on certain verbs has been observed include Lhasa Tibetan (DeLancey 1984:134), Guaraní and Lakhota (Mithun 1991:513, 517). This can also be seen as evidence against Dixon’s (1994:82) claim of a “fundamental difference” between split- and fluid-S systems.

#### *5.4. Explanations for typological observations*

The proposal is also conceptually appealing in its prediction that core case marking may be connected to a number of functional heads, as there seems to be no obvious reason that it should be restricted to a couple if the cartographic approach positing a large number of heads is adopted. Some questions do arise out of this, however. Firstly, if any of a large number of heads can assign case (which might possibly appear to be instantiated as “agreement” in some languages), why across a very large majority of languages does case/agreement seem to be connected to a much smaller number? (Split-S agreement is found in only about 7% of languages (Siewierska 2011), split-S case in about 2% (Comrie 2011).) Secondly, it might be asked why are there are heads which never seem to be connected to case assignment – there do not seem to be any languages where case is connected to celerative aspect, for instance, and yet Cinque (1999) posits Asp<sub>celerative</sub> heads.

A plausible answer to these questions may lie in the notion of some form of “subject/agent prototype”, whereby for instance a prototypical subject or agent is a volitional controller of a tensed, perfective, atelic verb denoting an action rather than a state, alongside other properties such as definiteness, topicality etc. (see Keenan (1976) for a list of possible subject properties and Dowty (1991:571-3) for discussion of some of the possible properties of an “Agent Proto-Role”). The way the learner employs this prototype in acquisition may lead to certain heads being favoured above others in assigning case to S or A arguments.

#### *5.5. Consequences*

Some wider consequences of this approach are worth mention. It may also account for aspect-based split ergativity if it is stipulated that ergative case (at least in languages with this split) is assigned by or otherwise connected to a (transitive) Asp head. (The question of why this should be limited to transitives remains open. Plausibly there may be a connection to Burzio’s generalisation – according to which only verbs with external arguments may assign accusative case (Burzio 1986:178) – and to the connections being accusative case and aspect observed in many languages, e.g. Russian (Richardson 2007:51) and Finnish (Kratzer 2004:389-90).) A number of split-S languages, including Mohawk (Mithun 1991:533), Tuscarora (Iroquoian, USA/Canada) (Mithun 1999:221), Georgian (Harris 1981:46-7) and Lhasa Tibetan (DeLancey 1984:133), have split-S systems only in certain aspects, suggesting an Asp head may also play a role in licensing case in these languages.

This proposal also has consequences for the theory of unaccusativity, which cannot be discussed in detail here. If agentive is an inherent case, it ought not to be able to occur on unaccusative arguments if, as the unaccusative hypothesis suggests, these are base-generated as complements to V. Yet, as has been seen in section 4, some unaccusative arguments do appear to occur with the agentive. One possible resolution to this issue is that unaccusative behaviour is itself a result, not of an argument's initial position, but of its interaction with various functional heads (similar arguments are presented for example by Öztürk (2005:97-8)). This may have a further advantage of providing an explanation for variation in unaccusative behaviour seen across and within languages (as discussed in Sorace (2000) and Randall, van Hout, Weissenborn & Baayen (2004)). In some languages the heads associated with case and those associated with unaccusativity might coincide, which would explain why there do seem to be languages in which unaccusativity and split-S properties are closely linked. It is also possible that Sorace's ASH can be derived from the nature of the functional hierarchy in some way.

#### *5.6. Relation to existing approaches*

To close this section, consider again the theoretical models presented in section 2. As has been argued, the approach proposed here can be considered an extension of the Aldridge/Legate model. It is unclear, however, how the current proposal might be integrated into the dependent case approach advocated by Baker (2012): the cognate object analysis presented in subsection 4.2 is viable only if the unaccusativity analysis of split/fluid-S systems is adopted. As has been seen, this analysis seems insufficient; further, it appears inferior to the analysis presented here which accounts for a wider range of languages. It can be concluded, therefore, that it is an extension to the Aldridge/Legate model that offers the most promising analysis of split/fluid-S phenomena.

## **6. Conclusions and prospects**

This dissertation has looked at a wide range of interlinked areas. Section 2 considered a number of theoretical approaches to alignment, both in terms of the phenomena they were originally formulated to explain (principally the differences between accusative and ergative languages) and with regard to possible extensions (where relevant) to tripartite languages. It concluded that, of those approaches considered, those of Aldridge (2004 and subsequent work), Legate (2002, 2006, 2008) and Baker (2012) (and suggested extensions) were the most successful at accounting for the types taken into account at this stage.

Section 3 argued that split- and fluid-S systems can be seen as variants on ergative systems in some way. Section 4 considered the possibility, presented in several authors, of accounting for these systems in terms of unaccusativity. On the basis primarily of Sorace's (2000) Auxiliary Selection

Hierarchy, it found that this analysis did not appear viable for all languages, although unaccusative and split/fluid-S behaviours may correlate in some.

Section 5 presented an alternative proposal, arguing that cross-linguistic variation in case marking and agreement may arise from variation in which functional heads are associated with these phenomena, assuming in line with the work of the cartographic approach that the number of such heads is considerable. In particular, it proposed an extension of the Aldridge/Legate approach under which a number of heads can assign inherent case to A and S<sub>a</sub> arguments. It also concluded that Baker's (2012) approach is not amenable to this sort of extension – indeed it offers no obvious satisfactory explanation for split/fluid-S languages at all.

In sum, therefore, it may be concluded that the Aldridge/Legate type of approach, with some slight extensions, is the most promising existing account of case alignment variation in the world's languages. A great number of issues remain outstanding, however. Most obviously in relation to the “cartographic” proposal, the predictions in subsection 5.3 still require empirical verification, and it remains to be seen which heads may be responsible for case assignment in most split-S languages.

Not all alignment phenomena are clearly accounted for in this type of proposal. A deep, formal explanation for person/animacy-based split ergativity, as opposed to an arbitrary morphological specification, remains elusive. Other alignment types (such as hierarchical alignment) have not been discussed. This discussion has also somewhat skirted around the issue of agreement and its relation to case, as discussed in subsection 2.1, and more work is still required on the nature of agreement and the ways in which it might fit in to the proposals here.

Subsection 5.5 claimed that the analysis presented here may have consequences for the theory of unaccusativity, and stated that unaccusative phenomena may themselves be as a result of the interaction of arguments with functional heads (in some instances possibly the same heads as are responsible for split-S phenomena). This, then, is another area for further research. More work along the lines of the ASH, based on other unaccusativity diagnostics across a greater range of languages, would also be useful in evaluating the reliability of the conclusions of Section 3.

This dissertation, then, has successfully realised its main aim, as laid out in subsection 1.2, of evaluating which of the various theories considered presents the most promising account of cross-linguistic variation in alignment. This decision has been influenced by the secondary aim of accounting theoretically for split/fluid-S alignment systems, for which a solution has been proposed. Further work remains to be done, however.

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