Time and Space II

Pavel Caha

Feb 27 2022

(1) a. Where is *the ball*?

(1)   a.   Where is *the ball*?

          b.   *The ball* is **under** the table.

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      b.   *The ball* is **under** the table.

▶ *Figure* → an object whose location is unknown/under discussion

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     b. *The ball* is **under** the table.

▶ *Figure* → an object whose location is unknown/under discussion

▶ Ground → an object whose location is known, we use it as a point of reference and we start our search for the Figure at this object

(1)   a.   Where is *the ball*?

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- *Figure* → an object whose location is unknown/under discussion
- Ground → an object whose location is known, we use it as a point of reference and we start our search for the Figure at this object
- spatial marker → it tells you where to look relative to the Ground

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        b.   *The ball* is **under** the table.

► *Figure* → an object whose location is unknown/under discussion

► Ground → an object whose location is known, we use it as a point of reference and we start our search for the Figure at this object

► spatial marker → it tells you where to look relative to the Ground

(2)   Where is Mary? — *Mary* is **in**   her room.

                         Figure   spatial marker Ground

LAMPA
lamp

nad
above

na
on

STŮL
table

pod
under

TENISÁK
tennis ball
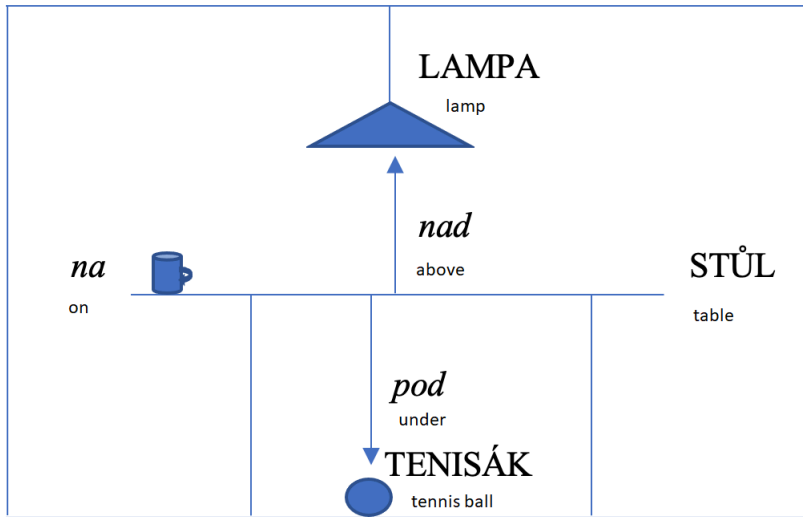
▶ Two basic ways of finding the Figure:

- Two basic ways of finding the Figure:
  - start at Ground, search in a particular direction

- ▶ Two basic ways of finding the Figure:
    - ▶ start at Ground, search in a particular direction
    - ▶ start at Ground, look around in no particular direction, but in the general proximity of the object

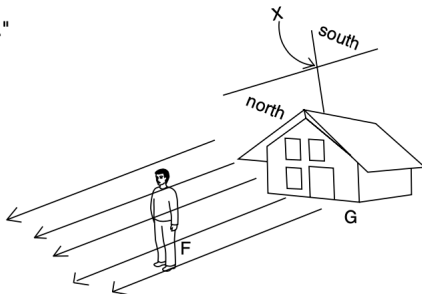# Intrinsic frame of reference (in front of the car)

Relative frame of reference
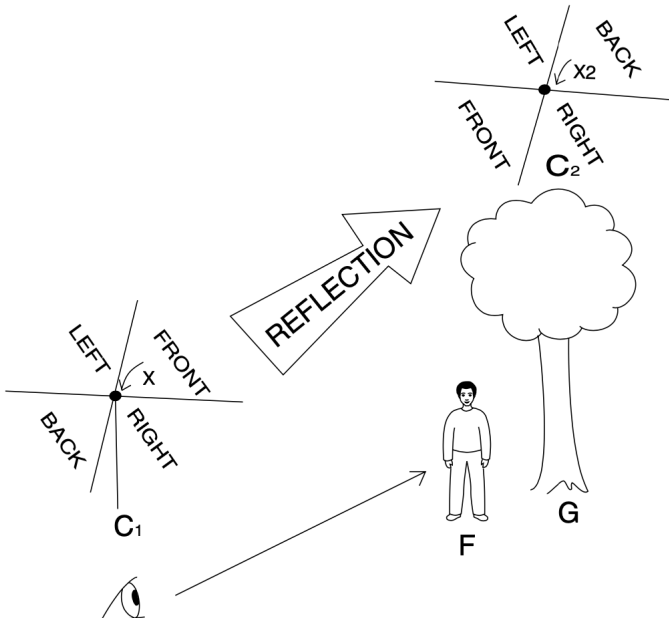
Absolute frame of reference

