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SPLIT “PP” STRUCTURE AND SYNTACTIC UNACCUSATIVITY*

1 INTRODUCTION

Adpositions have attracted much attention in generative literature. A general analysis claims that they head the PP (pre-/postpositional phrase), and the PP itself is to some degree, albeit not fully, functional in nature. But recently, some have started to discuss that adpositions are actually lexical. In this paper I will argue that, assuming PPs are lexical, the adpositions can be analyzed into a split structure. Some languages exhibit a V-to-P shift, and this supports my analysis. If the present analysis is on the right track, then it follows that linguistic theory must distinguish syntactic unaccusativity from lexical unaccusativity.

This paper is organized as follows: In section 2, I will present theoretical preliminaries relevant to this thesis, followed by some problems concerning the adpositions. Section 3 reviews previous analyses. In section 4, I propose the split analysis of PPs. Section 5 presents some theoretical consequences, and section 6 concludes the paper.

2 PRELIMINARIES

2.1 Theoretical Preliminaries: the Minimalist Program

This paper adopts the minimalist program of syntactic theory, to account for an interesting phenomenon exhibited by a class of prepositional phrases. In contrast to representational theories like the Standard and the GB, this theory is quite derivational in nature. The derivational computation states that there is a component, *Lexicon*, from which all the *lexical items* (*LI*) are taken to be used in the derivation; the list of

* I would like to express my deepest gratitude to Yukio Oba and Sadayuki Okada for their critical comments and generous encouragement. All remaining errors are, of course, my own.

words and indices, *Numeration*, has been made here. Syntactic operations, such as *Merge* and *Move*, are necessary to form phrases out of the Numeration. The computation proceeds in a successive cyclic fashion, obeying the locality (and local economy) of the derivation. Moreover, the concept of *phase* must be considered here. Chomsky (2000, 2001, 2005) claims that derivations proceed by phase. This can make derivations (more) economical, since when the computation must handle a sentence consisting of multiple finite clauses, it would be a demanding task if all the lexical items in the numeration demanded their introduction into the derivation. On the contrary, if the numeration is divided into a number of subclasses (*Lexical Subarray*), the complexity will disappear. These subclasses correspond to each phase of the derivation: CP and v^*P . Another important property of the phase system is that after a phase is completed on the syntactic derivation, it is impossible for any syntactic operation to go into the phase domain from outside of the phase; it is transferred to the phonological and semantic components simultaneously.

(1) *Phase-Impenetrability Condition*

In phase α with head H , the domain of H is not accessible to operations outside α , only H and its edge are accessible to such operations.

(Chomsky 2000: 108, 2001:13)

Since this paper includes a discussion as to how a syntactic object enters into an agreement relation with another object, this relationship should be mentioned here.

(2) *Agree*

- a. Goal as well as probe must be active for Agree to apply.
- b. α must have a complete set of ϕ -features (it must be ϕ -complete) to delete uninterpretable features of the paired matching element β .

(Chomsky 2001: 6)

This relationship works in this paper, when I account for how a functional adpositional head p assigns its c-commanding DP accusative Case.

2.2 Problems on Prepositional Phrases

The prepositional phrases (PPs) have long been treated, simply, in terms of bare structures. The head P (reposition) projects, (through an intermediate projection in GB framework), to the maximal projection, and that is all. Moreover, PPs mainly occupy a position adjoining another certain syntactic maximal projection, yielding optionality in the whole syntactic structure. These treatments of PPs cause some problems. One is that, some prepositional phrases can appear as thematic subjects, or objects of a matrix verb. These PPs can, without doubt, be considered to have subject or object status, as Matsubara (2000) shows. He, quoting examples from Bresnan (1994) and Levine (1989), demonstrates that the PPs at issue can undergo Subject-Auxiliary Inversion (SAI), and exhibit plural agreement on matrix (auxiliary) verbs, when used

as coordinated subjects, both of which are some of the properties of authentic nominals:

(3) a. Is [under the bed] a good place to hide?
(Matsubara 2001: 133; Bresnan 1994: 110)
b. [Under the bed] and [in the fireplace] are/*is not the best combination
of) places to leave your toys.
(Matsubara 2001: 134; Levine 1989: 1015)

If PPs only have a bare structure, as has traditionally been assumed, then it can never be accounted for as to why these subject-like prepositional phrases do exist, since bare-PP structures are not assumed to contain any nominal features, unlike true nominals. Matsubara tries to explain how the nominal PPs enter into checking relations with a valid checking head, assuming an additional functional prepositional head labeled *p*. According to Matsubara, this functional head is referential, just like D, another theoretical object assumed to select NP as its complement. This referentiality can account for why the PPs at issue may be nominal in character. Moreover, as Matsubara notes, the *p*-PP string is quite like the *v*-VP in that the lexical head, P and V respectively, can go up to the immediately higher functional head.

