# WPFG

English spatial prepositions in Functional Grammar
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I lost a naughty preposition;
He lived, I think, beneath my chair.
I cried aloud to him, 'Perdition!
Come on up out from down under there!'

Now language is my vade mecum
And straggling phrases I abhor:
And yet I wonder, what should he come
On up out from down under for?

Morris Bishop

## 0. Introduction

This paper addresses the question of how the underlined spatial prepositional phrases in such English sentences as (1-5) should be analysed in Functional Grammar (FG; Dik 1978; 1989), with especial reference to the prepositions they contain:[1]

(1)   My friend and I agreed to meet *at the theatre*

(2)   The opposition supporters were standing *right behind us*

(3)   *Under that tree* looks like a good place for us to have our picnic

(4)   After dinner my friend and I walked *to the theatre*

(5)   Let us go *aboard the ship*

I shall defend the position that it is necessary to distinguish between two classes of spatial prepositions, grammatical and lexical, and that, for the analysis of the latter, we must recognize a class of adpositional predicates in the lexicon, predicates which interact with relevant semantic functions to yield the prepositions in question.

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In so doing, I shall assume, with Lyons (1977: 474; 1989: 159), that we must recognize a fundamental distinction between entity-referring and place-referring expressions. I shall therefore presuppose the appropriateness of the proposal made in Mackenzie (forthc.) to analyse reference to places by means of terms containing a p-variable (where p = one-, two- or three-dimensional place). Thus, corresponding to entity-reference in (6), there is place-reference in (7):

(6) *this* (d prox $x_i$)    (7) *here* (d prox $p_i$)

    *something* (i s/g $x_i$)    *somewhere* (i s/g $p_i$)

    *what?* (Q $x_i$: <inanim>)    *where?* (Q $p_i$)

All the underlined terms in (1-5) will be analysed as cases of place-reference, *at the theatre* in (1), for example, being analysed as (8):

(8) (d1$p_i$: $f_i$: theatre$_N$)$_{Loc}$

As may already be clear from (8), I shall also assume the appropriateness of the 'proceduralist' proposal in Mackenzie (1987) whereby terms model the speaker's attempt to guide the addressee towards the intended referent. Predicates introduced to the right of the colon are seen as being 'tendered' by the speaker in 'a creative quest for the words which provide the receiver of the message with the best clues, in the given setting, to the meaning the Speaker wishes to communicate' (Mackenzie 1987: 3). Representationally, the proposal differs from the standard FG analysis of terms in lacking a repetition of the variable to the right of the colon:[2]

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[2]Dik, having first argued for the former representation, later in the same book (1989: 262) and increasingly in more recent work adopts the latter, regarding it as a 'simplification' and an advantageous 'notational convention'. My position, however, is that the two analyses actually offer a different understanding of the relationship between reference and predication. Whereas Dik's analysis of the term (Analysis A) represents the assignment of a property (in (9), the properties 'elephant' and 'old' respectively) to a variable, Analysis B shows a looser, in fact associative or 'metonymical' relation between variable and predicate(s), whereby predicates are offered as being associated with (rather than predicated of) the variable, thus as clues towards the identification of the referent.

(9)   *the old elephant*

A   Dik (1989: 115):   $(d1x_i: elephant_N(x_i)_{Zero}: old_A(x_i)_{Zero})$

B   Mackenzie (1987):  $(d1x_i: elephant_N: old_A)$

As will also be clear from (8), a final assumption that I shall make, following Hengeveld (forthc.), is that every predicate is to be represented as a restrictor on an f-variable (cf. Dik 1989: 50). In this notation, (9B) is shown as (10):

(10)  $(d1x_i: f_i: elephant_N: f_j: old_A)$

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The difference between the two proposals emerges from consideration of terms such as *from the prison* in (i) and *from you* in (ii):

(i)    Did he escape *from the prison*?
(ii)   Did he run away *from you*?

(iii)  Analysis A   $(d1p_i: prison_N (p_i))_{So}$   (= (i))
                    $(d1p_i: [-S, +A](p_i))_{So}$   (= (ii))
(iv)   Analysis B   $(d1p_i: prison_N)_{So}$   (= (i))
                    $(d1p_i: [-S, +A])_{So}$   (= (ii))

Both analyses assume the appropriateness of the p-variable in keeping with Mackenzie's (forthc.) claim that locational semantic functions like So are restricted to p-terms. On that basis, analysis A yields for the term in (i) the unproblematic reading 'from the place such that the place is (a) prison'; however, for the term in (ii), the paraphrase is 'from the place such that the place is "you"', which is problematic in involving a metaphorical relation between the place-variable and the entity-denoting "you". Analysis B yields the reading 'from the place such that I invoke (as an aid to your identification of the place) "prison" or, respectively, such that I invoke "you"', with in each case again a metonymical relation between the place-variable and the predicate. On the FG assumption that metaphorical readings invoke special interpretation strategies, Analysis A assigns different status to the underlined terms in (i) and (ii), namely as literal and metaphorical respectively, whereas Analysis B treats them in the same way, indeed treating all cases of the relation between variable and predicate as a matter of metonymy. In that regard Analysis B appears to be more general.

