Afrikaans Axials:
Complex Adpositions from a (Non-) Projective Perspective[1,2]

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Introduction

This talk seeks to highlight a syntactic (sub-)categorial distinction that seems not to have been noted as far as Afrikaans (and closely related West-Germanic languages) are concerned.

(a)   Daar is 'n gogga **op** / **bo** /   **bo-op** jou   kop.
        there is a bug   on   above top-on your head
        "There is a bug on / above / on top of your head."

It will be argued that *bo-* and *op*-type elements belong to distinct syntactic categories, and that this distinction helps to derive complex adpositions like *bo-op*.

Overveiw

1. (Non-) Projective Adpositions
2. Vector Space vs. Points in Space
3. Axial Parts
4. Complex Adpositions
5. Measure (and Degree) Modification
6. Directionals
7. Concluding Remarks

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1. (Non-) Projective Adpositions

Both *bo*-type and *op*-type elements seem to head locative PPs (1).

(1)   (a)   Daar is 'n gogga **op** jou kop.
                there is a bug   on your head
                "There is a bug on your head."

        (b)   Daar is 'n gogga **bo**   jou kop.
                there is a bug   above your head
                "There is a bug above your head."

These elements (and others like them) frequently exhibit distinct morpho-syntactic properties. E.g. *bo*-types may substitute an entire locative PP (2a); this is not possible for *op*-types (2b).

(2)   Jan speel [PP in die solder].
        Jan plays   in the attic
        "Jan is playing in the attic / upstairs."

        (a)   Jan speel **[bo]**.   (b)   *Jan speel [**op**].
                Jan plays above   Jan plays   on
                "Jan is playing upstairs."

Bo-types accept the superlative adjectival suffix *-ste*, and the *op*-type don't:[3]

(3)   (a)   bo-n-ste ("topmost")   (b)   op(*-ste)
                top-/N/-est   on -est
                binne-ste ("innermost")   in(*-ste)
                inside-est   in -est
                buiten-ste ("outermost")   uit(*-ste)
                outside-/N/-est   out -est
                voor-ste ("frontmost")   aan (*-ste)
                front-est   on/to -est
                agter-ste ("backmost")   by(*-ste)
                back-est   at -est

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[3] Most speakers can say *inste* or *uitste* in the conext of expressions like (i), but I argue that such uses derive from the **verbal particles** *in* and *uit* in expressions like *Hy het die bal (heeltemal) in/uit geslaan* (lit.: he has the ball (completely) in/out hit, "he hit the ball (completely) in/out"); that is, through the attributive use of the passive participle forms. Evidence for this comes from the fact that expressions like (ii), where there is no conceptual evidence for motion/direction (aspects of meaning that are typically associated with V-particles), are terrible. Contrast the badness of (ii) with (iii), which is fine in any context.

(i)   Dit was die inste /uitste bal wat hy nog geslaan het.
                that was the in-est/out-est bal that he yet hit   has
                "That was the best/worst shot he has played thus far."
(ii)   *Ek wil   die inste / uitste   bal hê.
                 I   want the in-est / out-est ball have
(iii)   Ek wil   die binneste / buitenste   bal hê.
                 I want the innermost/outermost ball have
                "I want the innermost/outermost ball."

Bo-types are compatible with measure modification; *op*-types are not:

(4)   (a)   Die gogga   is twee sentimeter   bo   jou   kop.
                  the bug   is two centimeters   above your head
                  "The bug is two centimeters above your head."

         (b)   *Die gogga   is twee sentimeter   op jou kop.
                    the bug   is two centimeters on your head

Semantically, *bo* ("above")-types = **projective** adpositions and
            op ("on")-types = **non-projective** adpositions

                              -- cf. i.a. Lang (1991), Zwarts (1997), Zwarts & Winter (2000)

(5)   (a)   <u>Projective adpositions:</u>   (b)   <u>Non-projective adpositions:</u>
                  bo ("above")   op ("on")
                  buite ("outside")   uit ("out")
                  binne ("inside")   in ("in")
                  voor ("front")   aan ("on/to")
                  agter ("back")   by ("at")
                  onder ("under")   oor ("over")
                  langs ("beside")   om ("around")

Syntactically, *bo*- and *op*-types are typically regarded as categorially equivalent (=$P_{(LOC)}$):
[$_{PP}$ P *op/bo* [$_{DP}$ *jou kop*]] – cf. equivalent distributions in (1) above.

So the projective/non-projective distinction is not generally reflected in syntax and the distinction is taken to be conceptual/semantic.

Some tests for category status suggest they *do* belong to the same category.

(6)   <u>Q</u>: Waar is daai gogga nou?!
                  where is that bug   now
         <u>A</u>:   (a)   [$_{PP}$ Op jou   kop]!
                              on your head
                              "On your head!"

