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7. General questions about topological relations in adpositions and cases
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Purpose:

The purpose of this questionnaire is to make sure that investigators have the basic information about the *linguistic forms* involved in the expression of the core of the IN, AT, ON relations in the languages under investigation. On typological grounds (recurrent grammaticalization), these notions seem to be the fundamental *topological relations*, i.e. spatial relations

- expressing **contact, coincidence, containment**
- *not* involving **angular specifications** of the kind found in frames of reference.

The background can be found in the notes "Topological spatial description II", where specific hypotheses about the **packaging** of this spatial information in language are outlined. For example:

Local Cases may encode: location/source/goal; occasionally Ground-geometry
Adpositions may encode: location/source/goal, Ground geometry, order, separation, proximity
Relational nominals: especially Ground geometry

This tool is intended only to get the background information over the whole topological domain, and to test some basic hypotheses about the packaging of topological concepts. It has some severe limitations:

- It is aimed at exploring the *least* specific parts of the topological system: cases, adpositions, or spatial nominals that stand alone (without cases and adpositions) or are required with cases or adpositions. Thus we are interested in what situations *can* be conflated (e.g. in a Locative case, or general adposition) – there will nearly always be further ways to distinguish them by the use of additional expressions (usually spatial nominals).
- It is not aimed at exploring the detailed meaning of these expressions. The entire Bowped picture series (Topological Picture Book) explores just the boundary between one of the 9 cells in the matrix below (the boundary between IN and ON) – it is that kind of detail that is needed to understand the extensions of terms.
- It presupposes that we know the structure of the domain being examined, whereas in fact we may not.

Structure of this questionnaire:

Part A. gives an introduction, motivating the general questions and hypotheses, thus allowing the researcher to extrapolate to other interesting questions beyond those directly dealt with in the questionnaire.
Part B provides a list of target sentences for translation - an exact translation is not the point; rather the explicit variables (e.g. animacy of figure, dimensionality of ground) should be carefully attended to.

Part A: Conflation Hierarchy (Grammaticalization & Lexicalization Hierarchy) for Topological Concepts marked in Local Cases, Adpositions & Relational Spatial Nominals

Examination of grammars suggests that there are **two dimensions** underlying the core topological domain:

- **Ground complexity** or dimensionality (e.g. point, surface, or container)
- **Motion** (e.g. to or from coincidence of location).

Many languages use just one form class to partition this two-dimensional domain: English uses prepositions, Finnish uses cases. But many languages use different form-classes for the two dimensions: e.g. case for the motion dimension (Locative, Allative, Ablative) and spatial nominals for the Ground-dimensionality dimension, so that one says in effect "inside-ABL" for 'from out of'. Recurrent splits of this kind thus suggest that there are two axes to the domain.

As a **working hypothesis**, we suggest that the two axes have the following prototype points along them:

Motion: Location, Goal, Source, Through-point
Ground: Point, Surface, Container (or 1-dimensional, 2-dimensional, 3-dimensional)
Typological evidence (mentioned below) supports the idea that these points lie along the axes in the order given.

The following diagram describes the **core** of the semantic space usually covered by adpositions, local cases and spatial nominals in language after language. This core is **two-dimensional**, yielding a 3 X 3 matrix (following ideas from Fillmore and H. Clark in the 1970s). There are implicational scales on both dimensions, and a third overall implicational scale along the diagonal.