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## 1. Current proposals and a challenge

Functional Grammar proposals for the analysis of spatial prepositions (and analogous phenomena in languages other than English) stand in clear need of elaboration. Dik (1989: 104) regards them as realizing one of three semantic functions, Loc(ative), So(urce) and Dir(ection), later in the book (1989: 197) adding the semantic function Path. Dik recognizes that further refinements of these spatial functions will be necessary. In this spirit, De Groot (1989: 13) analyses English *under* as realizing the semantic function Subessive:

(11)    (The dog was) under the table

        $(d1x_i: table_N (x_i))_{Subessive}$

This suggests the possibility of a radical extension of the set of spatial semantic functions (with notions such as inessive, sublative, etc.) to give a one-to-one relation between the members of that set and the spatial prepositions of English. It will be immediately clear that any such suggestion may be descriptively adequate but, being little more than an exercise in labelling, will have scant explanatory value. Generalizations involving such notions as Locative (for instance the Semantic Function Hierarchy) will also have to be replaced by cumbersome disjunctions.

What are the phenomena we should like to be able to explain? The four following facts must surely be encompassed by any attempt to handle the spatial prepositions of English:

(a) such systematic relations between prepositions and their meanings as displayed by the analogy *in*: *into* :: *on*: *onto*;

(b) sequences of prepositions as in *from under the table to behind the door* (Bennett 1975: 91);

(c) regular relations between many prepositions and spatial adverbs, e.g. *outside the door*: *outside*; *below the deck*: *below*;
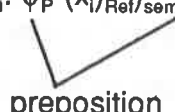
4

(d) the adverbial modification of prepositions, e.g. by *right* and *three miles* respectively in *right across from here*; *three miles down the road*.

These facts may be regarded as a challenge to any FG account of English prepositions.

## 2. The proposal

My proposal is that the great majority of spatial prepositions (and as we shall see, sequences of spatial prepositions) in English co-realize two elements of the representation of a term, namely a semantic function and a predicate. Schematically, this may be shown as follows, where, it should be noted, $(x_i)_{Ref}$ represents the complement of the preposition:

(12)  $(\omega\ p_i\colon f_i\colon \phi_P\ (x_i)_{Ref})_{sem.funct.}$

preposition

Let us first consider which semantic functions are involved (2.1), then progressing (2.2) to consider the nature of the $\phi_P$.

### 2.1.  Five semantic functions

Partially following Dik's own proposals (1989: 197), I propose to extend the number of relevant semantic functions to 5, preserving Loc and So, dividing Dir into All(ative) and App(roach), and, with Dik, adding Path. The resultant 5 semantic functions may *either* be directly realized as follows:

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(13) Loc       ->    *at*

     So        ->    *from*

     Path     ->    *via*

     Allative  ->    *to*

     Approach ->    *toward(s)* [*toward* is the norm in American, *towards* in British English]

     e.g. *at the car*: $(d1p_i: f_i: car_N)_{Loc}$

*or*, as we shall see, enter into the co-realization schematically represented in (12). The 5 prepositions in (13) will be dubbed grammatical prepositions, and will be assumed not to occur in the lexicon.

The Locative semantic function is employed for all instances of spatial location, as exemplified in (1-3) above. The other four functions are primarily associated with [+dyn] States of Affairs, as in (4-5) above. These latter States of Affairs may be regarded as 'journeys' (Bennett 1975: 31; Jessen 1975: Ch. VII), with a starting-point (Source), an intermediate point or route (Path), and either an end-point or an orientation (a direction). The first definition given by Dik (1989: 103) of Direction ('the entity [*sic*] towards which something moves/is moved') is at variance with the examples of the function given on p. 104, where in each case it is the end-point rather than the direction of movement that is referred to; for these examples, the second definition of Direction as 'the terminal point of a movement' (Dik 1989: 197) would seem more appropriate. I suggest removing the dubiety by splitting this function into two: Allative, which represents the end-point and is clearly telic (Dik 1989: 92); and Approach, which indicates the orientation, is non-telic and satisfies a modification of the first-mentioned definition of Direction, namely as 'the place towards which something moves/is moved'. The two functions are shown in (14) and (15):

(14) John walked *to the station*<sub></sub>All (*but he never got there)

(15) John walked *towards the station*<sub></sub>App (but he never got there)

A fully-specified journey is exemplified by (16):

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(16)  John walked (from his house)$_{So}$ (via the bridge)$_{Path}$ (to the station)$_{All}$ /(towards the station)$_{App}$

in which All and App are seen to be mutually exclusive. (16) represents the unmarked order, in which there is an iconic relation between the stages of the journey referred to and the order of terms. Clearly, as a result of pragmatic function assignment, other orders could arise. Equally clearly, any or all of the three journey-positions may be left unspecified:

(17a)   John walked (from his house)$_{So}$ (via the bridge)$_{Path}$
(17b)   John walked (from his house)$_{So}$
(17c)   John walked         etc.

This last fact is generally handled by regarding the terms with So/Path/All/App function as (level-one, i.e. predicate-modifying) satellites (Dik 1989: 197-198). The matter is not fully clear, however, since Dik (1989: 104) treats *to London* and *into the river* in *John drove to London* and *The tree fell into the river* as (Direction-)arguments, despite the fact that they are as easily omissible as the terms in (16). I shall not prosecute the question of the argument-satellite distinction here; for some discussion, see Mackenzie (1981: 301-306) and Siewierska (1991: 55-62).

