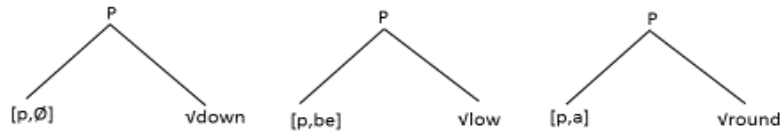


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- (3) a. shū zài zhuōzi shàng b. wǒ-men shàng ke le (Mandarin)
 book LOC table on 1-PL go to class ASP
 'The book is on the table.' 'We went (up) to class'
- (4) a. rǎft posht-e xane. b. posht-e mærd zæxmi æst (Persian)
 went back-EZ house back-EZ man wounded is
 'She/He went behind the house' 'The man's back is wounded'

With the proposal for a categorial *little p*₋, Deacon (2014a; 2014b) also proposes that /Ø/, /a-/, and /be-/ are exponents of *p*₋ in English. It is argued that these two morphemes are realizations of the proposed *p*₋ head in the same way the suffixes /-ify/or /en/ and /-tion/ or /-ness/ are understood as realizations of *v*₋ and *n*₋ heads in English. The exponent for *p*₋ is /Ø/ when it merges with a root like *down*, /be-/ when it merges with a root like *low*, and /a-/ with a root like *round* as in (5).

(5) Exponents of *p*₋ in English



This analysis, accordingly, aligns the category *P* with the other major lexical categories in in DM where all derivations are composed in the syntax. Questions, nevertheless, remain concerning the prevalence of *little p*₋. If analogous to *n*₋, *v*₋, and *a*₋, why do we not see root items operating in adpositional domains in more languages? Also how does this proposal align with other approaches which have mapped out several structural properties for the category *P* (i.e. the cartographic approach to syntax)?

It is proposed that the answer to these questions is found by examining the findings of the cartographic approach for adpositions. It is argued here that descriptions of the adpositional domain within the cartographic approach have uncovered *little p*₋ functioning in more languages than previously described. However, these works have not formally proposed a mechanism for framing lexical material in an adpositional domain (i.e. a categorial *little p*₋), and have instead proposed the existence of a separate syntactic head, AxPart (AxPart) (Svenonius 2006), to account for these forms operating in the extended projection of *P*. Moreover, because the cartographic enterprise argues that the items that realize the proposed AxPart node are single pieces of lexical information, the correspondence of AxPart types and syntactic patterns cannot be explained. Instead these must be considered idiosyncratic properties of each item.

Finding systematic properties corresponding with the different derived adpositional forms (i.e. prepositions beginning with /be-/ pattern differently than those beginning with /a-/ or /Ø/) suggests the analysis in (5) is correct. Otherwise, such a pattern could only be explained as a synchronic coincidence where the inaccessible etymology of a form continues to influence com-

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position. This paper shows that differences between /be-/ and /a-/ or /Ø/ exist, thus suggesting the proposal for *little p_* as a categorial head (Deacon 2011; 2014a) is useful beyond explaining the distributional overlap shown in (1-4). In other words, this more discrete analysis syntactically explains different patterns seen between different putative members of the category AxPart that otherwise must be considered idiosyncratic.

This paper is organized as follows. Section 2 gives a brief overview the extended projection of P within the Cartographic Enterprise. Section 3 proposes that the major adpositional domains described in Section 2 contain a root-node categorized by a flavor of *little p_*. Section 4 discusses the role of AxPart within the extended projection of P. Section 5 proposes that AxParts are better viewed as a root-node categorized by a locational *p_* head, and shows that there are systematic differences between /be-/ and /a-/ prefixed forms, supporting the need for the analysis taken here.

2. Cartographic Approach and the Extended Projection of P

The Cartographic Enterprise is an attempt to map the order of a large number of functional projections found with different categories (Ramchand and Svenonius 2014). Generally with this approach every identifiable feature occupies a different terminal node, requiring an additional projection.

The Cartographic approach for adpositions largely builds upon Grimshaw (1991) where prepositions are a functional projection of a DP, the Ground.^{1, 2} Thus adpositions are realizations of functional material projected from the categorial domain of N, not P.

