

## Appendix to Part I

## 10.1 Motion/Location and Spatial Structures

The formulation given in (1) of Part I was only a rough characterization of the translatory situation's much finer spatio-temporal nature. At the core of the translatory situation is a putatively-universal system of abstract *motion/location* subsituations. A few of these are shown specified -- still quite roughly -- by the underlying *motion/location structures* in (1). In these structures appear the following 'topological' bathic nouns with the specifications shown:

$\text{POINT}_{S,T}$  specifies an (unextended) point of space, time



$\text{E}^{\text{POINT}}_{S,T}$  specifies an extended point of space, time



$\text{EXTENT}_{S,T}$  specifies an (unbounded) extent of space, time



$\text{B}^{\text{EXTENT}}_{S,T}$  specifies a bounded extent of space, time



- (1)
- (a) a POINT<sub>S</sub> BE<sub>L</sub> AT a POINT<sub>S</sub>
  - (b) a POINT<sub>S</sub> MOVE TO a POINT<sub>S</sub> (at a POINT<sub>T</sub>)
  - (c) a POINT<sub>S</sub> MOVE FROM a POINT<sub>S</sub> (at a POINT<sub>T</sub>)
  - (d) a POINT<sub>S</sub> MOVE POR\* a E<sub>E</sub>POINT<sub>S</sub> (at a POINT<sub>T</sub>)
  - (e) a POINT<sub>S</sub> MOVE ALONG an EXTENT<sub>S</sub> (for an B<sub>B</sub>EXTENT<sub>T</sub>)
  - (f) a POINT<sub>S</sub> MOVE ALENGTH an B<sub>B</sub>EXTENT<sub>S</sub> (in an B<sub>B</sub>EXTENT<sub>T</sub>)

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\* The DIRECTIONAL notion intended here would normally be expressed in English by *through*, as in 'for a a point to move through a point'. For distinctness, however, the Spanish preposition *por* has been selected to represent the bathic morpheme.

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In any particular language these universal structures take as relative clause formations on their right-hand nominal constituent a set of particular *spatial structures* (some aspects of which may also be universal). E.g., one such spatial structure for English is, highly simplified;

- (2) a POINT<sub>S</sub> IS OF the INSIDE OF a SPHERE,

where *the INSIDE* specifies 'the space which is inside' and *SPHERE* is taken, again in a more topological sense, to specify any 'wholly or mostly closed surface'.



construction: in particular, from the last portion of a motion/location structure together with the first portion of a spatial structure. We now take six such constructions -- built from the last portions of (1 a, b, and c) together with the first portions of two different spatial structures -- and sketch the derivations leading from these to the corresponding surface DIRECTIONAL expressions of English. The last portion of the spatial structures, i.e., the bathic topological noun, is shown only in brackets and is assumed not to participate directly in the derivation:

(4)

(A) <u>For ( 1 a ):</u>	<u>For ( 1 b ):</u>	<u>For ( 1 c ):</u>
(a) AT a POINT <sub>S</sub> which IS OF the INSIDE OF [a SPHERE]	TO a POINT <sub>S</sub> which IS OF the INSIDE OF [a SPHERE]	FROM a POINT <sub>S</sub> which IS OF the INSIDE OF [a SPHERE]
(b) AT a POINT <sub>S</sub> OF the INSIDE OF	TO a POINT <sub>S</sub> OF the INSIDE OF	FROM a POINT <sub>S</sub> OF the INSIDE OF
(c) AT a POINT <sub>S</sub> IN	TO a POINT <sub>S</sub> IN	FROM a POINT <sub>S</sub> IN
(d) AT IN	TO IN	FROM IN
(e)		FROM OUT
(f) IN AT	IN TO	OUT FROM
(g) in	in(to)	out-of*
 (B)		
(a) AT a POINT <sub>S</sub> which IS OF the SURFACE OF [a PLANE]	TO a POINT <sub>S</sub> which IS OF the SURFACE OF [a PLANE]	FROM a POINT <sub>S</sub> which IS OF the SURFACE OF [a PLANE]
(b) AT a POINT <sub>S</sub> OF the SURFACE OF	TO a POINT <sub>S</sub> OF the SURFACE OF	FROM a POINT <sub>S</sub> OF the SURFACE OF
(c) AT a POINT <sub>S</sub> ON	TO a POINT <sub>S</sub> ON	FROM a POINT <sub>S</sub> ON
(d) AT ON	TO ON	FROM ON
(e)		FROM OFF
(f) ON AT	ON TO	OFF FROM
(g) on	on(to)	off(-of)

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\*In standard English, *into*, *onto*, and *off-of* can appear without the second element, but *out-of* cannot. At least in some black speech, however, this *can* happen: 'he fell out the bed'.