ABSOLUTE

"He's north of the house."

Particles

Topological spatial markers

A bit of syntax

(3)   (FIG (SM GR))

A bit of syntax

(3)   (FIG (SM GR))

(4)   SPATIAL DESCRIPTION
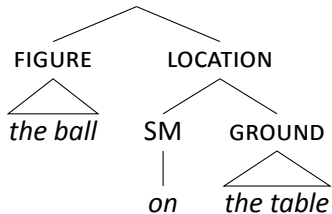
(5)   (AGENT (V PATIENT))

(5)   (AGENT (V PATIENT))

(6)   EVENT DESCRIPTION
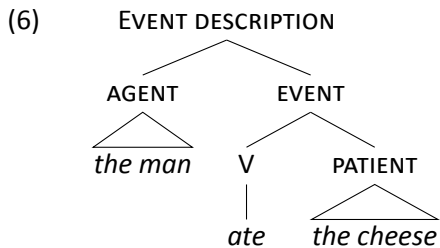
(7)   (AGENT (V))

(7)   (AGENT (V))

(8)   Event description

```
       Event description
          /        \
      AGENT        EVENT
       /\            |
      Mary          ACT
                    /\
                 worked
```

(9)   (V PATIENT))

(9)   (V PATIENT))

(10)
```
              EVENT
              /    \
            V      PATIENT
            |        △
          melt     snow
```
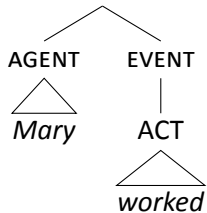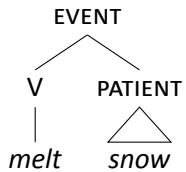
(11)   a.   The helicopter flew the firefighters up the mountain.

(11)   a.   The helicopter flew the firefighters up the mountain.

             b.   The helicopter flew the firefighters up.

(11) a. The helicopter flew the firefighters up the mountain.
      b. The helicopter flew the firefighters up.
(12) a. The police will fire tear gas in the window.

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      b. The helicopter flew the firefighters up.

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(13) a. The cook twisted the lid off the jar.

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(13) a. The cook twisted the lid off the jar.
      b. The cook twisted the lid off.

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      b. The helicopter flew the firefighters up.
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      b. The police will fire tear gas in.
(13) a. The cook twisted the lid off the jar.
      b. The cook twisted the lid off.

(14)   Improper prepositions
   a.   Petr kráčel **kolem** fakulty.
        Petr walked around faculty
        'Petr walked past/around the faculty.'

(14)   Improper prepositions
   a.   Petr kráčel   **kolem**   fakulty.
         Petr walked around faculty
         'Petr walked past/around the faculty.'
   b.   Petr kráčel   **kolem**.
         Petr walked around
         'Petr walked by.'

(15)   a.   Petr kráčel **od** fakulty
              Petr walked away.from faculty
              'Petr walked away from the faculty.'

(15) a. Petr kráčel **od** fakulty
          Petr walked away.from faculty
          'Petr walked away from the faculty.'
      b. *Petr kráčel **od**
          Petr walked away.from

(15) a. Petr kráčel **od** fakulty
          Petr walked away.from faculty
          'Petr walked away from the faculty.'
     b. *Petr kráčel **od**
          Petr walked away.from
     c. Petr **od**-kráčel
          Petr away-walked
          'Petr walked away.'