(4) [_{p¹}*p [_{p²}* behind [_{pp} *t* which counter]]]] (Matsubara 2000: 148)

In this study, I want to follow his work on split PP structures although I have to decline his analysis for the nominal PPs, which, because of their nominal characters, must be represented by means of nP or DP structures (like n-PP or D-P). The *p*-PP structure should instead be used to account for another phenomenon, which is the main topic of the present paper.

Another problem caused by the bare-structure treatment of PPs arises, when the PPs denote a specific location in a syntactically complement position of the matrix verb. A traditional analysis explains that PPs are basically an adjunct to VP. An example is *play baseball in the park*, where the PP *in the park* is optional, so that even if it was erased, the sentence stays grammatically correct: *play baseball*. But as a well-known example, *put a book on the table* shows, some PPs are obligatory and may not be freely erased: *put a book (on the table)*. Thus, these PPs, clearly with argumental status, must be analyzed as being in the argument position, and appropriately licensed by the VP. Moreover, as the resultative construction accompanied by a PP shows, the resultant PP surely has a telicizing function:

(5) a. Peter laughed {for an hour/*in an hour}.
b. Peter laughed himself under the table {*for an hour/in an hour}.

Thus PPs need to be distinguished, structurally between an adjunct and an argument, and lexically between telic and atelic ones.

3 PREVIOUS ANALYSES

This article will argue that some PPs occur with an additional functional projection *pP*, as argued by Matsubara (2000), though for a different purpose. My claim will be supported by directional PP constructions (e.g., *They ran into the station*), and resultative constructions (e.g., *The girl broke the vase into pieces*). Before starting the analysis, however, I would like to review some previous analyses on these topics.

Lieber and Baayen (1997) propose, within the lexical–semantic framework, that certain verbs and prepositions bear a primitive semantic feature [IEPS] (Inferable Eventual Position or State). According to their definition, (i) [+IEPS] verbs such as “come” specify two points of time, T1 and T2, and we can infer at the end of T2, something about the position or state of the highest argument; (ii) certain verbs like “zigzag,” bearing an unspecified [IEPS] feature will never be [+IEPS] without the addition of, for instance, a directional phrase; (iii) stative verbs such as “know” will never be specified for the feature, and iterative verbs like “flash” shall always be [−IEPS]. Moreover, certain adpositions may be specified for this feature: directional prepositions, but not locative prepositions, bear [+IEPS]; postpositions like in the Dutch word *door* as in *Hij is de kamer door gelopen* “He has walked the room through,” are always specified as [+IEPS]. The LCS (Lexical Conceptual Structure) of the verbs and adpositions can be assumed as follows:

- (6) a. *breken* ‘break’

$$[\text{Event} \text{ +dynamic } ([\text{Thing} \quad], \text{TO} [\text{Property} \text{ ‘broken’}])]$$

$$+ \text{IEPS}$$
- b. *lopen* ‘walk’

$$[\text{+dynamic } ([\text{Thing} \quad], [\text{Path} \quad]), [\text{Manner} \text{ ‘walking’}]]$$

$$\emptyset \text{IEPS}$$
- c. *door* ‘through’

$$[\text{VIA } ([\text{Place} \quad])]$$

$$+ \text{IEPS}$$
- d. composed CS *de kamer door lopen* ‘walk the room through’

$$[\text{+dynamic } ([\text{Thing} \quad], [\text{VIA } ([\text{Place} \text{ the room}])]), [\text{Manner} \text{ ‘walking’}]]$$

$$+ \text{IEPS} \quad + \text{IEPS}$$

(Lieber and Baayen 1997: 805, 808)

The idea of the semantic feature [IEPS] is very suggestive in accounting for a phenomenon called “auxiliary selection,” where unaccusative verbs take *be* as their perfective auxiliary, while others take *have*. What is crucial in the selection, is that verbs with [+dynamic, +IEPS] in the uppermost semantic predicate select *be*, that verbs with [−dynamic] and/or [−IEPS] never select *be* but *have*, and that dynamic verbs with an unspecified [IEPS] inherit [+IEPS] from a lower semantic predicate marked [+IEPS] as in (6d).

However, while some problems can be pointed out against their analysis; for the purpose of simplicity, only one of them can be discussed here. While they note, that a full cross-linguistic analysis of auxiliary selection in the Romance and Germanic languages is beyond the scope of their study, they would expect the feature [+IEPS] to

be of a cross-linguistically universal relevance. They explain that inherently [+IEPS] verbs (unaccusatives and inchoatives) and lexically [ØIEPS] verbs with a [+IEPS] adposition, as an argument, select *be*. But some German (genetically related to Dutch) examples exhibit contradictions.

(7) a. Wir haben/sind mehrere Stunden geschwommen.
 we HAVE/BE many hours swum
 ‘We swam for many hours’

b. Wir haben/sind den ganzen Tag geklettert.
 we HAVE/BE the whole day climbed
 ‘We climbed the whole day’

(Yoshida 1999: 1)

If the determination of the auxiliary selection crucially depends on, whether or not the semantic feature [+IEPS] exists in the semantic predicate, then there can occur no such example, where two alternating perfective auxiliaries, *have* and *be*, can both be allowed, as in (7).

