

Spatial adpositions in sign language

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1 Introduction¹

- In the sign language literature, it is commonly assumed that sign languages (SLs) lack spatial adpositions and that information about the spatial location of referents is encoded within the predicate by means of a spatial modulation of the predicate sign.
- For instance, in many SLs, in order to express that an object (e.g. a book) is located on a table, the signer would generally start by articulating TABLE (i.e. the Ground), followed by BOOK (the Figure) which in turn would be followed by the locational predicate.
- Crucially, the predicate will be modulated such that its endpoint coincides with the location in the signing space at which the Ground has been articulated, thereby yielding the complex meaning 'be located on the top/surface of'. No overt preposition is used.
- Despite this modality-specific peculiarity, we argue that SLs employ the same syntactic machinery for expressing spatial relations as spoken languages do.
- In particular, spatial expressions generally involve a complex predicate structure which involves two types of adpositions, P₁ and P₂:
 - P₁ encodes direction/path/goal and selects a predicate phrase PredP, the specifier of which hosts the phrase expressing the Ground, while the portion expressing location represents a part of the Ground.
 - P₂ is shown to develop from a bare noun, functioning as complement of Pred.
- We show that the distribution and combination of these two elements result in the various types of adpositions observed cross-linguistically.

2 Spatial adpositions in spoken languages

2.1 Some typological observations

- In many languages, spatial expressions are encoded by adpositions which may precede or follow the NP expressing the ground. In the Germanic/Romance examples in (1), for instance, the elements *on*, *auf*, and *sur* are analyzed as prepositions.

- (1) a. The cards are **on** the table [English]
 b. Die Karten sind **auf** dem Tisch [German]
 c. Les cartes sont **sur** la table [French]

- In Maithili, an Indo-Aryan language spoken in India, however, the adpositions occur following the ground (2) (Yadav 1989: 249). Sometimes, but not always, the choice between pre- and postpositions correlates with head-initial versus head-final word order.

- (2) a. dokan sá shop from 'from the shop'
 b. ghər me house in 'inside the house' [Maithili]

¹ We are indebted to Joni Oyserman, Marijke Scheffener, Pamela Perniss, and Brendan Costello for input.

→ Interestingly, in many African languages spatial expressions systematically involve two adpositions (glossed here as P₁ and P₂). These may occur on each side of the noun phrase, as in the Gungbe (Kwa) example in (3a), or may both precede the noun phrase, as in the Zina Kotoko (Chadic) example in (3b) (Holmberg 2002).

- (3) a. K̀̀j́ó zé gò ló **ḍó** [DP àkpótín ló] **k̀̀n** [Gungbe]
 Kojo take bottle DET P₁ box DET P₂
 ‘Kojo put the bottle beside the box [lit. at the side of the box].’
- b. K̀̀rtà dé **a** **gmá** tábàl [Zina Kotoko]
 cards DET P₁ P₂ table
 ‘The cards are on the table’

→ Similar examples are found in certain creoles. For instance, 18th century Sranan displayed the contrast illustrated in (4) (van den Berg 2007: 131).

- (4) a. Putti **na** tafra **tappo** b. Putti **na** **tappo** tafra [Sranan]
 put P₁ table P₂ put P₁ P₂ table
 ‘Put it on the table.’ ‘Put it on the table.’

→ P₁ and P₂ differ formally in at least two respects. First, elements of the class P₁ often form a small class and generally develop from relators, copulas, or verbal predicates. For instance, the Gungbe element **ḍó** in (3a) is arguably a cognate of the verb **ḍó**, roughly translated as ‘have’ in (5).

- (5) K̀̀j́ó **ḍó** kwè [Gungbe]
 Kojo have money
 ‘Kojo has money.’

→ Elements of the class P₂, on the other hand, form a larger class and generally derive from nouns expressing body parts or land marks. For instance, the particle **k̀̀n** in (3a) derives from the noun *nùk̀̀n* (‘forehead’) (Aboh 2005, in press).

- (6) K̀̀j́ó xò nùk̀̀n ná mì [Gungbe]
 Kojo hit forehead P₁ 1.SG
 ‘Kojo hit me at my forehead.’

→ Second, while P₁ can introduce a new argument (and therefore assign case) or introduce a clause (7a), P₂ never does so and must always occur in the context of a ‘governor’, either P₁ (7b) or a verb (7c).