                 (b)   [$_{PP}$ Bo   jou   kop]!
                              above your head
                              "Above your head!"

P-stranding pattern with *op*:
(7)   (a) Jan het sy sleutels op die boekrak gesit.
             Jan has his keys on the bookshelf put
             "Jan put his keys on the bookshelf."

(b) [Op die boekrak]$_j$ is [waar$_i$]$_j$ Jan   sy sleutels t$_i$ gesit het.
    on the bookshelf is where Jan   his keys   put   has
    "On the bookshelf is where Jan put his keys."

(c) [Die boekrak]$_i$ is [waar$_i$-op]$_j$ Jan sy sleutels t$_j$ gesit het.
    the bookshelf is where-on Jan his keys   put   has
    "The bookshelf is whereon Jan put his keys."

(d) [Die boekrak]$_i$ is [waar/wat$_i$]$_j$ Jan sy sleutels op t$_j$ gesit het.
    the bookshelf is where/what Jan his keys   on   put has
    "The bookshelf is what Jan put his keys on."

In the stranding construction (7d), the pronominal complement of *op* can surface as either the strong pronoun *wat* or the R-pronoun *waar*.[4, 5]

P-stranding pattern with *bo*:

(8)   (a) Jan het sy sleutels bo   die boekrak   gesit.
        Jan has his keys   above the bookshelf   gesit
        "Jan put his keys hang above the bookshelf."

    (b) [Bo   die boekrak]$_j$ is [waar$_i$]$_j$ Jan   sy sleutels t$_i$ gesit het.
        above the bookshelf is where Jan   his keys   put has
        "Above the bookshelf is where Jan put his keys."

    (c) [Die boekrak]$_i$ is [waar$_i$-bo]$_j$ Jan sy sleutels t$_j$ gesit het.
        the bookshelf is where-above Jan his keys   put   has
        "The bookshelf is where above Jan put his keys."

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[4] R-pronouns, or R-words, are so named for the phonological /-r/ ending of the members of this class, i.e. *hier* ("here"), *daar* ("there"), and *waar* ("where"). Van Riemsdijk (1978) describes such elements in Dutch as pronominal complements of P that must always surface to its left, even when that P is otherwise exclusively prepositional. Cf. Van Riemsdijk (1978), Koopman (2000), and Den Dikken (2010) for discussion, where R-pronouns are argued to occupy spec-P. Pronominal complements of P in Afrikaans can surface either as R-pronouns (e.g. *waar* – (i)) or as strong in situ pronouns (e.g. *wat* – (ii)).

(i)   [$_{PP}$ **Waar**$_j$ [P **op**] [$_{DP}$ t$_j$]]$_i$ het Jan sy sleutels gesit t$_i$?
        Where   -on   has Jan his keys   put   "On what did Jan put his keys?"
(ii)   [$_{PP}$ **Op wat**]$_i$ het Jan sy sleutels gesit t$_i$?
        on what has Jan his keys   put   "On what did Jan put his keys?"

[5] In (7c), though, the relative pronoun cannot alternate between the R-pronoun incorporating *waarop* and the strong pronoun incorporating *op wat*. The presence of strong pronouns in expressions like (iii), and (ii) in note 4 (which are treated in Du Plessis (1977) and Den Besten (2010)), suggests that adposition can be pied piped with strong pronouns in wh-movement operations. By contrast, it appears the pronominal component of relative pronouns must move through spec-P for the adposition to be felicitously pied piped.

(iii)   [Vir wat]$_i$ dink julle werk ons t$_i$?
        for what think you work we
        "What do you think we are working for?"

(d) [Die boekrak]$_i$ is [waar/ wat$_i$]$_j$ Jan sy sleutels bo   t$_j$ gesit het
      the bookshelf is where/what Jan his keys   above   put has
      "The bookshelf is what Jan put his keys above."

2. Vector Space vs. Points in Space

Conceptually, adpositions cannot denote **points in space**:
      Many adpositions accept measure modification (cf. (4) above and (9) below), which
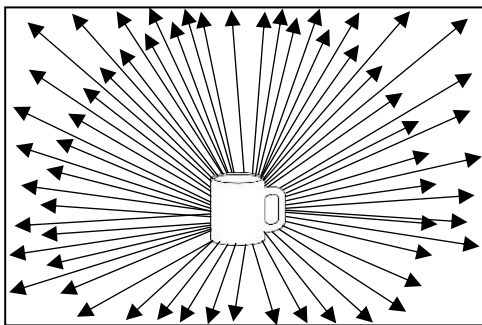   operates on depth and distance:

(9)   ...2cm **bo**   jou kop / 10m **agter**   die kerk / 1km **onder** die grond
          2cm above your head / 10m behind the church / 1km under the ground

