Roots in Adpositional Domains: Reasons to Include a *little p_* Categorial Head

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1. Introduction

Adpositions have been difficult to classify in terms of the traditional lexical/functional divide. They are described as a functional class (Baker 2003), semi-lexical class (Mardale 2011), and split class (Zwarts 1997; Hudson 2000). Their behavior also appears to create a problem for the framework of Distributed Morphology, DM, (Halle and Marantz 1993, 1994) where terminal nodes are qualitatively divided into L-nodes ('lexical') and F-nodes ('functional') (see Marantz 1997; Harley & Noyer 1999; Embick & Noyer 2007; Embick and Marantz 2008).

Singular exponents realizing both F-nodes and L-nodes (root nodes) are problematic for the insertion mechanisms of standard DM (Deacon 2014; De Belder & Van Craenenbroeck 2014). In short, Functional Vocabulary Items (FVIs) should not be inserted at a root node as this creates a violation of the Subset Principle.[2] Putative FVIs (/up/, /over/, /under/...) for adpositional features, such as those discussed in Radkevich (2010) and Svenonius (2010) (e.g. [DIRECTION], [PATH], [LOCATION]), however, also appear to realize root nodes in other lexical domains (Section 2).

To account for this distribution in DM, I have proposed that semantically viable roots (e.g. /up/, /over/, /under/, /hind/…) can be categorized in an adpositional domain (Deacon 2014; 2015).[3] That is, I propose a categorial *p_* head, analogous to *n_*, *v_*, and *a_* (Marantz 2001), to interpret the meaning of root items in adpositional domains. I argue this not only accounts for how and why an item can function as an adposition and as another lexical category in the DM model, but that this also explains why the meaning of adpositional forms in other lexical domains is not always derived from the item's adpositional interpretation (Sections 3 and 4). Deriving lexical items from category-less roots allows us to differentiate between establishing an interpretation and shifting an interpretation: derivation from a bare root versus derivation from a categorized root (Marantz 2001; Arad 2003, 2005; Acquaviva 2009). I argue this proposal also helps explain why adpositions are derived from other lexical categories (Section 5), why /be-/ prefixed prepositions in English are uniformly transitive, and why /be-/ prefixed prepositions cannot be suffixed with /-ward/ (Section 6).

2. Adpositional items in other syntactic domains

Languages such as English and Mandarin Chinese have a larger set of so-called adpositional forms (e.g. *up, down*; *shàng* 'up', *xià* 'down') that can also operate in other lexical domains (1-3), (5,7,8) and a smaller set of forms that appear only to operate as adpositional/functional items (e.g. *at, to, from* ; *zài* 'at', *wàng* 'to/toward', *zì* 'from/since') (see Deacon 2014).

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[2] The Revised Subset Principle (De Belder & Van Craenenbroeck 2014), a technical mechanism for the use of functional forms in a lexical domain in DM, is not used here as it drastically overgenerates, suggesting that any FVI can be inserted at a root node despite such examples being limited. This idea also contradicts unidirectionality and grammaticalization, whereby lexical items become functional, not the other way around.

[3] Adpositions of a strictly functional nature are argued to be the realization of the F-nodes that define the domain.

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(1) Verbal Domain

a.	The Whitehouse *upped* the pressure on North Korea.	'increased'
b.	The Russians *downed* a commercial airliner.	'brought down'
c.	The villagers *inned* the marshes.[4]	'contained'
d.	The mafia *offed* the FBI spy.	'killed'
e.	The horse and rider *overed* the jump.	'went over'

(2) Nominal Domain

a.	Michael Jordan had *ups*.	'ability to jump high'
b.	The Patriots have two *downs* remaining.	'a play in American football'
c.	The donors have an *in* with the senator.	'a connection/ a way to access'
d.	She was supposed to be enjoying her *offs*.[5]	'time off/ vacation'
e.	Rahul Dravid scored during that *over*.	'a bowling set in cricket'