Levin and Rappaport Hovav (1995) is another study focusing on verbal unaccusativity. They claim that several linking rules can be proposed between LCS and the argument structure of single-argument verbs. Related to the unaccusative verbs are the Directed Change Linking Rule and the Existence Linking Rule:

(8) a. *Directed Change Linking Rule*
 The argument of a verb that corresponds to the entity undergoing the directed change described by that verb is its direct internal argument.

b. *Existence Linking Rule*
 The argument of a verb whose existence is asserted or denied is its direct internal argument.

(Levin and Rappaport 1995: 146, 153)

Since Perlmutter (1978) and Burzio (1986), a verb has been referred to as “unaccusative,” only if its surface subject corresponds to the internal argument (Unaccusative Hypothesis). Thus, the two linking rules given in (8) can be informally called “unaccusativity linking rules.” In addition to these two and another “unergativity” rule, they propose one that is broader in scope, called the Default Linking Rule:

(9) *Default Linking Rule*
 An argument of a verb that does not fall under the scope of any of the other linking rule is its direct internal argument.

(ibid.: 154)

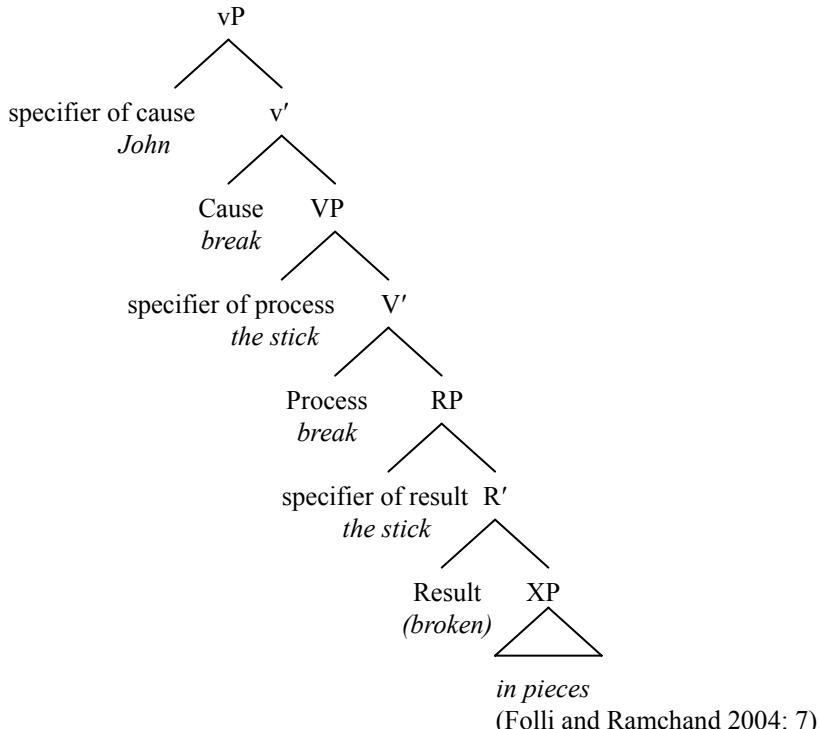
These linking rules sometimes compete in application. Take *John walked to New York* as an example. The verb *walk* itself is, without doubt, unergative; so its sole argument (the surface subject *John*) may be an external one (*Immediate Cause Linking Rule*; cf. Levin and Rappaport Hovav (1995:135)). But with a directional PP *to New York*, the

whole VP behaves like the unaccusative (crucially, the perfective auxiliary *be* is selected in Dutch and German). This falls under the scope of *Directed Change Linking Rule*, and the VP at issue is expected to have this linking rule applied. Here, two possible linking rules compete. Levin and Rappaport Hovav (1995) suggest that the *Directed Change Linking Rule* takes precedence over the *Immediate Cause Linking Rule*, since the VP in question turns out to be of unaccusativity; if the *Immediate Cause Linking Rule* is applied but not the *Directed* one, then we would expect the VP *walk to New York* to be unergative, which is quite different from the fact.

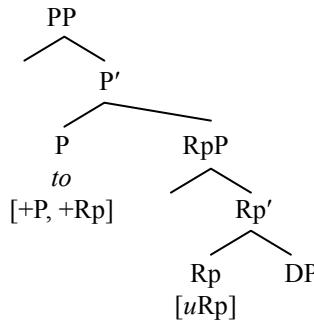
However, these linking rules themselves are problematic. They are like the transformational rules of the earlier generative grammar, since they are descriptive rather than principal. Just like some transformations were done away with, and others were made more general and economical because their numbers grew explosively, the linking rules that Levin and Rappaport (1995) proposed should be reconsidered. In particular, these rules must be made into a universally and independently motivated principle. Otherwise, similar descriptive rules can, and must be added, whenever unfamiliar phenomena are found, in order for the lexical theory to deal with them.

Folli and Ramchand (2004) propose an event structure for the resultative constructions as in (9) and another event structure for the goal of motion constructions (e.g., *They danced into the room*) as in (10), where R is a head of Result, P a head of Path and Rp a head of the resultative place:

(10) John broke the stick in pieces.