Particles/prefixes lack the Ground

(16) SPATIAL DESCRIPTION

```
            SPATIAL DESCRIPTION
           /                  \
       FIGURE              LOCATION
        /\                 /      \
    the ball            SM       GROUND
                         |         /\
                        on     the table
```
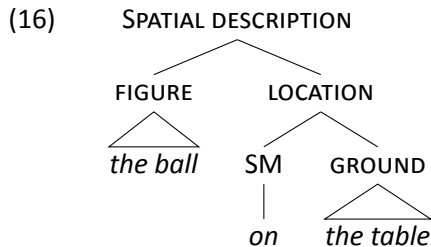
(17) a. The cook twisted the lid off the jar.

Particles/prefixes lack the Ground

(16)   SPATIAL DESCRIPTION

           FIGURE   LOCATION

      the ball   SM   GROUND

                 on   *the table*
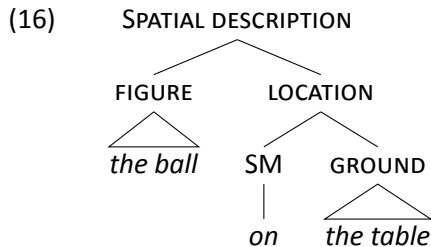
(17) a. The cook twisted the lid off the jar.
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Particles/prefixes lack the Ground

(16)   SPATIAL DESCRIPTION
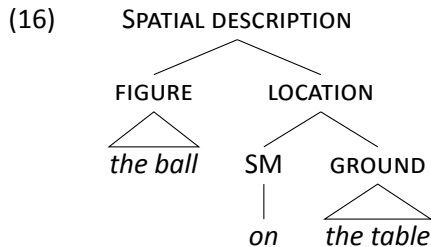
(17)   a.   The cook twisted the lid off the jar.
        b.   The cook twisted the lid off.

(18)   Vy-lez!
        out-get
        'Get out!'

Prefixes with Ground only

(19)   a.   Petr psal   vzorce   / *tabuli
                      Petr wrote formulas / whiteboard

Prefixes with Ground only

(19)   a.   Petr psal   vzorce   / *tabuli
                Petr wrote formulas / whiteboard

           b.   Petr psal   vzorce   **po**   tabuli
                 Petr wrote formulas all.over whiteboard

Prefixes with Ground only

(19)   a.   Petr psal   vzorce   / *tabuli
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        b.   Petr psal   vzorce   **po**   tabuli
                Petr wrote formulas all.over whiteboard

        c.   Petr **po**-psal   tabuli   (vzorcema)
                Petr all.over-wrote whiteboard formulas.INS

Prefixes with Ground only

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                 Petr wrote formulas all.over whiteboard

          c.   Petr **po**-psal   tabuli   (vzorcema)
                 Petr all.over-wrote whiteboard formulas.INS

          d.   Emma po-kreslila   daňové přiznání
                 Emma all.over-painted tax   declaration

(20)   a.   Maminka lepí Emmě   náplast na ránu
                mum   glues to.Emma a.plaster on wound

(20)   a.   Maminka lepí   Emmě   náplast   na ránu
            mum   glues to.Emma a.plaster on wound
       b.   Maminka na-lepí Emmě   náplast   na ránu
            mum   glues   to.Emma a.plaster on wound

(20) a. Maminka lepí Emmě   náplast na ránu
          mum   glues to.Emma a.plaster on wound
      b. Maminka na-lepí Emmě   náplast   na ránu
          mum   glues   to.Emma a.plaster on wound
      c. Maminka za-lepí Emmě   ránu   (náplastí)
          Petr   wrote formulas all.over whiteboard

(21) a. Stromy padaly
          trees   were.falling

(21)   a.   Stromy padaly
            trees   were.falling
       b.   Stromy o-padaly
            trees   around-fell

(21) a. Stromy padaly
          trees   were.falling
      b. Stromy o-padaly
          trees   around-fell
          'The trees lost their leaves.'