      Points in space do not define depth and distance
      So, adpositions should be conceptualized as **vector spaces**
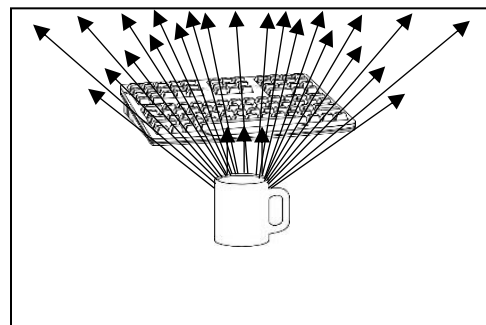
                                                    -- cf. Zwarts (1997) and Zwarts & Winter (2000)
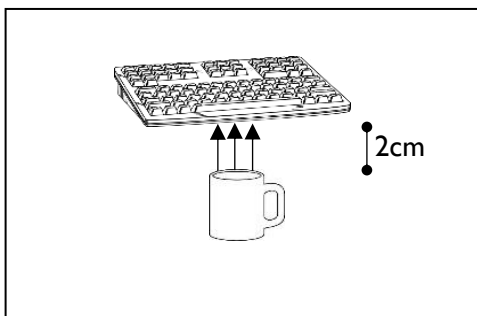
(10)   The keyboard is **2cm behind the coffee**.

(11)   *The coffee*'s vector universe: (12)   Vectors selected by *behind*:

(13)   Vectors selected by *2cm*:

                                    Not all adpositions *need* to be
                            characterised as denoting vector space

                            I propose that **projective** adpositions
                                    denote **vector space** and **non-
                            projective** adpositions **points in space**

(14)   (a)   Die poskantoor is twee kilometer   **binne/ buite**   die dorp.
                the post-office is two   kilometers inside/outside the town
                "The post office is two kilometers into/out of town."

                                                          PROJECTIVE, VECTOR SPACE

        (b)   * Die poskantoor is twee kilometer **in/uit** die dorp.
                  the post-office is two   kilometers in/out the town

                                                    NON-PROJECTIVE, POINT IN SPACE

How can the distinction be modelled structurally while allowing projective and non-projective adpositions to belong to the same syntactic category?

3. Axial Parts

"Axial Part" emerged as a concept related to the *visual-neurological processing* of objects in the work of Marr (1982). Jackendoff (1996) connects this concept with the *language* that is used in denoting spaces occupied by objects. Svenonius (2006) argues that AXPART is a grammatically active node (not merely a conceptual/cognitive category) – i.e. a projecting head.

> The "axial parts" of an object – its top, bottom, front, back, sides and ends – behave grammatically like parts of the object, but, unlike standard parts such as a handle or a leg, they have no distinctive shape. Rather, they are regions of the object (or its boundary) determined by their relation to the object's axes. The up-down axis determines top and bottom, the front-back axis determines front and back, and a complex set of criteria distinguishing horizontal axes determines sides and ends.
>
>   (Jackendoff 1996:14)

(15)   (a)   There was a kangaroo in (*the) **front** of the car.
        (b)   *There was a kangaroo on **front** of the car.   AXPART

(16)   (a)   There was a kangaroo in *(the) **front** of the car.
        (b)   There was a kangaroo on the **front** of the car.   NOUN

(17)   (a)   There were kangaroos in the **fronts** of the cars.   NOUN
        (b)   *There were kangaroos in **fronts** of the cars   AXPART

(18)   (a)   There was a kangaroo in the smashed-up **front** of the car.   NOUN
        (b)   *There was a kangaroo in smashed-up **front** of the car   AXPART

(19)   (a)   The kangaroo was in [the **front** of the car]$_i$, but the koala wasn't in it$_i$.   NOUN
        (b)   The kangaroo was in [**front** of the car]$_i$, but the koala wasn't in it$_{*i}$.   AXPART

                                                          (Svenonius 2006:50-51)

(20)   (a)   */??[Which car]$_i$ did the kangaroo sit in the front of t$_i$?   NOUN
        (b)   [Which car]$_i$ did the kangaroo stand in front of t$_i$?   AXPART

NB: Axials accept measure modification:
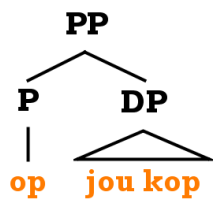(21)   (a)   *There was a kangaroo sixty feet in the front of the car.   NOUN

        (b)   There was a kangaroo sixty feet in front of the car.   AXPART
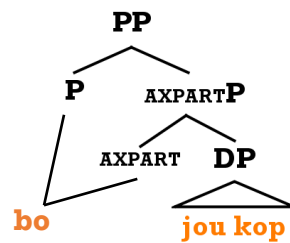
(Svenonius 2006:51)