(11)



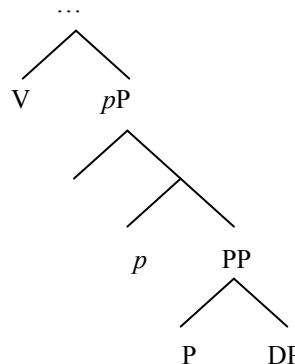
(Folli and Ramchand 2004: 8)

The proposed heads, namely R, P(ath) and Rp, are not so familiar in literature. Introducing a new theoretical object can complicate the theory. From an economical point of view, the newly introduced heads should be considered an unnecessary object; on the other hand, from a universality viewpoint, they do not seem to be universally and independently motivated. What Folli and Ramchand (2004) suggest is very important, and I will follow them in this present paper, but the newcomers will not be considered.

4 PROPOSAL

The main proposal argued for in this paper, is that the adpositional phrases can be a split structure, following Svenonius (2004b). To make this point clearer and more concrete, I show below a tree diagram of the split structure for PPs:

(12)



Some assumptions have to be made here:

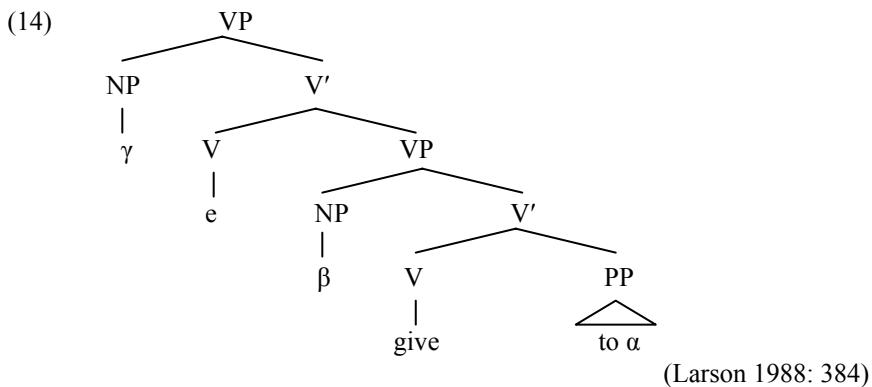
(13) a. *p* is a functional head analogous to *v*
 b. One of the similarities between *p* and *v* comes from accusative Case

assignment to a c-commanding complement. This assignment is accomplished in a Probe-Goal relation (Chomsky 2001: 6)

I will return to these assumptions later in 4.3; but before that, some justifications for the split analysis of PP are required.

4.1 Theoretical Justification

The idea that PP can be split into *p* and *P*, is not so unnatural because a similar analysis has been applied to the other lexical categories V, N, and A. The most familiar and well-known one is the split-V hypothesis, which dates back to Larson (1988). Larson proposes his analysis on the Double Object Constructions, assuming that the prepositional dative construction be the basic, and its “preposition-less” counterpart be derivative. In accounting for the asymmetrical c-commanding relationship between DP and PP (that is to say, the direct object c-commands PP and not vice versa), he proposes that both the DP and PP are contained in the same domain of a verbal projection VP headed by a ditransitive verb such as *send*. The verbal head rises to an immediately higher syntactic head V.



Chomsky (2001) suggests that all the verbs have an additional “light” verbal projection *v*, which is assumed to be functional, placed right on top of the lexical projection VP, in the structure. There is a crucial difference between the unaccusatives, and the others; the latter *v* is ϕ -complete, written as *v**, but the former is not.

$$(15) \quad [\beta C [Spec T \dots [\alpha XP [Subj v^* [VP V \dots Obj]]]]] \quad (\text{Chomsky 2001: 33})$$

Collins (1997) proposes a unique head Tr(ansitivity) in a way similar to the above proposal for *v*. As he notes in Collins (1997:15), “[i]t is the same head identified as *v* (light verb) by Chomsky (1995, Chapter 4).” What is assumed is that “[f]or transitive verbs, [Tr] checks accusative Case and assigns the external θ -role to its specifier. For unaccusative verbs, it is present, but it checks no accusative Case and assigns no

external θ-role. For all verbs, movement of V to a position, adjoining to Tr is obligatory; therefore the V feature of Tr is strong (perhaps universally).¹

Bowers (1993,2002) claims that the predicative relationships should be reflected in the syntactic structure as PrP (Predication Phrase). Starting with an example like *They considered him honest*, he proposes that the sentence can be analyzed into a syntactic structure such as [_{PrP} DP Pr [_{TrP} Tr [_{VP} V DP]]] (For transitives, Bowers (2002:186)). This predicative structure can be extended to general transitive and intransitive structures. Thus, as he notes, the verbal functional head v* (ϕ-complete) can correspond to Tr (different from that proposed in Collins (1997), since Collins assumes that all the verbal structures contain Tr, but Bowers claims that only the transitives and impersonal transitives have Tr) and Pr, and ϕ-incomplete alternatives can correspond to Pr.