Within this projection, it is widely understood that Path features dominate Place ones (Koopman 2000; Den Dikken 2006; Svenonius 2010; Radkevich 2010). Examples of this are given here for English, Zina Kotoko, Chinese, and Persian to show the extent of this strong tendency/universal.

- (6) [P- DP] → [Path - Place - DP]
- a. **From under** the house (English)
 - b. **ná gmá tábèl** (Zina Kotoko: Holmberg 2002)
to on table
'onto the table'
 - c. **cōng tái zi shàng** (Mandarin)
from table/desk on
'from on the desk'

¹ There is some controversy here regarding the lexical/functional nature of the category within the cartographic approach: compare Koopman (2000) and Botwinik-Rotem (2004) with Grimshaw (1991) and Svenonius (2010) (cf. Deacon 2014).

² The basic function of P is to relate a known entity (the Ground) with regards to space or time to an entity whose location in space or time is unknown (the Figure). See Langacker (1987), Zeller (2001), Svenonius (2008) and Deacon (2014) for further discussion of this.

- d. **æz** **tu(-ye)** quti (Persian: Pantcheva 2006:16)
 from in-ez box
 ‘out of the box’

In addition to Path above Place, Svenonius (2010) also proposes a *little p₋* head above Place: [p - Place - DP]. Here *little p₋* is argued to be responsible for introducing a Figure and being the locus for features of containment and contact (e.g. *in* vs. *on*). Additionally Svenonius (2010) proposes Directional (Dir) features above both Place and Path to account for the directional particles that can modify either head in English (7).

- (7) [P- DP] → [Dir- Path- p - Dir - Place - DP]
 Up from down in front of the house

While Svenonius (2008; 2010) argues for a *little p₋*, as shown in (7), modeling the projection of P after the Split VP hypothesis, he explicitly argues against the presence of a root-node in P as he maintains that P is projected from N as discussed earlier in this section:

“On the assumption that rich ‘encyclopedic’ or conceptual content can be associated with vocabulary items which are inserted under functional heads, there is no need for a special lexical root at the bottom of a sequence of functional heads” (Svenonius 2008: 19)

The cartographic approach describes and orders three major positions in P: [PLACE],[PATH], and [DIRECTION]. While these proposals further align P with the other major lexical categories, Svenonius’s (2010) proposals continue with Grimshaw’s (1991) original assumption that P is projected from DP. This makes the category P fundamentally different than *v₋*, *n₋*, and *a₋* because lexical material forms the base of the projection for the other major lexical categories. Given the lexical distribution shown in Section 1, this characterization appears to be incorrect or at least incompatible with DM.

3. **Root Nodes in the Extended Projection of P.**

Instead of lexical items³ representing the terminal nodes of functional projections from DP as in the cartographic approach, this work proposes that each major domain in the extended projection of P is the result of a lexical, root item situated (i.e. categorized) in one of the major spatial domains. This work thus proposes that Path (8), Place (9), and perhaps Directional features (10) can categorize a root item.

- (8) a. John climbed [[p_[path+case]] √IN] the hole].
 ‘John moved from outside to inside the hole’

³ Items from the lexicon, not lexical vs. functional.

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- b. John climbed $[[p_{[place+case]} \sqrt{IN}] \text{ the hole}]$.
'In the hole is where John climbed'
- c. John climbed $[[p_{[Dir]} \sqrt{IN}] [[p_{[goal+case]} \text{ to}] \text{ the hole}]]]$.
'John climbed inward'

With this analysis, $p_$ may select certain compounded roots (9). This analysis also allows the root selected to have an incorporated object as seen in (10).