MARKED →

Conflation Gradient	Location LOCATIVE	Goal ALLATIVE	Source ABLATIVE
GROUND **1D** (points, lines)	AT	TO	FROM
2D surfaces	ON	ONTO	OFF (OF)
3D (enclosures, bodies)	IN	INTO	OUT OF
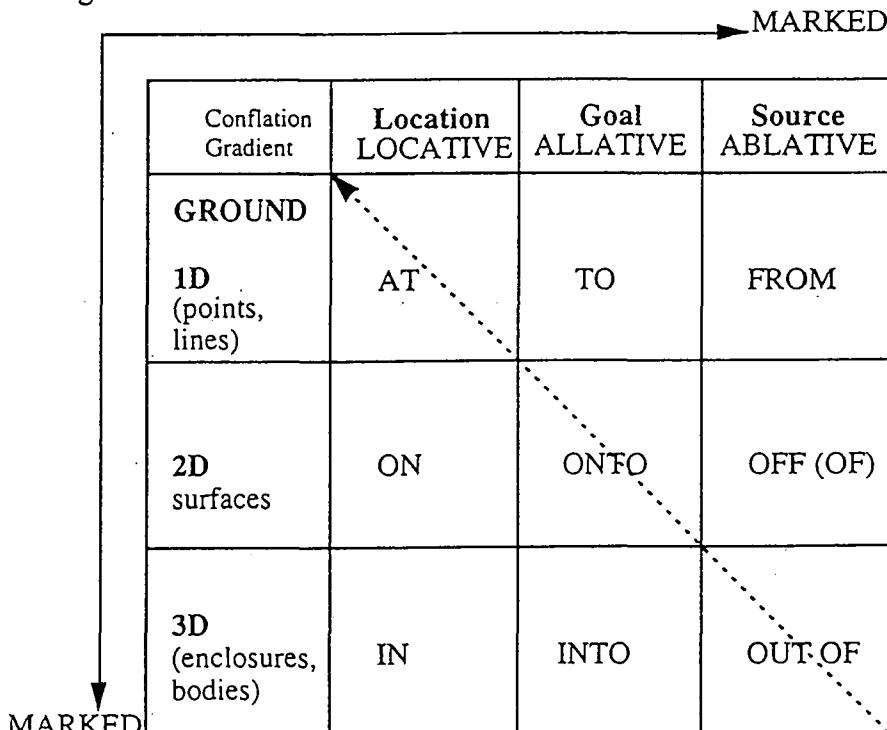
MARKED ↓

How to read the table:

- There are two **markedness dimensions**, each making predictions of their own: *the more marked the category the less likely to be conflated with others*, and the less likely to be grammaticalized/lexicalized to the same extent.
- English terms in capital letters indicate the prototype concepts, not the English prepositions: English *in* has wide extensions beyond the prototype IN ('inside body/container' sense), as in *in the newspaper, in the way, in the army.* The prototype ON is usually held to involve more than just a surface as Ground, namely a *horizontal* surface.
- Dimensionality (1D to 3D) of the Ground is not about physics but about *construal.* In many cases, we can choose to force a construal of a Ground as 1D, 2D, or 3D, as in *He is at the field, He is on the (playing) field, He is in the field.*
- Languages may further subdivide the cells on other grounds (e.g. animacy of figure or ground).

Predictions from the markedness dimensions (hypotheses):

1. **The more marked categories are** *more likely to be distinguished out* **from the rest.** Thus on the horizontal axis, we can expect many languages to distinguish SOURCE, while conflating LOC & GOAL; while on the vertical axis we can expect languages to distinguish INSIDE while conflating ON and AT. More especially, we do not expect any language to conflate LOC & SOURCE while distinguishing GOAL; or to conflate IN & AT while distinguishing ON.

2. **The more marked categories are likely to be** *less lexicalized/grammaticalized* **than the unmarked.** Thus we have English *out of* vs. *in,* etc.

3. **Conflation patterns:**
   AT+TO vs. FROM, AT+ON vs IN, AT+TO+ON+ONTO vs. rest of non-conflated categories, AT+TO+FROM+ON+ONTO+OFF vs. IN+INTO vs. OUT-OF etc. Diagrammatically:

Dimension 1: illisutrated with LOCAL CASE SYSTEMS
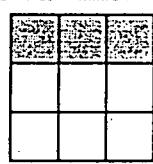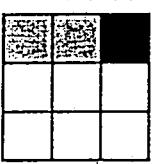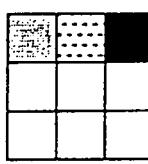

