THE SPLIT-PP HYPOTHESIS AND ITS IMPLICATIONS[*]

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1.   Introduction

The notion that the category 'preposition' is not a homogeneous one has had a long history in the literature. It has been observed on several occasions that the members of the pretheoretical category of prepositions[1] can be grouped into two distinct classes: a class of 'lexical' prepositions (1a), and a class of 'functional' prepositions (1b). This distinction is not limited to English: similar asymmetries have been noted in French (Tremblay 1996), Spanish (Horno Chéliz 2002), and Niuean (Oceanic, Polynesian; Massam, Gorrie, and Kellner 2006), among other languages.

(1)   a.   Lexical prepositions in English: *near*, *opposite*, *via*, *etc.*

    b.   Functional prepositions in English: *at*, *of*, *to*, *etc.*

Each of these classes is associated with a cluster of semantic, phonological, and morphosyntactic properties. Lexical prepositions have, in general, more concrete semantics than functional prepositions. Lexical prepositions can also be polysyllabic (and are in general phonologically heavier than functional prepositions) and polymorphemic, whereas functional prepositions are exclusively monomorphemic and overwhelmingly monosyllabic. These facts raise the question: what is the cause of these distinctions?

This paper will attempt to account for these asymmetries by appealing to a distinction in syntactic category between the two classes of prepositions. I take as a starting point the analysis in Starke (1993), under which lexical prepositions consist of two categorially-distinct heads, the lower of which is spelled out either as a functional preposition in its own right (2a) or as a null item (2b), and functional prepositions are exponents solely of the lower category.

(2)   a.   *next **to** John*

    b.   *near **ø** John*

[1] In this paper, I use the term preposition loosely to include postpositions and circumpositions as well.

On analogy with the analysis of several Romance prepositions (*e.g.* the Spanish *a personal*) as case markers, I assign the label K to the lower category (which, alone, spells out as a functional preposition such as 2a-b), while I assign the familiar label P to the higher projection (that which, when merged with KP, spells out as a lexical preposition). Further, I propose that the presence or absence of a PP-shell (in the case of functional prepositions) has consequences for the properties of the preposition in question. I find support for this analysis in: (a) the behaviour of inflected prepositions in Irish, (b) cross-linguistic asymmetries in the object-marking of complex predicates, and (c) the properties of the prepositional arguments of Irish pseudo-modal expressions.

2. The Split-PP Hypothesis

2.1 Motivations and Outline

The motivations for splitting the PP are many: firstly, the many differences between lexical and functional prepositions (delineated in section 1) lend themselves to an analysis under which the two types of prepositions are distinct in category; secondly, it will allow us to maximally decompose polymorphemic prepositions such as *atop*, *beside*, *instead of*, *etc.*; and finally, it will bring prepositions into line with verbs (Chomsky 1986; Pollock 1989) and nouns (Abney 1987; Grimshaw 1991) by furnishing P with an extended projection of its own (*á la* Svenonius 2007).

2.2 Why K?

It is obvious that, within the category of prepositions, some items (those which I call the functional prepositions) are more closely equivalent to case markers than other items (the lexical prepositions). The parallels of the functional prepositions with case markers is often very strong: in some instances, a given case feature can be spelled out using a case marker or a preposition. Although this generalisation is especially robust cross-linguistically, it also holds occasionally within languages.

For example, in Irish, partitives can be expressed either by using the genitive case (3a) or the preposition *de* 'of' (3b):

Irish (Indo-European, Celtic):

(3) a. *Beidh rogha teanga   ann.*
         be.FUT choice language.GEN in.3MSG
         'There will be a choice of language.'

     b. *Tug-ann siad   seo rogha de charachtair.*
         give-PRES 3PL.NOM this choice of character[PL]
         'These give a choice of characters.'

In Spanish, accusative case is marked on personal arguments[2] using the preposition *a* 'to':

Spanish:

(4)　　*Juan ama　　a　　　María.*
　　　　John love.3SG ACC.SPEC Mary
　　　　'John loves Mary.'

