Out of phase:

Form-meaning mismatches in the prepositional phrase[1]

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This paper presents two cases in which the syntactic and semantic structures of a prepositional phrase (PP) do not line up. This is in line with the relative independence of these levels of representation in the parallel architecture of Jackendoff (2002). At the same time, these mismatches can be analyzed as rather restricted lexical exceptions to the otherwise rather tight correspondence between syntax and semantics in this domain.

In the parallel architecture view on grammar (e.g. Jackendoff 2002) a linguistic expression can be taken as a bundle of different types of information, each with their own structural primitives and principles. Take the (partial) representation of the phrase *under the table* in (1):

(1) Phonology: (ˌʌn)(ˌdər)(ˌðə)(ˌteɪ)(ˌbəl)

     Syntax: [PP P [NP D N]]

     Semantics: UNDER (THE(TABLE))

There is a piece of phonology, consisting of sound segments, organized into syllables, a syntactic structure with parts of speech, and a representation of the expression's meaning in terms of function application. Within this bundle, parts correspond to each other, like the phonological form (ˌʌn)(ˌdər) with the syntactic category P and the semantic function UNDER, and (ˌðə)(ˌteɪ)(ˌbəl) with [$_{NP}$ D N] and THE(TABLE), forming smaller bundles, some basic, some derived.

In mainstream generative grammar, especially in its current minimalist form, the syntactic structure forms the combinatorial backbone of an expression. Sound and meaning components are derived by mapping the syntactic structure to a phonological and a semantic structure. The syntactic representation tends to be quite rich, allowing the mappings to sound and meaning to be as simple and direct as possible. In the parallel architecture, however, all three components function as relatively independent pieces of structure, held together by interface rules which leave room for potential mismatches between the phonological, syntactic, and semantic organization of an expression. The syntax can also be simpler than in the minimalist architecture (Culicover & Jackendoff 2005), partially because it is no longer the only generative component.

The goal of this paper is to demonstrate the fruitfulness of the parallel architecture for two phenomena in the prepositional domain in which there are

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mismatches between form and meaning. I argue that the simplest and most natural analyses of these cases involve relatively simple syntactic and semantic structures which the lexicon brings into correspondence in an idiosyncratic way, going against the optimal interface between the syntax and semantics of (prepositional) phrases for different reasons.

I sketch the background assumptions about prepositional phrases and their semantics in section 1. This sets the stage for two types of mismatches in this domain, one at the level of objects and arguments (section 2) and one at the level of heads and functions (section 3). Section 4 concludes with two more constructions (from a much wider range) that deserve further study in this respect.

1 Prepositional phrases and their meanings

Simplifying matters considerably, we can say that the sentences in (2a) and (3a), taken from Jackendoff (1983:163) have the syntactic structures in (2b) and (3b) and the semantic structures in (2c) and (3c), respectively.

(2)   a.   The mouse is under the table.

b. $[_{IP}$ NP $[_{VP}$ V $[_{PP}$ P NP $]]]$

c.   BE (MOUSE, UNDER (TABLE ; DEF))

(3) a. The mouse ran from under the table.

b. [$_{IP}$ NP [$_{VP}$ V [$_{PP}$ P [$_{PP}$ P NP]]]]

c. GO (MOUSE, FROM (UNDER (TABLE ; DEF)))

The phonological structures of the sentences are simply represented by its written forms in (2a) and (3a). In (2b)/(3b) and (2c)/(3c), many aspect of syntactic and semantic structure are ignored, in particular tense. This allows us to focus on the aspects that are important for this paper, namely the correspondences that hold between the different levels in and around the prepositional phrase. The ; is used in (2c) and (3c) and in the rest of this paper to introduce conceptual information that specifies or modifies what precedes it.

The first type of correspondence concerns the level of grammatical and conceptual argument positions. The sentences contain two NPs: *the mouse*, which functions grammatically as the subject of the sentence, and *the table*, the object of the preposition *under*. Such grammatical functions might ultimately require a dedicated tier of syntactic representation (e.g. Culicover & Jackendoff 2005), but for my purposes it is sufficient to assume that they can be read off from the phrase structures in (2b)/(3b) (Chomsky 1965:69). In the semantic representation we find a functional distinction that bears different names in different traditions, but for which I will use the terms figure and ground (originally introduced for this purpose in Talmy 1972). MOUSE, as the first argument of the BE or GO

function, is the figure of the situation, the entity of which the location or motion is represented relative to the ground, TABLE.

