

Spatial Cases in Formal Semantics: some examples from Uralic languages

“Case has not received a lot of attention from formal semanticists, probably because the approach has mostly focused on languages with relatively sparse case systems”. ([De Hoop & Zwarts: to appear, p. 170])

Accusative-partitive alternation in Finnish

In Finnish the object of a transitive verb can be marked either with accusative or with partitive case (examples from [De Hoop & Zwarts, p.173]):

(1) Anne tapaa vieraita.
Anne meets guests.PART
'Anne meets some guests'.

(2) Anne tapaa vieraat.
Anne meets guests.ACC
'Anne meets the guests'.

Example (1) has an indefinite reading of the object, (2) – a definite one.

(3) Presidentii ampui lintua.
president shot bird.PART
'The president shot at a/the bird'. (Президент стрелял в птицу.)

(4) Presidentii ampui linnun.
president shot bird.ACC
'The president shot a/the bird'. (Президент застрелил птицу.)

In (4) the result of the shooting is clear (poor bird!). In (3) the result is not known.

- **Traditional explanation** ([Karlsson 1983]):

Accusative applies to definite NPs, and a result is resultativity of the VP.

Partitive applies to indefinite NPs, and a result is irresultativity of the VP.

- **De Hoop** ([De Hoop 1992]):

The main idea: the NP that bears partitive case semantically functions as 'part of the predicate'.

Important mention:

Partee (handout of Lecture 3☺):

There are 3 types of NPs:

- 1) Type **e** for “referential NPs” (*John, the king, he_i*)
- 2) Type **(e→t)→t** for generalized quantifiers (*every man, the king, a man, John*)
- 3) Type **e→t** for NPs as predicates (**a man, the king**)

De Hoop suggests one more semantic type of NP:

- 4) Type **(e→t)→(e→t)** for predicate modifiers (in languages with differential case marking) (the same type Partee suggests for adjectives as predicate modifiers (*skillful*)).

Question 1. How do you think, what type will a quantificational object bearing partitive case (as in (5)) have?

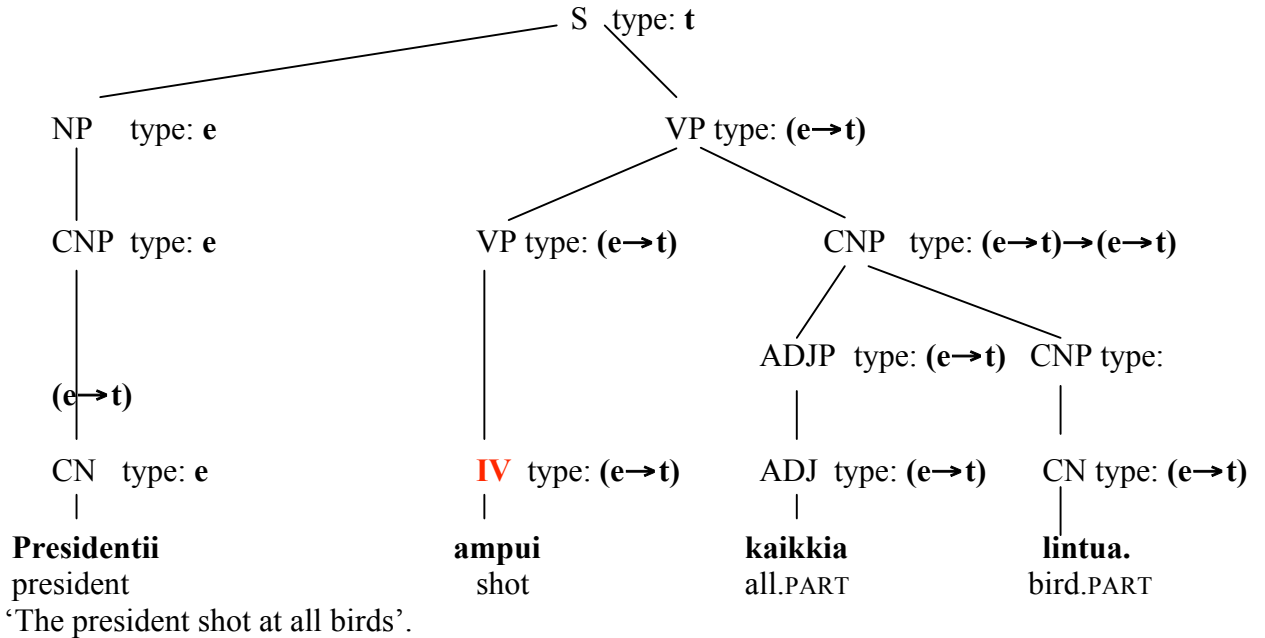
(5) Presidentii ampui kaikkia lintua.
president shot all.PART bird.PART
'The president shot at all birds'.

Question 2. What will be the type of the verb in (5)?