It may be noted that the derivations in (4) apply equally well to Russian through the '(f)' forms. In deriving further to the surface '(g)' forms, the bathic morphemes *IN*, *OUT*, *ON*, and *OFF* key in the appropriate Russian prepositions, while the bathic morphemes *AT*, *TO*, and *FROM* key in case markers for the governed noun:

(5)

(f)	IN	AT	IN	TO	OUT	FROM
(g)	v + -	<u>prepositional</u>	v + -	<u>accusative</u>	iz + -	<u>genitive</u>
(f)	ON	AT	ON	TO	OFF	FROM
(g)	na + -	<u>prepositional</u>	na + -	<u>accusative</u>	s + -	<u>genitive</u>

We now exemplify the motion/location structures of (1 d, e, and f) in (6), (7), and (8). In each case, the motion/location structure's prepositional and right-hand nominal are shown in construction with several different spatial structures. For each such construction, a derivational sketch, a pictorial diagram, and illustrative sentences are given. The high degree of incompleteness, simplification, and imprecision in this merely suggestive presentation cannot be over-emphasized.

(6)

- (a) POR a  $E$ POINT $_S$  which IS $_L$  TO-ONE-SIDE-OF [a POINT]  
 POR TO-ONE-SIDE-OF [a POINT]  
 past [a POINT]



the ball sailed past his head (at exactly 3 o'clock)

- (b) POR a  $E$ POINT $_S$  which IS $_L$  ON and PERPENDICULAR-TO [a LINE]  
 POR ON [a LINE]  
 across [a LINE]



the ball rolled across the border (at exactly 3 o'clock)

- (c) POR a  $E$ POINT $_S$  which IS $_L$  IN and PERPENDICULAR-TO [a PLANE]  
 POR IN [a PLANE]  
 through [a PLANE]



the ball sailed through the windowpane (at exactly  
 3 o'clock)

- (d) POR a  $E$  POINT<sub>S</sub> which IS<sub>L</sub> INSIDE and PERPENDICULAR-TO [a CIRCLE]  
POR INSIDE [a CIRCLE]  
through [a CIRCLE]



the ball sailed through the hoop/the arch (at exactly  
3 o'clock)

✓ hoop



(7) [Here and in (8), wherever *UP* and *up* appear, *DOWN* and *down* are equally appropriate]

- (a) ALONG an EXTENT<sub>S</sub> which IS<sub>L</sub> TO-ONE-SIDE-OF and PARALLEL-TO [a LINE]  
 ALONG TO-ONE-SIDE-OF [a LINE]  
 along(side) [a LINE]



he walked along(side) the row of houses (for 5 minutes).

- (b) 1. ALONG an EXTENT<sub>S</sub> which IS<sub>L</sub> ON and PARALLEL-TO [a LINE]  
 ALONG ON [a LINE]  
 along (on) [a LINE]
2. ALONG an EXTENT<sub>S</sub> which IS VERTICAL and ...  
 UP ALONG ON [a LINE]  
 up (along) [a LINE]



1. he walked along (on) the path (for 20 minutes).
2. he walked up (along) the ladder (for 10 seconds).

- (c) 1. ALONG an EXTENT<sub>S</sub> which IS<sub>L</sub> INSIDE and PARALLEL-TO  
[a CYLINDER]

ALONG INSIDE [a CYLINDER]

{ along inside }  
{ (along) through } [a CYLINDER]

2. ALONG an EXTENT<sub>S</sub> which IS VERTICAL and ...

UP ALONG INSIDE [a CYLINDER]

{ up inside }  
{ up (through) } [a CYLINDER]



1. he walked { along inside }  
{ (along) through } the tunnel (for  
20 minutes).