The relation between grammatical and conceptual functions that we see here is typical for prepositions: the ground of the relation expressed by the preposition corresponds to its object and the figure to a grammatical function outside the PP, usually the subject. Building on Talmy (2000) and others, Svenonius (2007) argues extensively for this generalization and compares it to the constraints that govern the linking between semantic arguments and grammatical functions in the verbal domain. The general correspondence rule in (4) covers this generalization (derived from an even more general rule in Jackendoff 1990:25):

(4)   If a syntactic head X corresponds to a one-place semantic function F, then
        the object of X corresponds to the argument of F.

In other words, the semantic configuration of functional application corresponds to the syntactic configuration of complementation. When a place or path function corresponds to a preposition, the argument of such a one-place function (i.e. the ground) corresponds to the object of the preposition. In section 2, I consider one construction in which this constraint does not hold.

Let us turn to the second type of correspondence exemplified in (2) and (3). Implicit in the semantic representations of those examples is a fundamental

distinction between two types of spatial concepts, places and paths, introduced

most explicitly in this form in Jackendoff (1983). Functions like UNDER and

FROM define an entity of a particular ontological category that Jackendoff (1983)

made explicit in the following way:

(5) a.   [Place UNDER ([Thing TABLE ; DEF])]

     b.   [Path FROM ([Place UNDER ([Thing TABLE ; DEF])])]

In line with common practice, I will omit these labeled brackets because

they are always uniquely defined by the functions and therefore somewhat

superfluous. A place is a region of space where something can be (a location,

region). In addition to UNDER, there is a range of other place functions, like IN,

ON, BEHIND, mapping objects to places in particular ways. A path is a stretch of

space (a trajectory, curve) along which something can move, extend, or be

oriented (Jackendoff 1983:174). As Jackendoff explains, path concepts can be

derived from place concepts in different ways. (3c) contains a path that has its

source under the table, as indicated by the path function FROM. Other path

functions are TO (specifying the goal of the path, e.g. for *into*) and VIA (its route,

e.g. *through*).

The prepositional part of example (3) exhibits a perfect match between

meaning and form. The place and path functions correspond one-to-one to the

prepositions *from* and *under*, respectively, and the hierarchical orderings of the two levels also match. A path function usually applies to the result of a place function and not the other way around. This is because a path can only be defined once a place has been identified. The only exception involves the place function ON (Jackendoff 1983:166-7) that defines a place as the end-point of a path (as in *The house is up the hill*, i.e. at the end of the path that goes up the hill). This conceptual asymmetry of paths and places is paralleled by the syntactic structure (Van Riemsdijk & Huybregts 2002): the path preposition *from* in (3) is outside the place preposition *under* and not the other way around (**The mouse ran under from the table*). (6) shows this isomorphism schematically:

(6) [PP P$_1$ [PP P$_2$ …   ]]

        PATH$_1$ (PLACE$_2$ (…))

The situation in (6) instantiates a more general correspondence pattern:

(7) If a semantic function F applies to the result of a semantic function G and F and G correspond to different syntactic elements, then the syntactic element corresponding to F governs the syntactic function that corresponds to G.

In other words, the semantic hierarchy of function composition corresponds to the syntactic hierarchy of government.

The correspondence rule is not intended to rule out the common situation that the path and place functions are together lexicalized as one preposition. *Through*, for example, can be analyzed as involving the functions VIA and IN (Jackendoff 1990:72). If the mouse ran through the maze, then it followed a path that involved places in the maze.

(8) a. through the maze

    b. [PP P [NP D N]]

    c. VIA (IN (MAZE ; DEF))

There are of course numerous cases where one single lexical item corresponds to a semantic representation with multiple functions, like the verb *enter*, which lexicalizes the functions GO, TO, and IN (Jackendoff 1983:183). One might say that in (8) the syntactic P head and the phonological form *through* correspond to a composite semantic function VIA∘IN.

It is also possible that a function at the semantic level does not have any formal correspondent. This is what we see in (9), from Jackendoff (1983:163):

(9) a. (The mouse ran) under the table.

b.   [$_{PP}$ P [$_{NP}$ D N]]

c.   TO (UNDER (TABLE ; DEF))

The TO function does not have any counterpart at the other levels, neither as a separate form (compare *from under*), nor as part of a special lexicalization (compare *through*). Another example is the ON function mentioned above, which is never lexicalized, as far as I know. Such 'covert' semantic operations, which are quite common (Jackendoff 1990:72), do not go against the correspondence formulated in (7). In section 3, I will consider a much less common mismatch that goes directly against this correspondence.