At the same time, as was observed by Fillmore (1971:51), any of the positions on the journey may undergo multiple filling, e.g. for Path:

(18)  He walked (down the hill)$_{Path}$ (across the bridge)$_{Path}$ (through the pasture)$_{Path}$ (to the station)$_{All}$

The three Path-satellites indicate temporally successive points on an all-encompassing path. This suggests analysing (18) as containing two satellites, with the three terms within the Path-satellite ordered by means of the symbol <, which represents precedence in time:

(19)  He walked (down the hill < across the bridge < through the pasture)$_{Path}$ (to the station)$_{All}$

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## 2.2 Adpositional predicates

Along with the proposal to extend the repertoire of spatial semantic functions, I introduce a new (closed) class of lexical predicates alongside the 4 already established for the English lexicon (noun, verb, adjective and adverb). This is the class of adpositions (subscript P - for *p*reposition/*p*ostposition), e.g. $on_P$.[3] As I shall argue, each of these predicates designates a spatial relation. I take them to have the lexical form of relational predicates, i.e. to be one-place predicates, the single argument having the semantic function Ref(erence) (see Mackenzie 1983: 38; Dik 1989: 103), e.g.:

(20) $on_P (x_i)_{Ref}$

These adpositional predicates will thus have the same lexical structure as was argued by Mackenzie (1987: 12) to obtain for such relational predicates as *father*, and by virtue of their meaning will closely resemble such relational nouns as *top*, *side*, *outside* and *front*. Dik defines a nominal predicate as being 'primarily used as head of a term' (1989: 162); refining this definition in the light of the proposed distinction between entity-referring and place-referring terms (x-terms and p-terms, cf. Mackenzie forthc.), we may now state that:

* a nominal predicate is a predicate which is primarily used as head of an x-term
* a spatial adpositional predicate is a predicate which is primarily used as head of a p-term

To exemplify, I propose (21) as an alternative to De Groot's (1989) analysis of *under the table* (cf. (11) above):[4]

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[3]The first to propose one-place adpositional predicates in an FG framework was Weigand (1990: 96; 136).

[4]There may appear to be a considerable amount of redundancy in (21). In Mackenzie (forthc.), however, I show that the distinctions between place-reference and entity-reference, between place-denotation and entity-denotation, and between locational and non-locational semantic functions are all required, for independent reasons.

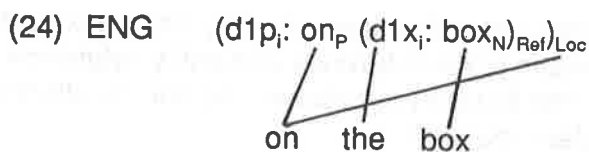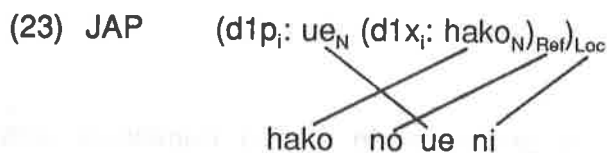(21)    $(d1p_i:\ under_P\ (d1x_i:\ table_N)_{Ref})_{Loc}$

under
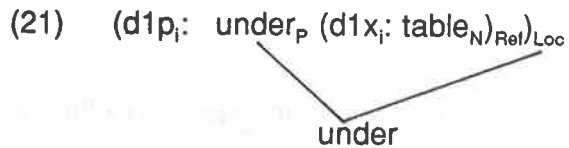
This representation has the theoretical advantage of resolving the controversy addressed by Dik (1983: 267-269) concerning the status of adpositions as heads or relators. FG has standardly opted for the latter analysis, while there is a considerable literature in other frameworks, notably X-bar theory, for the headship of adpositions within adpositional phrases (from Jackendoff 1973 onwards; but cf. Maxwell 1984 for criticism). The hypothesis schematized in (12) and exemplified in (15) incorporates the essence of both sides of the controversy, since *under* in (21) is both a relator in realizing Loc and also a head in realizing the first restrictor predicate.

The representation proposed may also have a good deal of typological validity for the representation of adpositional predicates across languages. It corresponds point-for-point with Kahr's (1975: 43) 'complex locational expressions', which she 'found to be pervasively representative of the world's languages'. Consider one such 'complex locational expression' from Japanese (Lehmann 1990: 172) and its English equivalent:

(22)  hako    no      ue      ni          on the box
      box     GEN     top     LOC
      'lit., at box's top'
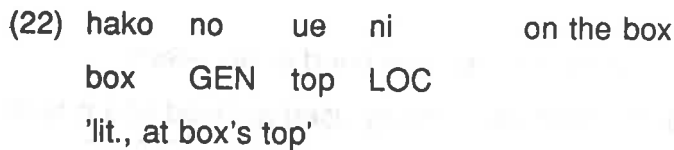
For both expressions I would propose essentially the same analysis (23/24):

(23)  JAP      $(d1p_i:\ ue_N\ (d1x_i:\ hako_N)_{Ref})_{Loc}$

      hako    no    ue    ni

(24)  ENG      $(d1p_i:\ on_P\ (d1x_i:\ box_N)_{Ref})_{Loc}$

      on    the    box

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The recognition of a small set of markers alongside the adpositional predicates, i.e. in English the prepositions listed in (13) above, also seems typologically justified: Kahr (1975: 43) found that 'all languages studied ... possessed at least one "primitive" adposition which defies further etymological or syntactic analysis'.

