

A phase-geometric approach to multiple marking systems*

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Multiple marking systems refer to case, agreement, and word order patternings that make use of more than two positions, agreement patterns or case markings, such as the phenomena of split ergativity and differential object marking. It is proposed here that such systems are sensitive to a particular version of phase theory. In particular it is argued that each phase consists of a single argument, the predicate that introduces it and a temporal operator. Since each phase is independently sent to the LF and PF interfaces, it is claimed each phase contains a restrictor and a nuclear scope for the argument in question. It is mapping to these phase internal scopal positions that gives rise to the appearance of argument (accessibility) hierarchies that seem to govern multiple marking systems.

1. Introduction

Chomsky (2000)¹ defines a “strong phase” as either a vP or CP; the two functional projections he identifies as “complete propositions”. While this characterization has had some important empirical and theoretical results (see for example the other papers in this volume), there is at least one conceptual problem and a family of empirical problems with this claim. I mention the conceptual problem here, and then will not talk about it again. The vP and CP do not, in fact, both represent “complete propositions” in any uniform sense of the words “complete” or “propositions”. They are quite different animals. The vP represents a verb and its arguments. By contrast, the CP represents a speaker’s intentions, beliefs and attitudes towards the predication, along with a temporal operator that locates the utterance relative to the speech time. While these all make important contributions to the truth conditions of the sentence, the two kinds of phase represent very different kinds of “complete propositions.” It isn’t at all clear (to me at least) what they have in common.

Turning now to the family of empirical issues. Consider the predictions made when we assume both Chomsky’s (2000) definition of phase, along with a Diesing (1992)-style tree-mapping analysis of specificity effects (defined where the VP is the domain of existential closure.) In such a system, specific and

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¹ See also Chomsky (2001a,b)

definite NPs must have raised out of the vP, so that they map to the restrictor. In phase theory, this means that only the vP phases have a domain of existential closure. There can only be one domain of existential closure per clause, simply because the vP phase is sent to LF before the CP phase comes into play.

Barss and Carnie (2003) address this problem with respect to English existential constructions and adverbial placement. They assume a typical view of Phase theory, where there is no covert movement; relationships previously taken to be covert movement are checked through the Probe-Goal relation (via AGREE). This means that the surface position of a phrase also marks its position with respect to scopal relations.² Consider the sentence in (1):

- 1) The woman always drove her car with her gloves on.

Taking temporal adverbs to mark the left edge of the vP (Emonds 1976), we have a definite NPs surfacing in the nuclear scope. Such a structure can't be rescued without covert movement.

A similar problem is seen in the example in (1)³:

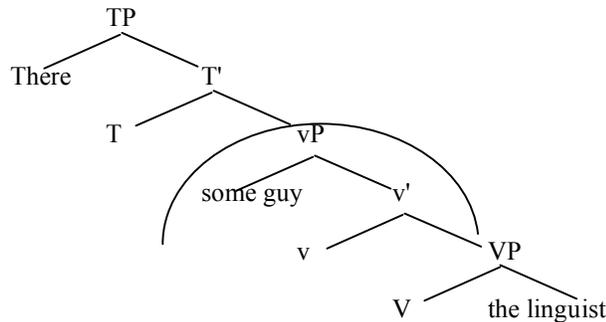
- 2) There was some guy kissing the linguist (when I walked into the room).

This sentence is acceptable with a non-specific reading of *some guy*, taken to be the canonical reading of a *there* existential sentence. In this sentence we have a clear marker of the vP edge: *some guy*. We can thus also conclude that vPs mark the top end of the nuclear scope of the clause. What is surprising here is the acceptability of the sentence given the presence of the definite *the linguist*, also presumably within the nuclear scope. Under standard assumptions about how the mapping principle works (see Diesing 1992, and much subsequent work), specific indefinites and definites such as *the linguist* should raise out of the vP in order to escape the nuclear scope. In versions of the minimalist program prior to Phase Theory, this was accomplished by covert raising of the DP. In this version of Phase theory, however, this option is not available. Word order considerations alone demonstrate that if we assume that surface order fixes scope and there are no covert operations, then it is impossible for *the linguist* to have moved outside the nuclear scope, yet have *some guy* remain inside it (3) (an arch here indicates the nuclear scope. The first phase is the vP and all it dominates.)