2 Objects and grounds: The temporal distance construction

This section describes a construction in which the object of a preposition is not a ground, but another semantic element, going against the normal correspondence formulated in (4) above.

Compare the following two sentences, figuring a relational temporal preposition in the terminology of Verkuyl (1973):

(10) a.   John left three years after the accident.

       b.   John left after three years.

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Both sentences can describe the same temporal relation between two events: the figure is the event of John leaving and the ground is the event of the accident, which is explicit in (10a) and implicit in (10b). The implicit argument takes its value from the context. (10b) can be understood as (10a) if an accident is being discussed, but on another context its value could be John's arrival. The temporal interval between the two events is specified through the measure phrase *three years*. In the terminology of Fillmore (2002) there is a vector pointing from the Landmark (the accident) to the Target (John's departure) over a Distance of three years in the Direction of the future.

In order to be able to (partially) represent the meaning of the PP *three years after the accident* I adopt two more elements from Jackendoff's conceptual semantics (Jackendoff 1983). First, there can also be locations in time, in accordance with the localist hypothesis. The PP corresponds to a Place concept in the semantic field of time, defined by a temporal function AFTER applied to an event. Second, this concept has an amount modifier that restricts it in an appropriate way, as indicated by the semicolon.

(11) AFTER (ACCIDENT ; DEF) ; [3 YEARS]

ACCIDENT functions here as the ground, in the same way in which the TABLE functions as the ground in the examples of the previous section. It is the entity with respect to which John's departure (the figure) is located in time. This is done by the function AFTER that maps it to a temporal place.

If we now compare (10a) and (10b), we can see that the first sentence complies with the generalization formulated in (4), but that in the second sentence it is not the ground that corresponds to the object of the preposition *after*, but the amount component. The ground is not expressed in (10b), but it is left implicit and picked up from the context. This disturbs the isomorphism between syntax and semantics: it is not an argument of a function that forms the object of the preposition, but a modifier.

We can now distinguish two lexical entries for *after*, corresponding to (10a) and (10b), each with pieces of phonology, syntax, and semantics, and coindexed variables over such pieces (Jackendoff 2002):

(12) a. $after_1$ *Phon$_2$*

            $[_{PP}$ P_1 *NP$_2$* $]$

            $AFTER_1$ (*Event$_2$*)

      b. $after_1$ *Phon$_2$*

            $[_{PP}$ P_1 *NP$_2$* $]$

            $AFTER_1$ (*R*) ; *Amount$_2$*

This makes explicit what is special about the use of *after* in (10b) in comparison to (10a), how a modifier is treated as if it were an argument and the ground becomes implicit (because there is nothing in the syntax or phonology corresponding to the reference event or time *R* in (12b)).

The pattern in (12b) occurs in many different languages, with a variety of temporal prepositions that describe temporal relations (Haspelmath 1997, Caha 2010). A temporal distance is expressed from the speech time S or a reference time R, in the direction of the past or the future. The German PP (13b), for example, locates an event one month before the speech time S.

(13) a. einen   Monat   vor   dem Unfall

          a.ACC   month   before   the   accident

          'a month before the accident'

   b. vor   einem   Monat

          before   a.DAT   month

          'a month ago'

In German, measure phrases are usually accusative, as *einen Monat* 'a month' in (13a), but when they follow the preposition, in the temporal distance construction, they carry the dative case that is typical for the locative use of

prepositions. This constitutes fairly direct evidence that the measure phrase in

(13a) behaves as the syntactic object of the preposition *vor* even though it is

semantically a modifier. The two different lexical entries of *vor* that figure in

(13a) and (13b) are shown in (14a) and (14b), respectively, ignoring dative case

for the time being:

(14) a. vor_1 *Phon$_2$*

            $[_{PP} P_1 NP_2]$

            $BEFORE_1$ (*Event$_2$*)

      b. vor_1 *Phon$_2$*

            $[_{PP} P_1 NP_2]$

            $BEFORE_1$ (*S*) ; *Amount$_2$*

The English construction *a month ago* does not fit the pattern of (12b) and

(14b): *ago* can better be treated as an intransitive preposition with an obligatory

modifier, as argued by in Fillmore (2002) and Coppock (2009).