Svenonius' (2006) analysis: [$_{PP}$ P *in* [$_{AXPARTP}$ AXPART *front* [$_{KP}$ K *of* [$_{DP}$ the car]]]]

Assuming AXPART to be the singular structural locus of vector space, projective adpositions are by hypothesis lexicalising this node and non-projective adpositions are not:

(22)   (a) Non-projective adpositions   (b) Projective adpositions

On an analysis like (22), projective and non-projective adpositions are categorially equivalent, and there is a structural distinction between the projective and non-projective types. Since projective adpositions have AXPART in their featural makeup, they denote vector space; non-projective adpositions, since they lack AXPART in their featural makeup, do denote simple points in space.[6, 7]

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[6] An analysis like (22b) obviously requires some notion of multiple terminal spellout (where one morpheme lexicalises more than one terminal node). There are various methods by which this could be implemented, including mainstream a notion like Head Movement, and less/non-mainstream notions like *Fusion* (cf. e.g. Marantz (1988); Halle & Marantz (1994); Harley & Noyer (1999); Bobaljik (2011)), *Phrasal Spellout* (cf. e.g. Starke (2009); Caha (2009; 2010; 2011); Dekany (2011); De Clerq 2013)), and *Spanning* (cf. e.g. Ramchand (2008); Taraldsen (2010); Svenonius (2012; 2016). Though, in this paper, I am not strongly committed to any particular approach, the representations sometimes resemble Head Movement (i.e. with complex adpositions in Section 4 below) and sometimes resemble Spanning (i.e. with simplex adpositions like *bo* in (22b)). Here, I thus take these approaches to multiple terminal spellout to be notational variants; but cf. Ramchand (2008), Svenonius (2016) and Svenonius & Bentzen (2016) for argumentation against treating Head Movement and Spanning as notational variants.

[7] Some of my other theoretical assumptions made here are (i) the *Superset Principle* (to qualify for insertion, a lexical entry must contain a superset of the syntactic features that are up for lexicalisation; this matching mechanism resembles but differs crucially the *Subset Principle* of Distributed Morphology which requires entries to be specified only for a subset of features – cf. Caha (2007) for discussion); I also assume (ii) an Exhaustive Lexicalisation principle (all syntactic nodes must receive morphological expression – cf. Fábregas (2007a; 2007b).

4. Complex Adpositions

Complex adpositions in Afrikaans consist of two morphemes, each of which is capable of functioning as an adposition on its own – e.g. *bo-op* (lit.: top-on, "on top").

Afrikaans incorporates a large set of "official" (=listed in dictionaries) complex adpositions:
> E.g. *naby* (lit.: near-at, "near"), *binne-in* (lit.: inside-in, "inside/into"), *bo-oor* (lit.: top-over, "over (the top)"), *tussendeur* (lit.: between-through, "in between"), *onderdeur* (lit.: under-through, "(through) underneath"), amongst others.

<div align="right">(Listed in Die Afrikaanse Woordelys en Spelreëls (2009))</div>

In addition, there are many combinations that are not listed as orthographic words but which I give the same treatment as listed complexes because they behave the same syntactically.
> E.g. *bo in* (lit.: top in, "in the top"), *buite om* (lit.: outside around, "around the outside"), *na aan* (lit.: near on, "near"), and *voor verby* (lit.: front past, "past in front").

Complex locative adpositions have the same basic distribution as simplex locatives:
(23)   Daar is 'n gogga [$_{PP}$ **bo-op** [$_{DP}$ jou   kop]].
        there is a bug   top on   your head
        "There is a bug on top of your head."

P-stranding and pronominalisation:
(24)   (a) Jan het sy   sleutels bo-op die boekrak   gesit.
            Jan has his keys   top-on the bookshelf put
            "Jan put his keys on top of the bookshelf."

        (b) [Bo-op die boekrak]$_i$ is [waar$_i$]$_j$ Jan sy sleutels t$_j$ gesit het.
            top-on the bookshelf is   where   Jan his keys   put   has
            "On top of the bookshelf is where Jan put his keys."

        (c) [Die boekrak]$_i$ is [waar$_i$ / wat$_i$]$_j$ Jan sy sleutels bo-op   t$_j$ gesit het.[8]
            the bookshelf is where what Jan his keys   top-on   put has
            "The bookshelf is what Jan put his keys on top of."

        (d) *[Bo die boekrak]$_i$ is [waar$_i$-<op>]$_j$ Jan sy sleutels t$_j$ <op> gesit het.
            top the bookshelf is where   -on Jan his keys   on   put has

        (e) *[Die boekrak]$_i$ is [waar$_i$ -<bo>]$_j$ Jan sy sleutels op t$_j$ gesit het.
             the bookshelf is where   top Jan his keys   on   put has

(24d-e) shows that the components of a complex adposition cannot be separated.