(21) a. Stromy padaly
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      b. Stromy o-padaly
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          'The trees lost their leaves.'
      c. Listí   padalo   ze   stromů
          leaves were.falling from trees

(21)   a.   Stromy padaly
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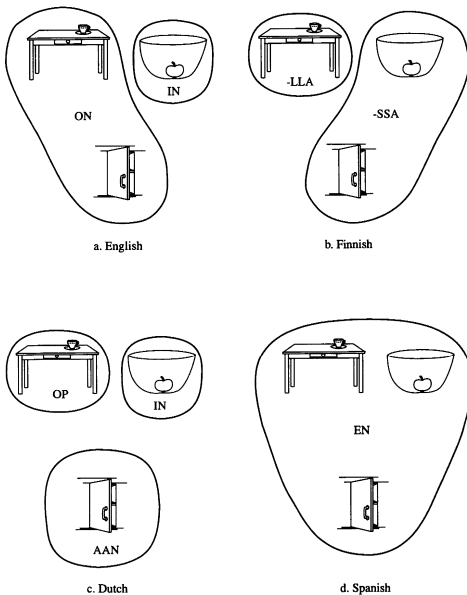
Particles

Topological spatial markers

Figure 10.1
Classification of three static spatial situations in English, Finnish, Dutch, and Spanish.

Similarly, in Mixtec, an Otomanguean language also spoken in Mexico, there is no all-purpose contact-and-support word comparable to English *on*. Instead, spatial relationships between two objects are indicated by invoking a "body part" of the

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reference object in a conventionalized but completely productive way (Brugman 1983, 1984; Lakoff 1987). For example:

(3) a. A man *on* a roof ([be.located] *sìkì-βeʔe* 'animal.back-house')
    b. A man *on* a hill (... *šini-yúku* 'head-hill')
    c. A cat *on* mat (... *nǔǔ-yuu* 'face-mat')
    d. A man *on* a tree branch (... *ndaʔa-yúnu* 'arm-tree').

Some of these forms can also be used for an area adjacent to the named "body part" of the reference object, for example, [be.located] *šini-yúnu* 'head-tree' could be said of a bird either located *on* the top of a tree, or hovering *above* the tree. Comparable body part systems are also employed by Tzeltal and other Mayan languages (Levinson 1994) and many other languages of Meso-America and Africa, although details of body-part assignment vary widely (Heine 1989; MacLaury 1989).

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To summarize, I have argued that different languages structure space in different ways. Most basically, they partition space into disparate and often crosscutting semantic categories by using different criteria for establishing whether two spatial situations should be considered as "the same" or "different" in kind. In addition, they

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10.3 Studying Spatial Semantic Categorization Crosslinguistically

How early in life do children arrive at language-specific spatial semantic categories?

(22) Czech

    a.   hrnek na stole
           cup   on table
           'a cup on the table'

    b.   klika   na dveřích
           handle on door
           'the handle on the door'

    c.   jabko v míse
           apple in bowl
           'apple in the bowl'

(23)   a.   TO–SUPPORT

(23)   a.   TO–SUPPORT

           b.   TO–ATTACHMENT (PROXIMITY)

(23) a. TO–SUPPORT
      b. TO–ATTACHMENT (PROXIMITY)
      c. TO–CONTAINER

(23) a. TO–SUPPORT
      b. TO–ATTACHMENT (PROXIMITY)
      c. TO–CONTAINER

(24) Czech

      a. **po**-stavil hrnek na stůl
          on-put   cup   on table
          'He put the cup on the table'

(23) a. TO–SUPPORT
      b. TO–ATTACHMENT (PROXIMITY)
      c. TO–CONTAINER

(24) Czech
      a. **po**-stavil hrnek na stůl
          on-put   cup   on table
          'He put the cup on the table'
      b. **na**-lepil papír na stůl
          on-glued paper on table
          'He glued the paper on top of the table'

(23) a. TO–SUPPORT
      b. TO–ATTACHMENT (PROXIMITY)
      c. TO–CONTAINER

(24) Czech

      a. **po**-stavil hrnek na stůl
          on-put   cup   on table
          'He put the cup on the table'

      b. **na**-lepil papír na stůl
          on-glued paper on table
          'He glued the paper on top of the table'

      c. **při**-lepil   papír ke stolu
          attach-glued paper to table
          'He glued the paper to the table'

(23)   a.   TO–SUPPORT
        b.   TO–ATTACHMENT (PROXIMITY)
        c.   TO–CONTAINER

(24)   Czech
        a.   **po**-stavil hrnek na stůl
             on-put   cup   on table
             'He put the cup on the table'
        b.   **na**-lepil   papír na stůl
             on-glued paper on table
             'He glued the paper on top of the table'
        c.   **při**-lepil   papír ke stolu
             attach-glued paper to table
             'He glued the paper to the table'
        d.   **v**-lepil   papír do knihy
             in-glued paper into book
             'He glued the paper into the book'

(25)   VIA ABOVE — VIA ON

(25)   VIA ABOVE — VIA ON

(26)   The prefix *pře-*

    a.   Petr **pře**- skočil   stůl.
        Petr over jumped table.ACC
        'Petr jumped over the table.'

