The German Stative Locative Alternation and theta-induced binding (extended English version of "Die deutsche stative Lokativalternation und theta-induzierte Bindung")

1 author:

Daniel Hole
Universität Stuttgart
52 PUBLICATIONS **398** CITATIONS

Some of the authors of this publication are also working on these related projects:

Theta-Induced Binding View project

Sign languages and the Bodily Mapping Hypothesis View project

Daniel HOLE

The German Stative Locative Alternation and Theta-Induced Binding
University of Stuttgart

Institut für Linguistik
Keplerstr. 17
70174 Stuttgart

holedan@gmail.com
+49-1573-142-4479

Abstract

This article analyzes the underinvestigated Stative Locative Alternation as found in German and Dutch (*Geigen hängen im Himmel* vs. *Der Himmel hängt voller Geigen* 'Violins are hanging in the sky' vs. lit. 'The sky is hanging full of violins'; Mulder and Wehrmann 1989; Hoekstra and Mulder 1990; Bücking and Buscher 2015). The analysis of the syntax and semantics of the non-base alternant of this alternation centers around a Landmark (locative) theta head, a functional glue morpheme tying together the lexical verb and the (aspectual) *voll*-phrase, and Theta-Induced Binding (Kratzer 2009, Hole 2012, 2014). A wide array of argument alternations is shown to be amenable to analogous treatments.

argument alternations, binding, stative causation, "small clause"

The German Stative Locative Alternation and Theta-Induced Binding

Abstract

This article analyzes the underinvestigated Stative Locative Alternation as found in German and Dutch (*Geigen hängen im Himmel* vs. *Der Himmel hängt voller Geigen* 'Violins are hanging in the sky' vs. lit. 'The sky is hanging full of violins'; Mulder and Wehrmann 1989; Hoekstra and Mulder 1990; Bücking and Buscher 2015). The analysis of the syntax and semantics of the non-base alternant of this alternation centers around a Landmark (locative) theta head, a functional glue morpheme tying together the lexical verb and the (aspectual) *voll*-phrase, and Theta-Induced Binding (Kratzer 2009, Hole 2012, 2014). A wide array of argument alternations is shown to be amenable to analogous treatments.

1. Introduction

The German argument alternation in (1) has not received much attention in the literature (but cf. Hole 2013, Bücking & Buscher 2015, and accounts dealing with its Dutch counterpart; cf. Mulder and Wehrmann 1989; Hoekstra and Mulder 1990).

(1) a. *Glasscherben lagen im Zimmer.*
　　　broken glass　lay　in.the　room
　　　'Broken glass was lying in the room.'

　 b. *Das Zimmer lag (am Boden) voll mit Glasscherben.* (SLA⁺)
　　　the　room　lay　on.the　floor　full　with　broken glass
　　　'The room was [lying] full of broken glass (on the floor) […].'[1]

The Stative Locative Alternation of German involves verbs like *liegen* 'lie', *stehen* 'stand' etc. (cf. Section 2.1), and it opposes one alternant featuring what may be called standard argument structural properties as in (1a) to another one that may be said to feature a more indirect mapping in the argument structure. Note, for instance, that the subject of *lag* in (1b) is not a locatum, as in (1a), but a location. In what follows, I will call the more involved variant as in (1b) "SLA⁺"

---

[1] I will use idiomatic translations as in (1b) throughout the paper. The strings without the bracketed words render something close to the meaning of the examples; but cf. subsection 2.5. The (ungrammatical) strings with the *ing*-forms added are supposed to give English speakers a feel for the German construction.

(for "Stative Locative Alternation$^+$"). Note right at the beginning that the distribution and acceptability of the SLA$^+$ appears to be skewed along a geographical dimension. As far as I know, it is fully acceptable in areas of Germany neighboring the Netherlands, while it is judged as degraded in many cases by speakers from Southern German varieties. This holds especially true of literal uses as in *Der Briefkasten steckt voll mit Müll* 'The letterbox is [sticking] full of debris', whereas non-literal uses received good acceptability ratings in my non-representative survey (*Grünkohl steckt voll mit Vitaminen* 'Kale is [sticking] full of vitamins'. In the first portions of the article, I largely rely on attested data from internet searches to tackle doubts on the part of readers who are suspicious about the existence and productivity of the SLA.