- (9) a. John climbed $[[p_{[place+case]} \sqrt{INSIDE/OUTSIDE}] \text{ the hole}]$.⁴
'In the hole is where he climbed'
- b. John climbed $[[p_{[path+case]} \sqrt{INSIDE/OUTSIDE}] \text{ the hole}]$.
'John moved from outside to inside the hole'
- (10) a. John swam $[p_{[place+ease]} [\sqrt{DOWN}[\sqrt{STREAM}]]]$.
'John swam in a place that is downstream of the reference point'
- b. John climbed $[p_{[place+ease]} [\sqrt{IN} [\sqrt{FRONT}]]]$.
'John climbed in a place that is located in front of the reference point'
- c. John climbed $[p_{[place+ease]} [\sqrt{DOWN}[n_{[lex. plural]} \sqrt{STAIRS}]]]$.⁵
'John climbed in a place that is located downstairs'

In (10) the case feature under $p_$ is satisfied by the incorporated object, explaining why these forms cannot select for a DP ground: **John swam downstream the stream*. The incorporated complement, however, may have nominal features (10c), but it will not merge with all the functional projections of a DP before incorporation. It should be noticed that these also may receive Path interpretations. This can be easily accounted for under the present analysis by instead merging the root item with a $p_$ head containing a path feature (11).

- (11) a. John swam $[p_{[path+ease]} [\sqrt{DOWN}[\sqrt{STREAM}]]]$.
'John swam from somewhere upstream to somewhere downstream'
- b. John climbed $[p_{[path+ease]} [\sqrt{IN} [\sqrt{FRONT}]]]$.
'John climbed from somewhere to a position in front'
- c. John climbed $[p_{[path+ease]} [\sqrt{DOWN}[n_{[lex. plural]} \sqrt{STAIRS}]]]$.
'John climbed to a location that is downstairs'

With this analysis in place, it is argued that the category AxPart (Svenonius 2006) can often also be explained as lexical material categorized by a *little p_* head.

⁴ This analysis also capture uses such as *John was smacked upside the head*.

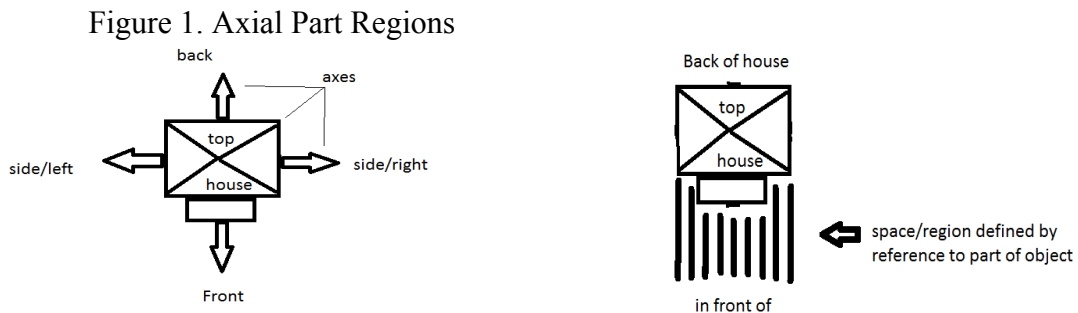
⁵ See Alexiadou (2011) for a more thorough discussion of the difference between merging a root with Plural before versus after categorization.

4. Axial Parts in the Projection of P

In addition to the projections discussed in the previous section, [Dir- Path- p - Dir - Place - DP], Svenonius (2006) also proposes that Place can be broken down into at least four separate projections: [Loc-AxPart-K-DP]. This captures the order of the adpositional items in (12) below. Crucially what is of interest is the projection labeled AxPart which is given in bold.

- (12) Projections within Place P → [Loc-**AxPart**-K-DP]
- a. In **front** of the house (English)
 - b. ie no **mae** ni (Japanese)
 house gen front LOC
'in front of the house'

In (12) K is the locus for genitive case markers while Location (Loc) is the locus for adpositions denoting Place. More importantly for the discussion here, AxPart is proposed to be the locus for items which denote a region in relation to part of the reference provided via the DP Ground. In other words, Axial Parts, as a semantic class of spatial prepositions, “pick out a region determined by extending the reference object’s axes out into the surrounding space” (Jackendoff 1996: 15). The category generally includes concepts such as *top*, *bottom*, *sides*, *front*, *back*, *ends* etc... This is demonstrated with Figure (1).