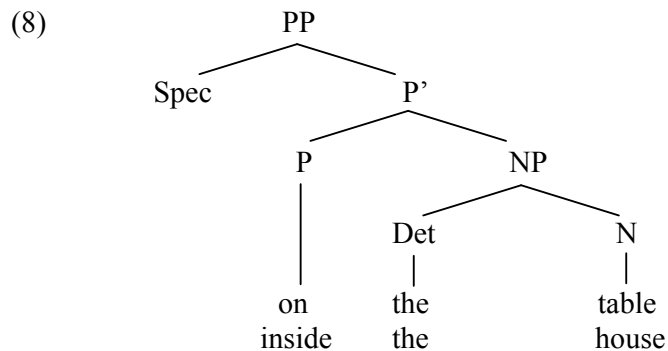
- (7) a. K̀̀j́ó yì xwégbè **ḍó** àgbó kpé è [Gungbe]
 Kojo go home P₁ fatigue suffice 3.SG
 ‘Kojo went home because he was tired’
- b. * K̀̀j́ó zé wémá *(**xlán**) yòvóto **mè**
 Kojo take letter P₁ Europe P₂
 ‘Kojo sent a letter to Europe [lit. Kojo sent a letter in-to Europe].’

- c. Kɔ̀jɔ́ sín àkpótín lɔ́ k̀̀̀n [Gungbe]
 Kojo sat box DET P₂
 ‘Kojo sat next to the box’

- The generalization is therefore that while the two elements can occur independently of each other, P₂ occurs in contexts where it must be ‘governed’.
- Put together, these facts lead to the question whether the languages described under (1) and (2) and those under (3) to (7) resort to completely different strategies in encoding spatial expressions or whether there is a principled way of accounting for the variation we observe here.

2.2 Suggested analysis

- Traditionally, the prepositions in (1) and (2) are analyzed as heading a prepositional phrase, as represented in (8) for English (but see Koopman (2000), Svenonius (in press), and den Dikken (in press) for recent alternative proposals). A similar structure can be proposed for the Maithili example in (3), modulo the directionality parameter.



- However, the data we just presented suggest that this structure is too simplistic. Indeed, it appears that even in Germanic and Romance, one finds bipartite adpositions, i.e. morphologically complex (9a) or phrasal (9b) prepositions.

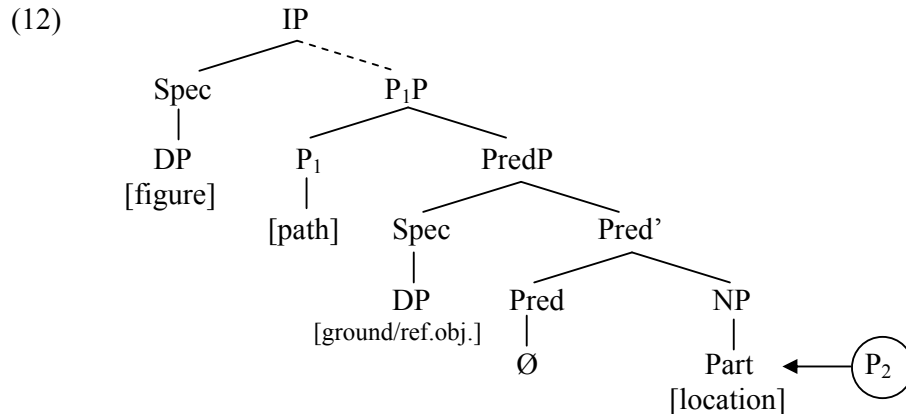
- (9) a. John put the bottle **in-side** the box [English]
 b. L’arbre est **à-côté-de** la maison [French]
 ‘The tree is next to the house.’

- Again, as we suggested for the data in (3) and (4), while both English *in* and French *à* and *de* can occur on their own (10ab), the same does not hold for the elements *side* and *côté*, respectively (11ab).