The present article has two goals. On the one hand, it aims to provide a complete description of the SLA$^+$, combined with an explicit proposal to deal with its syntax and its semantics. On the other hand, I pursue a second, more ambitious, theoretical goal. I use the SLA$^+$ to shed light on the wide-spread occurrence of what I call Theta-Induced Binding. I take Theta-Induced Binding to underlie all obligatorily local binding relationships. The short preview of the main ideas (which builds on and extends ideas from Kratzer 2009) is as follows. (i) It is not in the context of DPs that binder indexes are introduced into the syntax. Rather, event-building predicates or, as I will dub them, theta heads take on this role (Kratzer 2009). In (1b), the head which licenses *das Zimmer* 'the room' fulfills this function; it is dubbed "θ$_{LANDMARK}$" in (2), a preliminary highly simplified preview of the analysis to be developed.

(2) *dass   das   Zimmer* [θ$_{LANDMARK}$ [i [*an seinem$_i$ Boden voll mit Glasscherben lag*]]]
    that   the   room   [θ$_{LANDMARK}$ [i [on its$_i$ floor full of glass splinters lay]]]

I am well aware of the fact that this detail of the analysis, namely that the higher index is related to theta heads, and not to DPs, will appear alien to many readers. However, it was first proposed by a leading figure in the field (Kratzer 2009: 193), and it has been shown to have fruitful applications (Hole 2012, 2014, Geist & Hole 2016). (ii) Reflexivity is but one instance of this rather widespread kind of binding. (iii) Many argument alternations, in their non-base alternants, crucially involve Theta-Induced Binding. In (1b), the implicit possessor/whole variable of *am Boden* 'on its floor' is the target of binding, and the subject locative is its antecedent. In (2), I use the less colloquial possessive pronoun to render this point more clearly visible.

These ideas have consequences for the theory of different kinds of binding (local vs. non-local; Cable 2005, Kratzer 2009), and they massively extend the empirical reach of Binding

Theory. Needless to say, the second goal of promoting a new view of local binding phenomena is a broad one, and its treatment in the present contribution will be but a programmatic one.

Section 2 assembles the descriptive generalizations that each analysis of the SLA$^+$ must cover. Section 3 reviews the available literature. Section 4 presents my syntactic analysis and foreshadows its semantic implementation. Section 5 deals with the broad array of argument alternations which feature Theta-Induced Binding, singles out some properties of Theta-Induced Binding, and proposes an implementation. Section 6 concludes. The appendix provides a sample derivation of the meaning that an SLA$^+$ structure will be assigned if my analysis is assumed, couched in expository text that comments on the devices used.

2. Descriptive generalizations
2.1 Verb class restriction

The SLA is productive with few verbs. Those verbs that partake in it in the clearest way were independently singled out as a natural class with some subclasses by Kaufmann (1995), who coined the term "stative localizing verbs relating to a solid supporting object" for them ("*stative Lokalisierungsverben*" relating to "*ein festes unterstützendes Objekt*").[2] Mapping the verb class that undergoes SLA to Kaufmann's independently established verb class is a genuine contribution of the present article. One example each is provided in (3), and I will make use of a simplified version of Kaufmann's (1995), Lang's (2001) and Lemmen's (2002) apparatus to characterize the different verb meanings. I will use the shorthand SLV$_{SUPPORT}$ for the verb class in this paper, and I will discuss less-than-full productivity with individual verbs, or verb senses, towards the end of the present subsection. Moreover, stative localizing verbs with a non-solid supporting object will enter the picture towards the end of the present subsection. (Superscript *a* to the left of an example indicates that the sentence at hand is attested and was retrieved from the internet by a Google search.[3])

---

[2] Kaufmann (1995) arrives at her classification and at her subclassification by studying the use of different prepositions co-occurring with those verbs. Quite typically, and interestingly, this verb class has no direct counterpart in Levin's (1993) classification of English verbs.