As depicted in Figure (1), *in front of* the house “denotes a region of space in proximity to the projection of [the house]’s front-back axis beyond the boundary of [the house] in the forward direction” (1996:15). This differs from the nominal use of the same form (13).

- (13) AxPart vs. Noun Interpretation
- a. There is a man *in front of* the house. ‘inside a space projected from an object’
 - b. There is a man *in the front of* the house. ‘inside an object/reference’

Generally in the literature these items are referred to as to as class B adpositions or as relational nouns which are not themselves *case* assigners (cf. Muriungi 2007 for Kĩtharaka; Pantcheva 2006 for Persian; and Djamouri et. al 2012 for Chinese). This is because items argued to

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be AxParts often must appear below other locative expressions, case assigners, to select for a DP (14).⁶

- (14) AxParts Dominated by other Functional Adpositional Items
- a. **cip pakk ey** (Korean: Svenonius 2006)
house outside LOC
'outside the house'
 - b. **ga- tîgatî k-a metha** (Kîrtharaka: Muriungi 2006:34)
12- centre 12-as 9 table
'the center of the table'
 - c. **(dær) posht-e xane** (Persian: Pantcheva 2006:10)
at/LOC behind-EZ house
'behind the house'
 - d. **Shu zài túshūguǎn ĭ** (Chinese)
book LOC library in
'the book is inside the library'

Svenonius (2006), however, argues extensively that AxParts are not nouns. In addition to having a different interpretation than nouns (13), the syntactic properties of items in the domain highlighted in (13) and (14) are different than nouns. Svenonius (2006) shows that AxParts cannot take definite articles (15), generally cannot be made plural (if a plural marker is found its meaning is different than the plural form found with a noun as seen with (15c)) or be modified by adjectives (16). Moreover, unlike a DP, AxParts can take a measure phrase (17).

- (15) Articles and Number
- a. There are radios in the fronts of the cars. (Nominal Use)
 - b. * There are radios in fronts of the cars. (AxPart Use)
 - c. **Shekær rixt in zir-ha-ye miz.** (Persian: Pantcheva 2008)
sugar spilled this under-pl-EZ table
'The sugar spilled here all over under the table'

- (16) Adjectival Modification
- a. There is a note in the damaged front of the car. (Nominal Use)
 - b. * There is a note in damaged front of the car. (AxPart Use)

⁶ In (14c) it can be argued that *posht-e* 'behind-EZ' can appear without *dær* 'LOC' because the *ezafe* marker is a case feature that then allows *posht* to select for the DP ground *xane* 'house'.

- (17) Measure Phrase
- a. * There is a note 10 feet in the front of the car. (Nominal Use)
 - b. There is a note 10 feet in front of the car. (AxPart Use)

While Svenonius and others have undoubtedly described an item that is different than a noun,⁷ whether AxParts are separate lexical entries or the product of different syntactic derivations of the same form remains a question.

As seen here, many axial prepositions are morphologically related to nouns⁸ that denote axial parts (Jackendoff 1996). While Svenonius suggests that this “relationship between N and AxPart ... may be either historical or derivational” (2006: 66), the position that aligns with the cartographic approach is that this category comes from the grammaticalization of nouns (and sometimes other categories) whereby the noun no longer refers to part of an object but to the space associated with that part of an object (Svenonius 2006; 2010) That is, for Svenonius and others taking the cartographic approach, AxPart must be a product of the lexicon. There must be a separate list of items in the lexicon capable of realizing the category AxPart. Recall that the cartographic framework assumes/proposes that a unique position in the syntax requires a unique item or list of items capable of lexicalizing such a position.

Thus within the cartographic approach, AxPart is proposed to be a separate syntactic category within the extended projection of P that is realized by lexical items identified as AxParts. In the following section, I argue against this idea, instead proposing that in many cases the nominal and AxPart uses of an item are better understood as items derived via the categorization of an acategorial root item, as discussed in Sections 1 and 3.