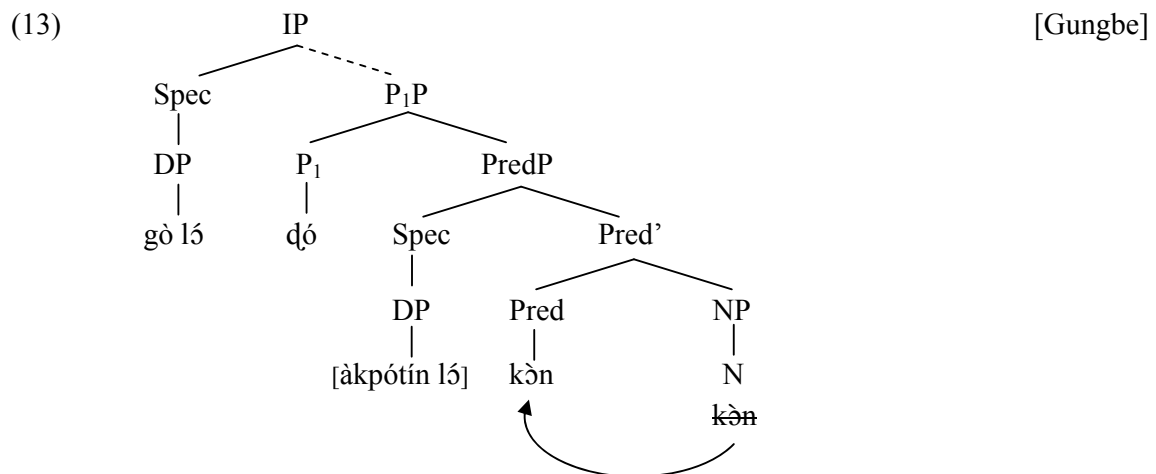
- (10) a. John lives in Paris b. Jean vit à Paris
 (11) a. * John lives side Paris b. * Jean vit côté Paris

- For the examples in (11) to be grammatical, an element of the type *in* or *à* is required. Accordingly, elements of the type *side* or *côté* behave just like elements of the type P₂ presented before, while *in* and *à* behave like elements of the type P₁.

- Building on this, we propose that complex prepositions in Germanic/Romance have a certain resemblance to those observed in West African languages. We further suggest to take this resemblance seriously and to analyze the former on a par with the latter.
- To that end, we adopt Aboh’s (in press) idea that spatial expressions involve a complex predicate phrase embedded under an element P₁ which encodes path (direction/goal). Cross-linguistically, it has been shown that P₁ often derives from verbs.
- In contrast, the Part-NP within PredP encodes location and may grammaticalize into P₂. This explains why these adpositions commonly derive from nouns (Heine & Kuteva 2002). The relevant part of the structure is given in (12).

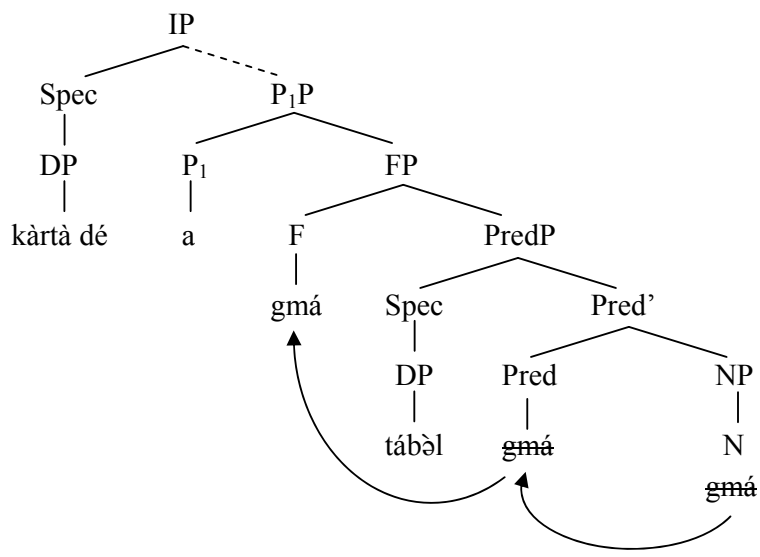


- Let us consider again the Gungbe example in (3a). P₁ *dó* encodes path and selects a predicate phrase inside which the reference object *àkpótín ló* (DP) is the subject, and its part expressing location represents a bare noun phrase headed by *kɛ̀n*. The latter subsequently incorporates into Pred° and surfaces as P₂. This derivation yields the sequence P₁ > DP > P₂, as illustrated in (13).



- In contrast, the Zina Kotoko example (3b) involves predicate (head) inversion where P₂ moves past the reference object DP *tábàl* to a position in the vicinity of P₁ (Kayne 1994; den Dikken 1998). This results in the pattern P₁ > P₂ > DP shown in (14).