² *Wh*-in situ, Quantifier scope ambiguities and other phenomena commonly analyzed as covert movements might seem at first to be prima-facie counterexamples to this claim. However, it isn't at all clear that covert movements are the appropriate analyses of such phenomena in any case. For example, Cooper-stack analyses of quantifier scope ambiguities seems to have a better account of the full range of the phenomena – see Sag, Wasow and Bender (2003) for discussion.

³ See Barss and Carnie for extensive arguments that these constructions do not involve a reduced relative clause rather than an associate/tail existential construction as is crucial to the story here.

3)



When the LF for the lowest phase is created, there is no way for *the linguist* to move to create an appropriate variable. That is, on a theory with no covert movement, the Mapping principle is seemingly violated, since the definite DP *the linguist* has to be interpreted in situ, and it is within the nuclear scope.

Following in the spirit of Percus (1993), and building upon Barss and Carnie (2003), and Jelinek and Carnie (2003), I propose that the definition of phase is relativized to each argument as set out in (4). Each phase consists of an argument, the predicative element that introduces the argument (V or vP) and a functional category that represents a temporal operator that locates the predicate in time or space (Asp, T, etc.)

- (4) Phases consist of:
- a. a predicative element (v or V)
 - b. a single argument
 - c. a temporal operator that locates the predicate and argument in time and space (Asp or T)

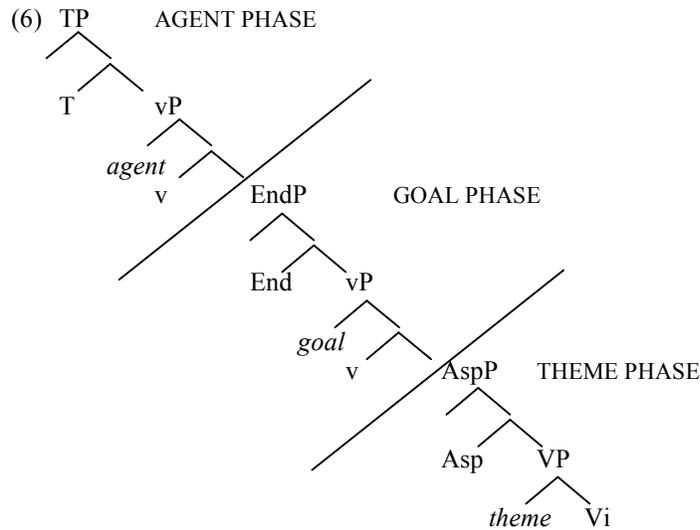
This gives rise to phases such as those seen in (5)⁴:

- (5)
- | | | |
|----|-------------|---|
| a. | Theme Phase | [_{AspP} [_{Asp'} Asp [_{VP} <i>theme</i> V]]] |
| b. | Goal Phase | [_{EndP} [_{End'} End [_v <i>goal</i> [_{v'} v ...]]]] ⁵ |
| c. | Agent Phase | [_{TP} [_{T'} T [_{vP} <i>agent</i> [_{v'} v ...]]]] |

The clausal architecture created by such phases is essentially that of Travis' (1991) inner aspect approach:

⁴ I am assuming here, of course, a Hale and Keyser (1992, 1993, 2002) analysis of theta roles, where theta role is determined by syntactic position. I also leave aside the question of how CPs fit into this system. Speculatively, there is a fundamental difference between CP and phases and the phases in (5), such that CP phases define A-bar relations, whereas those in (5) represent A relations. I'm not prepared at this time to show how phase edging would work under such a conception, so I leave it for future work.