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[8] The complex *bo-op*, unlike simplex adpositions, must be stranded when forming part of a relative pronoun. To see this, contrast (i) with (12-13c) above.
(i)   ??/*[Die boekrak]$_i$ is [waar$_i$-bo-op]$_j$ Jan sy sleutels t$_j$ gesit het.
                the bookshelf is where-top-on Jan his keys   gesit has
                "The bookshelf is where on top of Jan put his keys."

On closer inspection, complex adpositions pattern with non-projective simplex adpositions (like *op*) rather than with projective ones (like *bo*):

(25)   Jan speel [_PP_ in die solder].
        Jan plays   in the attic
        "Jan is playing in the attic / upstairs."

(a)   Jan speel **[bo]**.
        Jan plays   above
        "Jan is playing upstairs." (=2a)
	(b) *Jan speel **[op]**.
	            Jan plays on (=2b)
	
	(c) *Jan speel **[bo-op]**
	            Jan plays top-on

(26)   (a)   bo-n-ste ("topmost")   (b)   op(*-ste)
                top-/N/-est   on   -est   (=3)

                                              (c)   bo-op(*-ste)
                                                      top-on -est

(27)   (a)   Die gogga   is twee sentimeter   **bo**   jou   kop.
                the bug   is two   centimeters   above your head
                "The bug is two centimeters above your head."   (=4a)

        (b)   *Die gogga   is twee sentimeter   **op**   jou kop.
                  the bug   is two centimeters on your head   (=4b)

        (c)   *Die gogga is twee sentimeter   **bo-op** jou   kop.
                  the bug   is two centimeters top-on your head

Before trying to account for the facts in (25-27), let us take a closer look at the morphological composition of complex adpositions.

The order in which the elements combine is rigid:
(28)   *Daar is 'n gogga **op-bo** jou   kop.
            there is a bug   on top your head

The initial element is usually projective, and the final element is never projective.

Afrikaans' adposition inventory is split perfectly in half: there are those Ps that occur in the morphologically initial position in complex adpositions, and those that occur finally.

Though the split does not occur along a strict (non-)projective dichotomy, there do not seem to be any examples of a P that can occur as either the initial or final component (cf. 30).

(29)

Morphologically Initial	Projective?	Morphologically Final	Projective?
agter "behind"	✓	aan "on/to"	✗
binne "inside"	✓	by "at"	✗
bo "above"	✓	in "in"	✗
buite "outside"	✓	op "on"	✗
na "near"	✗	oor "over"	✗
onder "beneath"	✓	uit "out"	✗
rond "round"	✗		
teen "against"	✗		
tussen "between"	✗	af "down/off"	directional
langs "beside"	✗	deur "through"	directional
van "of"	✗	om "around"	directional
voor "front"	✓	verby "past"	directional

(30)　(a)　Permissible　　　　　　　　　　Impermissible
　　　　　naby　　　　　　　　　　　　　　*byna*[9]
　　　　　near-at "near"　　　　　　　　　 at-near
　　　　　binne-in　　　　　　　　　　　*in-binne*
　　　　　inside-in "inside/into"　　　　　 in-inside
　　　　　bo-oor　　　　　　　　　　　　*oor-bo*
　　　　　top-over "over (the top)"　　　　 over-top
　　　　　tussendeur　　　　　　　　　　*deur-tussen*
　　　　　between-through "in between"　　 through-between
　　　　　onderdeur　　　　　　　　　　*deur-onder*
　　　　　under-through "through"　　　　　 through-under
　　　　　vanaf　　　　　　　　　　　　*afvan*
　　　　　of-off "from"　　　　　　　　　　 off-of
　　　　　langsaan　　　　　　　　　　　*aanlangs*
　　　　　beside-on "next to"　　　　　　　 on-beside
　　　　　rondom　　　　　　　　　　　　*omrond*
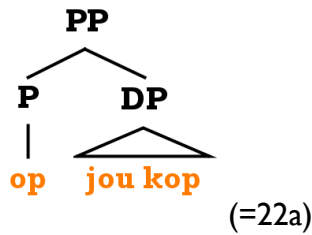　　　　　round-around "around"　　　　　　 around-round

These facts suggest two important things:
　　　(i)　　The inventory "split" is not conceptual/semantic
　　　(ii)　 P elements are specified for complementary parts of the structure underlying
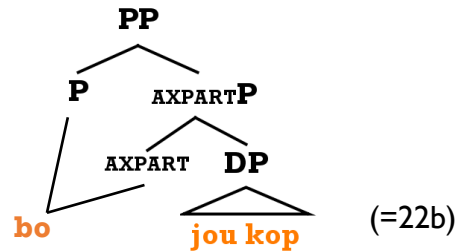　　　　　　these complex adpositions

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[9] This combination does in fact exist, not as a spatial adposition, but as a degree adverb:
(i)　　Hulle het　die koekies byna　　opgeëet.
　　　they　have the cookies at-near up-eaten
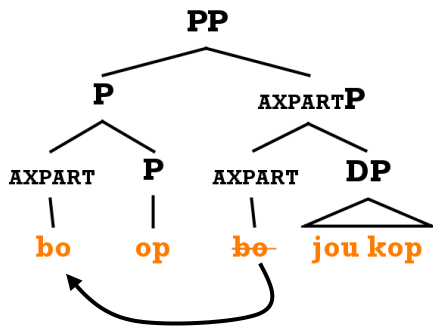　　　"They've pretty much finished the cookies."