Tarascan   Guugu Yimithirr   Warlpiri

Dimension 2: illustrated with ADPOSITION SYSTEMS
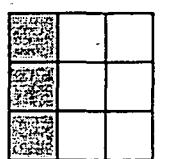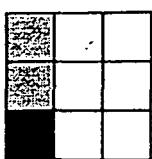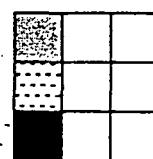
Tzeltal *ta*　　　　Yucatec　　　　English *at, on, in*

Two-Axis Predictions:
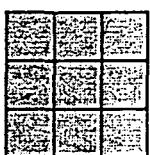
1-term systems	1+multiple	Multiple
Tarascan case?	marked	English
Tzeltal *ta*	Spanish *en*?	
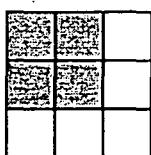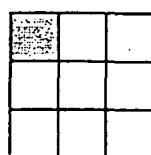
Other Dimensions

The 9-cell matrix does not cover all the notions forming the core of topological spatial concepts. Here are some additional notions which are closely related:

1. PATH: these are the *via, across/over, through* notions:

	LOCATION	GOAL	SOURCE	PATH
1D				via
2D				over
3D				through

Hypothesis: Path notions are marked relative to Source notions: any language with a Perlative case will also have an Ablative case.

2. BETWEEN/MIDDLE OF (Piaget's ORDER)

Sometimes a figure is located with respect to TWO grounds. There seem to be three distinct concepts that languages tend to conflate:
(1) 1D: A figure Y is in relation to two Grounds, treated as points X and Z, such that the order is X-Y-Z (This can be thought of as relating the figure to two AT-relations)
(2) 2D: Y is surrounded by points W, X, Z on a surface ground G;
　　　　Y is in the centre of G (optional extra condition)
(3) 3D: Y is located at the centroid of volume G.
This amounts to the tendency to conflate in one linguistic expression the first column of the matrix in cases of two grounds. (English *in between* may have a 1D prototype, while *in the middle of* perhaps has a 2D one, but both seem extendable in either direction.) In the case of

motion, the same expression seems to be used too, as in *go between, come from between*. The general hypothesis is that languages tend to conflate the matrix in the case of double Grounds.

3. PROPINQUITY

Most languages express notions like 'near', '(close) by', 'close to' within the closed classes used for other topological relations (especially in relational nominals perhaps; sometimes the so-called *comitative case* can be used). NEAR is the counterpart of AT, but NEAR does not exclude AT: NEAR entails that the figure is *within* some (pragmatically given) radius from the ground. Again, the hypothesis is that languages express NEAR in a form with a 1D prototype, and extend it to 2D and 3D grounds (i.e. construe them as points), which do not have special forms.

Cleavage Patterns

Cross-cutting this matrix are various factors that are known to cause special marking in adposition/case systems:

1. Contact/Distance

Lack of contact, or increase of distance, can trigger a shift from **topological** to **non-topological** (typically Intrinsic) systems of adpositions. In Tamil, postpositions+Dative indicate contact, same postpositions+Oblique indicate non-contact.
Note that markedness asymmetries operate here too: in many languages 'behind' has both topological and intrinsic interpretations (i.e. both contact & non-contact interpretations), but 'on-front-of' may be distinguished from 'in front of'.

2. Attachment/Part-whole relations

Rossel attachment postpositions take precedence over ON/IN postpositions.

3. Human/Non-human or Animate/Inanimate

Languages may quite often have special topological expressions for animate grounds, e.g. Guugu Yimithirr has special cases for '(move) into/out of presence of person' vs. '(move) to/from place'. Distinctions may also be made for animate vs. inanimate figures, although these distinctions are more likely to be marked in the verb (e.g. specific positionals).