⁵ The functional category End is meant to represent a temporal operator that determines grammatically defined aktionsarten. See Travis (2000), Borer (1994) and van Hout (2000) for discussion of the motivation for such a functional category. The ordering of this phase relative to the Theme phase is unimportant to the story presented here.



Each of these phases has its own domain of existential closure (the vP or VP) and it's own nuclear scope. This means that the interpretation of each NP will be logically independent of its clausemates.

Using relativized phases, I am going to argue for an account of multiple (or split) marking systems, where the split is triggered by some kind of specified or markedness hierarchy effect. The most familiar kind of split system are split case systems; although I use the term “marking” systems to extend the empirical domain to agreement and word order marking systems. This includes both differential object marking (DOM) (Aissen 1999, 2003) and differential subject marking (DSM). In the next section, I turn to a brief description of such systems.

2. The Larger Goal: Differential Marking Systems.

There are at least two distinct notions of ‘hierarchy’ present in grammatical theory today. One is the hierarchical constituent structures created by multiple applications of the Merge operation. The other conception, which is more prevalent in the typological literature, but sometimes bleeds into generative work as well, concerns relational or markedness hierarchies. The so-called theta hierarchy (see, for example, Grimshaw 1990) is perhaps the most salient of these markedness/relational hierarchies. Scholars working outside the realm of mainstream Indo-European languages also have to draw upon other less well-known hierarchies. For example, argument ordering in Navajo apparently governed by an animacy hierarchy, such that animate arguments precede inanimate ones (independent of their thematic or grammatical relation); the interpretation of the nominals is determined by active/inverse marking on the

verb (Willie 1991). Similarly, the vast literature⁶ on split ergativity has shown the importance of person and number hierarchies with respect to ergative/absolutive split case-marking systems. Typically this second kind of hierarchy is presented as a ranked list. Some example of such rankings are given in (7):

- (7)
- a. Animate > inanimate
 - b. Definite > indefinite specific > indefinite non-specific
 - c. 1st/2nd person > 3rd person
 - d. Topical > focal
 - e. Agent > Experiencer > Goal > Theme > Instrument/Benefactive
 - f. Subject > Object > Indirect object

There are two important things to note about these kinds of hierarchies. First, they represent tendencies rather than hard and fast rules. It is possible to override a markedness hierarchy with, for example, a particular morphological marking or operation (e.g., special voice marking, clefts, scrambling etc.). Second, as pointed out to me by Marantz (p.c.), it isn't at all clear what the ontological status of such hierarchies is for an approach such as generative grammar. They aren't rules; they aren't constraints.⁷ Nevertheless they have widespread exponence in the syntax of the world's languages.

In this paper (and other work), I aim to reduce all independent semantic/relational/accessibility hierarchies to the constituent hierarchy, whereby appearing to the left on the relational hierarchy corresponds to positioning high in the constituent tree.

This approach to hierarchies is not particularly new. Hale and Keyser (1992, 1993, 2002) claim that thematic roles can be directly be determined by the argument's initial position in the constituent tree. The "thematic hierarchy" is an artifact of the fact that, for example, agents are generated higher in the tree than themes.

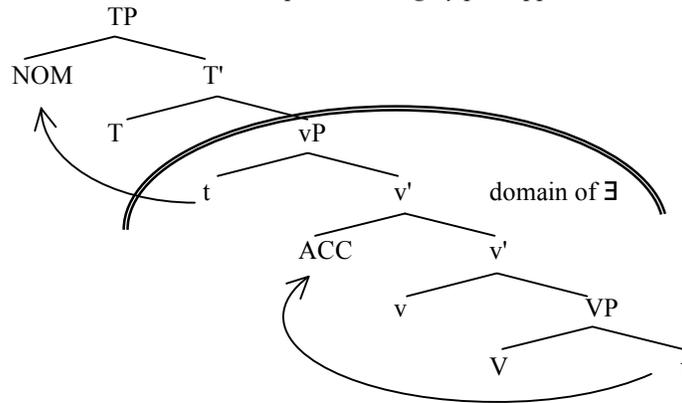
Jelinek (1993) presents a similar account of split ergativity in Lummi, exploiting Diesing's mapping principle. 1st and 2nd person subject pronouns are inherently specific, so must appear outside the nuclear scope, which results in a nominative argument marking. 3rd person subject pronouns in Lummi are, by