(14) [Zina Kotoko]



→ We further claim that in some languages, fusion of P₁ and P₂ may yield morphologically complex adpositions like English *inside* and *in front of* or French *à côté de*. The proposed analysis extends to these cases, too (see Aboh (in press) for discussion).

3 The expression of spatial relations in sign languages

- Within the signing space, a Ground object (usually the backgrounded, bigger, and immobile entity) and a Figure object (usually the focal, smaller, and more mobile entity) can be located in various configurations with respect to each other.
- For the most part, we will use examples from Sign Language of the Netherlands (NGT) for illustration, implicitly assuming that other SLs express comparable situations in a similar way. Still, we acknowledge the possibility of cross-linguistic variation (see e.g. Perniss & Özyürek 2008; Özyürek et al. 2009a,b; Arik 2009).
- We assume that there are two basic spatial predicates, BE-LOCATED (location) and TRANSFER (transitive motion, e.g. PUT-DOWN). Note, however, that in the following, we will only be concerned with the former of the two.

3.1 Canonical locative constructions

- Perniss (2007) observes certain regularities with respect to the (canonical) expression of Figure and Ground in locative relations across SLs.
- First, in both spoken and signed languages, referents are typically introduced before information about them is predicated. This tendency, she claims, is due to a general modality-independent discourse property (i.e. Topic-Comment articulation).
- Secondly, the Ground is usually mentioned before the Figure in the locative construction (cf. Engberg-Pedersen (1993) for Danish SL; Emmorey (1996) for American SL).
- Third, the classifier handshape that represents the Ground is commonly held in place while the other hand positions the Figure in relation to the Ground. That is, the locative construction is depicted by a simultaneous classifier construction.
- These canonical properties are illustrated by the DGS example in (15b) (Perniss 2007: 78; glosses slightly adapted); the stimulus picture which elicited (15b) is given in (15a).

(15) a.



b.



[DGS]

rh: MAN BROWN SASS(hat) CL(man)_{loc(r)}
 lh: TREE CL(tree)_{loc(l)}-----
 'A man is standing next to a tree, facing the tree.'

- (15b) is canonical in the sense that (i) both referents (A & C-E) precede the predicate (F), (ii) the Ground entity (A) is mentioned before the Figure entity (C-E), and (iii) a classifier handshape representing the Ground is held (B-F) while the other hand localizes the Figure in relation to the Ground (F).
- All of the static scene descriptions analyzed by Perniss (2007) depict entities that are localized next to each other, e.g. a man and a tree or two men. For scenes containing two identical entities, it cannot be determined which of the two functions as the Ground.
- We will therefore focus on situations in which the Ground entity can be unambiguously identified. In the glosses, we will neglect the classifier morphemes which commonly constitute a part of location predicates (implicitly adopting proposals that analyze them as gender agreement markers; e.g. Glück & Pfau (1998), Zwitserlood (2003)).

3.2 Hold as part of the Ground

- Let us start our discussion by looking at the spatial relation 'on (the top/surface of)'. For localizing a non-human Figure like CAT, the predicate BE-LOCATED is used. This predicate combines with the appropriate classifier handshape (b-hand in (16a)).
- As is evident from the pictures in (16a), the feature [location] of the predicate expresses the location of the Figure CAT in relation to the Ground CHAIR. As before, both entities precede the predicate and the Ground precedes the Figure. The same is true for (16b) which involves a non-animate figure (video stills from NGC (2002)).
- In contrast to (15b), we do not observe a simultaneous classifier construction in (16ab). In principle, the Ground could be represented by a one-handed surface classifier signed simultaneously with the predicate, as in (16c); according to our informants, however, this strategy is marked and hardly ever observed.

(16) a. [NGT]



rh: CHAIR_{loc(x)} CAT BE-LOCATED_{top-of-loc(x)}
 lh: CHAIR_{loc(x)} CAT
 'A cat is sitting on (top of) the chair.'

b. [NGT]



rh: TABLE_{loc(x)} MILK BE-LOCATED_{top-of-loc(x)}
 lh: TABLE_{loc(x)} MILK
 'A glass of milk is on (top of) the table.'