In all of these instances, when a preposition is used, that preposition is part of the set of functional prepositions[3]. Therefore, I propose that functional prepositions are exponents of the category K, which I assume (following Bittner and Halle 1996a; 1996b) to be the head of the maximal extension (KP) of the nominal projection.

This proposal, which is not entirely new (see, for example, Kayne 2002), faces certain theoretical and empirical obstacles. One such obstacle is the co-occurrence of functional prepositions with case markers, as occurs in Latin (5). How does the split-PP hypothesis account for this phenomenon?

Latin:

(5)　　a.　　*ad homine-m*
　　　　　　　to person-ACC.SG
　　　　　　　'to the person'

　　　　b.　　*dē　　　fact-ō*
　　　　　　　down.from fact-ABL.SG
　　　　　　　'in fact'

A further problem for such an analysis arises from the behaviour of the objects of functional prepositions[4] when conjoined. A single preposition can take two conjoined DPs as a complement (6a), whereas case markers (at least in languages where this case marker is a bound morpheme) must occur on each conjoined nominal (6b-c). How is this discrepancy explained?

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[2] This personal *a* is only used when a personal accusative argument is [+SPECIFIC].
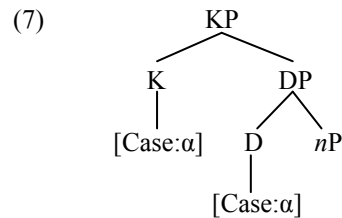
[3] For the lexical/functional distinction in Irish prepositions, see section 3.1.

[4] While indeed these facts hold for both lexical and functional prepositions, they are only potentially problematic for this analysis in the case of functional prepositions.

Latin:

(6) a. *ob   multitūdine-m   et vetere-m   bell-ī*
         because.of great.number-ACC.SG and old-ACC.SG war-GEN.SG
         glōria-m
         glory-ACC.SG
         'on account of [their] great number and ancient glory in war…'
                                         (adapted from Cæsar, De Bello Gallico, 3.24)

     b. *gladi-īs et hast-īs*
         swords-ABL.PL and spear-ABL.PL
         'with swords and spears'

     c. * *gladi-īs et hast*
         swords-ABL.PL and spear

These objections can be dealt with by adopting an analysis which (following Marantz 1991) holds morphological case—the case markers familiar from examples such as the Latin case suffixes shown in (5-6)—to be assigned post-syntactically to satisfy language-specific well-formedness requirements. The analysis that I propose here, however, differs from that of Marantz (1991) in that I posit a discrete case head K which controls morphological case marking on the DP. This relationship is schematised in (7):

(7)   KP
                   ╱   ╲
               K   DP
               | ╱   ╲
           [Case:α]   D   *n*P
                           |
                       [Case:α]

This structure would then be spelled out in a fashion that meets the well-formedness requirements of the language in question. This makes it easier to resolve the objections advanced above. Under this analysis, the co-occurrence of functional prepositions (putatively exponents of K) with morphological case marking on DPs ceases to be problematic: the case marker on the DP is inserted post-syntactically. Likewise, both the fact that the K element need not be repeated in front of each member of a conjoined DP structure (6), and the fact that morphological case is obligatory on both members of a conjoined DP (6b-c) emerge straightforwardly from this analysis: if case marking originates uniformly from a structural position higher than the DP, a relationship of agreement could still hold between the case assigner K and each DP in a conjoined construction.
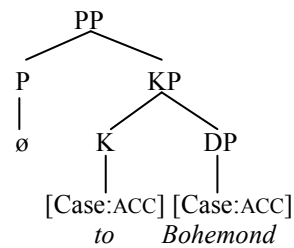
2.2   With or Without P