2. he crawled { up inside }  
{ up (through) } the chimney (for  
2 minutes).

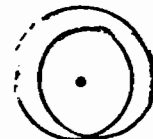
- (d) ALONG an EXTENT<sub>S</sub> which IS<sub>L</sub> TO-ONE-SIDE-OF [a POINT]

ALONG TO-ONE-SIDE-OF [a POINT]

around [a POINT]



or



he ran around the house (for 20 seconds).

he ran around the house (for 2 hours).

(8)

- (a) 1. ALENGTH an  $_B$ EXTENT $_S$  which IS $_L$  ON,  
PARALLEL-TO, and COTERMINOUS-WITH [a BOUNDED LINE]

ALENGTH ON [a BOUNDED LINE]

--- [a BOUNDED LINE]

2. ALENGTH an  $_B$ EXTENT $_S$  which IS VERTICAL and ...

UP ALENGTH ON [a BOUNDED LINE]

up [a BOUNDED LINE]



1. \* he walked --- the pier (in 5 minutes)

[a different construction, one with a direct  
object and no preposition, must be resorted to  
here:

he walked (the length of) the pier (in  
5 minutes)]

2. he walked up the ladder (in 20 seconds).

- (b) 1. ALENGTH an  $_B$ EXTENT $_S$  which IS $_L$  INSIDE,  
PARALLEL-TO, and COTERMINOUS-WITH [a BOUNDED CYLINDER]

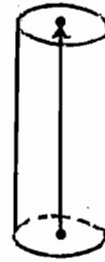
ALENGTH INSIDE [a BOUNDED CYLINDER]

through [a BOUNDED CYLINDER]

2. ALENGTH an  $_B$ EXTENT $_S$  which IS VERTICAL and ...

UP ALENGTH INSIDE [a BOUNDED CYLINDER]

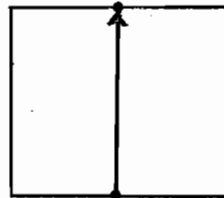
up [a BOUNDED CYLINDER]



1. he walked through the tunnel (in 30 minutes).
2. he crawled up the chimney (in 3 minutes).

(c) 1. ALENGTH an  $B$  EXTENT $_S$  which IS $_L$  ON  
and COTERMINOUS-WITH [a BOUNDED PLANE]  
ALENGTH ON [a BOUNDED PLANE]  
across [a BOUNDED PLANE]

2. ALENGTH an  $B$  EXTENT $_S$  which IS VERTICAL and ...  
UP ALENGTH ON [a BOUNDED PLANE]  
up [a BOUNDED PLANE]



1. he walked across the field (in 5 minutes).  
the fly walked across the wall (in 1 minute).
2. the fly walked up the wall (in 30 seconds).

(d) ALENGTH an  $B$  EXTENT $_S$  which IS $_L$  TO-ONE-SIDE-OF [a POINT]  
and COTERMINOUS-WITH ITSELF  
ALENGTH TO-ONE-SIDE-OF [a POINT]  
around [a POINT]



he ran around the house (in 40 seconds).

In the final line of the derivations in (7 b2 and c2) it was indicated that the expression

'up along [a LINE]' can reduce to 'up [a LINE]'

and the expression

'up through [a CYLINDER]' can reduce to 'up [a CYLINDER]',

rendering possible such sentences as

'he walked up the ladder (for 10 seconds)'

and 'he crawled up the chimney (for 2 minutes)'.

A similar kind of reduction is now shown in (9) for several other English expressions.

(9)

(a) 1. in(to [a SPHERE]) through [a CIRCLE]  $\implies$   
in [a CIRCLE]

2. out(-of [a SPHERE]) through [a CIRCLE]  $\implies$   
out [a CIRCLE]

1. he crawled in the window (\*... into the window).

2. he ran out the door (\*... out of the door).

(b) around ([a POINT]) along on [a LINE]  $\implies$   
around [a LINE]

he ran around the track (for 20 seconds/for 2 hours).

(c) across ([a BOUNDED PLANE]) ALENGTH ON [a BOUNDED LINE]  $\implies$   
across [a BOUNDED LINE]

he walked across the bridge (in 3 minutes).