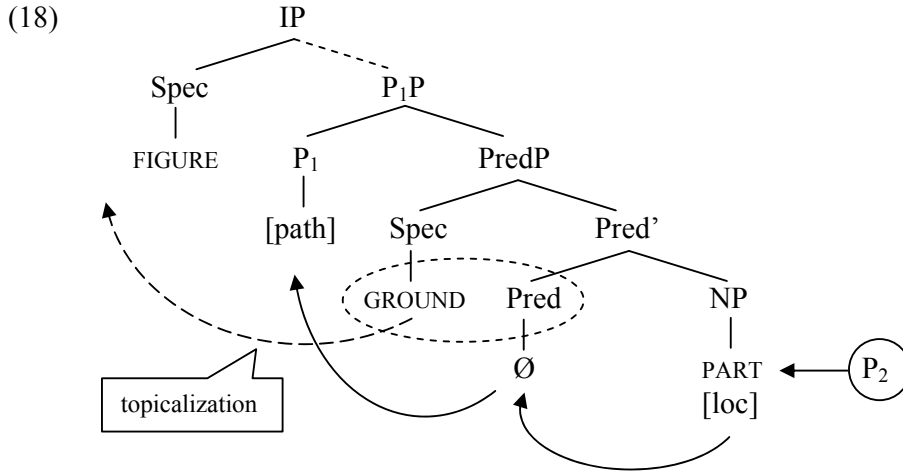
c. ? rh: CHAIR/TABLE_{loc(x)} CAT/CUP BE-LOCATED_{top-of-loc(x)}
 lh: CHAIR/TABLE_{loc(x)} CAT/CUP SURFACE_(x)
 'A cat/glass is on (top of) the chair/table.'

- It is worth pointing out, however, that in less prototypical spatial configurations, e.g. in (17a) below, it is more likely for the non-dominant hand to serve as (Part of) the Ground.
- Also, Arik (2009: 179f) observes structures of the type in (16c) in Turkish SL (TİD), Croatian SL (HZJ), ASL, and Austrian SL (ÖGS); see (17b) (the stimulus picture showed a mug on top of a book). We will come back to that option in section 3.3.

(17) a. rh: TABLE_{loc(x)} BOY BE-LOCATED_{top-of-loc(x)} [NGT]
 lh: TABLE_{loc(x)} SURFACE_(x)
 'A boy is standing on a/the table.'



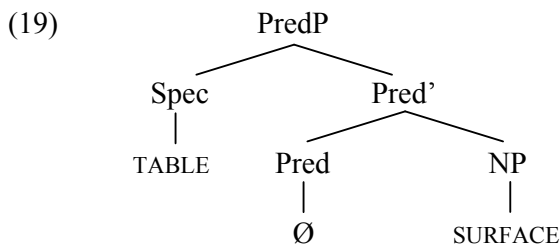
- We assume that (12) can be extended to the SL data (18). As for the realization of P₁ and P₂, we argue that in (16ab), PART (P₂) is spelled out by a hold-morpheme (cf. Rathmann (2005), Wilbur (2008) for aspectual hold morphemes). P₁, on the other hand, is realized by a zero movement. At spell-out, a (phonetic) default movement will be inserted.



- The head of the PART-NP raises to the (zero) predicate head, where spatial agreement with the GROUND is established under Spec-head agreement (indicated by the broken circle).
- Subsequently, PART adjoins to P₁. The latter movement produces morphological fusion comparable to English complex prepositions (e.g. *inside*, where *side* equals the Part (P₂) and *in* equals P₁).
- This analysis leads us to assume that there is no lexical posture verb (e.g. ‘lie’, ‘stand’, etc.) in these constructions (cf. the Zina Kotoko example in (3b)). Hence, what we gloss as BE-LOCATED is just a short-hand for a fused P₁-P₂-Agreement complex.
- Finally, we interpret the fact the Ground precedes the Figure as resulting from a general Topic-Comment articulation, where the Ground acts as topic. Consequently, we assume that the GROUND moves to a topic position within the left periphery of the clause.

3.3 The non-dominant hand as Part of the Ground

- In the above examples, we observe prototypical situations where the Figure is located on the (upper part of) the Ground, e.g. the surface of a table. As shown in (16c), in NGT, in these cases, the part of the Ground encoding location is usually left unexpressed.
- However, there are good reasons to believe that the final hold that is part of the movement component of BE-LOCATED is indicative of the part of the Ground that is functioning as location.
- Though this awaits further confirmation, it could be argued that the hold represents the surface indirectly, which would mean that it derives from a nominal, just as P₂ in spoken languages; cf. examples in (3), (4), and (9).
- Partial evidence for an analysis along these lines comes from the observation that occasionally, the Part component can be overtly and simultaneously realized by the non-dominant hand. In (17), e.g., PART is simultaneously spelled out by SURFACE; see (19).