We have thus seen that the verbal projection can be assumed to be a split structure. What is noted here, is that the verbal head V is classified as a lexical category. A further possibility of split structures for lexical categories, comes from analyses on nominals and adjectivals. Abney (1987) is a leading study on DP-analysis of nominals. He assumes that a nominal projection needs, on top of itself, another functional projection headed by D (determiner). This can be considered to be one of the split analyses of lexical categories, since nominals uncontroversially constitute a substantive category. Abney’s proposal is as follows:

(16) [_{DP} John [_D ’s] [_{NP} book]] (Abney 1987: 79)

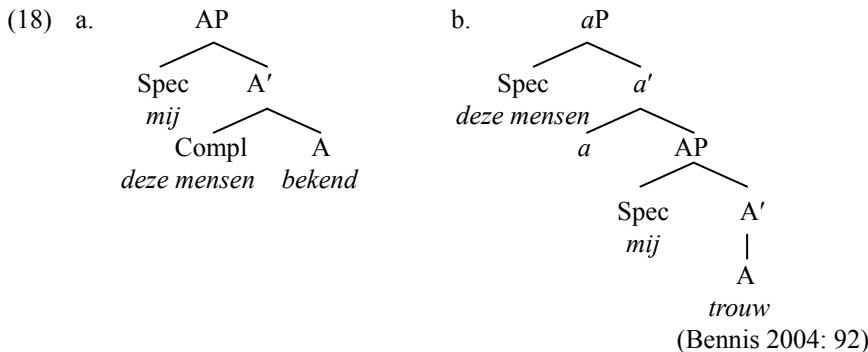
Bennis (2004) proposes an *a*-shell structure for “unergative adjectives,” to borrow his term. One of the crucial differences, between Dutch ergative and unergative adjectives¹, comes from the examples given below:

(17) a. Zoals *e* bekend is, houdt Jan niet van slakken
as well known is, likes John not snails
b. *Zoals *e* grappig is, houdt Jan van slakken.
as funny is, likes John snails

(cf. Bennis 2004: 91)

(17a) is an example of the ergative adjective, and (17b) of the unergative one. This difference is to some degree similar to the familiar distinction between raising and control adjectives, the former being, for instance, *likely* and the latter being *eager*. Bennis argues, giving two Dutch adjectival examples *Deze mensen zijn mij bekend* “These people are known to me,” and *Deze mensen zijn mij trouw* “These people are loyal to me” (ibid.:89), that these distinctions can be expressed in structural terms as follows:

¹ See Cinque (1990) for ergative/unergative distinctions in Italian adjectives.



Though I don't discuss, whether or not his analysis on this topic is reasonable, the split structure analysis for adjectives is quite suggestive and supportive to the analysis I have put forward below. Another *a*-shell analysis is developed in Hicks (2003, Chapter 5) for *tough*-constructions.

As we have reviewed so far, nominal and adjectival categories can be analyzed into split structures, in accord with the verbal head. So, I can conclude that the split PP structure is theoretically valid, if we assume that the prepositions are also one of the lexical categories.

4.2 Empirical Justification

The first empirical justification has to do with accusative Case. Directional prepositional phrases, basically contain an accusative DP. On the other hand, corresponding locative sentences exhibit an oblique-marked DP. For example, German locative prepositions govern the dative (or 3rd) Case, the Czech dative (or 3rd) or locative (or 6th) Case, and the Latin ablative Case; in contrast, the three languages are in common with each other, when their PPs are used to lend some directionality, that is, they all show the accusative Case on their DPs:

(19) German^{2,3}

a. dass Peter **in** dem Zimmer getanzt hat.
 that Peter in [the room]-DAT danced has
 '... that Peter danced in the room.' (locative)

² German definite articles are usually incorporated into the immediately preceding preposition to form ins from in das, im from in dem. But in this paper the incorporation is omitted for visibility.

³ In glossing our examples, the following abbreviations are used:

ABL	Ablative	GEN	Genitive
ACC	Accusative	IMPFVE	Imperfective
ASP	Aspect Marker	LOC	Locative
CL	Classifier	NOM	Nominative
DAT	Dative	PFVE	Perfective
DET	Determiner	POSS	Possessive Marker

b. dass Peter **in** das Zimmer getanzt ist.
 that Peter in [the room]-ACC danced is
 ‘... that Peter danced into the room.’ (motional)

(20) Czech

a. Petr šel **na** hradě.
 Petr was-walking in castle-LOC
 ‘Petr was walking in a castle.’ (locative)

b. Petr šel **na** hrad.
 Petr was-walking in castle-ACC
 ‘Petr was walking to a castle.’ (motional)

(21) Latin

a. Sextus **in** hortō ambulat.
 Sextus in garden-ABL walks
 ‘Sextus is walkng in the garden.’ (locative)

b. Marcus **in** hortum ambulat.
 Marcus in garden-ACC walks
 ‘Marcus walks into the garden.’ (motional)

The fact that the accusative Case is consistently used for directional expressions, is one of the motivations for me to assume that a certain functional head, which I dub *p* here, exists in the syntax, and also to assume that the head *p* can be considered to be parallel to the functional verbal head *v*, which is assumed to assign the accusative Case to its c-commanding DP. As Horrocks and Stavrou (2007) point out, Ancient Greek did have directional PPs (which they dub “goal-marking PPs”), but in contrast, Modern Greek does not (the Ancient-Greek examples in (22) are taken from Horrocks and Stavrou (2007:613)).