(31)   (a) Non-projective adpositions   (b) Projective adpositions

PP — [P: op] [DP: jou kop]   (=22a)

PP — [P], [AXPARTP: [AXPART: bo] [DP: jou kop]]   (=22b)

(c) Complex adpositions

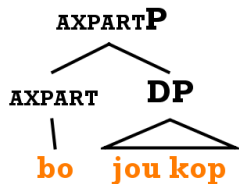PP — [P: [AXPART: bo] [P: op]] [AXPARTP: [AXPART: ~~bo~~] [DP: jou kop]]

Problem!

The analyses in (31) suggest that complex adpositions (31c) transparently realise the very same structure as projective simplex adpositions (31b), so we expect complex adpositions to pattern with projective simplex adpositions and not with non-projective simplex adpositions in (25-27), as they do.

What (25-27) suggest is that complex compositions are categorially equivalent to non-projective simplex adpositions, and that projective simplex adpositions are somehow distinct from the former two types of adposition.

Rather:

(31')   "Projective" adpositions   →   As we have seen, not *only* projective adpositions (strictly speaking, those simplex locative adpositions that accept measure modification) occur as the morphologically initial element of complex adpositions.

AXPARTP — [AXPART: bo] [DP: jou kop]

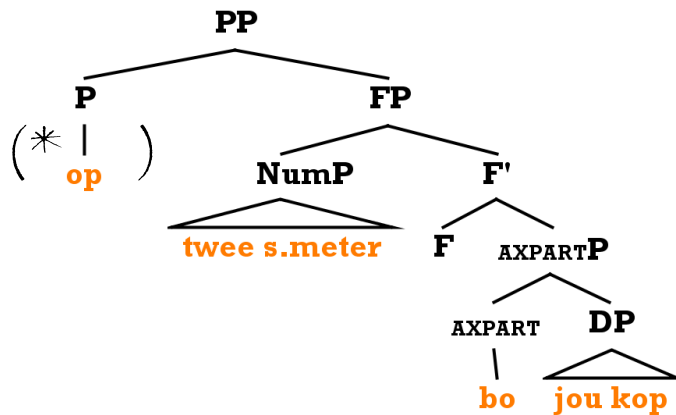**It is the morphologically initial forms that I argue belong to the category**

Let us consider more closely what type of analysis is suggested by the measure modification facts in (27) above.

5. Measure (and Degree) Modification

I propose to analyse the measure modification facts in (27) – repeated in (32) – as in (33).

(32 = 27)   (a)   Die gogga   is twee sentimeter   **bo**   jou kop.
                        the bug   is two centimeters above your head
                        "The bug is two centimeters above your head."

               (b)   *Die gogga   is twee sentimeter   **op** jou kop.
                         the bug   is two centimeters on your head

               (c)   *Die gogga is twee sentimeter **bo-op** jou   kop.
                         the bug   is two centimeters top-on your head

(33)

PP
├── P
│   (＊|)
│   op
└── FP
    ├── NumP
    │   twee s.meter
    └── F'
        ├── F
        └── AXPARTP
            ├── AXPART
            │   bo
            └── DP
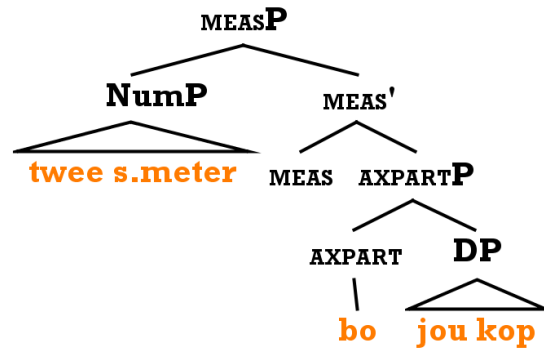   jou kop

A configuration like (33) accounts for the fact that measure modification is infelicitous with complex and non-projective adpositions: if the functional projection introducing the modifier doesn't scope over both components of the complex adposition, the result is infelicitous. Since F doesn't scope over P, non-projective adpositions are infelicitous with measure modification.