⁶ See for example, Abraham (1996), Bittner and Hale (1996a,b), Bobaljik (1993), Bok-Bennema (1991), Campana (1992), DeLancey (1981), Dixon (1972, 1979, 1994), DuBois (1987), Hooper and Thompson (1980), Isaak (2000), Jelinek (1993), Johns (1992), Levin (1993), Levin and Massam (1995), Murasugi (1992), Silverstien (1976), Ura (2001), and Woolford (1997) to name just a sampling.

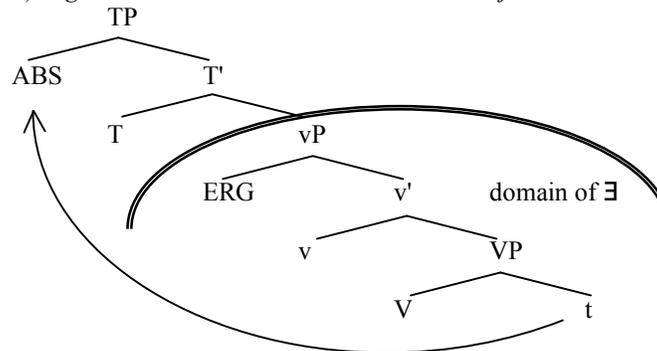
⁷ Aissen (1999) and (2003) attempts to recast these hierarchies as universal constraint rankings in Optimality Theory. There are, however, a number of significant problems with her account. First, it relies significantly on morphological markedness constraints, where unexpected mappings between relational hierarchies must be realized with overt morphology. This is contraindicated by the fact that such mismatches can be realized with non-morphological means, such as word order. Second, some of her crucial arguments are based on a faulty empirical characterization of Dyirbal (she asserts that Dyirbal Nom/Acc patterns are unmarked for case—this is false, class markers in Dyirbal are overtly marked for case). Finally, her constraint rankings are "derived" via harmonic alignment from the relational hierarchies themselves. This requires that the relational hierarchies be some kind of primitive, whose ontological status is still in doubt. Similar problems can be found with the systems described by Isaak (2000).

stipulation, non-specific and thus stay inside the VP, where they get an inherent ergative case. Diesing and Jelinek (1995) extend this analysis to phenomena in other languages that appear to be sensitive to relational hierarchies. Under this kind of approach, we can derive certain kinds of split ergative system as schematized in 10. This approach follows a Murasugi (1992) nested paths approach to ergativity. Under this view, presuppositional, topical, definite, animate subjects—the relevant criteria depending upon the language—raise out of VP to create a variable within the nuclear scope, giving rise to a nominative accusative pattern as in (8a).

- (8) a. *Nominative/Accusative pattern: “highly presuppositional subject”*



- b) *Ergative/Absolutive Pattern: “Asserted subject”*



By contrast asserted (non-specific, indefinite, inanimate) subjects are licensed within the VP, as seen in (8b). The agent receives a lexical ergative case and thus remains within the nuclear scope. This ergative case presumably blocks accusative checking. As a matter of last resort the object raises to the specifier of TP where it gets nom/abs case⁸.