(22) a. Es Himera:n pro:ton pleusantes
 (In)to Himera-ACC first sailing-PFVE
 ‘having sailed first to Himera’ (Thucydides VII, 1)

b. Par-epleusan es Lokrous.
 Beside-sailed-PFVE.3pl (in)to Locri-ACC
 ‘They sailed along (the coast) to Locri.’ (Thucydides VII, 1)

c. Kata-pleomtes ... es ta pros to pelagos te:s ne:sou
 Down-sailing-IMPFVE to the(-parts) facing the open-sea of-the
 island
 ‘sailing down to the parts of the island facing the open sea’
 (Thucydides IV, 26)

The data in (19)–(21) as well as in (22) are quite parallel to those concerning verbal expressions, in that both *p* and transitive *v*, if assumed, govern the accusative Case on their c-commanding DPs.

(23) a. ..., dass er einen Roman liest. [German]
 that he a novel-ACC read
 ‘... that he read a novel.’

- b. Maminka mi dávala talíř na zem. [Czech]
Mommy me-DAT gave-IMPFVE dish-ACC on ground-ACC
'Mommy gave me a dish onto the ground.'
- c. Carmina Paulus emit, recitat sua carmina Paulus. [Latin]
poem-ACC Paulus buys recites [his poem]-ACC Paulus
'Paulus buys a poem; Paulus reads his own poem aloud.'

The accusative Case is assumed, to be one of the structural cases in the generative literature. Thus, accusative Case-marking has played a central role, and has attracted much attention. Another fact, which should be mentioned here, is that an accusative Case-marked DP itself can sometimes convey a directional and goal-marking sense.

(24) a. *Omnēs viae Rōmam ducunt.* [Latin]
all roads-NOM Rome-ACC lead
'All roads lead to Rome.'

b. *Wō qù/lái Táibēi.* [Mandarin]
I go/come Taipei
'I go/come to Taipei.'

Though the Chinese example does not seem uncontroversial, since this language has had no overt Case declension throughout its linguistic history, it can be reasonable to assume that *Táipēi* in (24b) *Wō qù/lái Táipēi* exhibits the abstract accusative Case in parallel, with an apparent accusative DP *Rōmam* in the Latin example (24a) *Omnēs viae Rōmam ducunt*. From the data given above, it can be said that accusative Case is one of the factors for directionality, and that given (24a,b), the verbal functional head *v* can be responsible for directed movement, in some languages.

The second empirical justification is the split realization of adpositions in Gbe languages, as discussed by Aboh (2005). He argues that the Gbe languages have two distinct types of adpositions, one preceding the DP-complement P_1 , and the other following the DP, P_2 . The following examples are from his (2005:621):

(25) a. *Kōjō zé àmì ló xlán Kwésí.*
Kojo take oil DET P_1 Kwesi
'Kojo sent the oil to Kwesi.'

b. *Kōjō xé tábò ló jí.*
Kojo climb table DET P_2
'Kojo climbed on top of the table [lit. on top/surface of the table].'

c. *Kōjō zé àmì ló dó tábò ló jí.*
Kojo take oil DET P_1 table DET P_2
'Kojo put the oil on top of the table [lit. on the top/surface of the table].'

As this present paper discusses that some PPs actually have a split projection, the data that Aboh has given are quite supportive of my analysis on adpositions. Moreover, he points out that adpositions P_1 develop from certain verbs, since the prenominal positions are exclusively occupied, by either verbs or adpositions, in Gbe

languages. This phenomenon can be seen in Chinese as well as Gbe, both of which are Serial Verb languages.

(26) Akan⁴

- a. Kofi **kɔɔ** Kumase.
Kofi go Kumase
'Kofi went to Kumase.'
- b. Kofi de Yaw **kɔɔ** Kumase.
Kofi take Yaw go Kumase
'Kofi took Yaw to Kumase.'

(Aboh 2005: 632; my emphasis)

(27) Chinese

- a. Wǒ **gěi** tā yì-zhī gāngbì.
I give him one-CL pen
'I gave him a pen.'
- b. Māma **gěi** wǒ zuò-le yí-jian xīn yīfu.
Mother for me make-ASP one-CL new clothes
'Mother (has) made a new suit of clothes for me.'

In contrast, P₂ in Gbe (as also argued for, by Aboh (2005)) and Chinese is developed from nominals. In both languages, P₂ follows a DP, and sometimes allows genitive markers to intervene between them.