(25) VIA ABOVE — VIA ON

(26) The prefix *pře-*

    a.   Petr **pře**- skočil   stůl.
           Petr over jumped table.ACC
           'Petr jumped over the table.'

    b.   Petr **pře**- šel   ulici.
           Petr over went street
           'Petr crossed the street.'

(25) VIA ABOVE — VIA ON

(26) The prefix *pře-*
    a.   Petr **pře**- skočil   stůl.
            Petr over jumped table.ACC
            'Petr jumped over the table.'
    b.   Petr **pře**- šel   ulici.
            Petr over went street
            'Petr crossed the street.'

(27) FROM ABOVE — FROM ON

(25)   VIA ABOVE — VIA ON

(26)   The prefix *pře-*

    a.   Petr **pře**- skočil   stůl.
        Petr over jumped table.ACC
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    b.   Petr **pře**- šel   ulici.
        Petr over went street
        'Petr crossed the street.'

(27)   FROM ABOVE — FROM ON

(28)   a.   Hráči **s**- lezli   z   ledu.
        players off- crawled from ice
        'The players got off the ice.'

(25) VIA ABOVE — VIA ON

(26) The prefix *pře-*

    a. Petr **pře**- skočil   stůl.
        Petr over jumped table.ACC
        'Petr jumped over the table.'

    b. Petr **pře**- šel   ulici.
        Petr over went street
        'Petr crossed the street.'

(27) FROM ABOVE — FROM ON

(28) a. Hráči **s**- lezli   z   ledu.
        players off- crawled from ice
        'The players got off the ice.'

    b. Maria **s**-   lezla   po žebříku.
        Maria down- crawled on ladder
        'Maria climbed down the ladder.'
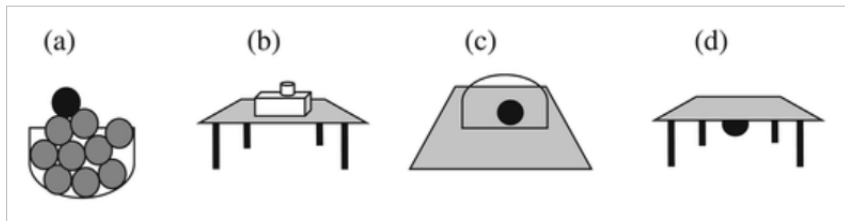
Geometry vs. functionality
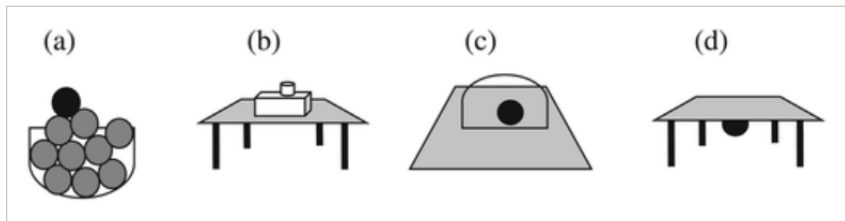
▶ ON: *in contact with* vs. **support**

Geometry vs. functionality

- ▶ ON: *in contact with* vs. **support**
- ▶ IN: *enclosed by the boundaries of* vs. **container**

Geometry vs. functionality

- ▶ ON: *in contact with* vs. **support**
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(a) (b) (c) (d)

Geometry vs. functionality

▶ ON: *in contact with* vs. **support**

▶ IN: *enclosed by the boundaries of* vs. **container**

projective locations

- BEHIND: *along an axis going out via the back side* vs.
  inaccessible to perception

projective locations

- ▶ BEHIND: *along an axis going out via the back side* vs. **inaccessible to perception**
- ▶ IN FRONT OF: *along an axis going out via the front side* vs. **accessible to perception**

projective locations

- ▶ BEHIND: *along an axis going out via the back side* vs. **inaccessible to perception**
- ▶ IN FRONT OF: *along an axis going out via the front side* vs. **accessible to perception**