## 3. Application to English

Returning to English, we may claim with justification that the two-pronged proposal (extension of the set of spatial semantic functions; introduction of adpositional predicates) has explanatory value in offering answers to the four-part challenge laid down in section 1 above.

Firstly, the systematic relationship displayed by the analogy *in*: *into* :: *on*: *onto*, which can be *described* by using such labels as inessive: illative :: superessive: 'super-lative', can be insightfully *explained* as resulting from an interaction between semantic function (Locative vs. Allative) and lexical choice (*in* vs. *on*):

(25) in: $(... f_i: in_P ...)_{Loc}$

   into: $(... f_i: in_P ...)_{All}$

(26) on: $(... f_i: on_P ...)_{Loc}$

   onto: $(... f_i: on_P ...)_{All}$

Both *into* (which has been written as one word since Old English times) and *onto* (which has only recently come to be regularly written as one word) may be seen as in effect sequences of prepositions (*in/on* + *to*) with *to* as the (normal) realization of All, occurring - exceptionally, as we shall see - after rather than before the lexical preposition, schematically:
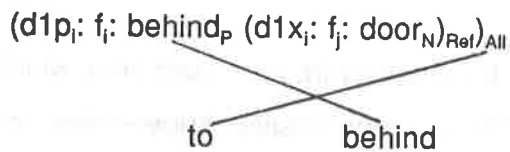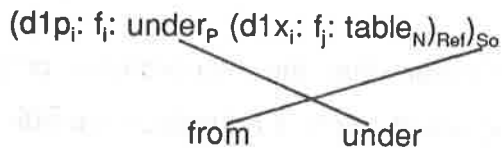
(27) $(... f_i: in_P ...)_{All}$

   in   to

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Secondly, sequences of prepositions orthographically written as separate words can be explained as involving separate rather than fused realization of predicate and semantic function, e.g.:

(28)  from under the table to behind the door

$$(d1p_i: f_i: under_P (d1x_i: f_j: table_N)_{Ref})_{So}$$

from          under

$$(d1p_i: f_i: behind_P (d1x_i: f_j: door_N)_{Ref})_{All}$$

to          behind

Note that sequences of prepositions, other than the sequence preposition + *of*, of which more in 5.2, are in English basically limited to *from* + preposition. *To* + preposition, exemplified in (28), appears to occur only where it has to be made clear that what is intended is an Allative satellite and not a Locative postmodifier within a term (i.e. in (28) to avoid the understanding 'the table (that is) behind the door'). Thus *The dog crept (?to) behind the door* is of dubious acceptability with *to*. Furthermore, *to* + *in* and *to* + *on* are, as we have seen, fused into one word with the prepositional elements in the reverse order.

The proposal predicts that *from* will be freely combinable with lexical prepositions, which Figure 1 below shows to be generally the case, and also that *from* will not be combinable with the other, grammatical prepositions. And indeed *\*from at*, *\*from via*, *\*from to* and *\*from towards* are impossible sequences.

Thirdly, the regular relationships between many English spatial prepositions and locative adverbs can be understood as a matter of category change coupled with valency reduction, whereby the lexical preposition comes to lose its one argument, yielding an avalent adverbial predicate. The relevant predicate-forming rule may be formulated as follows:

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## LOCATIVE ADVERB CREATION

Input: $\phi_P\,(x_i)_{Ref}$ (e.g. *below the deck*)

Output: $\phi_{Adv}$ (e.g. *below*)

The locative adverbs in question are thus to be situated in the fund, the repertoire of elements formed by operations on lexical entries. Such locative adverbs as *downstairs, aloft,* etc., which are not formed from prepositions, will be the lexical counterparts of the forms under discussion.

This proposal correctly predicts the absence from the language of *at/from/via/to/towards* as adverbs. (*Come to* is a phrasal verb; *to and fro* is a fixed expression; and *The door is to* ('closed') is unrelated to the prepositional use of *to*.)

Fourthly, in an analysis incorporating adpositional predicates, adverbial modifiers of spatial prepositions can be regarded as restrictors on those predicates. Thus *right behind us*, where *right* serves to indicate that the spatial relation holds with more than normal geometrical precision, may be analysed as follows:

(29) $(f_i\colon \text{behind}_P\,(dmx_i\colon f_j\colon [+S,\ ])_{Ref}\colon f_k\colon \text{right}_{Adv})$

The proposal correctly leads one to expect that *right* cannot be combined (in the relevant sense) with any of the 5 grammatical prepositions. In such an apparent exception as *He came right from London*, *right* cannot be taken to indicate greater precision about the *from*-relation but rather is a manner satellite in its own right. As Mike Hannay has pointed out to me, this is shown by the difference between *They came from right behind me*, where *right* is a restrictor on *behind me* and *They came right from behind me*, where *right* is a satellite of manner.