⁸ The tree in (8b) seems to have an obvious violation of Shortest Move or the Minimal Link Condition. The simplest solution to this problem is to say that inherently case-marked arguments—

While this sort approach has a number of appealing qualities, it also has some significant defects. First, in the system in (8), it appears as if the eventual LF is driving the syntax. Second this system doesn't allow for cases with identical interpretations of multiple arguments; for example, cases where the subject and object are both interpreted presuppositionally or are both interpreted as novel. This can be seen by looking at the trees in (8), if the both the object and the subject are asserted, then they should both remain inside the VP. In such a situation, either the formal Case requirements of the object are not met resulting in a syntactic crash or the argument doesn't appear in the correct position for interpretation, resulting in semantic anomaly. Similar effects would be found when both the subject and the object are topical. Such interpretations do occur, as seen in Nez Perce data in (9):

- (9) a. Háama +Ø hi+'wí+ye wewúkiye
 man+Ø 3+shoot+asp elk
 "A man shot an elk"
- b. Háama+nm pé+'wi+ye wewúkiye+ne
 Man+NM 3/3+shoot+asp elk+NE
 "The man shot the elk" (modified from Woolford 1997)

Third, while it captures "simple" cases of ergative splits, where nominative always co-occurs with accusative and ergative always co-occurs with absolutive, it fails to account for more complicated 3 and 4 way systems, where for example ergative and accusative co-occur, as is found in languages such as Dyirbal (Dixon 1972). Finally, although it does so in a disguised form, it maintains the idea that there are two separate hierarchies in the system: a semantic one (the LF) and a syntactic one; the two hierarchies are related by a mapping relation. In an ideal situation these two kinds of hierarchies should be homomorphic. All but the first problem disappear in a system with relativized phasing. Problems (2) and (3) vanish because the interpretations of nominals are largely independent of one another, as each has its own phase. Problem (4) disappears in any phasing system where there is no covert movement, as surface position will determine scope.

The first problem (the fact that interpretation drives syntax), does not necessarily require relativized phasing, but is easily overcome using another aspect of Chomsky (1995)-style minimalism: little *v* categories. Provided that we have an explicit enough set of lexical entries for functional categories and predicate categories, these lexical entries not only select for arguments but also determine the functional structure that licenses the arguments, thus determining surface position and relative scope.

with perhaps Icelandic Quirky case marked arguments being the exception—are not candidates for movement, thus don't create intervention effects.

3. Multiple Marking Systems

The relativized phase approach, when it is coupled with an explicit theory of formal features and lexical entries for functional categories, provides an explanation for the existence and range of variability in multiple argument marking systems.

3.2 Ergative Split in Dyirbal

Consider first the case of split case marking in Dyirbal. I will be discussing here a “simplified” form of Dyirbal, in that I’m only trying to account for the range of phenomena already accounted for by other approaches. I’m not trying to account for all the case marking patterns that exist in the language. (See Dixon (1972) for discussion of the fuller range of data).

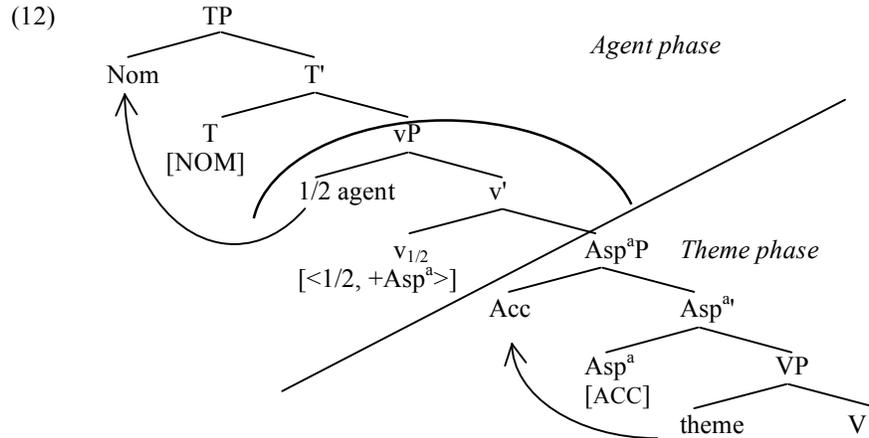
Dyirbal case marking is split along the lines of person. 1st and 2nd person subjects exhibit a nominative accusative pattern, 3rd person subjects take an ergative/absolute pattern. I’m following Jelinek’s analysis of person splits here where 1st/2nd subjects are more “presuppositional”⁹ than 3rd person subjects, which are typically asserted.