(29) a. Pes   **za**-lezl   **za**   barák
          the.dog   behind-crawled   behind   the.house

projective locations

- ▶ BEHIND: *along an axis going out via the back side* vs. **inaccessible to perception**
- ▶ IN FRONT OF: *along an axis going out via the front side* vs. **accessible to perception**

(29) a. Pes   **za**-lezl   **za**   barák
          the.dog behind-crawled behind the.house
      b. Pes   **za**-lezl   **do**   boudy
          the.dog behind-crawled into its.dog.house

projective locations

- ▶ BEHIND: *along an axis going out via the back side* vs.
  inaccessible to perception
- ▶ IN FRONT OF: *along an axis going out via the front side* vs.
  accessible to perception

(29) a. Pes   **za**-lezl   **za**   barák
          the.dog behind-crawled behind the.house
      b. Pes   **za**-lezl   **do**   boudy
          the.dog behind-crawled into its.dog.house
      c. Pes   **za**-lezl   **pod**   divan
          the.dog behind-crawled under the.table

projective locations

- ▶ BEHIND: *along an axis going out via the back side* vs. **inaccessible to perception**
- ▶ IN FRONT OF: *along an axis going out via the front side* vs. **accessible to perception**

(29) a. Pes **za**-lezl **za** barák
           the.dog behind-crawled behind the.house

      b. Pes **za**-lezl **do** boudy
           the.dog behind-crawled into its.dog.house

      c. Pes **za**-lezl **pod** divan
           the.dog behind-crawled under the.table

(30) a. Pes **vy**-lezl **před** barák
           the.dog out-crawled to.in.front.of the.house

projective locations

- ▶ BEHIND: *along an axis going out via the back side* vs. **inaccessible to perception**
- ▶ IN FRONT OF: *along an axis going out via the front side* vs. **accessible to perception**

(29)   a.   Pes   **za**-lezl   **za**   barák
                 the.dog behind-crawled behind the.house

        b.   Pes   **za**-lezl   **do**   boudy
                 the.dog behind-crawled into its.dog.house

        c.   Pes   **za**-lezl   **pod**   divan
                 the.dog behind-crawled under the.table

(30)   a.   Pes   **vy**-lezl   **před**   barák
                 the.dog out-crawled to.in.front.of the.house

        b.   Pes   **vy**-lezl   **z**   boudy
                 the.dog out-crawled out.of its.dog.house

projective locations

- ▶ BEHIND: *along an axis going out via the back side* vs. **inaccessible to perception**
- ▶ IN FRONT OF: *along an axis going out via the front side* vs. **accessible to perception**

(29) a. Pes **za**-lezl **za** barák
          the.dog behind-crawled behind the.house

      b. Pes **za**-lezl **do** boudy
          the.dog behind-crawled into its.dog.house

      c. Pes **za**-lezl **pod** divan
          the.dog behind-crawled under the.table

(30) a. Pes **vy**-lezl **před** barák
          the.dog out-crawled to.in.front.of the.house

      b. Pes **vy**-lezl **z** boudy
          the.dog out-crawled out.of its.dog.house

      c. Pes **vy**-lezl **na** divan
          the.dog up-crawled on the.sofa

(31) CZ: out of an perceptually inaccessible location

    a. (nouzový) **vý**-chod
       emergency out-going
       'emergency exit'

    b. **vý**-chod (slunce)
       up-going of.sun
       'sunrise'

(31) CZ: out of an perceptually inaccessible location
- a. (nouzový) **vý**-chod
      emergency out-going
      'emergency exit'
- b. **vý**-chod (slunce)
      up-going of.sun
      'sunrise'

(32) NOR: out of a container
- a. sol-**opp**-gang
      sun-up-going
      'sunrise'
- b. nød-**ut**-gang
      emergency-out-going
      'emergency exit'

Summary

- Spatial markers prototypically relate Figure and Ground
- However, there are also spatial markers that only introduce the Figure (Ground is implicit)
- Other spatial markers only introduce the Ground (Figure is implicit)
- Verbs 'steal' the semantic arguments of spatial markers (Figure or Ground may become a subject or an object of the verb)