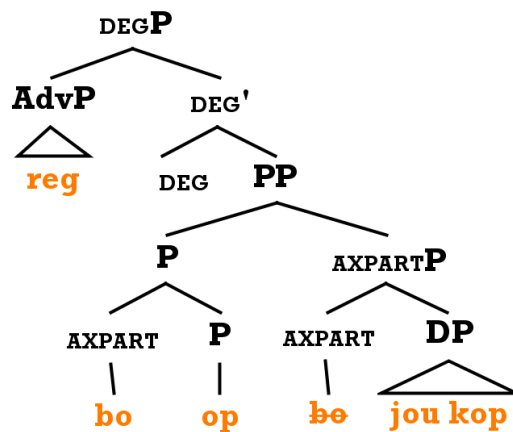In contrast to measure modification *all* locative adpositions accept degree modification:

(34)   (a)   Daar is 'n gogga reg   bo   jou   kop.
                there is a bug   right above your head
                "There is a bug right above your head."

       (b)   Daar is 'n gogga reg   op jou   kop.
                there is   a bug   right on your head
                "There is a bug right on your head."

       (c)   Daar is 'n gogga reg   bo-op   jou   kop.
                there is a bug   right top-on your head
                "There is a bug right on top of your head."

There is another functional head above P that introduces degree adverbs like *reg* in its specifier. The functional projection above AXPART is thus argued to be a MEAS(ure) head, and that above P a DEG(ree) head:

(35)   (a)   Measure modification with projective adpositions

```
                    MEASP
                   /     \
               NumP      MEAS'
              /    \     /    \
        twee s.meter  MEAS   AXPARTP
                            /      \
                        AXPART      DP
                          |        / \
                         bo      jou kop
```

        (b)   Degree modification with (non-)projective and complex adpositions

```
                    DEGP
                   /    \
               AdvP     DEG'
               /        /   \
             reg      DEG    PP
                            /   \
                           P     AXPARTP
                          / \    /     \
                    AXPART  P  AXPART   DP
                       |    |    |     /  \
                      bo   op   b̶o̶  jou kop
```

(35a) clearly shows that projective adpositions like *bo* which are modified by measure phrases cannot be giving expression to the P node, as first suggested in (22b), because just like with complex adpositions, the modifier would not scope over both components of such an adposition.

If projective adpositions like *bo* in (35a) are expressing only AXPART (and not P), we are forced to conclude that such adpositions never express P, and always express only AXPART.

Thus, what at first appears to be a single syntactic category – namely, locative adposition (P) – in fact constitutes two separate categories: one corresponding to P (simplex, non-projective adpositions), and another corresponding to Axial Part (simplex (usually) projective adpositions).

NB regarding Axial Parts: they differ from P in forming the morphologically initial element of complex adpositions.

6. Directionals

Directional simplex adpositions accept measure modification:
(36)   (a)   Die man hardloop tien meter **deur**   /**om**   /**verby** die huis.
               the man runs   ten meters through / around / past   the house
               "The man is running ten meters through/around/past the house."

        (b)   Die perd spring 'n meter **oor** die hek.
               the horse jumps   a meter over the gate
               "The horse is jumping a meter over the gate."

Directional complex adpositions are compatible with measure modification
(37)   (a)   Die boom se wortels het 2m **onderdeur**   die muur gegroei
               the tree pos roots   have 2m under-through the waal grown
               "The tree's roots grew two meters into the other side of the wall."

        (b)   Die man het die bal 10m **voor   verby** die huis   geskop.
               the man has the ball 10m before past   the house kicked
               "The man kicked the ball ten meters past the front of the house."

The data in (36-37) further support the idea that complex adpositions are complex heads that obey Williams' (1981) Right-hand Head Rule (RHR).

In keeping with what is now the general assumption, I take directional adpositions to comprise two structural layers (P_{LOC} (=locative) and P_{DIR} (=directional)), as indicated in (38).[10] Complex directional adpositions thus have the structure in (39).

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[10] Since Jackendoff's (1983) proposal, it has become untroversially accepted that the structure underlying directional PPs crosslinguistically consists of two layers (cf. e.g. Koopman 2000, Van Riemsdijk & Huybregts 2002, Helmantel 2002, Biberauer & Folli 2004, Svenonius 2004; 2007a, Den Dikken 2010). Conceptually, the idea that direction embeds location can be understood in terms of paths being "constructed out of… nested sets or sequences of places" (Zwarts 2005:348; cf. also Bierwisch 1988 and Verkuyl & Zwarts 1992). Direct evidence comes from languages in which a morphological "nesting" can be observed in directional PPs:
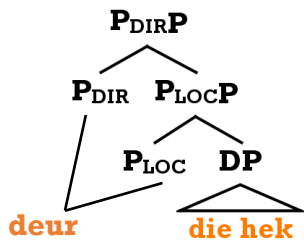
(i)   Location   Direction
    (a) English: in the city   into the city
    (b) Norwegian: i byen   inn i byen
                         in city-DEF   into in city-DEF
                                                              (From Zwarts 2010:983)
(ii)   Macedonian
    (a) Kaj parkot   sum.
         at park.def be.1sg
         "I am at the park"   (Location)
    (b) Odam na-kaj parkot.
         go.1sg to -at park
         "I am going to the park"   (Direction)
   (From Pantcheva 2011:36-37)