Haspelmath (1997) and Caha (2010) choose opposite strategies in working

away the mismatch in (13b), either pragmatically or syntactically. For Haspelmath

einem Monat is semantically the argument of *vor* and for Caha it is syntactically a

modifier. Haspelmath paraphrases the meaning of *vor einem Monat* as

'immediately before a one month period ending now', which he analyzes as

resulting from the normal temporal meaning of *vor* 'before' with pragmatic mechanisms of strengthening. In Caha's analysis, the measure phrase starts at the normal position for modifiers, but it moves into the dative-marked object position, which is preceded, after movement, by the preposition. In both cases the underlying assumption is that the syntactic and semantic structures must be isomorphic and pragmatic or syntactic complexities are necessary to maintain this assumption. A much simpler analysis is possible if we do not hold that assumption, as I showed, but allow for lexical items in which form and meaning are out of phase, aligned in an idiosyncratic way. Note that not every temporal preposition with the appropriate meaning allows the measure phrase to be put in the object position. German *vor* allows it, but English *before* does not. This makes it necessary to store patterns like (12b) and (14b) in the lexicon.

The question is now why the type of mismatch discussed here would arise in the first place. Why would a measure phrase that functions as the modifier of the P end up as its object, violating the general correspondence in (4)? I have presented (12a)/(12b) and (14a)/(14b) as completely separate lexical entries, but this is not realistic when we want to capture the rich network of relations among elements in the lexicon (e.g. Jackendoff 2008). It seems more likely that (12a)/(12b) and (14a)/(14b) are specific instantiations of more general prepositional patterns in the lexicon, like the couplings of the phonological forms /$after_1$ *$Phon_2$*/ and /vor_1 *$Phon_2$*/ with the syntax [$_{PP}$ P_1 NP_2]. All by itself,

hierarchy and default inheritance is not enough to explain why measure phrase modifiers can be direct objects of prepositions, but it does not seem unreasonable to assume that a strong prepositional pattern in the language puts pressure on the cases we studied to submit to that pattern and realize the modifier as an object. Phrased differently, modifiers are realized as objects in (12b) and (14b) in analogy with the frequent and canonical prepositional construction in (12a) and (14a), even when this mixes up the usual correspondence between form and meaning in that pattern.

I now turn to a situation in which the mismatch involves syntactic heads and semantic functions.

3 Heads and functions: The spatial case alternation

Many languages in the Indo-European language family show a meaningful alternation between two types of cases within prepositional phrase. I focus here on German, but the pattern can also be seen to various degrees in other IE languages (see Gehrke 2008, Caha 2010, Lestrade 2010). The German case alternation is well-covered in descriptive and theoretical work (both cognitive and generative grammar, e.g. Smith 1995, Zwarts 2006, Van Riemsdijk 2007).

Some spatial prepositions in German can occur either with the dative or accusative case on their object:

(15) a. Anna stand   in dem   Zimmer

       Anna stood   in the.DAT room

       'Anna stood in the room'

    b. Otto trat   in das   Zimmer

       Otto stepped in the.ACC room

       'Otto stepped into the room'

The dative case is used when the PP describes a place and the accusative when it describes a path to that place. The prepositions with which this happens are *an* 'on', *auf* 'on', *hinter* 'behind', *in* 'in', *neben* 'next to', *über* 'above', *unter* 'under', *vor* 'in front of', *zwischen* 'between', which constitute almost all the primary locative prepositions of German, covering both topological and projective relations. The set of alternating prepositions is not the same in every language that shows the alternation and it is not stable in German either: it varies somewhat across dialects (Draye 1996) and across time (Dal 1966). That motivates a lexical treatment of the case assignment properties of individual prepositions.

We can make more precise what (15a) and (15b) mean in terms of the semantics sketched in section 1, but ignoring the contribution of the verbs:

(16) a. BE (ANNA, IN (ROOM ; DEF))

b.   GO (OTTO, TO (IN (ROOM ; DEF)))

When the preposition governs the accusative case, the TO function applies in the semantics, but when it governs the dative this function is absent. This is the pattern with all the alternating prepositions mentioned above.

What do the PPs in (15) look like in the parallel architecture? Simplifying matters considerably, I syntactically represent dative and accusative case as features on the NP (which are mostly spelled out on the determiner).