4. Horizontal vs. Vertical grounds

As noted above, ON is normally assumed to have a prototype 'in contact with a horizontal surface', i.e. to involve *vertical support* as well as two-dimensionality of the ground. Hence ON might be held to contrast to UNDER. By virtue of the contrast +/-CONTACT, ON might also contrast to OVER. Obviously, this involves consideration of the handling of the vertical dimension in languages, and the whole system of terms for distinguishing 'top'/'bottom', 'over'/'under', 'above'/'below', 'up'/'down' which lie beyond this questionnaire.
However, a few questions have been included to check out the following generalization:
Languages distinguish +contact (ON) vs. –contact (OVER) in the postive (unmarked UP) vertical direction, but tend to conflate +/-contact (UNDER) in the negative (DOWN) direction.

Part B: Questionnaire

SECTION I: THE BASIC MATRIX OF 9 CELLS
The researcher will probably have a pretty good idea of how most of this works in advance -
but lower and righter cells may yield some surpises. So it is definitely worth checking out the
situation – the verbal distinctions may also be interesting.

Parameters: DIMENSIONALITY of Ground, AT/ON/IN & ANIMACY OF FIGURE
(Try to aim here for locally normal scenes, a bit difficult in the inanimate motion cases: one
can try wind/feathers etc. as figures.)
Although we are primarily after adpositions and spatial nominals, do check carefully for
verbs: are there lexicalized forms for ENTER, EXIT (see that questionnaire)? If so, are there
also verbs for GO-ON, GO-OFF, GO-TO, GO-FROM, BE-AT, BE-ON, BE-IN, etc.

AT
1.1.1   John is at the river
1.1.2   The big rock is at the river

ON
1.1.3   John is on the big rock
1.1.4   The little rock is on the big rock

IN
1.1.5   John is in the house
1.1.6   The rock is in the house

TO
1.1.7   John went to the river
1.1.8   The rock went/rolled (down) to the river

ONTO
1.1.9   John/the cat went/got onto the table
1.1.10 The stick/leaf fell onto the table

INTO
1.1.11 John went into the house
1.1.12 The stone came (rolling)/the feather came (wafting) into the house

FROM
1.1.13 John came from the house
1.1.14 The rock rolled (down) from the house

OFF
1.1.15 John/the cat got off the table
1.1.16 The leaf fell/blew off the table

OUT OF

1.1.17 John came out of the house

1.1.18 The ball came (rolling) out of the house

ANIMATE GROUND

Note: With animate (and especially human) grounds, many languages will prefer to switch constructions. So first check to see whether you can use the normal AT/IN/ON etc. spatial relators with a simple human ground, then with a human body-part, then with an animal, etc. If not, then check what the alternative constructions are.

AT

1.1.19 John is at Bill('s place)/ with Bill

1.1.20 The money/beer is at Bill('s place)/with Bill

ON

1.1.21 John is on Bill's shoulders / John is standing on Bill

1.1.22 The log is on Bill's shoulders

IN

1.1.23 The disease/food/sadness is in Bill
         The bullet/thorn is in Bill('s leg)

TO

1.1.24 John went to Bill

1.1.25 The news came to Bill

ONTO

1.1.26 The child climbed onto Bill

1.1.27 The ant climbed onto Bill / the leaf fell onto Bill

INTO

1.1.28 John went into Bill's presence

1.1.29 The idea / spirit / breath came into Bill
         The bullet went into Bill/The thorn went into Bill's toe

FROM

1.1.30 John left from Bill's (presence)

1.1.31 The spirit/breath/life left from Bill

OFF

1.1.32 The child got off Bill('s shoulders)

1.1.33 The worm/leaf fell off Bill's shoulders
         The fly flew off Bill's face

OUT OF

1.1.34 John came out of/exited Bill's (house/presence)

1.1.35 The snake came out of Bill's (house/presence)

The bullet/splinter came out of Bill's leg

If animate grounds look interesting, try the following scenario suggested by Jürgen Bohnemeyer:

SCENARIO with LOCATION and MOTION:

1.1.36 The fly is AT/ON John.

1.1.37 Bill shoos the fly away FROM John

1.1.38 Now the fly lands ON Bill

1.1.39 Bill shakes the fly OFF from him

1.1.40 Now the fly flies from Bill back TO John

1.1.41 The ball is AT John

1.1.42 John kicks the ball TO Bill

1.1.43 Now the ball rolls away FROM Bill

1.1.44 It rolls TO Harry

1.1.45 Harry tries to kick it back TO John, but it goes OUT OF the court/grassy area

SECTION II CAUSED LOCATION & MOTION

Parameters DIMENSIONALITY of Ground, AT/IN/ON, ANIMACY of patient/theme
NB: Check carefully for preferences vs obligatoriness of animacy distinctions.