- (10) a. nyura-Ø banaga-n^yu.
 2PL-NOM returned-NONFUT
 “You (pl) returned.”
- b. nyura-Ø Nana-na bu}a-n.
 2PL-NOM 1PL-ACC see-NONFUT
 “You saw us.”
- c. [baya Numa-Ø] banaga-n^yu.
 class1.ABS father-ABS returned-NONFUT
 “Father returned.”
- d. [baya Numa-Ø] [baNgun yabu-Ngu] bu}a-n
 class1.ABS father-ABS class2.ERG mother-ERG sawNONFUT
 “Mother saw father.”

One means of encoding this type of split is through the use of different little *v* categories for introducing 1/2 vs. 3rd subjects. This is a reasonable approach to take, since we will need to lexically specify that 3rd subjects take a lexical ergative case in any event. It thus seems reasonable to assume that these different functional categories also have different subcategorizational properties. The *v* that introduces 1/2 subjects subcategorizes for an accusative case assigning AspP, whereas the *v* that introduces 3rd subjects (as well as the ones that introduce passives and intransitives) selects for a defective AspP that lacks an accusative case feature. This is encoded in the lexical entries in (11).

⁹ The nature of this “presuppositionality” and “assertedness” is of course a crucial open question. I leave it as an open question requiring a precise formal characterization once the phenomena have been more thoroughly described and better understood.

straight line. The nuclear scope of the agent phase is indicated with a curved line¹¹.



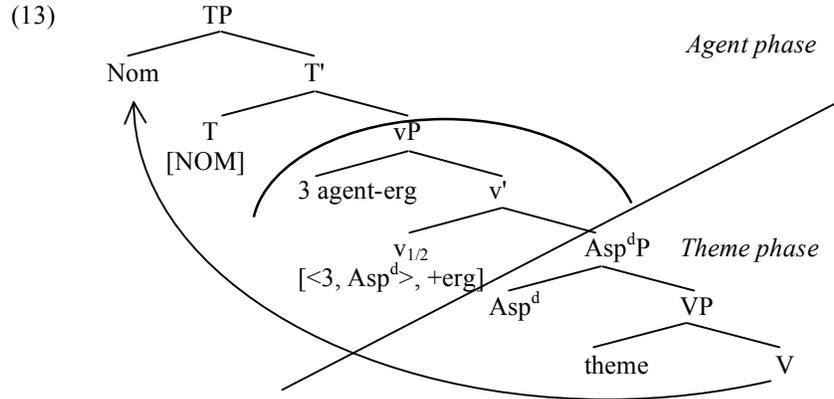
In this structure, the $v_{1/2}$ is used. This v does not assign a lexical case, so the agent must move to the specifier of TP for case licensing, this means that, on the surface, it appears in the restrictor portion of the phase. $v_{1/2}$ also selects for Asp^{aP} . This aspect node assigns checks an accusative case feature in its specifier.

Consider now the tree in (13), which represents an ergative/absolutive structure. v_3 inherently marks its agent with an ergative case, so the remains inside the vP (and thus is interpreted non-presuppositionally). Note that the pragmatics are not determining the movement here (unlike, for example, Jelinek 1993); instead the case licensing determines surface position, which in turn determines how the argument is mapped to information structure after LF. Like v_{intran} , and $v_{passive}$, v_3 selects for Asp^{aP} . This aspect node has no accusative case feature to check, so as a matter of last resort, the NP must move to get licensed in the next phase, resulting in Nominative (Absolutive) case checking.¹²

¹¹ I have not indicated here the scopal properties of the embedded clause. How differing interpretations of objects work in Dyrbal requires additional data and study.