Answer to question 1. The predicate modifier type will be $(e \rightarrow t) \rightarrow (e \rightarrow t)$.

Answer to question 2. The type of the verb will be $(e \rightarrow t)$.

Illustration to questions 1 and 2:



The NP “president” is considered to be of type **t**, because semantically it is a determined NP (Finnish does not have articles).

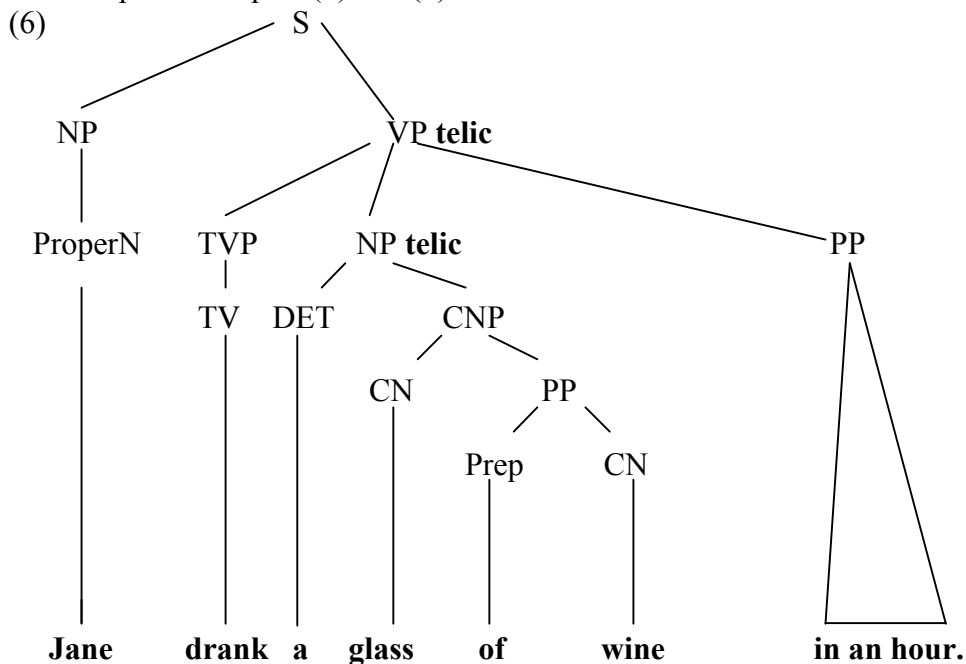
As we can see from the tree drawn above, the verbs governing partitive are considered to be intransitive.

- **Krifka** ([Krifka 1992]):

The main theoretical assumptions:

- **The reference type of NPs (mass, count) together with the verb class** ([Vendler 1967]) **build the (a)telic interpretation of the VP.**

Compare examples (6) and (7):



6. Verbs that denote psychological states (*ihailta* ‘admire’), intension (*pyytää* ‘ask for’), continuous motion (*ravistaa* ‘shake’) or contact (*koskettaa* ‘touch’) are unbounded.

How it works (explication of the main rule):

- Bounded V + bounded object = bounded VP. In surface structure it is marked by assigning accusative case to the object.
- Bounded V + unbounded object = unbounded VP. In surface structure it is marked by assigning partitive case to the object.
- Unbounded V + bounded object = unbounded VP. In surface structure it is marked by assigning accusative case to the object.
- Unbounded V + unbounded object = unbounded VP. In surface structure it is marked by assigning partitive case to the object.

(Un)boundedness has the same structure as the logical ‘and’ has:

verb	object	VP
0	0	0
0	1	1
1	0	1
1	1	1

0 marks boundedness, 1 marks unboundedness

Problem 1:

There are verbs which can take objects in both cases ([Kiparsky 1998, pp. 15-16]):

- (8) Siirsi-n isoäiti-ä
 move-PST1SG grandma-PART
 ‘I moved grandma’. [around, a ways]
- (9) Siirsi-n isoäidi-n
 move-PST1SG grandma-ACC
 ‘I moved grandma’. [to another place]

Solution:

Such verbs are 0-bounded (Kiparsky doesn’t name them so: he only says that they can be either bounded or unbounded).

(Un)boundedness of VP in this case is assigned only through the object.

Thus, the opposition “bounded vs unbounded” seems to be equipollent (the feature ‘unboundedness’ has three values: 1, 0 or undefined).

Problem 2:

Unbounded verb, but bounded VP (examples from [De Hoop & Zwarts, p.177]):

- (8) Rakastin teitä.
 I.loved you(pl).PART
 ‘I loved you.’
- (9) Rakastin teidät rappiolle.
 I.loved you(pl).ACC ruin.ADESS
 ‘I loved you into ruins’.

Solution:

“Boundedness can be licensed by resultativity through explicit or implicit locative or resultative predication” ([De Hoop & Zwarts, p.177]).