(3) Adjectival/Adverbial Domain

a.	The *uppish* people scorned the newcomers.	'arrogant, assertive'
b.	The *uppity* teenager was rebuked.	'self-centered, self-important'
c.	How *downly* he looked upon my behavior of the past.	'looked down upon/unfavorably'
d.	He is the *downest* gangster I have ever known.[6]	'most serious/real'
e.	The subtle Fiend, though *inly* stung with anger and disdain, dissembled.[7]	'stung inwards'
g.	He is a very *off* individual.	'strange'
h.	The *underly* (archaic) people are suffering.	'poor/unfortunate'

Examples (1-3) show several English prepositional forms operating as verbs, nouns, and adjectives/adverbs. Mandarin also demonstrates this kind of flexibility to a degree with its prepositions and postpositions.[8] Chinese prepositions are thought to be derived from verbs and postpositions from nouns historically (Norman 1988: 92; Hagége 2010). Several of these so-called prepositions (4) can still function as the sole verb of a clause (5).

(4) Prepositional Domain

a. cōng měiguó *dào* zhōngguó hěn yuǎn
from America to China very far
'From America to China is very far.'

b. lǎoshī *duì* wǒ hěn hǎo
teacher for me very good
'The teacher is very good for me.'

(5) Verbal Domain

a. wǒ *dào* le
I arrived ASP
'I have arrived.'

b. wǒ *duì* zé tā
I face PART him
'I faced him.'

[4] This is from *The Agrarian History of England and Wales* edited by Edward Miller.
[5] This is from *The Case of the Love Commandos* by Tarquin Hall.
[6] This is from "Young Ni*&^%" by Tupac (2pac) Shakur.
[7] This is from *Paradise Regained Book 1*; Lines 465-466 by John Milton.
[8] There is some controversy regarding the status of Chinese postpositions in contrast to relational nouns. This paper takes the position of Djamouri et al. (2012) that postpositions are distinct from relational nouns because unlike relational nouns, postpositions cannot be stranded from their object or be the object of a preposition. However, instead of treating this as a lexical distinction, I argue this difference results from different syntactic contexts alone.

The verbal aspect maker *le* and particle *zé* indicate that *dào* and *duì* are operating in a verbal domain. Likewise, forms such as *shàng*, *xià*, *hòu*, and *qián* operate as postpositions (6), verbs (7), or nouns (8).

(6) Postpositional Domain

a. shū zài zhuōzi shàng / xià
book LOC table on / below
'The book is on / below the table.'

b. tā zài shūdiàn hòu / qián mǎi shū
he LOC bookstore behind / front buy book
'He buys a book behind / in front of the bookstore.'

(7) Postpositional Forms in the Verbal Domain

a. wǒ-men shàng ke le
ISG-PL go to class ASP
'We went (up) to class.'

b. wǒ xià shān le
I down mountain ASP
'I went down the mountain.'

(8) Postpositional Forms in the Nominal Domain

a. hòu yǒu zhuī bīng
Behind exist pursue enemy
'Enemies in the rear are chased.'

b. qián yǒu mái-fú
front exist bury-ambush
'There is an ambush in the front.'

As mentioned in the introduction, DM qualitatively divides terminal nodes by the presence or absence of morpho-syntactic features. F-nodes are defined by morpho-syntactic features, which are later spelled out by FVIs. Root nodes, on the other hand, are defined by a lack of morpho-syntactic features and are spelled out by Lexical Vocabulary Items (LVIs).[9,10] LVIs are not listed with associated features. Instead, insertion at a root node is either early (Embick and Halle 2005), free[11], or late and determined by underspecified concepts (see Haugen and Siddiqi 2013) or indices (Acquaviva 2009; Harley 2014) in the narrow syntax. Because the Subset Principle forbids a Vocabulary Item from being inserted if it is associated with an extra or different feature from the value of a terminal node, FVIs with associated features should not realize root nodes. If forms like *up* and *shàng* are simply FVIs, then their distribution in (1-3) and (7, 8) is problematic as they appear in what otherwise would be considered a root position.

Several possible solutions exist for this problem. One is to propose that these forms are LVI / FVI homonyms. Another is to propose that P is selected by another categorial head selecting for either a null root or no root. A third possibility is that the forms in question are not FVIs but instead root items categorized by different heads in different domains.