I propose the complete absence of a PP in the case of functional prepositions in order to account for a number of semantic and morphological phenomena.
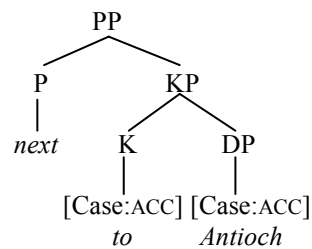
   A priori, of course, the difference between functional prepositional phrases like *to Bohemond* and lexical prepositional phrases such as *next to Antioch* or *during Lent* could be attributed to the existence of a null P head.
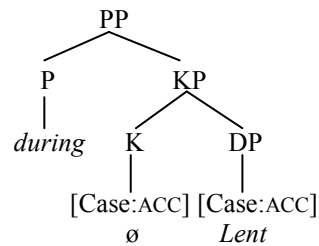
(8)   A null-P hypothesis:

   a.

```
            PP
         ___|___
        P       KP
        |      __|__
        ø     K     DP
              |      |
         [Case:ACC] [Case:ACC]
             to    Bohemond
```

   b.

```
            PP
         ___|___
        P       KP
        |      __|__
       next   K     DP
              |      |
         [Case:ACC] [Case:ACC]
             to    Antioch
```

   c.

```
            PP
         ___|___
        P       KP
        |      __|__
      during   K     DP
              |      |
         [Case:ACC] [Case:ACC]
             ø     Lent
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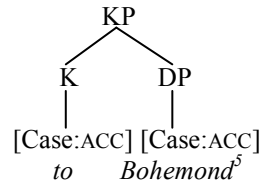
   Under a null-P analysis, however, although the gross facts of word order and constituency are respected, an important generalisation is missed. By positing an identical syntactic structure for lexical and functional prepositional phrases, it is more difficult to derive the divergent properties of each class of prepositions in a principled way.

For example, as was discussed above, it is well known that lexical prepositions cross-linguistically exhibit more concrete semantics and a narrower range of meanings than their functional equivalents. This robust generalisation can be better accounted for by positing a structural difference between the two classes of prepositions, as shown in (9).

(9)

```
              KP
             /  \
            K    DP
            |     |
    [Case:ACC] [Case:ACC]
        to     Bohemond⁵
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The precise mechanism by which the broad semantic range of functional prepositions (and the corresponding narrow range of lexical prepositions) is obtained is not entirely clear. I will, however, sketch out a possible solution.

I will first consider the broad range of meaning of functional prepositions, using English *at* as a representative example. The many and varied meanings of *at* seem to coalesce into four broad groups: (a) spatial *at*,[6] (b) temporal *at*,[7] (c) *at* of activity or circumstance,[8] and (d) thematic *at*.[9]

If functional prepositions are indeed instances of K, then their use as object markers for certain verbs is unsurprising; it is nothing more than the familiar phenomenon of quirky case (Levin and Simpson 1981) being assigned by a particular lexical item to its complement.

Russian:

(10) *On   zanimaetsja biznes-om*
      3MSG.NOM study-3SG.   business-INST.SG
      'He studies business.' (adapted from Bickel and Nichols 2007)

The remaining three categories are more contentful. Although they are diverse in meaning, there does seem to be a common thread running through all three of them: the notion of location *where*, be it spatial, temporal, or circumstantial[10]. This commonality I ascribe to a feature of the lexical item *at*—

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[5] The structure of lexical prepositions under this hypothesis is identical to that posited in (8b-c).

[6] *e.g. at home, at my heels, at the party, at the church, at her side, etc.*

[7] *e.g. at midnight, at three o'clock, at the time, at first, etc.*

[8] *e.g. at work, at peace, at your disposal, etc.*

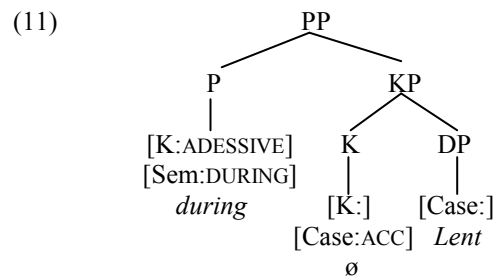[9] *e.g. look at Godfrey, aim at the target, marvel at his wealth, etc.*

[10] Of course, this is a more metaphorical sense than the other two.

more specifically, the valuing of a K feature[11]; [K:ADESSIVE]. In the absence of additional semantic features (which I propose exist in the case of lexical prepositions), this KP complex is interpreted in a relatively underspecified way in the context of its site of attachment (see section 2.4), giving rise to the spatial, temporal, and circumstantial senses of *at*.