Thus, the internal factors can assign (un)boundedness to VP – and they win!

The use of the partitive case in Finnish described above is derived (see [Kiparsky 1998]) from the spatial meaning of it. How should we deal with spatial meanings?

Spatial Meanings

- Uralic languages usually have spatial cases. Examples from Komi-Zyrian language, Izhemsky dialect:

(10) karTina-ys ES-al-y stena-yn / stena-a-s
picture- POSS3SG hang-HAB-PRS.3SG wall-ESS / wall-LOC-POSS3SG
‘There was a picture on the wall’.

(11) aj-e ES-ed-Ys kart’ina-se stena-a-s
father- POSS1SG hang-CAUS-PST.3SG picture-ACC wall-LOC-POSS3SG
‘My father hung the picture on the wall’.

Why formal semantics pays practically no attention to the spatial case meanings:

“Semantically, local cases function very much like adpositions (i.e. prepositions or postpositions). For example, if we interpret the English preposition *in* as a function to from objects to their spatial interior, then the Finnish inessive will have to denote a very similar function. So, from a spatial point of view, there does not seem to be much to say about local cases beyond what we already know from adpositions, which might be the reason for the restricted attention that local cases have received in the semantic literature, either with a formal or with cognitive orientation” ([De Hoop & Zwarts, p. 178]).

Remark: The problem of semantic correlation between spatial cases and adpositions remains unsolved. Personally, I couldn’t believe that so much language stuff is used to encode the same things, but I don’t know how to deal with it; maybe the answer is in the discourse semantic field.

- But spatial cases encode spatial distinctions more systematically as adpositions do.
- And they refer to the NP-morphosyntax and provide implications for the relation between syntax and semantics.
- So they do receive a little attention from the formal semanticists☺.
- The way of formalization spatial meanings:

Two parameters relevant for spatial cases:

- a. location
- b. direction (mode of the motion)

[Kracht 2002]: location and direction are functions which define a spatial relation between an object *x* and a reference object *y* over an interval *I*:

direction (x, location (y), I)

Thus, location is «a function that, applied to an object *y*, gives a parametrized neighbourhood, a time-dependent set of spatial relations on or around *y*» ([De Hoop & Zwarts: to appear. p. 179])

Decomposition of the illative meaning:

A. Applying the location function to y :

$$y \rightarrow \text{loc}'(y)(t) \rightarrow \iota(\text{loc}'(y)(t)) \rightarrow \{r:r \subseteq \iota(\text{loc}'(y)(t))\} \rightarrow \lambda t \{r:r \subseteq \iota(\text{loc}'(y)(t))\}$$

Steps of the derivation :

1. From the reference object y to its spatial location at time t
2. Define the interior of the spatial location of y
3. Extract all the regions included in this interior
4. Bind the time argument (make the function over times)

B. Applying the direction function to the output of the location function:

cf* (x, in'(y), I) iff {t∈I: loc'(x)(t)∈in'(y)(t)} (=J) properly ends I

Important notion: Spatial cases like illative or illative divide the interval I into two phases (for illative, for example, it is an initial phase in which the location of x is not interior to y and a final phase J in which the location of x). Fong (see [Fong 1997]) argues that the interval I must not always be spatiotemporal, as we should also interpret contexts where there is no literal location or literal motion, for example:

(13) Lena miCar-dZyk kaTa-ys'.
Lena beautiful.OBL-COMPAR Katya- EL.
'Lena is more beautiful than Katya'.

(14) me Neb'-Y kNiga-se das Sajt-ys'.
me buy-PST.1SG book- ACC.POSS3SG ten rouble-EL
'I have bought a book for ten roubles'.

Spatial cases can have many such meanings.

Here we can find a way to build a prototypical meaning of a given spatial case (treating case as a radial category, as the Cognitive Grammar does) in order to make a unified description of spatial case meanings.

To be solved:

A. Correlation to agency

Some Uralic spatial cases which mark agency:

(15) Khanty language, vasjugansky dialect (example from [Mymrina 2006, p. 65]):
qu%-n% nin-%l-Q ewe-l-%t%
man-LOC woman-POSS.3SG-NOM kiss-PRAES.3SG-3SG
'A/the man is kissing the woman'.

(16) Khanty language, vasjugansky dialect (example from [Mymrina 2006, p. 65]):
hot-ew rusj-at-na omat-s-a
house-POSS.1PL:SG Russian-PL-LOC put-PST-PASS.3SG
'Our house has been put by Russians'.

Examples like (14) can also be found in Nganasan.

B. Adverbial marking

In some Uralic languages spatial case suffixes can be attached to adverbs.

Conclusion:

“We can only hope for a more intense interaction between the empirical and formal approaches to this domain” ([De Hoop & Zwarts, p. 181]).

Thank you for your attention!

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