The homonym explanation suggests that the related meaning and identical sound are synchronically a coincidence. There is no independent reason to adopt this solution other than theory internal convenience. On the other hand, it may be possible for a categorial head to exist without selecting for a root, an idea discussed in Panagiotidis (2015). Perhaps the verbs in (5) are similar to auxiliary verbs or represent cases where rootless P has been reframed by a little v_ head.[12] Explaining

[9] See De Belder (2014) for a more extreme analysis where the root node is void of anything.

[10] A common consensus is that lexical categories consist of featureless acategorial roots combined with category assigning heads (Marantz 2001; Embick and Marantz 2008; Acquaviva 2009; Siddiqi 2010; Embick 2012).

[11] See Siddiqi (2010) for a discussion about how early DM entertained the possibility of a single √Root item in List A that is differentiated from the other bundles of morpho-syntactic features by a (√) feature.

[12] Chinese prepositions are sometimes referred to as co-verbs.

all the data this way, however, runs into the issue of why a null root is always selected or why P as a rootless functional domain is frequently a target for this usage while other functional categories (D, T, C …) are not.

Of course larger phrases (e.g. the derivation of some gerunds, Harley 2009) can be selected and re-framed by a categorial head, but these phrases generally contain or have the ability to contain root items (9a). Additionally, practically any word or functional word can be nominalized in meta-discourse (9b), but since (1-3) and (5, 7, 8) are not the result of meta-discourse, their derivation is arguably different.

(9) a. We had a *free-for-all.* → We *free-for-alled* through life.
b. the *what-ifs* / no *ifs, ands* or *buts*

Instead, the flexible distribution and meaning variability seen with the forms in Section 2 is argued to be more similar to what is seen with traditional root categorization.

3. Identifying root nodes

The literature does not provide a straightforward answer for precisely how to determine if a terminal node is a root node. In practice a root is assumed present when there is a core element in a lexical domain. That is, there is an item with rich or idiomatic meaning that cannot be broken down further into morpho-syntactic features: extra-grammatical meaning is present. A specific root node acts like an address for its entry in the Encyclopedia, where extra-grammatical, semantic knowledge and idiomatic meaning is stored (Harley 2014). In other words, "the sole function of the root is to add [this] conceptual meaning to the structures built by syntax" (De Belder & van Craenenbroeck 2015: 627). What exactly constitutes extra-grammatical or conceptual meaning as opposed to possible grammatical meaning, however, is unclear. Not all of the possible morpho-syntactic features and bundles thereof have been identified, and ideas of what these could be are different (see Haugen and Siddiqi 2013). Does UG provide features to distinguish between *under* and *below*? Some, moreover, propose that functional nodes can also link to idiomatic meaning in the Encyclopedia:

> "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" in the adpositional domain (Svenonius 2010: 19).

If FVIs are also individually listed in the Encyclopedia (as opposed to larger idiomatic phrases consisting of FVIs and LVIs), it is very difficult to know if a terminal node begins as a root or F-node because this view permits FVIs to act as core elements linking to idiomatic meaning in the Encyclopedia. In fact, this proposal almost eliminates the need for a root node altogether. This idea is not adopted here, as it is an assumption that seems to challenge all the empirical reasons for the L / F divide. Thus, while the presence of conceptual information suggests the presence of a root, the distinction between grammatical and extra-grammatical meaning is not clear enough to make absolute judgments.

Another way to identify root items is via their distribution and correlated interpretation. Exponents with associated features should only appear where those features are present in the syntax.[13] LVI insertion by comparison is freer as a root can appear where any other root appears, barring a possible semantic constraint.[14] That is, if roots are acategorial, then they may appear in more than one of the lexical categorial domains. Arad (2003) also proposes that the "meaning of the root" is "by no means predictable from the combination of the root and the word-creating head" which forms such domains (740). If these ideas are correct, distribution and meaning shift may serve as a diagnostic tool. In other words, if an item has a flexible lexical distribution and its interpretation varies (or can vary) unpredictably, this suggests that it originates as a root node because root items are not associated with

[13] The possibility of homonymous FVIs, of course, complicates this approach.
[14] This is the idea that some concepts cannot be interpreted in certain domains.

morpho-syntactic features interpreted at LF. Take for instance the root √RUN in (10) and the Hebrew root √GDL in (11).