Under this analysis, *at* (or more accurately, what will later be spelled out as *at*) comes into the derivation as at least the following bundle of features: an unvalued [K:] feature and a morphological case feature [Case:ACC]. This second feature ensures that the complement of *at* is spelled out with morphological accusative case. The [K:] feature, on the other hand, originates without a value,[12] and will have to receive abstract case from something else (see below). The function of K, then, is to mediate between a large number of abstract cases (there will be at least one for every functional preposition) and a small number of morphological cases.

Of course, languages differ with respect to how many distinctions this K mediator maintains. In English, all of the dozens of prepositional abstract cases are collapsed into the morphological accusative case by K, but in languages with richer morphological case systems (Latin, German, Russian, *etc*.) the K mediator may allow more than one morphological case to be realised on the DP[13]. I will return to the question of what values the [K:] feature in section 2.4.

The fact that lexical prepositions lack this broad polysemy might be explains as follows: the P head bears a feature (which I label in example 11 as [Sem:]) corresponding to the semantics of the preposition in question, in addition to a [K:] feature, which—unlike the [K:] feature on the K head—comes prevalued, and will not need to be valued by a higher projection. This gives additional, more precise information about the interpretation of the PP, resulting in prepositions with fewer and more concrete meanings.

(11)

PP
├── P
│   [K:ADESSIVE]
│   [Sem:DURING]
│   *during*
└── KP
    ├── K
    │   [K:]
    │   [Case:ACC]
    │   ø
    └── DP
        [Case:]
        Lent

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[11] I use the feature K to represent abstract case and the feature Case to represent morphological case.
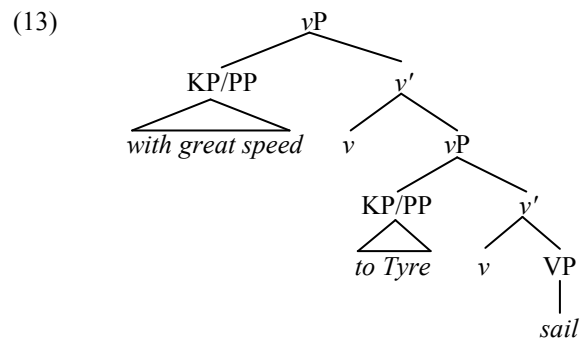
[12] At least, when it appears on the K head.

[13] Latin allows either accusative or ablative (depending on the preposition) on the objects of prepositions, for example.
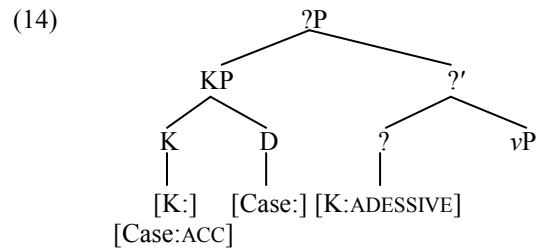
2.2 Valuing K

How then is the [K:] feature valued? To answer this question it is necessary first to make explicit where in the structure of a sentence these KPs and PPs attach. Based on parallels such as that in (12), I analyse these KPs and PPs as circumstantial adverbials, and following Cinque (1999), I will assign them a preliminary structure like that given in (13).

(12)   a.   *They sailed **quickly** to Tyre.*

       b.   *They sailed **with great speed** to Tyre.*

(13)

Under such an analysis, the verb moves later in the derivation to a projection above the highest *v*P to derive the attested order [VP PP *etc.*].

This analysis takes all circumstantial adverbials to be structurally identical: a temporal circumstantial is base-generated in the specifier of *v*P just as a place circumstantial is. Adger and Tsoulas (2004), however, argue that distinct types of circumstantial adverbials (*e.g.* place adverbials, manner adverbials, *etc.*) are base-generated in the specifiers of distinct functional projections in the verbal domain. Although I will remain agnostic as to the identity of these projections, I will proceed assuming the insight that circumstantial adverbials are not a homogeneous class, and that the distinctions between different types of circumstantial adverbials can be represented syntactically by having them occupy the specifiers of different functional projections.