(38)

(39)
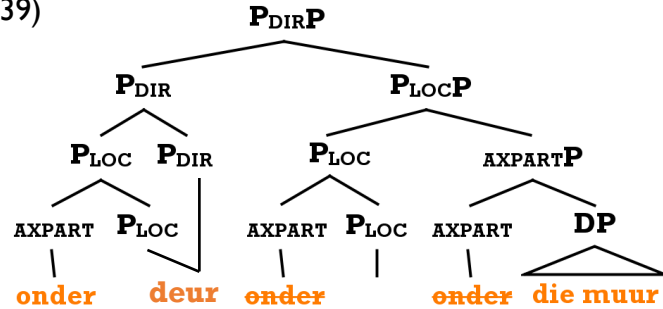
Section 5 showed that measure modifiers with locative adpositions scope over AXPART and under P (what is now P$_{LOC}$). If we take the same projection to be introducing the measure modification in (37), the predication – which is not bourne out – is that complex directionals – like complex locatives – should not accept measure modification.

There is thus another functional projection, scoping over P$_{DIR}$, introducing the modifiers in expressions like (37):

(40)
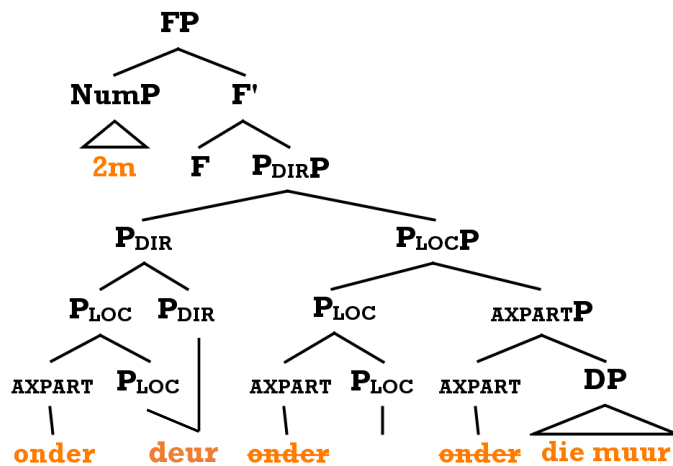
An analysis like (40) is supported by the fact that in (37a), the measure phrase can only modify the length of the path *deur* (i.e. how far through/past the wall the roots grew) and cannot modify *onder* (suggesting that the axial element is inaccessible to the modifier, which supports the complex head analysis and Williams' RHR).

Likewise, the only reading available for (37b) is one in which the ball is kicked a distance of ten meters, not where the distance between the ball and the house is ten meters (i.e. modifying *verby* and not *voor*) – again, only P$_{DIR}$ is visible to the modifier, not AXPART.

So, the fact that the measure phrases in felicitously (37) co-occur with complex Ps, in addition to the fact that only the path-related reading is available on such modification, suggests that the measure phrases in these expressions are not hosted in a projection above AXPART, but in a projection that scopes over P$_{DIR}$, and that AXPART is not visible to the modifier.

7. Concluding Remarks

This talk started out with the typical assumption that all simplex locative adpositions are categorially equivalent.

It was shown, though, that the semantic distinction between projective (=vector spaces defining) and non-projective (=point in space defining) locative adpositions has syntactic validity too. This is particularly apparent with complex locative adpositions, which pattern with non-projective locative adpositions in many diagnostics. Among these diagnostics is an element's felicity with measure modification.

Axial Part (AXPART) was taken to be the structural locus of vector space, and also shown to be node corresponding to the morphologically initial element in complex adpositions (with the morphologically final one corresponding either to P_{LOC} (=locative adpositions) or to P_{LOC}-P_{DIR} (=directional adpositions).

Since complex adpositions and projective adpositions do not pattern together (despite the fact that both are AXPART-incorporating elements) ultimately suggests that projective and non-projective simplex adpositions are *not* categorially equivalent – the projective ones are Axial Parts, whereas the non-projective ones are locative Adpositions, in the traditional sense.

One remaining question is the fact that the morphologically initial elements of complex adpositions (which have been argued to lexicalise AXPART) are not always projective (and AXPART is argued to be the locus of vector space). We do not expect the conceptual and formal properties of all lexical elements to always align, so it could simply be that not all elements that are formally specified for AXPART align with the conceptual requirements for measurable vector space.

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