(10) a. She *ran* a race.
b. She has a *run* in her stockings.
c. She likes her eggs *runny*.

(11) Hebrew (Arad 2005:12)

√Root: √GDL	Meaning:	Pattern:	Category:
a. gadal	'grow'	CaCaC	(Verb)
b. higdil	'enlarge'	hiCCiC	(Verb)
c. migdal	'tower'	miCCaC	(Noun)

The verbal meaning in (10a) is not contained in (10b) and (10c). Likewise, one cannot predict that the nominalization of a root meaning *to grow* will result in *tower* any more than the verbalization of a root meaning *tower* will mean *enlarge* (11). This is something that has to be memorized (i.e. stored in the Encyclopedia). The question, then, is if the forms in examples (1-3) and (5, 7, 8) show this variable meaning or only suggest the reframing of an FVI inserted for specific morpho-syntactic features?

4. Unpredictable meaning versus stacked derivations

Acquaviva (2009) suggests that the verbs *to chain* and *to tape* are nouns reframed as verbs, as it is semantically odd *to chain something with a rope* or *tape something with a staple*. In other words, an interpretation of the root as a noun is what is made available for the verbal categorial head. This is contrasted with verbs like *to hammer* where the verbal meaning is not dependent on the nominal interpretation (e.g. to hammer something with a shoe). The verb *hammer* is the derivation of a [root + v] while *to chain* and *tape* are stacked derivations: [root + n] v].[15]

Following this logic, if examples (1-3) and (5, 7, 8) all involve [v [P]] (the no root analysis), the base interpretation of the form as a preposition (or intransitive preposition / particle) should be kept within the verbal frame, but this is not always the case. The interpretation(s) of the form in the adpositional or particle domain (12) is not used to derive the interpretation in the other lexical domains, suggesting derivation from a bare root (13).

(12) Prepositional/Particle Domain and Meanings of Up
a. John went *up* the stairs. 'Figure moves from a lower to higher position, the Ground.'
b. John put the sign *up*. 'Figure moves from lower to higher position.'
c. John ate the bread *up*. 'The bread was completely eaten.'

(13) Bare Root Categorization
a. Lebron James has *ups*. 'ability to jump high'
b. I *upped* my effort. 'increased'
c. The *uppish* doctor would not listen. 'arrogant'
d. The *uppity* teenager would not listen. 'self-important'

It is unclear how the interpretations of *up* in (13) are derived from the interpretations in (12). This is comparable to the variation previously shown in (10) and (11). If the verbal use is derived from the prepositional interpretation, then (14) is expected.

(14) a. ??? John upped the stairs. 'John went up the stairs'
b. ??? John upped the sign. 'John put the sign up'

[15] This is not to say that *chain* or *tape* cannot also be categorized as a bare root, rendering different meanings.

Example (13) instead suggests [[√UP] n], [[√UP] v], [[√UP] a,ity], and if *up* is an LVI, then a *little p_* head is needed to derive (12): [[√UP] p] *the stairs*. This, of course, does not exclude the possibility of stacked derivations where a preposition or intransitive preposition is reframed by another head (15).[16]

(15) a. She got *up* and came over → She *upped* and came over.
b. The horse and rider went *over* the jump. → The horse and rider *overed* the jump.
c. The Russians brought a jet *down*. → The Russians *downed* a jet.

Given this, I argue along the lines of Arad (2003, 2005) and Acquaviva (2009) that the meaning shift in (14) is the product of the interpretation of a root and categorial head. While (15) could be explained as [v [P]], the categorial *p_* head permits the possibility of [[[√OVER] p] v] in analogy with the derivation of a form like *verbalize*, [[[√VERB]a,al]v,ize], and as /-ize/ and /-al/ are thought to be exponents of *v_* and *a_*, the realization of *p_* does not appear always to be null.