[3] https://www.stimme.de/archiv/leintal/Krankenschwester-fuer-Igel-gesucht;art1906,3505855 (last visited on 03/01/2019)

https://www.facebook.com/pg/naschwerlte/reviews/ (last visited on 03/01/2019)

https://books.google.de/books?isbn=3641097975 (last visited on 03/01/2019)

https://www.theaterverlag-rieder.de/leseproben/Leseprobe_965_Leberkaes%20und%20rote%20Strapse.pdf (last visited on 03/01/2019)

https://www.meinesuedstadt.de/auf-einen-kaffee-nen-streusel-und-krokus-mit-markus-berges/ (last visited on 03/01/2019)

https://www.brigitte.de/rezepte/saisonkalender/obst-gemuese-januar/ (last visited on 03/01/2019)

(3) a. *stehen* 'stand'

  [a] *Der* […] *Gang   steht   voll   mit   Leuten* […].
  the   hallway   stands   full   with people
  'The hallway is [standing] full of people.'

  b. *liegen* 'lie'

  [a] *Der Boden   lag   voll   mit   Reis* […].
  the floor   lay   full   with rice
  'The floor was [lying] full of rice […].'

  c. *sitzen* 'sit'

  [a] *Das Wartezimmer saß   voll   mit   […] Flüchtlingen* […].
  the   waiting room sat   full   with   refugees
  'The waiting room was [sitting] full of refugees […].'

  d. *hocken* 'sit (typically without a back rest or substandard/dialectal form for *sitzen*)'

  [a] […] *die   […] Bude   hockt   voller   Lockenwickler.*
         the   shack   sat   full.with   hair.rollers
  '[…] the shack was [sitting] full of hair rollers.'

  e. *hängen* 'hang'

  [a] *Die Wand   hing voll   mit   Bildern* […].
  the   wall   hung full   with pictures
  'The wall was [hanging] full of pictures.'

  f. *stecken* 'stick/be stuck in'

  [a] [*Grünkohl*]   *steckt   voll   mit   Vitaminen.*
  kale   sticks/pokes   full   with vitamins
  'Kale is [sticking/poking] full of vitamins.'

  g. *kleben* 'stick/be stuck on'

  [a] [*D*]*as   […] [G]eschirr klebt   voll   mit   Speisebrei ....*
  the   dishes   sticks/glues   full   with chyme
  'The dishes are [sticking/glueing] full of chyme.'

It is definitional for *stehen* 'stand' as in (3a) that the dominant, or a non-minimal, axis of the locatum coincides, or nearly coincides, with the vertical axis. Moreover, there must be a support

---

relation with a referent underneath the locatum. If the locatum referent is a living being, some exertion of physical strength is required to maintain the standing position (Lemmens 2002). *Liegen* 'lie' as in (3b) likewise requires support from underneath, but the dominant axis of the locatum must be horizontal. *Sitzen* 'sit', as applied to humans in (3c), requires support under the upper thighs or the buttocks. However, we will see below that the most productive verb sense of *sitzen* 'sit' has a different content for many speakers. *Hocken*, as used in (3d), is a substandard or dialectal variant of *sitzen* 'sit', often involving the absence of (contact with) a back rest. In other contexts it may have the meaning 'crouch' or 'squat'. *Hängen* 'hang' as in (3e) requires the locatum to be supported by something which is not underneath it, as was the case with all other verbs so far. The remaining two verbs are verbs of contact which imply contact that is maintained independent of gravity. The example for *stecken* 'stick/be stuck (inside)' in (3f), which was chosen here because it is easily accepted by speakers, is a figurative use.[4] In literal uses, the *stecken* relation requires that the contact between the locatum and the supporting object is maintained as a consequence of the tightness with which the locatum stays fixed inside or on the surface of the supporting object. Arrows stuck in a target, or the way credit cards are typically inserted into wallets are prototypical instantiations of this type of local relation. *Kleben* 'be stuck to/be glued to' is a relation that requires some sticky substance which maintains the support relation between the surfacy supporting object and a surfacy neighborhood region of the locatum. Sticky notes on a refrigerator, or dried mud on shoes are good examples of this type of configuration.