5. AxParts as Roots: the Systematic Difference between /a-/ and /be-/ Forms

The position AxPart is here widely argued to be the product of a root item framed in the adpositions domain. The advantages of this approach is that it explains why forms prefixed with /a-/ or /be-/ behave differently with regards to co-occurring with the case marker /of/ when linking to a DP Ground, why /be-/ prefixed adpositional do not function as particles, enables us to capture both the incongruity and similarities between putative AxParts like *inside*, and *beside*, and explains why AxParts have to occur with other functional material to select for a DP.

Svenonius (2008; among others) model potentially complex spatial items such as *behind*, *beside* etc...as monomorphemic AxParts where *be-* is not equated with *in* or *on* in *in front of* or *on top of*. Accordingly *side* is an AxPart in the derivation of *inside* but not in *beside*.

“Sometimes it is suggested that prefixal components like *be-* in *behind* represent distinct heads, but I have been unable to identify any common component shared by *behind*, *between*, *beside*, *beneath*, and *before* that distinguishes them from *in back of*, *among*, *next to*, *underneath*, and *after*. I

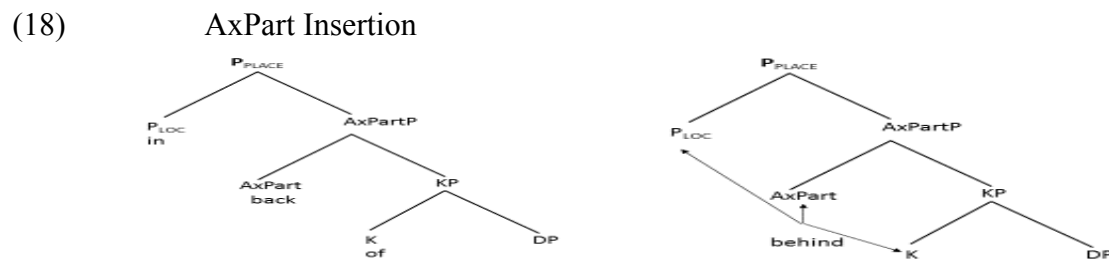
⁷ This proposal is adopted by Muriungi (2006) and Amritavalli (2007) among others.

⁸ Jackendoff (1996) also lists items that are not derived from nouns such as *next to* as AxParts.

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therefore assume that if *behind* is bimorphemic, the parts are idiomatically, and not compositionally, combined” (Svenonius 2008: footnote 5).

Moreover, Svenonius (2010) proposes that *behind* and *in back of* are syntactically the same, creating a problem. If *behind* is monomorphemic as claimed above, it must satisfy Loc, AxPart, and K while *in back of* overtly spells out all three heads. The claim is that in a late insertion model like DM, exponents must be able to satisfy the features of multiple terminal nodes. This is done by either Head Movement or “Vocabulary insertion might allow vocabulary items to associate with several heads, without head movement” (Svenonius 2008: 11). The latter idea is demonstrated in (18).



This idea replaces the traditional subset principle with a superset principle where certain items can realize chunks of structure (Ramchand 2008). However, this creates several problems and contrary to claim above fails to explain the systematic role /be-/ has in the derivation of /be-/ prefixed adpositional forms as explained below.

Some items prefixed with /a-/ must appear with /of/ to link to a DP Ground (19a), some appear to optionally co-occur with /of/ (19b), while others cannot co-occur with /of/ when linking to a DP Ground (19c). On the other hand, items prefixed with /be-/ never co-occur with /of/ (19d).

- (19) Selectional Differences Between /a-/ and /be-/
- a. It is ahead / adrift / *(of) the house(s)
 - b. It is atop (of) the house(s)⁹
 - c. It is along /aside /around/ amid (*of) the house(s)
 - d. It is beside / behind / below / beneath / before / beyond / between (*of) the house(s)

In addition to this difference, as shown in Deacon (2014), /be-/ prefixed forms also do not operate as particle forms while many /a-/ and /Ø/ forms do operate as particles. Compare Tables 1 and 2.