→ Things are somewhat different for the 'under'-relation. It seems that in this case, the predicate BE-LOCATED by itself does not provide sufficiently specific information (20a). Signers show a preference for introducing a two-handed directional sign glossed as UNDER-SURFACE (20b). In this case, the predicate is even optional.

- (20) a. * rh: CHAIR_{loc(x)} CAT BE-LOCATED_{below-loc(x)} [NGT]
 lh: CHAIR_{loc(x)} CAT (SURFACE)
 b. rh: CHAIR_{loc(x)} CAT UNDER (BE-LOCATED_{below-loc(x)})
 lh: CHAIR_{loc(x)} CAT SURFACE-----
 'A cat is sitting under a/the chair.'

→ As for the UNDER-SURFACE case, we assume that SURFACE spells out the Part of the Ground (P₂) while UNDER is a directional occupying the head of P₁P.
 → We suggest to analyze SL structures in which the Part component is optionally expressed on a par with English sentence pairs such as the one in (21).

- (21) a. The bottle is **in** the box (only P₁ realized) [English]
 b. The bottle is **inside** (of) the box (P₁ and P₂ realized)

→ Turning to the 'next to'-relation, we observe that the use of the non-dominant hand (H2) as Part of the Ground is more common (also cf. the DGS example (15b)). Depending on characteristics of the Ground, there are two ways for H2 to participate in such structures.
 → First, both Ground and Figure can be introduced before the locative predicate is signed simultaneously with the Part of the Ground (SIDE in this case), as in (22a).
 → Secondly, the Ground can be localized by a classifier predicate, which in the ASL example in (22b) is held stationary by H2 (a 'perseveration' (Miller 1994; Vermeerbergen et al. 2007)) while the signer articulates the Figure BIKE and the locational predicate (Emmorey 2002: 87).

- (22) a. rh: HOUSE_{loc(x)} CAR SIDE_(x) [NGT]
 lh: HOUSE_{loc(x)} CAR BE-LOCATED_{next-to(x)}
 'The car is (located) next to the house.'

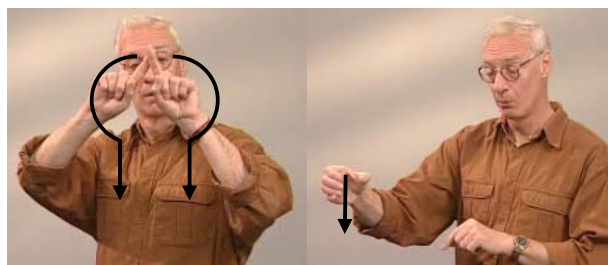
b. [ASL]



- rh: HOUSE BIKE BE-LOCATED_{next-to(x)}
 lh: HOUSE BE-LOCATED_{loc(x)}-----
 'The bike is (located) next to the house.'

c.

[NGT]



rh: TREE BE-LOCATED_{loc(x)}
lh: TREE-----



rh: INDEX₁ BIKE CL:TREE_{loc(x)}
lh: ----- BIKE BE-LOCATED_{next-to-loc(x)}

‘My bike is located next to a tree.’