TO PUT AT (Cause to be at a location)

2.1.1 John put the sick child (down) at the cross-roads/river bank

2.1.2 John put the sack (down) at the cross-roads/river bank

TO PUT ON

2.2.3 John put (lay) the sick child on the table

2.2.4 John put the stick on the table

TO PUT IN

2.2.5 John put the sick child in the canoe/box/cradle

2.2.6 John put the sack in the canoe/box/cradle

CAUSE TO MOVE TO (cause to move to a location)

2.2.7 John moved/walked the sick child to the river-side/corner of the house

2.2.8 John rolled the rock (down) to the river side (i.e. caused it to move)

CAUSE TO MOVE ONTO

2.2.9 John moved/walked the sick child onto the mat

2.2.10 John rolled the ball onto the mat

CAUSE TO MOVE INTO
2.2.11 John moved/walked the sick woman into the canoe/cave

2.2.12 John rolled the ball into the cave

CAUSE TO MOVE FROM
2.2.13 John walked/moved the sick child from the riverside

2.2.14 John rolled/moved the rock from the top of the hill

CAUSE TO MOVE OFF
2.2.15 John walked the toddler off the mat/ John shooed the dog off the mat

2.2.16 John rolled the ball off the mat

CAUSE TO MOVE OUT OF
2.2.17 John walked the sick lady out of the cave/house

2.2.18 John rolled the ball out of the cave/house

SECTION III: PERLATIVE DIMENSION
This section explores the next column beyond the basic matrix, to do with motion **through** a 1D, 2D or 3D Ground

GO VIA (1D)
3.1.1 John went via the village

3.1.2 The river runs via the gorge

GO OVER (2D)
3.1.3 John walked over the field/mat/piazza

3..4 The rock rolled over the field

GO THROUGH (3D)
3.5 John went through the tunnel/cave/fallen hollow log

3.6 The river ran through the tunnel/cave

SECTION IV: OTHER TOPOLOGICAL RELATIONS

4.1 BETWEEN
This relation instantiates Piaget's ORDER - on the assumption that 'between' has a prototype presuming a 1D ground with figure F located on a line between two points (two ATs as it were). As mentioned, it is expected that 1D 'between' will extend to 2D and 3D 'in the middle of' – but this is worth checking.

BE LOCATED BETWEEN (1D)
4.1.1. John stood between his two brothers/the two trees

4.1.2 The village is between the two rivers/hills

BE LOCATED IN MIDDLE (2D)
4.1.3   John is in the middle of the piazza/the forest/the crowd
4.1.4   The village is in the middle of the forest/valley/plain

BE LOCATED IN MIDDLE (3D)
4.1.5   John is in the middle of the hollow tree
4.1.6   The stone/pit is in the middle of the fruit

MOVE BETWEEN
4.1.7   John went between the two trees/walked between the two mountains
4.1.8   The rock rolled between the two trees
4.1.9   John came out from between the two trees
4.1.10 The rock rolled out from between the two trees

4.2 NEAR

DIMENSIONALITY IRRELEVANT?
4.2.1   John is near the crossroads/near the field/near the church
4.2.2   The stone is near the crossroads/near the field/near the church

ANIMACY OF GROUND
4.2.1   John is near Mary
4.2.2   John is near Mary's house/the tree

SECTION V: THE VERTICAL DIMENSION

The 2D row of the matrix is the only row that seems to systematically intersect with the vertical dimension. It seems that ON (+contact) contrasts with OVER (above, -contact), which together are opposed to UNDER (+/-contact). To check this out:

OVER (check entailed non-contact)
5.1.1. John was dangling from a rope over the river/hanging in his hammock over the fire
5.1.2   The bag/light was hanging from a rope over the table

ON (check entailed contact)
5.1.3   John was (lieing) on the table (test: in his hammock)
5.1.4   The bag was (lieing) on the table (test: on top of a large box)

UNDER (check +/- contact)
5.1.5   John was under the roof (check: sitting under, vs. climbing in the rafters)
5.1.6   The money was hidden under the table (check: in the ground vs. stuck on the underneath)

Check also the relation of the notions UP/DOWN with OVER/UNDER – are they conflated?

