The Semantics of Space (Seminar Semantics and Pragmatics, Handout 4)
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1 Basic principles of location using prepositions

1.1 Located object and reference object

Prepositions typically locate an entity with reference to another entity. In (1), the preposition on helps tell us where the book is by relating it to the shelf, specifically its upper surface.

(1) a. The book is on the shelf. I put the book near the box.

We need technical terms for the entity being located and the entity with reference to which the other entity is located. Many different terms exist in the literature to name this distinction. Here is a list (with reference to the nouns in (1)):

(2) book: located object, figure, trajector, theme, locatum

boxed: reference object, ground, landmark, relatum, location

We will use located object (LO) and reference object (RO) in this course. Basic info on LO/RO:

♦ The RO appears as complement of the preposition, forming a prepositional phrase (PP) with it. A PP with a spatial preposition is a syntactic constituent whose purpose is to indicate the place occupied by the LO.

(3) the person [in the car], I went [in towards the house], I took the pot [from the stove]

♦ For the sake of efficient communication, the RO must be one which makes it easy to find the LO. This has the following consequences:

• The RO must be relatively large, so the hearer can find it quickly in the environment.

• The RO must be an entity whose position is known. This usually means that it is in a fixed position.

Examples:

(4) a. John is behind the church.

b. ??The church is behind John.

(5) a. Mary is near the clock. [a big, clock, not easily moveable]

b. *Mary is near the ant.

(6) a. The record is on the record player turntable.

b. *The record player turntable is under the record.

Exceptions (usually not purely spatial meanings):

(7) a. people in black clothes

b. people on drugs

A. Which uses of with below contradict what was said above about LO-RO relationships?

a. John is with his parents; He put the book with the other things

b. Carol cut the bread with the knife

c. Fred always takes his mobile phone with him.

d. A person with an umbrella.

B. Identify the nature of the implicit RO of the underlined particle (no complement preposition) in the following sentences involving what are called particle verbs or phrasal verbs:

1. Grandma put her false teeth in in.

2. I put the kettle on.

3. I took my jacket off.

4. I put a record on.

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1.2 Adverbs and verb particles: implicit reference objects

“Adverbs of location and direction” are really a type of preposition with no syntactic complement. Often the interpretation of these expressions involves identifying an implicit reference object:

(8) a. Fred is inside (=in some building, either generic or specific and contextually identified)

b. Should I put the computer on the table or underneath? (=underneath the table)

c. I was standing in the queue with Bill in front and Mary behind (=in front of/behind me)

You needn’t memorise all the terms. Important is the distinction between projective and topological prepositions:

➤ ‘Projective’: the easiest way to think of this is if we imagine an area projected from some specific part (side, front etc.) of the RO which the LO must be located in. Thus, over locates the LO in an area projected from the top of the RO. It is not sufficient to define on in these terms because non-projective prepositions relate the LO to the RO (or a part of the RO) directly, rather than relating the LO to a projection from the RO.

➤ ‘Topological’: a geometric term which refers to the study of the properties of an object which remain the same if we change its form (e.g. by stretching, squeezing, inverting it). Thus, John is near the house remains true if the house collapses into a heap of rubble, but it isn’t necessarily still true to say that he is beside the house. The term ‘topological’ is frequently used in studies of prepositions, but one can query the usefulness of the notion, which is why we will use the term ‘non-projective’ here.

Some other aspects of the meanings of prepositions:

➤ Perspective/deixis. Certain projective prepositions (e.g. behind, in front of, to the left of) are interpreted using knowledge about the RO. Some entities (car, computer, house, animate beings) have an intrinsic front or back. Thus, the ball is in front of the car probably means that the ball is in the region projected from the intrinsic front of the car. If the RO has no intrinsic front (e.g. tree, ball, box), then the front region is defined deictically in terms of the visible side of the RO. Thus, the ball is in front of the tree means that the ball is on the side of the tree which the speaker can see.

➤ Dimensionality: the problem of at. Sometimes dimensionality is argued to be important for the meaning of prepositions. E.g. at is used when the RO is seen as a whole or point. When its dimensionality is ignored. (9)(a) implies that the freeway is at rightangles to some real or imagined trajectory and cannot be used if the prior context involved someone driving along the freeway. Thus, the freeway is not perceived as a whole but as a point on a route. Likewise, towns can be used with at if they are perceived as points on an itinerary or map (9)(b-d) or as relatively small (9)(e)). This all makes sense if at involves the conceptualisation of objects as dimensionless.

(9) a. The gas station is at the freeway. (cf. Hershkovits 1986:138)

b. They spent {two days/*two years} at London.

c. The plane refuelled at Sydney.

d. our spy/reporter at London

e. His second flat is at a nearby village/*city.