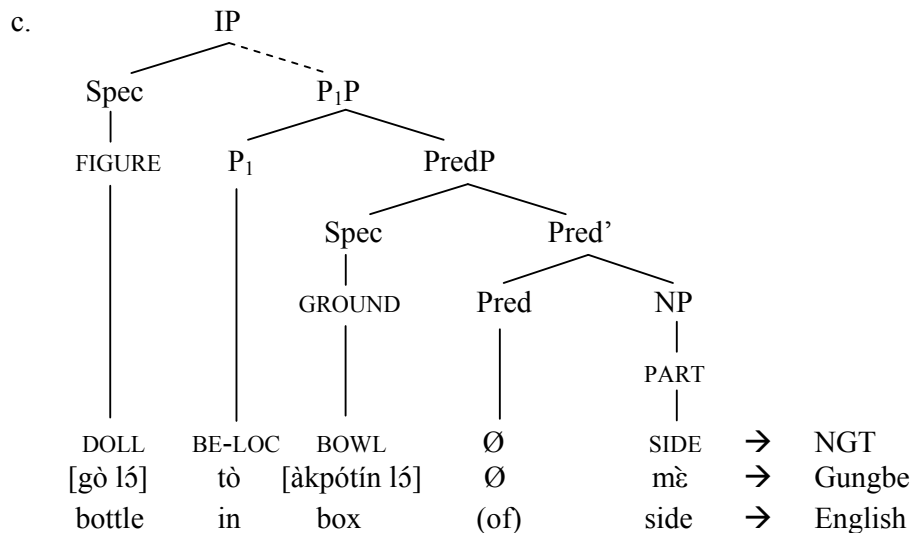
- The NGT example (22c) is similar to (22b). In this case, however, the classifier is articulated by the dominant hand and is not held stationary. Despite the use of a classifier which represents the object, we still assume that H2 in (22b) and H1 in (22c) function as Part of the Ground, just like SURFACE in (17) and SIDE in (22a).
- Let us finally consider the ‘inside of’-relation. It appears that NGT makes use of two overt prepositions: INSIDE-1 (B-hand, (23a)) and the two-handed INSIDE-2 (a combination of | -H1 and < -H2).
- Still, H2 may occasionally be used as Part of the Ground in ‘inside’-constructions, too, as is shown in (23b). Note that optionally, H2 of the Ground is perseverated.
- (23c) suggests that in cases in which H2 does not provide sufficiently specific information about the containment relation, use of H2 as Part of the Grounds results in ungrammaticality. Further research is necessary to verify this claim.

- (23) a. rh: FENCE SASS:SQUARE_{loc(x)} TREE INSIDE-1_(x) [NGT]
lh: FENCE SASS:SQUARE_{loc(x)} TREE
‘The tree (located) within the fence.’
- b. rh: BOWL_{loc(x)} DOLL BE-LOCATED_{inside(x)}
lh: BOWL_{loc(x)} (-----) SIDE_(x)
‘The doll is standing inside the bowl.’
- c. * rh: FENCE SASS:SQUARE_{loc(x)} TREE BE-LOCATED_{inside(x)}
lh: FENCE SASS:SQUARE_{loc(x)} TREE SIDE_(x)
‘The tree (located) within the fence.’

- In (24ab), we cite comparable examples from Gungbe and English, respectively, and in (24c), we provide a comparative structure for the NGT, Gungbe, and English examples.

- (24) a. Gò ló tò [DP àkpótín ló] m̀è [Gungbe]
 bottle DET P₁ box DET P₂
 ‘The bottle is inside the box [lit. in the inner side of the box].’

b. The bottle is **inside** (of) the box



4. Conclusion

- The above discussion suggests that a common pattern found in both spoken and sign languages is that locative expressions require a relation between a Figure and a Ground.
- Following Talmy’s (2000) theory of cognitive semantics, we assume that generally, a preposition establishes a relation between a Ground and its Part. In this regard, Talmy (2000: 196f) argues that

“a major group of space-characterizing linguistic forms makes appeal to a Ground object’s having some form of asymmetry, or biasing in its structure. Either it has structurally distinct parts – parts that in themselves are distinguishable from one another and can form a basis for spatial discriminations – or it has some kind of unidirectionality.”

- We argue that this characterization holds for all the languages under study here and we propose that the Ground may be complex in that it involves a *Reference Object* whose Part is used to localize the Figure. Literally, this implies that a sentence like “The book is on the table” could be paraphrased as “The book is on the top of the table”.
- The paper therefore shows that when it comes to spatial expressions, SLs are not exceptional despite the fact that they have the potential to make use of the signing space.
- If our analysis is on the right track, this would mean that the apparent iconic properties of locative constructions in SLs are an artifact of the syntax of spatial expressions. Iconicity thus reduces to a spell-out phenomenon and is not part of the computational system. As such, it is comparable to surface effects in spoken languages.