5. Derived adpositions

Adpositions in some languages perhaps are best described as a semi-closed/semi-open class (see Kortmann & König 1992). While sometimes borrowed, new adpositional members often are derived from other lexical items in languages with sets of lexical-like adpositions. A majority of English prepositions are derived from root items and a grammaticalized prepositional form: the prefixes /a-/ and /be-/ (e.g. a-side vs. be-side / a-fore vs. be-fore / a-low (archaic) vs. be-low).[17] The prefix /b(e)-/ also derives prepositions from already categorized spatial roots in English's close relative Dutch, (16).

(16) Derivation of Prepositions in Dutch

Root + /-en/ + /b(e)-/	Uses	Meanings
a. uit→uiten→buiten	prep→verb→prep	out→ to draw out→ outside
b. in→innen→binnen	prep→verb→prep	in→ take in→inside/until/on
c. noord→noorden→benoorden	noun→noun→prep	north→north→above/north of
d. zuid→zuiden→bezuiden	root→noun→prep	south→south→south of
e. oost→oosten→beoosten	root→noun→prep	east→east→east of
f. west→westen→?bewesten[18]	root→noun→GAP	west→west→GAP

The /b(e)/ prefix allows the form to operate as a transitive preposition licensing a DP ground (17).

(17) a. *en in de Volgermeerpolder noorden Amsterdam
and in the Volgermeerpoder north Amerstam
'and in Volgermeerpolder north of Amerstam'
b. en in de Volgermeerpolder benoorden Amsterdam
and in the Volgermeerpoder north Amerstam
'and in Volgermeerpolder north of Amerstam'

[16] It is possible that like many de-adpositional verbs, nouns and adjectives, these sometimes involve two categorizing heads with the outer head defining the surface category and *p_* selecting the root. This is the analysis assumed elsewhere, for example, for gerundive nominals or deadjectival nouns that use the suffix *–ness* (Marantz 1997; Embick and Marantz 2008).

[17] The prefix /a-/ is historically derived from several locational morphemes (/a-/ < on, at, of) as well as the past participle prefix /ge-/ in Old English. Prepositional /be-/ is derived from one locational morpheme (/be-/ < be/bi 'by'), but the same exponent also functions as a word forming [transitive] (e.g. befriend, befuddle), [intensive] (e.g. belittle, bespatter, bedazzle) and [privative] (e.g. behead) verbal prefix. It is, thus, conceivable that homophonous /a-/ and /be-/ prefixes exist.

[18] If indeed *bewesten* is not used as a preposition by any speakers of Dutch, this gap must be an accident. That is, there is nothing conceivable to prevent its derivation.

One may attempt to argue that these items in Dutch are also the products of grammaticalization like the /be-/ prefixed forms in English (i.e. monomorphemic items). This, however, makes the phonological and semantic correlations between the roots in the prepositions and the use of the roots elsewhere in the language appear accidental. Roots with a cardinal direction meaning are also used to create new postpositions in Mandarin Chinese (18).

(18) Mandarin Postposition Derivations

root + /-biān /	Uses	Meanings
a. běi → běi biān	noun →postposition/noun	north → north side, to the north of
b. nán → nán biān	noun →postposition/noun	south → south side, to the south of
c. dōng → dōng biān	noun → postposition/noun	east → east side, to the east of
d. xī → xī biān	noun →postposition/noun	west →west side, to the west of

The root itself does not function as a postposition (19a), but it can when it is suffixed with *biān* (19b).

(19) a. *zhōng-guó hǎi zài chéng-shì běi
China sea LOC city north
'China sea is north of the city'

b. zhōng-guó hǎi zài chéng-shì běibiān
China sea LOC city north
'China sea is north of the city'

This suggests something systematic is occurring as opposed to random or accidental historical changes. If a categorial *p_* head is active, then roots with spatial meanings are likely targets for categorization, accounting for what appears to be a rather common occurrence on a much smaller scale.

Category changing adpositional derivations are certainly not as productive as other major lexical category changing derivations, but this section serves to show that languages do create new adpositional forms from lexical items without signs of grammaticalization. In the case of Dutch and English, I argue that /be-/ is an FVI exponent for the proposed *little p_* head. While this exponent is no longer productive in English (perhaps replaced by null) and appears limited to certain roots in Dutch, the transitive nature of the /be-/ prefix is retained in English, suggesting that it is still associated with an active feature.