¹² The tree in (13) and others in this paper ignore the Phase Impenetrability Condition. There is a paradox raised by the interaction of formal licensing requirements with semantic requirements on the phase's LF. In split ergative systems, semantic considerations indicate that asserted DPs remain VP internal, but formal requirements (the PIC) force them to move out of nuclear scope to the edge so that they can case check with TP in the higher phase.

This either suggests that the whole enterprise I have sketched here is misguided, or we have to rethink the PIC. One possible compromise is to assume that we don't actually merge all of a lexical items features on its first instance. Instead we merge only formal features. This is consistent with many recent proposals recasting Move in terms of Merge (see for example Lasnik 1999). The trace, which never has phonological content, isn't linearized during the phase's PF. This means that when the next phase accesses the structure, it can target any null argument without adjusting the PF content of that lower phase. As such, edges become irrelevant. One way to encode the requirement that traces not be phonologically realized would be a condition on the operation SPELLOUT, such that it would only merge phonological features into the structure when all the uninterpretable



3.3 Nez Perce 4-way case system

In this section, we look at a different kind of situation. One where the behavior of each phase interacts with those above it. This data comes from the complicated case marking patterns found in the Sahaptian language Nez Perce, spoken in Idaho. This section is a partly updated version of the analysis¹³ given in Cash Cash and Carnie (2003).

Consider the data in (14).

- (14) a. Háama +Ø hi+'wi+ye wewúkiye Ø/Ø pattern
 man+Ø 3+shoot+asp elk
 "A man shot an elk"
- b. Háama+nm pé+'wi+ye wewúkiye+ne ERG/NE pattern
 Man+NM 3/3+shoot+asp elk+NE
 "The man shot the elk"
- c. * NM/Ø (*The man shot an elk)
- d. * Ø/NE (*A man shot the elk)

There are a couple of important things to note about these sentences. First, there is an interpretive difference between (14a and b), which in turn corresponds to a

features have been checked (i.e., phonological features could only be merged at the top of a movement chain), otherwise the node is left null. Of course, this kind of proposal creates many more questions than it answers. For example, work will need to be done to recapture the economy character of the PIC—perhaps in terms of scope in chains. Similarly, I will eventually need an account of those situations where the phonological material is inserted into a lower member of the chain (assuming such cases as *wh* in situ or resumptive pronouns do in fact involve a movement chain). Nevertheless, I hope that this kind of proposal provides a fruitful alternative view about how a phasal theory of syntax might work.

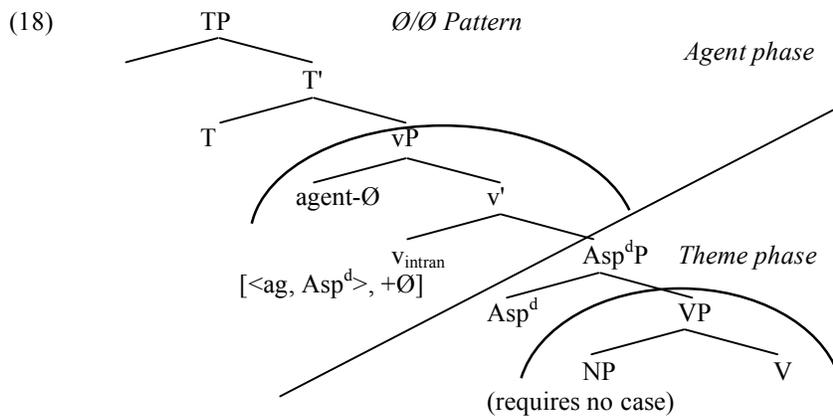
¹³ For alternative analyses of Nez Perce, see Rude (1982, 1985, 1986a,b, 1988) and Woolford (1997).

Thus giving an intransitive pattern. These NPs have no case checking requirements, thus remain VP internal, and are subsequently interpreted as novel information, from the perspective of the rest of the clause such VPs are essentially intransitive.