(14)

```
                            ?P
                      ┌──────┴──────┐
                     KP            ?′
                   ┌──┴──┐       ┌──┴──┐
                   K     D       ?     vP
                   │     │       │
                  [K:] [Case:] [K:ADESSIVE]
                [Case:ACC]
```

It is by the heads of these projections that I am suggesting the [K:] feature is valued. For example, the head of whatever functional projection introduces the place adverbial would carry a feature such as [K:ADESSIVE] (or whatever K feature is required). This feature values the unvalued [K:] feature on the K head,[14] which in turn values the morphological [Case:] feature on D.

3 Irish Prepositions: Further Evidence for a Split-PP

3.1 Inflected Prepositions

In some languages, there are prepositions which inflect for φ-features. This is a salient aspect of the morphology of the Insular Celtic languages (Irish, Manx, Scottish Gaelic, Welsh, and Breton). In Irish, which I use as a representative example, there is a closed class (listed in example 15) of prepositions which, instead of taking a pronominal object, themselves inflect for person, number, and gender.

(15)   Irish inflecting prepositions: *ag* 'at', *ar* 'on', *as* 'out of', *chun/chuig* 'towards', *de* 'of', *do* 'to, for', *faoi* 'under, about', *i* 'in', *idir* 'between', *le* 'with', *ó* 'from', *roimh* 'before', *trí* 'through', *thar* 'past, over', *um* 'around'

(16)   Irish prepositional inflection: *ar* 'on', *orm* 'on me', *ort* 'on you (sg.)', *air* 'on him', *uirthi* 'on her', *orainn* 'on us', *oraibh* 'on you (pl.)', *orthu* 'on them'

Not all prepositions in Irish behave in this manner, however. There is also a class of prepositions for which (accusative-marked) pronominal objects are perfectly licit, and for which inflection for φ-features is impossible.

These two classes of prepositions are marked by much the same distinctions which exist between English lexical and functional prepositions. For example, the semantics of Irish inflected prepositions are vague (see 17 for one

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[14] Recall that, although the PP also bears a [K:] feature, that feature comes prevalued, and therefore cannot be valued by the head of the functional projection whose specifier it occupies.

non-exhaustive list), whereas the non-inflected prepositions (those that admit pronominal objects) usually have a much more limited range of meanings.

(17) a.   *Tá sé   ar an mbord.*
       be 3MSG on DEF table
       'He is on the table (=spatial).'

     b.   *Tá punt ar an ull.*
       be 3MSG on DEF apple
       'A pound (of cost) is on the apple (=in exchange for).'

     c.   *Tá an t-áras   aon stór   déag ar airde.*
       be DEF building one storey ten   on height
       'The building is eleven stories in height (=in the dimension of).'

These facts suggest that the distinction between the two classes of Irish prepositions is roughly equivalent to the lexical *vs.* functional distinction discussed in section 2.2. Therefore, to the list of the properties of functional projections we might add the following: functional projections are able (in some languages, at least) to inflect for person, number, and gender. If functional prepositions are indeed exponents of K, however, then this property is not unexpected, although it is usually thought of not as case markers expressing the features of a null pronoun, but rather pronouns expressing the features of a null case marker.

(17) Some Irish prepositions alongside Latin functional equivalents, exemplified in their first person singular forms:

	Irish	Latin
DATIVE	*dom* (from *do* 'to, for')	*mihi*
ABLATIVE	*uaim* (from *ó* 'from')	*mē*
PARTITIVE	*díom* (from *de* 'of')	*meī*
COMITATIVE	*dom* (from *le* 'with')	*mēcum*

As can be seen in (17), the parallels between (what are traditionally considered to be) inflected prepositions and case-marked pronouns are clear. While the Irish inflected prepositions may have arisen historically in a different manner from the Latin case-marked pronouns, they are functionally equivalent; a split-PP hypothesis provides a principled account for this.