SECTION VI   On the extensions of AT/IN/ON notions

This section, compiled by Jürgen Bohnemeyer (using material from Herskovits, Vandeloise, Garrod et al, Bowerman & Pederson, Wilkins), has a different function. It supplements the scenes in the BOWPED booklet, but is addressed to the same issues as that book – namely to the way that the basic topological notions are **extended** either to non-topological relations or to non-canonical ones. In other words, these queries explore the meaning range of forms that will (most likely) have already occured in the answers to the queries above.

AT-Scenes

Location at place vs. on/in reference object
> *The boy is / at the / on a / beach.*
> (contrast the beach with mountains and forest in the background; the boy is standing)
> *The boy is lying on the beach.*
> (no contrast; the boy is much more salient than in the previous picture)

Person / at institution / using artifact:
> *The children are at/in school.*
> *The girl is at her desk.*
> *The boy is at the blackboard.*
> (this can be one scene)

Spatial entity at landmark in highlighted medium/region
> *There is a star at the top of the tree.*

ON-Scenes

Physical object contiguous with another
> *The shadow is on the wall.*

Physical object on part of itself (also in Melissa's notes)
> *The man is (lying) on his back.*

Objects on ground (from Melissa's notes)
> *The red cup is on the table, and the blue cup is on the ground.*
> (contrast!)

Objects on canonical vs. non-canonical grounds (from Melissa's notes)
> *The red cup is on the table, and the blue cup is on top of the TV set.*
> (contrast!)

"Functional" ON configurations (from Garrod, Ferrier & Cambell to appear)

> *The weight is on the plank.*
> (Strings are tied to the weight, but their opposite ends are not connected.)
> (Strings are connecting the weight to a second plank above it, but the strings are lax.)
> (Strings are connecting the weight to a second plank above it, and the strings are tense.)

IN-Scenes

Spatial entity in container
(the crucial question here is, what counts as a container?)

> *The babies are in the nest.* (hanging, oriole-style birdnest; the bird babies are peaking
> out the hole in the bottom - from Melissa's notes)
> *The chair is in the corner.*
> *The cat is sitting in the fork of the two branches.*
> *The man is standing in the doorway.*
> *The man is lying "in/under" (i.e. protected by) the windbreak (being on its leeside) /*
> *the tree (being in its shadow) / the shelter (being underneath it) (from David's work)*
> (In Yukatek, location in any delimited area - a garden, a corn field, a play ground
> is described using the IN relator, and so are all kinds of BETWEEN configurations)

Gap/object 'embedded' in physical object (also in Melissa's notes)

> *The fish is in the water/iceblock.*
> *The nail is in the board.*

Physical object in outline of another, or of a group of objects (also in Melissa's notes)

> *The bird is in the tree.*
> *The squirrel is in the grass.*
> *The worm is in the rice.*
> *The worm is in/between the strawberries.*

"Functional" IN configurations (from Garrod, Ferrier & Cambell to appear)

> *The pear is in the bowl.*
> (The bowl is filled with apples, and the pear is on top of the apples.)
> (The bowl is empty, and the pear is hanging above its ground from a thread.)
> (The pear is on the table, and the bowl is covering it, put upside down.)
> *The light bulb is in the socket.*

Accident/object part of physical or geometrical object

> *The man is standing in the crowd.*

Spatial entity in area

> *The island is in the lake.*

Physical object blocking a path

> *There is a truck in the road.*
> (the truck is blocking the road, as viewed from an approaching car)