(28) Gungbe (a member of Gbe languages) (ibid.: 637)

- a. Kòfí sín glè
Kofi POSS farm
'Kofi's farm'
- b. tábò (ló) sín gló
table DET POSS P₂/under
'the underneath of the table'

(29) Chinese

- a. Zhāngsān de shū
John POSS book
'John's book'
- b. xuéxiào (de) li
school POSS P₂/inside
'inside of the school'

I do not mean to claim that the locative prepositions of English like *in* and *on* are nominal in nature, just because Gungbe and Chinese data suggest that kind of nature. But it is worth noting, that P₁ and P₂ (which roughly correspond to *p* and *P* in my terms respectively) are distinct, since this suggests that adpositions can be split theoretically and empirically, which is compatible with my analysis.

⁴ Akan is a member of Kwa languages a subclass of which is Gbe languages. As for the examples (26a-b) there is no problem about the generality.

4.3 Split Adpositions

Now that we have observed, that a class of adpositions function as an accusative Case marker, and more generally bear certain verbal properties, it is natural to assume that the traditional PPs can be classified into two split projections as *p* and *P*. This assumption is crucial, in accounting for the goal-of-motion constructions in English.

(30) John ran into the station.

In light of the split projection analysis, the preposition *into* in (30) can be analyzed as [_p*P* *to* [_{PP} *in* DP]]. The locative preposition *in*, base-generates as the head of PP. On the other hand, *p* assumedly conveys a directional sense, and prototypically allows for *to*. The low preposition *P* *in*, rises to an immediately higher head *p*, to form *into*. This is similar to what happens in the verbal projection *v*-VP: Verbs base-generate in *V*, and then rise to *v*. Swedish, in contrast, displays another pattern. This language also has directional prepositions, and the lower *P* does not rise to *p*, as argued by Svenonius (2003a):

(31) a. Vi hoppade i vattnet.
we jumped in water-the
b. Vi hoppade in i vattnet.
we jumped into in water-the

If all the *p* did attract the lower *P*, we would expect that the PP in (31b) is *i-in* or *in-i*. Since this is not the case, a parametric distinctiveness is needed here, which this paper does not discuss.

German marks its prepositional (non-)directionality, based on what Case a preposition governs over the DP. Consider (19), repeated here as (32):

(32) a. dass Peter **in** dem Zimmer getanzt hat.
that Peter in [the room]-DAT danced has
'... that Peter danced in the room.' (locative)
b. dass Peter **in** das Zimmer getanzt ist.
that Peter in [the room]-ACC danced is
'... that Peter danced into the room.' (motional)

Seemingly, nothing special happens in these German cases. But I can claim that the preposition *in*, in (32b), actually rises to a functional category *p*, headed by an abstract preposition (or simply a directional feature [+DIR], without any syntactic expressions). If I represent the abstract preposition by means of TO, the partial syntactic structure for (32b) will be as follows:

(33) [_p*P* *in*-TO [_{PP} *in* [_{DP} das Zimmer]]]]



This also applies to ambiguous English prepositions.

(34) The bottle floated under the bridge.

Examples like (34), display a kind of ambiguity between motional and locative senses. In (34), the motional interpretation is obtained, when the floating bottle moves to a place under the bridge; on the other hand, the locative interpretation is obtained, when the bottle simply floats on the water under the bridge. The motional *under*, can be analyzed as [_{pP} *under*-TO [_{PP} ~~under~~ DP]]]. As for non-directional examples like (32a), and languages like French that disallow directional prepositions to occur, I can assume that the functional head *p* does not exist, or *p* does exist but is morphologically and structurally defective. This is a question, which I leave for future research.

As mentioned in the preceding subsections, the directional preposition consistently governs the accusative Case. This consistency will be accounted for, if *p* is assumed to follow *v*, in that it assigns the accusative Case on the basis of Probe-Goal relation, proposed by Chomsky (2001):

(35) *Agree*

- a. Goal as well as probe must be active for Agree to apply.
- b. α must have a complete set of ϕ -features (it must be ϕ -complete) to delete uninterpretable features of the paired matching element β .

(Chomsky 2001: 6)

(35) works well in nominative and accusative Case assignments done by *v** and *T* respectively. To take the nominative Case assignment, for example, a DP, to be assigned the nominative Case, has an interpretable ϕ -feature and an unspecified Case feature [Case], which is uninterpretable at the LF interface, and thus is active; *T*, in the numeration, has an uninterpretable ϕ -feature, and thus is active. As the derivation proceeds and *T* is introduced, an Agree relation is established, where *T* is the probe, and the DP is the goal. The Probe assigns a nominative value to the goal, and deletes the Case feature. The goal DP, in turn, deletes the uninterpretable ϕ -feature on *T*. The same can be said about the accusative Case assignment in *v**-DP and *p*-DP. If *p* has an uninterpretable ϕ -feature, and the ability to assign the accusative Case to its c-commanding DP, there is no theoretical peculiarity to claim that *p* and the DP enter into an Agree relation, and the Case assignment is accomplished.

My proposal can be extended naturally to the PP resultative constructions.

(36) a. Mary broke the vase *into pieces*.
 b. Peter laughed himself *under the table*.