(17) a. in_1 $dem_{2,3}$ $Zimmer_4$

$[_{PP}$ P_1 $[_{NP[DAT3]}$ D_2 N_4 $]]$

IN_1 ($ROOM_4$; DEF_2)

b. in_1 $das_{2,3}$ $Zimmer_4$

$[_{PP}$ P_1 $[_{NP[ACC3]}$ D_2 N_4 $]]$

TO_3 (IN_1 ($ROOM_4$; DEF_2))

The dative marker in (17a) has no semantic component corresponding to it, since location is characterized by the absence of a path function. The dative case can be treated as a default case for several reasons (Zwarts 2006) and this is one of the reasons. The accusative case, however, is directly linked to the semantic TO function.

We can take the next analytical step by assuming two lexical entries for German *in*, one governing dative and having place semantics and one governing accusative with path semantics:

(18) a. in_1 *Phon$_2$*

         $[_{PP}$ P_1 $NP_{2[DAT]}$ $]$

         IN_1 (*Thing$_2$*)

    b. in_1 *Phon$_2$*

         $[_{PP}$ P_1 $NP_{2[ACC3]}$ $]$

         TO_3 (IN_1 (*Thing$_2$*))

I assume that all the alternating prepositions in German have two entries like this. A noun phrase can only be inserted in or unify with the open place in (18) if it has the right case, as determined by the feature on the syntactic variable. In the construction grammar view of Jackendoff (2008) and others, (18a) and (18b) might be part of two more general constructions in which a syntactic form $[_{PP}$ P_1 $NP_{2[DAT]}$ $]$ would correspond to the meaning *Place$_1$*(*Thing$_2$*) and $[_{PP}$ P_1 $NP_{2[ACC3]}$ $]$ to TO_3(*Place$_1$*(*Thing$_2$*)), both with the phonological form *Phon$_1$* *Phon$_2$*.

If we now consider (18b), or the schematic construction that it instantiates, more closely, we can see that it violates the correspondence principle formulated

in (7). The order of function application between TO and IN does not correspond to the order of government between the preposition *in* and the accusative case marker. The accusative marker is in the wrong place, semantically speaking; it should be 'outside' the preposition. For the parallel architecture this is no problem. Even though the correspondence principle in (7) captures the default situation, the lexicon can contain idiosyncratic exceptions that go against the default.

In minimalist syntax, the approach is different. Following work by Koopman (2000) on Dutch, it has become customary to assume that the semantic articulation of paths and places is actually part of the syntax (see Cinque & Rizzi 2010 for a representative collection of papers). There are different versions of this but, roughly speaking, the central idea is that a directional PP consists of a PathP on top of a PlaceP, as illustrated here for the phrase *from under the table* in (19a):

(19) a.   [PathP from [PlaceP under [DP the table]]]

      b.   [PathP vandaan [PlaceP onder [DP de tafel]]]

      b'.   [PathP [PlaceP onder [DP de tafel]] vandaan *t*]

There can be no real mismatches between syntax and semantics, because the semantic hierarchy of place and path has become an integral part of the syntax of prepositional phrase. It is possible to move elements within the structure, to

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account for postpositional structures, like the Dutch translation of (19a) in (19b'), which is then derived from (19b) by movement. The actual analysis is usually more complicated than this.

Applications of this idea to the German case alternation can be found in Van Riemsdijk (2007), Den Dikken (2010) and Caha (2010). Here I focus on Caha's treatment, who explains the connection between accusative case marking and path semantics by moving the object noun phrase to the accusative position associated with the PathP followed by another movement that puts the preposition in front of the object again. The first step could be taken as parallel to the derivation of postpositional structures in Dutch (see (19b) and (19b')), but it is unclear what motivates the crucial second step of putting the locative preposition in front. As a result, the way goals are marked by accusative case inside German prepositional phrases does not really fall out naturally from general principles but has to be stipulated in a way that is much more complicated than a lexically stipulated correspondence between more independent pieces of structure, like in (18b), in line with the parallel architecture.