6. Exponents of p_ and adpositions with different features

Spatial prepositions that are prefixed with /be-/ in English are always transitive as opposed to forms prefixed with /a-/; simplex forms: *in*, *down* and *out*; or complex forms: *in front* and *in back*, which all show variability in selecting for KP where K is realized by /of/ (see Svenonius 2006, 2010).[19] Prepositions prefixed with /be-/ never select for KP, cannot operate as intransitive prepositions or particles, and cannot be suffixed with /-ward/.

(20) a. It is beside / behind / below / beneath / before / beyond / between (*of) the object(s)[20]
b. It is ahead / aside *(of)[21] ; atop (of) ; around / amid /amongst (*of) the object (s)
c. It is out / in front *(of) the object ; inside (of) ; in / over (*of) the object (s)

The forms in (20a) do not select /of/ to license a ground DP while the other types of prepositional forms behave in an unprincipled manner. This suggests /be-/ prefixed forms account for the feature necessary to license the DP, traditionally a case feature, while the other forms are either underspecified,

[19] Transitivity is understood here as a semantic distinction. The object of transitive verbs and prepositions may be elided if the context is understood: *We turned (the car) off (main street) on 23nd street.*

[20] This excludes *because of* as it is not a spatial preposition and its etymology is different. Interestingly /of/ does not appear with the recent usage of *because* as a preposition (e.g. I believe it *because science*).

[21] Usages can be found where *aside of* equals *beside* via Google searches.

or listed to merge in either a case or non-case assigning context. Since particles are described as intransitive prepositions (Emonds 1972) or non-case assigning prepositions (den Dikken 1995), /be-/ prefixed forms naturally cannot function as such. This does not mean, however, that forms requiring /of/ in the spatial prepositional domain will also function as particles in the verbal domain. Roots may be listed differently for each categorial domain, as √SIDE, √TOP, and √ROUND do not inherently have transitivity or case properties.[22] The claim is merely that /be-/ cannot be the exponent for *p*_ in the verbal/particle domain because *p*_ is intransitive in that domain.

(21) Be-prefixed Prepositions cannot be Intransitive Directional Particles

a.	Tom brought (*before) the crowd (*before).	'The crowd is brought forward.'
b.	Tom pulled (*behind) the curtain (*behind).	'The curtain is moved hindward.'
c.	Tom set (*below) the rocks (*below).	'The rocks are lowered.'
d.	Tom moved (*beside) the table (*beside).	'The table is moved to the side.'
e.	Tom pushed (*beyond) his car (*beyond).	'The car was pushed out yonder.'
f.	Tom moved (*beneath) the treasure (*beneath).	'The treasure was moved netherward.'

In (21) it is impossible for the verbal object to invert and the meaning to remain the same. The only way that is grammatical is if the semantic ground of the /be-/ prefixed form is elided (e.g. Tom moved the desk behind (something) / She is behind (us)). Compare this with (22) where some /a-/ prefixed forms and simplex forms can invert without a meaning change.

(22) A-headed Intransitive Forms

a. Jane brought along her friends.	→	Jane brought her friends along.
b. Jane got across her message.	→	Jane got her message across.
c. Jane set aside her savings.	→	Jane set her savings aside.
d. Jane looked up the number.	→	Jane looked the number up.
e. Jane took down the number.	→	Jane took the number down.

In (22) the intransitive item can appear on either side of the verbal object without changing the semantic meaning. Within this frame, another prepositional item is required to introduce another DP: Jane brought her friends along *to the dance*. This difference can be explained if /be-/ is associated with a transitive or case feature bundled with the proposed categorial *p*_ head. Lastly /be-/ prefixed forms cannot be suffixed with /-ward/.

The suffix -*ward* attaches to root items and creates intransitive directional particles: [sky + ward] → skyward; [up + ward] → upward (23).[23]

(23)

a.	John ran up the stairs.	→ John ran upward (*the stairs).
b.	John ran down the stairs.	→ John ran downward (*the stairs).

The forms proposed to be prefixed with /be-/ on the other hand cannot be suffixed with /-ward/ (24).