Among these verbs, *sitzen* 'sit' is most often rejected by native speakers of German in the SLA[+]. Many speakers of German find examples as in (4) less than fully acceptable, probably because its contents bear witness of an elevated speech style, a style that doesn't go together with the expressive flavor of the SLA[+].[5]

---

[4] A pilot was run to check how the proportions of literal and non-literal uses are distributed across the verbs *liegen*, *stehen*, *hängen* and *stecken* in the SLA[+]. It was found that *stecken* has by far the largest proportion of non-literal uses, followed by very few ones for *hängen* and *stehen* (Hole 2016 assisted by student helper Katherine Fraser). Speakers who are uneasy with the SLA[+] report much less degraded judgments for non-literal uses of SLA[+] *stecken*. Such contrasts are interesting, but orthogonal to the aims of the present study.

[5] I have not carried out any experimental research dealing with this issue. What I report here is the uneasiness of many colleagues who were confronted with data as in (4), nothing more.

(4) *Das   Parkett   saß   voll   mit   Ehrengästen.*
     the   pit   sat   full   with guests.of.honor
     'The pit was [sitting] full of guests of honor.'

The problem with *sitzen* is aggravated by the fact that speakers from some regions of Germany have a (slightly substandard) use type of *sitzen* at their disposal that speakers from other regions rate as unacceptable.[6] Typical examples are found in (5).

(5) a. ᵃ*Die   Pumpe   saß   voll   mit   braunem   Bakterienschleim.*
        the   pump   sat   full   with brown   bacteria.slime
        'The pump was [sitting] full of brown bacteria slime.'
    b. ᵃ*Der   ganze   Körper   saß   voll   mit   Ungeziefer.*
        the   whole   body   sat   full with vermin
        'Its whole body was [sitting] full of vermin.'
    c. ᵃ[*Der*]*Lüfter   saß   voll   mit   Wollmäusen.*
        the   fan   sat   full with dust-bunnies
        'The fan [casing] was [sitting] full of dust bunnies.'

It is characteristic of these uses that they involve configurations with nauseating or gross locatum referents that ought not to be where they are. I take this to be a use-conditional meaning component (Gutzmann 2015). The shape and position of the locata must be such that their contact regions are rather big when compared to their volume or thickness. Hence bugs, beetles, mold and dirt are good locata in this use type. As evinced by the no less typical (5a), insides or hollows such as the hollows of pumps, or duvet fillings make for good supporting objects too. If the locatum is not a liquid, and if it is inside the supporting object, the meaning is very close to *stecken* as exemplified in (3f). It appears to be the case that this special use, in those northwestern low German dialect regions of Germany where it is common, has something to do with the fact that Dutch *zitten* 'sit' has a very similar use, maybe without the use-conditional component (Lemmers' [2002] "non-postural use of *zitten*").

Kaufmann (1995) singles out one more subclass of verbs, the stative localizing verbs with a non-solid supporting object. It contains just two verbs, *schwimmen* 'be afloat (in water or

---

[6] The author grew up in this region neighboring the Netherlands.

other liquids)' and *schweben* 'be afloat (in air or gas)'. Both verbs are sometimes possible in the SLA$^+$ as evinced by the only mildly awkward attested examples in (6a) and (7a).[7, 8]

(6) a. [a] *Die ganze Weichsel schwimmt voller Leichname.*
          the whole Vistula swims full.of dead.bodies
          'The whole river Vistula is [swimming] full of bodies.'

     b. [a] *Das Wasser schwamm voller kleiner Holzstücke.*
          the water swam full.of small pieces.of.wood
          'The water was [swimming] full of small pieces of wood.'

(7) a. *Die Luft schwebt voller Haarspray.*
          the air afloat.in.air full.of hairspray
          'The air is [lingering] full of hairspray.'

     b. *Der Nebel schwebte voller Rußpartikeln.*
          the fog afloat.in.air full.of soot.particles
          'The fog was [lingering] full of soot particles.'