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2 Types of the spatial relationships expressed by prepositions

A rough classification of meanings of spatial prepositions (loosely based on Frawley 1992:254ff):

<table>
<thead>
<tr>
<th>TYPE OF SEMANTIC RELATIONSHIP</th>
<th>EXAMPLES</th>
</tr>
</thead>
<tbody>
<tr>
<td>topological (non-projective)</td>
<td></td>
</tr>
<tr>
<td>proximity</td>
<td>near</td>
</tr>
<tr>
<td>interior</td>
<td>positive in, inside, within</td>
</tr>
<tr>
<td>inferiority</td>
<td>negative out of, outside</td>
</tr>
<tr>
<td>contact</td>
<td>positive on, on top of</td>
</tr>
<tr>
<td>vertical alignment</td>
<td>superiority above, over</td>
</tr>
<tr>
<td>horizontal alignment</td>
<td>inferiority under, below, underneath</td>
</tr>
<tr>
<td>projective</td>
<td>posteriority in front of</td>
</tr>
<tr>
<td>laterality</td>
<td>posteriority behind, at the back of</td>
</tr>
<tr>
<td></td>
<td>laterality beside, next to, to the left of, at the right of</td>
</tr>
</tbody>
</table>

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In the above table, *at* is tentatively treated as being able to express the same kinds of meaning as *in* and *on*. This is because it is possible to say things like the following in certain contexts:

10. a. They are at the supermarket [it is unclear whether they are in it or near it]
   b. The bird flew from our house to the next house, stopping at the fence [the bird might have been on the fence]
   c. In army training, the soldiers had a race where they had to climb over several hurdles. One soldier was way ahead of the others, but didn't win because he tore a muscle at the last hurdle. [he might have been on it]

It seems that *at* is possible once the RO is perceived from a distance (which accounts for the dimensionality effects seen above). If someone uses *at* they don't care what the exact relationship between LO and RO is; the important thing is the contrast between one RO and another. This is different from *in*, which can be used to specify that the LO is inside a particular RO as opposed to being on it, beside it, near it, etc.

- **Geometrical vs. functional descriptions**: It is under debate whether the meanings of prepositions should be described in geometrically (i.e. solely with reference to the relative positions of the objects) or whether we must also include functional information in the description. 'Functional information' here means information about how objects behave and relate to each other in ways that go beyond their location. (E.g. Vandeloise (1986)). Examples of functional analyses:
  - *x is on y* expresses relationship in which *x* is supported by *y*, which means that *y* prevents *x* from being affected by gravity.
  - *x in y* expresses not just interiorty but a relationship between a container (*x*) and a contained thing (*y*). A container is an object that has the power to prevent the movement of *y*. It thus exerts a type of force or control over *y*. Vandeloise gives examples like the following to argue for this type of analysis:
    - (11) Imagine a policeman arresting a criminal, dragging him away, holding his hand. Then:
      a. *The criminal's hand is in the policeman's hand.*
      b. *The policeman's hand is in the criminal's hand.*
    - (12) Imagine a bowl with apples in it where the apples are piled much higher than the upper rim of the bowl. You put another apple on top of the pile. It is possible to say: *The apple is in the bowl.*

### 3. Prepositional phrases

#### Locational vs directional PP's: English has some specifically directional prepositions, but other prepositions are ambiguous between locational and directional readings.

- **(13) DIRECTIONAL ONLY: onto, into, to**
- **(14) LOCATIONAL OR DIRECTIONAL: near, inside, above, under, in front of, behind, beside**

Types of directional prepositions:

- **(15) SOURCE (RO is the beginning of the path): an escape from the prison, I come from Leipzig**
- **(16) GOAL (RO is the end of the path): their trip to city; I went into the house**
- **(17) PASSAGE (RO in the middle of the path): a walk through the forest, we went past the church**

Examples of sentences with all three:

18. I sprinted [source out of the house] [passage across the lawn] [goal to the fence]
19. I walked [source from the town hall] [passage around the market square] and [goal into the bank]

Note also directional expressions which indicate movement closer to a goal:


C. Using the examples below, identify the difference between *out and out of*.

1. I went out the door. I threw it out the window.
2. I went out of the house. I took it out of the box.
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6.2 Extension
There is another type of statical path which is the LO. The LO is some long object which seems to have a direction. Jackendoff proposes another function for this, called **extend**.

(40) the road goes to Rome [\textit{road} \textit{extend} [\textit{road} \textit{to} [\textit{rome}]]]

(41) the desert extends towards the horizon, the extension cord reaches into the garage, the rope dangles into the water, the beam sticks out of the wall

7 Prepositional phrases with meanings which are not completely spatial
One often finds cases where a preposition combines a spatial meaning with a meaning not definable in purely spatial terms. Examples:

- When \textit{before} means the same as \textit{in front of}, but there is the extra implication that there be some type of interaction between LO and RO.
- a. Wayne stood before the judge (in the presence of the judge in his/her official capacity)
  b. Wayne stood in front of the judge (could be at a concert, in a queue, in a photo etc.)

(43) a. Bob sat before the piano/computer/television (→ he intended to interact with it)
  b. Edward put the plate before Edith (→ she is expected to do something with it)

- English has a sense of on with larger vehicles as RO (e.g. on the bus, ship, ferry, aircraft, spacecraft; *on the car/rowboat*). Note that the LO must be in a position to use the RO:

(44) *Cutibert is on the old train on display in the museum.*

J. In the prepositional phrases in 1 below, the RO appears without an article. The examples in 2-5 show that these PP's cannot be used in some of the contexts where normal PP's are used. What makes the shorter PP's acceptable? Hint: consider the normal function of the RO.

1. in store, off stage, in/at/to school, in/to court; in/at/to church; to/in hospital
2. a. Nelly is at school learning useless information.
   b. *Nelly is at school to pick up her daughter.
3. a. Wayne is in gaol for blowing up the Institute for Semantics.
   b. *Wayne is in gaol visiting his friend.
4. a. There are people on stage performing a play.
   b. *There are people stage cleaning up after the concert.
5. a. She has the concert on cd.
   b. *There is a scratch on cd.

8 References