Thus the proposal to analyse spatial prepositions as in (15) above has been shown to rise to the four challenges laid down in section 1. Moreover, it has been demonstrated that the classes of lexical and grammatical prepositions in English display discrete behaviour in various respects.

### 4. Adpositions: a separate class?

A possible drawback of the proposal made in this paper is that it entails the recognition within FG of a closed class of predicates. However, this may not be such a novelty, given that the class of English adverbs that cannot be derived from adjectives (e.g. *meanwhile, tomorrow, tonight, again, piecemeal, pointblank,* etc.) is probably also finite.

Hengeveld (forthc.), reacting to my initial proposal to introduce a new class of adpositional predicates in Mackenzie (forthc.), suggests that the proposed class is perhaps a subclass of nouns; in support of this idea, he points to the indubitable parallelism between $outside_N$ (which requires a Ref-argument) and $outside_P$ (which has the same requirement). The obvious relation between this particular preposition and the corresponding noun cannot be generalized, however, either on synchronic or diachronic etymological grounds, across the class of English prepositions. There is no indication of nominal behaviour or origin for such prepositions as, say, *in, under* or *against*; moreover, a preposition such as *near* shows, if anything, more analogy with the class of adjectives (cf. *nearer, nearest*). If conflation with another class is to be considered, then there are good reasons for considering the class of Adverbs as a likely candidate. Firstly, there is a subset of adverbs with spatial meaning; secondly, as we have observed, the lexical class of adverbs is itself probably a closed class; thirdly, as we have also seen, adpositions and adverbs are closely related through the rule of locative adverb creation. Thus, on the assumption that the class of adverbs, as presently constituted, consists of avalent predicates, adpositions, in an extended class, could constitute their monovalent companions, i.e.:

(30) $\phi_{Adv}$ = adverb

$\phi_{Adv} (x_i)_{Ref}$ = adposition

### 5. The spatial prepositions of English

For an overview of the spatial prepositions and prepositional sequences of English, see Figure 1. Only a relatively small subset of the prepositions listed here, namely those enclosed in Box A, occur in the lexicon: the prepositions enclosed in Box B are introduced

by expression rules, and those enclosed in Box C result from the interaction of semantic function and lexical form.

It goes without saying that Figure 1 and the subsequent discussion barely begin to do justice to the overwhelming complexity of spatial prepositional meanings in English as found in contextual use. Nevertheless, following the example of Bennett (1975), Herskovits (1986) and others, an attempt has been made to circumscribe the general sense of each preposition. Further specifications will be left to the lexicon.

Figure 1

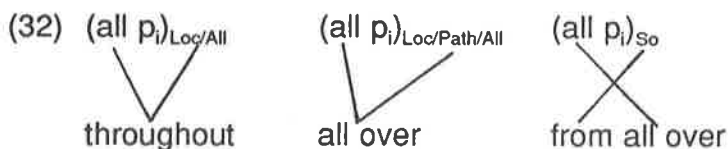|  | Loc | So | Path | All | App |
|---|---|---|---|---|---|
| *point* | (B) at | from | via | to | towards |
| *omnipresence* | throughout | -- | -- | thru'out | -- |
|  | all over | from all over | all over | all over | -- |
| **+containment** |  |  |  |  |  |
| :interior | in (A) | out of (C) | through | into | inwards |
| :enclosure | inside | from inside | inside | inside | -- |
|  | within | from within | -- | -- | -- |
| :exterior | outside | from outside | outside | outside | outwards |
| **+verticality** |  |  |  |  |  |
| :superior |  |  |  |  |  |
| :contact | (up)on | off (of) | over1 | onto |  |
|  |  |  | across |  |  |
| :top contact | on top of | from on top of | -- | on top of | -- |
| :no contact | above | from above | -- | above | -- |
|  | over₁ | from over₁ | over₁ | over₁ | -- |
| :inferior | under | from under | under | under | -- |
|  | beneath | from beneath | beneath | beneath | -- |
|  | below | from below | -- | below | -- |
| :enclosure | underneath | from underneath | underneath | underneath | -- |
| :kinesic |  |  |  |  |  |
| :rising | -- | -- | up | -- | upwards |
| :falling | -- | -- | down | -- | downwards |
| **+orientation** |  |  |  |  |  |
| :anterior | in front of | from in front of | in front of | in front of | -- |
| :leading | ahead of | -- | -- | ahead of | forwards |
| :posterior | behind | from behind | behind | behind | -- |
|  | in back of | from in back of | in back of | in b. of | backwards |
| **+relation** |  |  |  |  |  |
| :lateral contact | against | from against | -- | against | -- |
| :proximity | near | from near | near | near | -- |
|  | [idem: near to/near by.............................] |  |  |  |  |
|  | by | from by | by | by | -- |
| :lateral | beside | from beside | beside | beside | -- |
| :parallel | alongside | from alongside | along | alongside | -- |
| :immediate | next to | from next to | next to | next to | -- |
| :opposition | opposite | from opposite | -- | -- | -- |
|  | across from | -- | -- | acr. from | -- |
| :circumposition | around | from around | around | around | -- |
|  | [idem: round .............................] |  |  |  |  |
|  | about | -- | -- | -- | -- |
| :interposition |  |  |  |  |  |
| :dual | between | from between | between | between | -- |
|  | [idem: in between .............................] |  |  |  |  |
| :plural | among | from among | among | among | -- |
|  | [idem: amongst .............................] |  |  |  |  |
| :central | amid | from amid | amid | amid | -- |
|  | [idem: amidst .............................] |  |  |  |  |
| :ultraposition | beyond | from beyond | beyond | beyond | -- |
|  | over₂ | from over₂ | over₂ | over₂ | -- |
| other: |  |  |  |  |  |
|  | aboard | from aboard | -- | aboard | -- |
|  | astride | from astride | -- | -- | -- |