To see how this works, let us again set up lexical entries for the various flavors of little *v* found in the language. Notice that the variation is along transitivity lines.

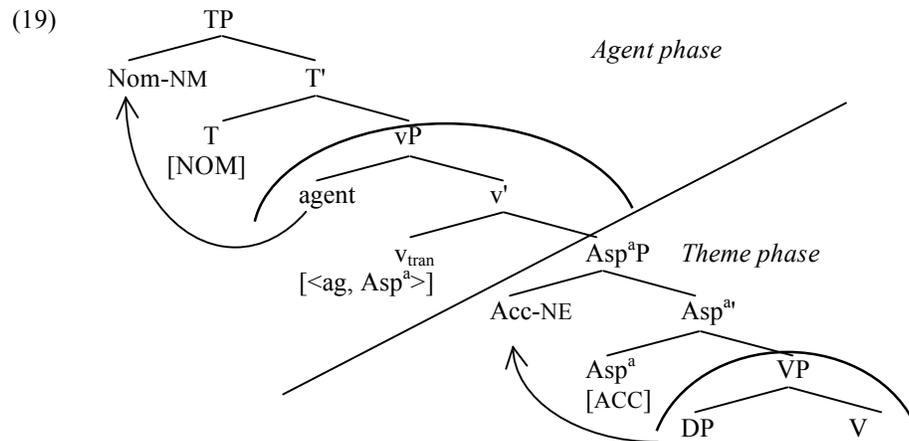
- (17) a. $v_{\text{tran}} \quad \langle \text{ag}, \text{Asp}^a \rangle$ b. $v_{\text{intran}} \quad \langle \text{ag}, \text{Asp}^d \rangle$

Starting with the \emptyset/\emptyset pattern, we can see how the relativized phasing approach, combined with these lexical entries derives the patterns in (14). The agent marked with lexical $-\emptyset$ ergative case remains in situ in the nuclear scope, since it doesn't have to raise for case licensing. The theme is a pseudo-incorporated NP, and thus also remains within its own VP. Both arguments are interpreted as novel asserted information.



Contrast this to the NM/NE pattern. In these cases, transitive *v* is used. This *v* does not assign a lexical case. So the agent argument must raise to the specifier of TP for case checking. This results in it (obligatorily) being interpreted presuppositionally. This *v* selects for Asp^aP . The theme, being a DP (requiring) case moves to the specifier of Asp^aP for case checking, and thus also moves out of its own nuclear scope.

¹⁶ This is a bit of an oversimplification of Cash Cash and Carnie's account and of the data. Indeed, certain kinds of constructions that may well have determiners, such as possessive-possessed constructions are found with the \emptyset/\emptyset case marking, nevertheless they are interpreted by native speakers as being "of no importance" or "less relevant" and thus less likely to be presupposed. For a fuller discussion of this, see Cash Cash and Carnie.



This kind of case marking system is a direct consequence of a relativized phasing combined with the language particular featural composition of functional categories. One important thing to note about the tree in (19) is that although the *-ne* marked argument is dominated by the vP defining the agent's nuclear scope, due to relativized phasing (and only relativized phasing – normal Chomsky-style phasing does not have this effect) the object can be construed as part of the restrictor of the clause, and thus construed presuppositionally. This is because the LF of the theme phase is constructed entirely independently of the LF of the agent phase. As discussed above in section 1, this kind of interpretive pattern is extremely difficult to construct if each argument does not have its own interpretive domain – an advantage presented by the cyclically constructed LFs of Phase Theory.

4. Conclusions

I have argued that Phases relativized to argument structure allow an account of the interaction and non-interaction of the interpretation of nominals. This predicts the existence of syntactic marking systems, which indicate the position of nominals relative to their interpretation in their own phase. This in turn allows us to take a step towards deriving semantic hierarchy effects the phrase structure hierarchy.

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