3.2   Modal-like Expressions

A further difference between the two classes of prepositions is that only the inflecting prepositions may appear in the many modal-like expressions of Irish; something which non-inflecting prepositions never do.

(18) a. *Ba   chóir **duit** é   a dhéan-amh.*
COP.IRR justice to.2SG 3SG.ACC INF do-NMLZ
'You should do it. (=to do it would be justice to you)'

b. *Thiocfadh **leat** é   a dhéan-amh.*
come-COND with.2SG 3SG.ACC INF do-NMLZ
'You could do it. (=to do it would come with you)'

c. *Tá **uait** é   a dhéan-amh.*
be from.2SG 3SG.ACC INF do-NMLZ
'You want to do it. (=to do it is from you)'

d. *Tá **ort** é   a dhéan-amh.*
be on.2SG 3SG.ACC INF do-NMLZ
'You have to do it. (=to do it is on you)'

Under the split-PP hypothesis, this property of Irish lexical prepositions is reduced to the more familiar phenomenon of quirky subjects. Compare the Irish sentences in (18) to the following example from Icelandic:

(19) **henni**   *fór   fram*
3FSG.DAT went forth
'She got better.' (Sigurðsson 2004)

If Irish inflecting prepositions are case markers, then the existence of quirky subjects using inflected prepositions is not unexpected.

3.2 Object Marking in Complex Predicates

Further evidence for a split PP can be found in the way that objects of Irish complex predicates (specifically, light verb constructions) are marked. Consider the sentences in (20). When a given predicate is synthetic (*i.e.,* expressed by means of a contentful verb) as in (20a-b), its object is marked with the accusative case.[15] But when the same predicate is expressed analytically (*i.e.,* using a light verb construction) as in (20c-d), the object is marked by the preposition *ar* 'on'.

(20) a. *D'-ionsaigh siad   an Iaráin.*
PST-attack   3PL.NOM DEF Iran
'They attacked Iran.'

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[15] As in English, the accusative case in Irish is morphologically differentiated from the nominative only in the case of personal pronouns.

b.   *D'-ionsaigh siad   é.*
        PST-attack   3PL.NOM 3MSG.ACC
        'They attacked it.'

c.   *Rinne siad   an t-ionsaí ar an   Iaráin.*
        do.PST 3PL.NOM DEF attack   on DEF Iran
        'They attacked Iran (=they made an attack on Iran).'

d.   *Rinne siad   an t-ionsaí air*
        do.PST 3PL.NOM DEF attack   on.3MSG
        'They attacked it (=they made an attack on it).'

The split-PP hypothesis is able to retain the insight of the underlying equivalency of these two predicate instantiations, at least with respect to case. If functional prepositions such as *ar* 'on' are case markers, there need not be any structural difference between the internal arguments of (18a) and (18c) on the one hand, and (18b) and (18d) on the other.

Furthermore, the phenomenon of differential object marking shows again the division between the two types of prepositions: inflecting (by hypothesis functional, case-marking) prepositions can serve as object markers in light verb constructions, while those prepositions that do not inflect (by hypothesis the lexical prepositions of Irish) never function in this capacity.

4   Conclusion

I have proposed in this paper a new theory of prepositions in which the morphological, semantic, and phonological differences between two cross-linguistic classes of prepositions are reflected in the syntax. Specifically, I claim that there is a categorial distinction between so-called functional prepositions (to which I assign the category K) and so-called lexical prepositions (which are composed of a higher PP in addition to a KP), and that the properties of lexical prepositions fall out from the presence of their PP-shell.

This split-PP hypothesis finds further evidence from the dichotomy in Irish of inflected versus non-inflected prepositions, which parallels the English lexical/functional distinction. From their morphological behavior (inflection for φ-features) and their appearance as quirky subjects and objects, I have argued that Irish inflected prepositions are instances of K, and therefore equivalent to English functional prepositions such as *to*, *at*, *from*, *etc.*

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