predicates
in lexicon

The uppermost row, in Box B, contains the 5 grammatical prepositions of English (cf. (13) above). They share with the other occupants of Box B the property that the Ref-argument of these prepositions is always understood as a (zero-dimensional) point in space (cf. Bennett 1975: 68 for discussion). Thus in (31), *London*, *New York* and *Moscow* (although "in fact" vast cities) are conceptualized as points on a line:

(31)  Flying from New York to Moscow, I stopped over at London

Similar remarks apply to *throughout* and the two-word preposition *all over*, which both mean 'at/to all points such that ...'; these are introduced by expression rules sensitive to the universal quantification operator and thus do not occur in the lexicon of English:

(32)  $(all\ p_i)_{Loc/All}$      $(all\ p_i)_{Loc/Path/All}$      $(all\ p_i)_{So}$

throughout        all over            from all over

Box A contains the reflexes of the lexical prepositions of English. Note, in defence of this position, that the Locative prepositions are morphologically the simplest: compare Locative *in* with Allative *into* and Approach *inwards*, and the suppletive forms *out of* (Source) and *through* (Path). Moreover, the locatives are distributionally unmarked: with the exception of *up* and *down*, to be discussed below, all rows have a locative form, whereas all the other columns have, to a greater or lesser extent, gaps: cf. ?\**from ahead of* as a Source sequence in (33); \**below* as a Path preposition in (34); \**within* as an Allative preposition in (35); etc. The gaps appear to be arbitrary and may even be idiolectal; in any case, they will have to be indicated in the lexical entry as exception features.
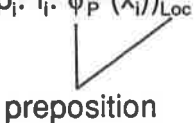
(33)  \*He came from ahead of the procession (in the sense that he had been ahead of the procession and came from there)
(34)  She walked under/\*below the bridge to the other side of the highway
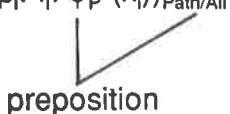(35)  The children ran inside/\*within the house for cover

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The forms found in Box A will result from a co-realization of the predicate with a zero-expression of the semantic function, schematically:

(36)  $(\omega \ p_i: f_i: \phi_P \ (x_i))_{Loc}$
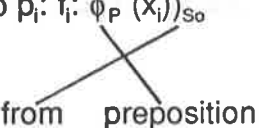
preposition

Box C shows how combinations of semantic functions other than Locative with prepositional predicates are expressed. For Path, and generally also for the Allative semantic function in combination with prepositions, we find co-realization with a zero-expression of the semantic function, schematically:

(37)  $(\omega \ p_i: f_i: \phi_P \ (x_i))_{Path/All}$

preposition

Only under the conditions discussed in section 3 above may Allative be realized separately as *to*. Zero-expression of the semantic function is thus the norm for both Path and All. This prompts the idea that Path may be analysable as a subtype of Allative, where an intermediate destination is intended.
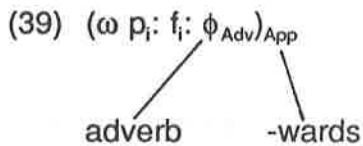
The semantic function Source in combination with a prepositional predicate is expressed as *from* preceding the lexical preposition:

(38)  $(\omega \ p_i: f_i: \phi_P \ (x_i))_{So}$

from    preposition

Approach, finally, is expressed as *-wards*, but only with lexical prepositions that have undergone category change and valency reduction:

(39)  $(\omega\ p_i\text{: } f_i\text{: } \phi_{Adv})_{App}$

adverb          -wards

## 5.1. Suppletion

Many of the exceptions to the expression rule schemata (36-39) may be regarded as cases of suppletion. Thus *out of* and *through* appear to be the standard ways of expressing $(\omega\ p_i\text{: } f_i\text{: } in_P \ldots)_{So}$ and $(\omega\ p_i\text{: } f_i\text{: } in_P \ldots)_{Path}$ respectively, just as *off* (*of*) and *over/across* are suppletive expressions of $(\omega\ p_i\text{: } f_i\text{: } on_P \ldots)_{So}$ and $(\omega\ p_i\text{: } f_i\text{: } on_P \ldots)_{Path}$, respectively. Bennett (1975: 75) takes issue with such an analysis, finding that direct expression of $(\omega\ p_i\text{: } f_i\text{: } in_P \ldots)_{So}$ and $(\omega\ p_i\text{: } f_i\text{: } on_P \ldots)_{So}$ as *from in* and *from on* 'cannot be ruled out as ungrammatical', and claiming that *out of* and *off* (*of*) are in fact allative expressions (meaning 'to the exterior' and 'to the non-surface' respectively).[5] He thus denies the need for suppletion in Source (but not corresponding Path) expressions. One fact not fully considered by Bennett, however, is that *out of* and *off* may in some dialects - as also in Early Modern English - be (vacuously) supported by the preposition *from*, which strongly suggests that *out of* and *off* are indeed Source expressions; if they were Allative expressions, as Bennett claims, a clash would arise between Source and Allative:

(40)  She appeared from out of the kitchen
(41)  Go and loose the sackcloth from off thy loins (Is. 20:2)

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[5]Bennett's (1975: 75-77) major argument in favour of this analysis is that phrases with *out of* can be conjoined with phrases with *into*, as in *The rabbit ran out of the house and into the hole*. Whereas source expressions cannot normally be conjoined with allative expressions (*\*It ran from the house and to the tree*), conjunction of expressions with the same semantic function is regularly possible, indicating a succession of journeys.

## 5.2. Many-word prepositions

FG allows predicates to be combinations of words (Dik 1989: 54). The combinations to be admitted to the class of lexical prepositions are *on top*, *in front*, *in back* as well as *across from*, *in between*, *near by* (sometimes written as *nearby*), and *next to*. The *of* that follows the first three of these prepositions may elegantly be regarded as the expression of the semantic function Ref of the argument-term. Note, in support of this analysis, that when Ref is expressed in English as a preposition, i.e. in a non-verbal domain, it is generally as *of*: *the father **of** the beauty queen*; *fond **of** chocolates*. Note furthermore that when prepositions that can be followed by *of* undergo valency-reduction and category change, the *of* disappears with the disappearance of the Ref-argument: *on top of the pile*: *on top*; *ahead of the procession*; *ahead*. Finally, there are a number of prepositions that in certain dialects permit overt expression of the Ref semantic function (*off, outside, inside, alongside*); that expression is always as *of*. The only preposition with a deviant (optional) expression of Ref is *near*, which takes *to*. (As mentioned in 4. above, *near* may be better analysed as a (monovalent) adjective.)

## 5.3. Resultative and itinerative interpretations

Static location in space can be expressed not only by Locative but also - indirectly - by Source, Allative and Path terms; cf., respectively:

(42)  Finally I was *out of the trap*

(43)  At long last I'm *onto the stage*

(44)  His house is *under/*below the bridge* (from here)

(42) and (43) have a resultative meaning, while (44) may be said to have an itinerative meaning, by which I mean that it indicates a location by describing a Path from a pragmatically salient starting-point towards that location. In such an itinerative expression, the starting-point may be expressed as a So-term, *in casu* 'from here'. Since these interpretations are possible only in association with predicative use of the prepositional

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phrases in question, it seems appropriate to regard them as terms that have undergone predicate formation. Thus the predication in *I was out of the trap* may be represented as in (45):

(45) Past e: {(d1p$_i$: f$_i$: in$_P$ (d1x$_i$: f$_j$: trap)$_{Ref}$)$_{So}$} (d1x$_i$: f$_k$: [+S, -A])$_{Zero}$

The resultative interpretation will arise from the resolution of the clash between the static predication (cf. the Zero-argument) and the dynamic semantic function So. And similarly for location expressed through Allative and Path term predicates.[6] The itinerative (but not the resultative) interpretation is also found in static predications where the Path-expression functions as an argument, for example with a verb such as *live*:

(46) Itinerative: John lives under/*below the bridge (in the sense that John's dwelling can be reached by passing under the bridge)

(47) Resultative: *Ivan now lives out of Russia

Generally speaking, prepositions used in a resultative or itinerative construction cannot be combined with *from* as the preposition expressing Source:

(48) *John is from onto the stage

(49) *John is from under the bridge

---

[6]The problems with a representation such as (45) are catalogued by Hannay (1990). His solution to these problems, which involves deriving term predicates containing a semantic function from a satellite to a nominal predicate (Satellite Predicate Formation), works well for normal locatives. However, it appears not to work for Source, Allative and Path expressions interpreted as resultative or itinerative locatives, since these expressions cannot be used as satellites to nominal predicates:

(i)    *the man out of the trap
(ii)   *the actress onto the stage
(iii)  *the house under the bridge (in the relevant itinerative interpretation)

One apparent exception is the sequence *from over* in (50):

(50)  John is from over the hill = John is from beyond the hill

It would appear that *over* (= above) has, as a result of being involved in itinerative expressions, adopted an additional meaning 'beyond'. In Figure 1 the distinction is captured as *over$_1$* 'above' and *over$_2$* 'beyond' respectively. (For extensive discussion of *over*, see Lakoff 1987: 418-461.)

*Up* and *down* are unusual prepositions in that their basic use is as Path rather than Locative prepositions, as in (51):

(51)  Tom ran (up/down the hill)$_{Path}$ (to his grandmother's house)$_{All}$

In [-dyn] sentences such as (52) and (53), *up* and *down* consequently have an itinerative understanding (cf. (44) and (46)). Here they indicate a location by means of the path (rising or falling, respectively) that must be taken to reach that location:

(52)  The pub is up the road
(53)  John lives down the hill

This is apparent from the fact that *up* + NP does not necessarily locate the pub or John's dwelling with respect to the road or hill: the pub may not be on or even near the road in question and John's home need not be spatially associated with the hill. Rather, both expressions indicate (or perhaps only adumbrate) a route towards the intended location from a pragmatically salient starting-point (which may be specified, say by *from here*).