References

- Aboh, Enoch. O. 2005. The category P: the Kwa paradox. *Linguistic Analysis* 32, 615-646.
- Aboh, Enoch O. In press. The P route. In: Cinque, G. & L. Rizzi (eds.), *The cartography of syntactic structures, vol. 6.: The cartography of PPs*. Oxford: Oxford University Press.
- Arik, Engin. 2009. *Spatial language: Insights from sign and spoken languages*. Ph.D. Dissertation, Purdue University, West Lafayette, IN.
- Den Dikken, Marcel. 1998. Predicate inversion in DP. In: Alexiadou, A. & C. Wilder (eds.), *Possessors, predicates and movement in the DP*. Amsterdam, Benjamins, 177-214.
- Den Dikken, Marcel. In press. On the functional structure of locative and directional PPs. In: Cinque, G. & L. Rizzi (eds.), *The cartography of syntactic structures, vol. 6.: The cartography of PPs*. Oxford: Oxford University Press.
- Emmorey, Karen. 1996. The confluence of space and language in signed language. In: Bloom, P., Peterson, M.A., Nadel, L. & M. Garrett (eds.), *Language and space*. Cambridge, MA: MIT Press, 171-210.
- Emmorey, Karen. 2002. *Language, cognition and the brain*. Mahwah, NJ: Erlbaum.
- Engberg-Pedersen, Elisabeth. 1993. *Space in Danish Sign Language. The semantics and morphosyntax of the use of space in a visual language*. Hamburg: Signum.
- Heine, Bernd & Tania Kuteva. 2002. *World lexicon of grammaticalization*. Cambridge: Cambridge Univ. Press.
- Glück, Susanne & Roland Pfau. 1998. On classifying classification as a class of inflection in German Sign Language. In: Cambier-Langeveld, T. et al. (eds.), *Proceedings of ConSOLE 6*. Leiden: SOLE, 59-74.
- Holmberg, Anders. 2002. Prepositions and PPs in Zina Kotoko. In: Schmidt, B.K., D. Odden & A. Holmberg (eds.), *Some aspects of the grammar of Zina Kotoko*. Munich: Lincom, 162-174.
- Kayne, Richard S. 1994. *The antisymmetry of syntax*. Cambridge, MA: MIT Press.
- Koopman, Hilda. 2000. Prepositions, postpositions, circumpositions, and particles. In: Koopman, H. (ed.), *The syntax of specifiers and heads*. London: Routledge, 204-260.
- Miller, Christopher. 1994. Simultaneous constructions in Quebec Sign Language. In: Brennan, M. & G.H. Turner (eds.), *Word-order issues in sign language*. Durham: ISLA, 89-112.
- NGC / Nederlands Gebarententrum. 2002. CDROM *Basisgrammatica Nederlandse Gebarentaal*. NGC & UvA: Bunnik & Amsterdam.
- Özyürek, Aslı, Pamela Perniss & Inge Zwitserlood. 2009a. Body and iconicity in spatial language in Turkish and German Sign Languages. Paper presented at The Nijmegen Gesture Centre lecture series, May 2009.
- Özyürek, Aslı, Inge Zwitserlood & Pamela Perniss. 2009b. Locative expressions in signed languages: A view from Turkish Sign Language. To appear in *Journal of Linguistics*.
- Perniss, Pamela. 2007. *Space and iconicity in German Sign Language (DGS)*. Ph.D. dissertation, University of Nijmegen. Nijmegen: MPI Series in Psycholinguistics.
- Perniss, Pamela & Aslı Özyürek. 2008. Representation of action, motion, and location in sign space: A comparison of German (DGS) and Turkish (TID) Sign Language narratives. In: Quer, J. (ed.), *Signs of the time*. Hamburg: Signum, 353-376.
- Rathmann, Christian. 2005. *Event structure in American Sign Language*. Ph.D. dissertation, University of Texas at Austin.
- Svenonius, Peter. In press. Spatial P in English. In: Cinque, G. & L. Rizzi (eds.), *The cartography of syntactic structures, vol. 6.: The cartography of PPs*. Oxford: Oxford University Press
- Talmy, Leonard. 2000. *Toward a cognitive semantics. Vol.1: Concept structuring systems*. Cambridge, MA: MIT Press.
- Van den Berg, Margot. 2007. *A grammar of Early Sranan*. Zetten, NL: Drukkerij Manta.
- Vermeerbergen, Myriam, Lorraine Leeson & Onno Crasborn (2007), Simultaneity in signed languages: A string of sequentially organized issues. In: Vermeerbergen, M., L. Leeson & O. Crasborn (eds.), *Simultaneity in signed languages: Form and function*. Amsterdam: Benjamins, 1-25.
- Wilbur, Ronnie B. 2008. Complex predicates involving events, time and aspect: Is this why sign languages look so similar? In: J. Quer (ed.), *Signs of the time*. Hamburg: Signum, 217-250.
- Yadav, Ramawater. 1989. *A reference grammar of Maithili*. New Delhi: Munshiram Manoharlal Publishers.
- Zwitserlood, Inge. 2003. *Classifying hand configurations in Nederlandse Gebarentaal*. Utrecht: LOT.