But why would such a mismatch between the position of a syntactic element (a case marker) and a semantic element (the TO function) exist? Stipulating the existence of pairs like those in (18) is insufficient. We also want to know why German (and other IE languages) have such pairs. The explanation does not lie within the workings on the synchronic grammar themselves, but outside it, in the

historical development of Indo-European languages and in the process of the

grammaticalization of cases. The case system of Proto-Indo-European that the

system of modern German derives from was not only richer in its inventory, but it

also allowed the spatial use of cases without any prepositions, something which

can be seen in Latin. The accusative form *Roma-m* has the meaning TO(ROME)

and the ablative form *Carthagin-e* the meaning FROM(CARTHAGE). It is

assumed that prepositions came in later in the IE languages and also in German,

developing out of adverbs (see Dal 1966 for German). This means that nouns

were already carrying obligatory case markers with elementary directional

meanings and prepositions were combined with those case-marked nouns, adding

locative meanings. The accusative case in German is closer than the preposition

because it represents an older layer and the locative preposition is outside it,

grown as a newer layer (see Vincent 1999 for this situation in Latin and

Romance).

In order to allow these non-compositional combinations, the grammatical

system has to reanalyze them as lexical units, as in (18). It would be impossible to

first build an accusative noun phrase *das Zimmer* with the meaning

TO(ROOM ; DEF) and then apply *in* with the meaning IN in such a way that the

place function gets squeezed between TO and the ground ROOM. The only

option is to take the combination *in*+ACC as a lexical unit, non-compositionally

associated with the meaning TO ∘ IN.

4 More mismatches

I have taken a detailed look at two form-meaning mismatches in the prepositional

domain, demonstrating that they allow for a simple representation in the parallel

architecture, giving syntactic and semantic structures their due. The class of

mismatches in the prepositional phrase is not exhausted by the two cases

discussed here. Let me mention two other cases here that deserve further study.

There is a class of locative PPs that refer to the body part of the figure that

makes contact with a supporting surface, like in the following example (with *his*

anaphoric to Bob):

(20)   Bob stood on his head.

Crucially, *his head* is not the ground of the relation, because Bob is not

located relative to his own head. The ground is implicit in (20) (it is the floor, for

instance). One might think that *on* does not have a spatial sense, but simply marks

body parts involved in location, but Dutch shows that the preposition still

functions with its usual spatial component. Dutch has two versions of *on*: roughly

speaking, *op* is used for situations where the figure is supported from below and

aan is used when it is supported from above, i.e. hanging (Van Staden, Bowerman & Verhelst 2006). Now consider the following examples:

(21) a.   Bob stond op zijn handen (op de tafel).

                 Bob stood on his hands (on the table)

       a'. * Bob stond aan zijn handen (op de tafel).

       b.   Bob hing aan zijn handen (aan de dakgoot).

                 Bob hung on his hand (on the gutter)

       b'. * Bob hing op zijn handen (aan de dakgoot).

The preposition *op* or *aan* that is used with the body part is always the same contact preposition that is used to express the type of contact made with the ground (here between parentheses).

Suppose now that semantically the preposition *on* in example (20) still applies to an implicit ground and that *his head* refers to the figure of the spatial relation and not the ground. The representation of the contribution of the PP could be as given in (22):

(22) on$_1$ his$_2$ head$_3$

       [$_{PP}$ P$_1$ [$_{NP}$ D$_2$ N$_3$]]

       BE(HEAD$_3$(BOB$_2$),ON$_1$(*Ground*))

Although many aspects of this construction need further study, it seems a potential example of a PP that involves a mismatch between form and meaning, because the syntactic object of the preposition corresponds to what is conceptually the figure.

A different type of mismatch is presented by doubling in the prepositional phrase, which is rare in English, but common in many other languages. The FROM function can be expressed in Dutch by a preposition *van*, a postposition *vandaan* (with a meaningless cranberry morpheme *daan*), but interestingly, also by a combination of the two.

(23) a.   van onder de tafel

          from under the table

      b.   onder de tafel vandaan

          under the table from-DAAN

      c.   van onder de tafel vandaan

          from under the table from-DAAN

Such a situation is potentially problematic for a model that encodes meaning in the syntax through a unique PathP. In the parallel architecture representation of

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(23c), however, there might be just one FROM, corresponding to a combination

of adpositions:

(24) van *Phon*$_1$ vandaan

$[_{PP} [_{PP}$ P *PP*$_1$] P]

FROM(X_1)

Of course, such a representation does not release us from the obligation to

make generalizations about doubling patterns like those in (24) and to explain

how and why they occur, but such generalizations and explanations are not driven

by a syntax that directly embodies the semantics of space, but by a system that

flexibly aligns form and meaning on the basis of a variety of factors and

constraints.

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