Bennett (1975: 89) in effect denies that *up* and *down* can be prepositions, regarding *up* in (49) as a directional locative adverb and *the road* as a path expression equivalent to *via the road*. This analysis accords well with the historical origins of *up/down* + NP, but fails to do justice to the syntactic unity of the combination, which in the contemporary language behaves in all respects like a prepositional phrase. I therefore suggest regarding *up* and *down* as prepositional predicates, with exception features blocking their occurrence in Loc,

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So and All terms. Thus the predication in *John lives down the hill* may be represented as in (54):

(54)   Pres $e_i$: $f_j$: live$_V$ ($f_j$: John$_N$)$_{Zero}$ (d1p$_i$: $f_k$: down$_P$ (dlp$_j$: $f_l$: hill$_N$)$_{Ref}$)$_{Path}$

where the itinerative interpretation will arise from the resolution of the clash between the static predication (cf. the Zero-argument) and the dynamic semantic function Path.

   The possibility should however not be excluded that *up* and *down* have undergone a similar fate to *over*, i.e. that the itinerative interpretation has been lexicalized, with *up* developing the meaning 'at a higher location' and *down* 'at a lower location', for example, where they are used in apposition with locative expressions as in *up on high* or *down below*. For another example, see the discussion of (59) in 7 below.

## 6. Non-locational p-terms

Finally, let us consider such uses of spatial prepositional phrases as that underlined in (3), here repeated for convenience:

(3)    *Under that tree* looks like a good place for us to have our picnic

Mackenzie (forthc.) analyses such instances as 'non-locational p-terms with an adpositional predicate', whereby 'non-locational' means 'not bearing one of the five spatial semantic functions'. The underlined term in (3) may be represented as follows:

(55)   (d1p$_i$: $f_i$: under$_P$ (d rem 1x$_i$: $f_j$: tree)$_{Ref}$)$_{Zero}$

The attribution of Zero-function is of course justified by the relation between the term and the predicate *look (like)*. A problem for our analysis is the existence of such a sentence as (56) (Mackenzie forthc. takes a similar sentence to be ungrammatical):

(56)   *At the station* was where I met him

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Clearly, if - as has been argued - *at* is not an adpositional predicate, but the realization of Loc, and given that FG excludes double assignments of semantic functions (e.g. *LocZero), (55) cannot offer a model for the representation of the two underlined terms. However, given the explanatory value, demonstrated above, of the distinction between those prepositions that realize a semantic function and those that realize both a semantic function and an adpositional predicate, some other explanation should be sought, perhaps along the following lines.

Observe that (56) contains an identifying predication, as can be seen from the potential reversability of the terms. As a result, the two terms must have the same semantic function (Zero). Furthermore, (56) can *salva veritate* also be expressed as (57):

(57)  The station was where I met him

to be represented, in outline, as:

(58)  $(d1p_i: station)_{Zero}$

   =

   $(d1p_i: Past\ e_i: [meet\ (!)_{Ag}\ (he)_{Go}]\ (p_i)_{Loc})_{Zero}$

In this light, it becomes thinkable that the (redundant) *at* in (56) is the result of the need to maximize the balance of the two sides of the equation by vacuously introducing Loc as a quasi-semantic function in the term $(d1p_i: station_N)_{Zero}$.

## 7. Conclusions

The major conclusions of this paper are:

a) that 5 semantic functions need to be recognized for the analysis of the spatial prepositions of English;

b) that it is also necessary to recognize a closed class of monovalent adpositional predicates which may form a subset of the class of adverbs;

c) that both resultative and itinerative uses can be captured by regular interpretive principles without addition of new semantic functions;

d) that the analysis also applies to spatial prepositional phrases that do not bear one of the five spatial semantic functions.

A convenient summary may be offered by an analysis of the last line of the first stanza of the Morris Bishop poem that heads this paper:

(59)  Come on up out from down under there

Of the six 'prepositions' that occur in sequence in (59), the first, *on*, is, I assume, part of the phrasal verb *come on*. The second, *up*, is a Path expression; the third, *out*, is a Source expression, as is the sequence *from down under there*. *Out* is a suppletive form, co-realizing So and valency-reduced *in*. *From* realizes the semantic function So, with *down* and *under there* being locative expressions in apposition with each other. *Down* has undergone valency reduction, while *under* has *there* as its argument. As mentioned in 5.3. above, where *down* occurs in apposition with locative expressions, analysis as a locative adposition seems appropriate. The full analysis may therefore be as follows: ·

(60)  IMP $E_i$: [$X_i$: [$e_i$:

[$f_i$: come-on$_V$

($d1x_i$: $f_j$: [-S, +A])$_{Ag}$

($d1p_i$: $f_k$: in$_{Adv}$)$_{So}$, ($d1p_i$: $f_l$: down$_{Adv}$, $f_m$: under$_P$ (d rem $p_j$))$_{So}$

($d1p_k$: $f_n$: up$_{Adv}$)$_{Path}$]]]

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