It appears to be the case that examples with these two verbs are clearly degraded if no surface or no clear inside of the supporting object is construable. The bodies in (6a) are at the surface of the water. Likewise, the pieces of wood in (6b) are at the surface of the water. Similarly, (7a) describes an indoor situation, whereas (7b) is probably degraded if it describes a situation in which the limits of the fog are not discernible (i.e. if the fog is not quantized). Reviewing the examples in (3) through (5) one more time, we may say that all attested examples involve supporting objects with clear surfaces or insides.[9] It appears to be a constant property of the SLA$^+$ to relate to insides or surfaces of supporting objects. In fact, edges of objects that have a non-minimal extension in only one dimension such as canes or branches are a third (rare) kind of neighborhood region of supporting objects that license the SLA$^+$; cf. (8).[10]

---

(8) a. *Die   Hafenkante   sitzt voll mit gestrandeten Passagieren.*

       the   port.edge   sits   full with stranded   passengers

       'The port edge is [sitting] full of stranded passengers.'

    b. [a] *Der Ast   sitzt voller Vögel.*

       the   branch sits   full.of birds

       'The branch is [sitting] full of birds.'

If edges, surfaces and insides license the SLA^+, we may reformulate this by saying that the extensions of delimited objects (that are construed as) having one, two, or three non-minimal dimensions are good supporting objects. Non-delimited abstract or mass terms (unless they refer to kinds as in (3f)) appear to be unattested as partaking in the SLA. The base alternant underlies no such restriction; cf. (9) and (10).

(9) a. *Ballons   schwebten in der Luft.*   (base)

       balloons   floated   in the air

       'Balloons were floating in the air.'

    b.* *Die Luft schwebte voll mit Ballons.* (SLA^+)

       the   air   floated   full with balloons

       int.: 'The air was [floating] full of balloons.'

(10) a. *Viele   noch   unentdeckte Fische   schwimmen   im   Ozean.* (base)

       Many   still   undiscovered fishes   swim   in.the ocean

       'Many still undiscovered fishes swim in the ocean.'

    b.* *Der Ozean schwimmt voll mit noch   unentdeckten Fischen.* (SLA^+)

       the   ocean swims   full with still   undiscovered fishes

       int.: 'The ocean is [swimming] full of still undiscovered fishes.'

In a nutshell, the SLA is fully productive with Kaufmann's stative localizing verbs inasmuch as the supporting object has a clear dimensional profile which allows for singling out insides, surfaces, or edges. Certain issues with *sitzen* 'sit' as discussed in connection with (4) and (5) must await further clarification.

2.2 Location "promotion"

The most obvious syntactic characteristic of the SLA^+, which is invariably noted in the scarce literature, is location "promotion". By using scare quotes around the term *promotion* I would

like to make it clear that I use this term descriptively without subscribing to a movement or a lexical derivation approach. In fact, I will argue for an analysis in Section 4 below which introduces the (locative) landmark subject of the SLA$^+$ by way of a theta head which relates to the argument structure of the localizing verb in a most indirect way. The core of location "promotion" is that the PP of the base alternant corresponds to a subject DP in the SLA$^+$. This is illustrated with two examples from (3), repeated here as (11b) and (12b), which are opposed to their base alternants in (11a) and (12a).

(11) a. *Kartons*   *stehen* ***im***   ***Gang****.*
     cardboard.boxes stand   in.the   hallway
     'There are cardboard boxes standing in the hallway.'

   b. ***Der Gang***   *steht*   *voll* *mit* *Kartons.*
     the   hallway   stands   full   with cardboard.boxes
     'The hallway is [standing] full of cardboard boxes.'

(12) a. *Glasscherben lagen* ***auf*** ***dem*** ***Boden****.*
     broken.glass   lay   on   the   floor
     'There was broken glass lying on the floor.'

   b. ***Der Boden*** *lag*   *voll* *mit* *Glasscherben* […]*.*
     the   floor   lay   full   with broken.glass
     'The floor was [lying] full of broken glass […].'