(37) a. [_{vP} _{v*-break} [_{VP} the vase _{break} [_{pP} **PRO** **in-to** [_{PP} **in** **pieces**]]]]]
 b. [_{vP} _{v*-laugh} [_{VP} himself _{laugh} [_{pP} **himself** _{under-T0} [_{PP} ~~under~~ the table]]]]]

What is implicitly assumed here is that, on the one hand the transitive PP resultative construction involves a control construction, and on the other hand the intransitive one involves a raising construction, since the DP *the vase* in (36a), is uncontroversially, an argument of the verb *break*, but in contrast the DP *himself* in

(36b), is not originally an argument of the verb *laugh*.

5 THEORETICAL CONSEQUENCES

5.1 Auxiliary Selection

We have thus far seen, that certain adpositional phrase can be split, and the functional head *p* bears directionality ([+DIR] feature), and has the ability to assign the accusative Case. Once the split adpositional structure is assumed, an interesting result immediately obtains. What matters here is Auxiliary Selection (AS) phenomenon, one of the verbal unaccusativity diagnoses: BE for unaccusatives, and HAVE otherwise. The goal-of-motion construction, where a directional PP is added to an unergative VP, selects BE, whereas all the resultative constructions, except for those based on unaccusative verbs, select HAVE as their perfective auxiliaries. A crucial difference between the goal-of-motion and resultative constructions is that the former have no overt object, but the latter sometimes do (unless the resultatives are formed on the basis of unaccusatives). In other words, the former do not involve *v*P* but simply *vP*, whereas the latter need to have *v*P*.

I suggest that the AS phenomenon has to do with the Agree relation between T and *p*, the matching feature being [+DIR]. If the Agree relation is established, T calls for BE. If not, T still has an uninterpretable [+DIR], and HAVE, which I assume can check the feature, is inserted.⁵ When *PIC* (1), repeated here as (38), is taken into consideration, it immediately follows that while the goal-of-motion construction selects BE, the resultative constructions select HAVE.

(38) *Phase-Impenetrability Condition*

In phase α with head H, the domain of H is not accessible to operations outside α , only H and its edge are accessible to such operations.

(Chomsky 2000: 108, 2001: 13)

As Chomsky notes, *v*P* constitutes a strong phase, and obeys the *PIC*. This assures that T, of the resultative constructions, cannot go into the domain of *v*P*, i.e. the complement of *v**, and that T and *p* do not enter into the Agree relation. In contrast, the goal-of-motion construction involves the weak phase *vP*, and it does not prevent T from establishing the Agree relation with *p* in the domain of *v*.

⁵ This is just a stipulation, and further research is definitely required.

5.2 *Syntactic Unaccusativity*

Since Perlmutter’s (1978) Unaccusative Hypothesis, unaccusative verbs have long been considered to be lexical in nature, just as the transitivity of transitive verbs is lexically specified. Lexicalists claim that appropriate linking rules map the arguments on the argument structure onto the unaccusative syntactic structure, where there exists only one argument DP. Syntacticians, in contrast, claim that the only argument of unaccusative verbs, base-generates in the complement position of VP, and in some cases rises to the subject position. As for inherently unaccusative verbs, this seems plausible. But another theory will be needed, if we take “unaccusativization” into consideration. As we have observed in 4.3, unergative verbs change their syntactic nature to that of unaccusatives when they have a directional PP added, which Horrocks and Stavrou (2007) term “unaccusativization.” Naturally, the “unaccusativizable” verbs themselves are not unaccusative, as the following examples indicate:

(39) a. Gianni è corso in spaggia.
 John BE run in beach
 ‘John ran to the beach.’

 b. *Gianni è corso.
 John BE run
 ‘John ran.’

 c. Gianni ha corso in spaggia.
 John HAVE run in beach
 ‘John ran in the beach.’

(Folli and Ramchand 2004: 11-13)

My suggestion is that the inherent nature of unaccusativity should be called “lexical unaccusativity,” and of the derivative one be called “syntactic unaccusativity.” The latter nature can immediately follow, if we assume the split projection analysis of adpositions as *p*-PP. As 4.3 and 5.1 suggest, *p*, that is in the domain of weak phase vP, functions as the inducer of BE-selection, in the AS phenomenon. This is the consequence of syntactic unaccusativization.

Lexical unaccusativity has long played a central role in literature. But having once considered an example like (39a), the lexical version of unaccusativity does not necessarily fully account for it. What is called for here, is syntactic unaccusativity. While the lexical account of syntactic unaccusativity is simply a stipulation (cf. Levin and Rappaport Hovav (1995)), my syntactic account is a principled one. These two distinct classifications of unaccusativity seem reasonable and promising.

6 CONCLUSION

This paper has argued that the traditional bare PP analysis of adpositional phrases, is

untenable in some respects, and that a split analysis should be qualified as an alternative. Crucial empirical evidence has come from the goal-of-motion construction. Moreover, my analysis can be extended to the resultative constructions, and some theoretical consequences can obtain. Remaining issues about syntactic unaccusativity are left open for future research.

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