⁹ *Atop* is used both with /of/ and without it: “the weathervane is perched atop the barn”; “the air raid siren atop of the courthouse” (http://www.oxforddictionaries.com/us/definition/american_english/atop)

Table 1: Be-headed Forms Failing as Particles

Uninverted	Inverted
John moved before the crowd.	*John moved them before
John moved behind the desk.	*John moved it behind.
John moved below the boulder.	*John moved it below.
John moved beside house.	*John moved it beside
John moved beyond the rock.	*John moved it beyond
John moved beneath the house.	*John moved it beneath.
John moved between the trees.	*John moved them between.

Table 2: A-headed Particle Forms

Uninverted	Inverted
She moved her piece <i>ahead</i> two spaces	She moved it ahead two spaces
She got <i>across</i> the information.	She got it across.
He took <i>apart</i> the engine.	He took it apart.
I moved <i>around</i> the furniture.	I moved it around.
I set <i>aside</i> some money.	I set it aside.
She pushed <i>away</i> the man.	She pushed him away.
They ran <i>aground</i> the ship.	They ran it aground.

Particles are commonly understood as caseless P-items (den Dikken 1995). Thus it makes sense that /be-/ headed forms would not be used as particles if they are exponents of this feature. Thus the syntactic differences shown in (6) and Table (1) and (2) can begin to be explained if the items are treated as bi-morphemic, where /a-/ is underspecified for a type of *case* or *transitive* feature and /be-/ is inserted for this feature (20).

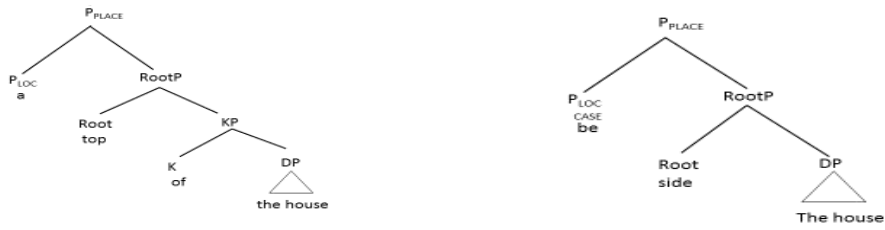
- (20) Insertion Rules for /a-/ and /be-/ FVIs.
 /a/ \leftrightarrow [p_] / {__√SIDE __√BOARD __√LONG __√CROSS etc...}
 /be/ \leftrightarrow [p_, CASE] / {__√SIDE __√LOW __√HIND __√YOND etc..}

If *p_* is intransitive, it must select for a KP to license a complement. Given this, *atop of* in comparison to *beside* is modeled as in (21) in comparison to *inside* (22). Whether an /a-/ prefixed form selects for a KP or not is here argued to be a contextual feature of the root. That is, only some roots are selected by a P_{loc} containing a *case* feature. The identity of this root then can determine whether /a-/ or /be-/ realizes a P_{loc} head containing case.¹⁰

¹⁰ Here it is assumed that a contextual feature (the identity of the root item) can override an associated feature (i.e. [CASE]), rendering *aboard the ship* and not *beboard the ship*.

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(21) /a-/ and /be-/ as realization of P_{location}



Items that optionally select for a KP are explained as roots that can merge with either a case containing or caseless p_ head. In (22) INSIDE may merge with p_ [+/-CASE], explaining the ostensible optionality of K.

(22) Compound root item categorized by P_{location}



This section shows that there is a systematic difference between /be/ and /a/ prefixed forms. It proposes that /be/ is an exponent for a case feature, explaining why it does not select for a KP and why it cannot be used as a particle. The exponent /a/ on the other hand is not specified for case, allowing it to appear with KP in some instance and without in others. This difference is explained as a contextual property of the specific root categorized by P_{loc}.

6. Conclusion

This work proposes that root items can merge with Path, Place and Direction heads in the extended projection of P. This explains why the same forms can operate in more than one of these domains. Furthermore, instead of proposing that AxPart is a separate category in the lexicon, this work proposes that AxPart is, in many cases, the result of a lexical, root item categorized in a spatial domain. This not only explains the nominal, adpositional overlap these items often share, it also explains the patterns of null and overt K between /be-/ prefixed forms and the other putative AxParts items in English.

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