(24) *besideward / *behindward / *belowward / *beneathward / *beforeward / *beyondward

If /be-/ is associated with a transitive feature, then its incompatibility with /-ward/ is already predicted. However, forms which appear to consist of an /a-/ prefix and root also do not take /-ward/: **asideward, *atopward, *aheadward* ... as opposed to *afterward*.[24] Following this, I propose that /-ward/ is also an FVI exponent for a type of *p*_head. This explains why both do not co-occur. In contrast, the ability of /-ward/ to occur with forms like *up* and *down* and *fore* and *side* is predicted if these forms are root items. This results in the following insertion rules for *p*_ in English (25).

[22] For instance, the root √FUN is not contextually listed for categorization in a verbal context.
[23] The form *toward(s)* breaks this pattern because it takes an object. I argue that the form *toward* is an FVI representing a *p*_ head that has the features [GOAL, CASE] and [DIR]: John flew *toward* the sky; John flew *skywards*.
[24] There is no root *fter,* so this is not the product of [a- + root], explaining why *after* is able to take /–ward/.

(25) Insertion Rules for *p_* FVIs in English for Root Categorization.[25]

/be-/ ←→[p_, CASE/TRANS] /{__√SIDE __√LOW__√HIND__√YOND etc..}

/a-/ ←→[p_] / {__√SIDE __√BOARD__√LONG __ √CROSS__etc…}

/Ø/ ←→[p_] / {elsewhere / semantically viable root}

/-ward/ ←→[p_{DIR}] / {semantically viable root}

The proposed exponents of *p_* appear as both prefixes and suffixes. This is not problematic for this specific proposal under the view that the realization of an affix as a suffix or prefix is either an arbitrary property of the language (Noyer 1997) or one that is decided after syntax (see Embick and Marantz 2008). Moreover, an argument could be made that *little v_* is also realized by both prefixes and suffixes in English: [v, en[joy]], [v, be [little]] versus [[simple] v, ify], [[dark] v, en].

7. Conclusion

Several items in English and Chinese function as adpositions or as other lexical categories. The interpretation of these forms in different domains varies in a manner that is similar to what is described for bare root derivations. While not as productive as other categories, new adpositional forms are derived from lexical items in Dutch and Chinese, and at least historically with English. To explain these facts, it is proposed that root items may be framed in adpositional domains by a *little p_* categorial head. Roots such as √DOWN and √UP may be selected by *v_, n_, a_* or *p_* to create their verbal, nominal, adjectival/adverbial and prepositional uses. This may be a stacked derivation ([[√OVER] p] v] 'overed/went over the fence') or a bare root derivation ([[√OFF] v] 'offed/killed the spy'). A little *p_* categorial head, thus, allows the grammar to take a viable concept and frame it in an adpositional domain without creating a separate functional copy and without changing the concept's status as a root.

This proposal also begins to explain the different properties of /be-/ prefixed prepositions in English in relation to those in Dutch and forms suffixed with /-ward/. The synchronic difference between /be-/ prefixed and other prepositional forms in English is accounted for if /be-/ is an exponent for (an) active feature(s). Otherwise the difference can only be explained as an accident of history, whereby the forms *beside* and *side* are not derived from a common source in modern day English. If /be-/ is still a morpheme in English, then it derives prepositions as it does in Dutch, suggesting it is an exponent for *p_*. The suffix *-ward* only appears to select for root items, explaining why categorized forms (prepositions consisting of /a-/ or /be-/ and a root item) cannot be suffixed with /-ward/.

Finally, as a temporary solution for why most root items do not/cannot appear as adpositions, I have relied on contextual features. That is, most roots are not listed as candidates for an adpositional frame. Ideally a semantic filter will replace this stipulation whereby the range of meanings a root item has listed in the Encyclopedia could be linked to its index, preventing a categorial head from selecting a root for which no interpretation is possible. That is left for future research as overgeneration is a larger problem of the acategorial root hypothesis in DM and similar frameworks (Embick 2012).

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[25] Here it is proposed that a contextual feature (the identity of the root item) can override an associated feature (i.e. [CASE]), rendering *across the road* and not *becross the road.*

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