2.3. Locatum demotion/Non-atomicity of the locatum referent

With location "promotion" being a characteristic of the SLA, the subject locatum of the base alternant can, of course, not be realized as a subject DP in the SLA$^+$. As evinced by the repeated (11) and (12) in (13) and (14) – albeit with different highlighting –, non-base locata surface as complements of *mit*-PPs.

(13) a. ***Kartons***   *stehen* *im*   *Gang.*
     cardboard.boxes stand   in.the   hallway
     'There are cardboard boxes standing in the hallway.'

   b. [a] *Der Gang*   *steht*   *voll* ***mit*** ***Kartons****.*
     the   hallway   stands   full   with cardboard.boxes
     'The hallway is [standing] full of cardboard boxes.'

(14) a. **Glasscherben** *lagen auf dem Boden.*
      broken.glass   lay   on   the   floor
      'There was broken glass lying on the floor.'

   b. ᵃ *Der Boden lag voll* **mit Glasscherben** *[…].*
      the   floor   lay   full   with   broken.glass
      'The floor was [lying] full of broken glass […].'

In fact, there is variability as concerns the licensing of the locatum phrase in the SLA⁺. Two variants of (14b) are provided in (15). (NAQ stands for "Non-Atomic Quantity"; this will be discussed in due course.)

(15) a. *Der Boden lag* **voller** *Glasscherben.*
      the   floor   lay   full.NAQ   broken.glass
      'The floor was [lying] full of broken glass.'

   b. *Der Boden lag* **voll** *Glasscherben.*
      the   floor   lay   full   broken.glass
      'The floor was [lying] full of broken glass.'

The variant in (15a) involves *voll* 'full', which has fused with a quantizing suffix that restricts the following expression to denoting (the property of) a non-atomic entity. This is shown in (16).

(16) *Der Tisch klebte* **voller** ***Zettel/Butter/Unrat/*Handtuch.***
   the   table   glued   full.NAQ   sticky notes/butter/debris/towel
   'The table was [sticking] full of sticky notes/butter/debris/*towel.'

As (16) shows, plural count nominals are fine, just as singular mass nominals and singular nominals with a collective meaning are. Singular nominals describing an atomic entity are deviant. Inasmuch as I interpret the existing literature on the topic correctly, the non-atomicity restriction is stated here for the first time. The same semantic restrictions actually hold for all other variants, too, as shown in (17).

(17) *Der   Tisch   klebte   **voll (mit)/voller**   **Zettel(n)/Butter/Unrat/*Handtuch**.*
     the   table   glued   full   with/full.NAQ   sticky notes/butter/debris/towel
     'The table was [sticking] full of sticky notes/butter/debris/*towel.'

However, *voller* 'full.NAQ' has the additional c-selectional property of disallowing DP complements. Probably its complements are mere NPs.

(16′) *Der   Tisch   klebte   voller   **(*der/*des)** gelber Zettel/Butter/Unrat/*Handtuch.*[11]
     the   table   glued   full.NAQ   the.GEN   yellow sticky notes/butter/debris/towel
     'The table was [sticking] full of (the) sticky notes/butter/debris/*towel.'

As the (indefinite) quantizing is felt to be brought about by the *-er*-ending on *voll* in (16′), the complement of *voller* may neither be a DP nor a classifier phrase; as said a moment ago, I assume they are NPs. I think that the complementation behavior of the *voll* variants, and their inflected shape, in (16) and (16′) hint at a deeper property of the construction under scrutiny. In Sections 4 and 5 I will argue that the inflection on *voll* in cases like (16) and (16′) constitutes the spell-out of functional structure whose features are checked against the *voll* head, which I take to be aspectual in nature.[12] However, for the rest of the descriptive portions of the paper

---

[11] To avoid further clumsiness in the example, I ignore the fact here that, for (16') to have a chance of being grammatical, *gelber* would have to be changed to *gelben* after *der*.

[12] The contrast between *voll* (*mit*) and *voller* in the SLA[+] involves one more component. *Voller* clearly adds use-conditional content to the SLA[+], something that SLA[+]s with *voll* (*mit*) do not indicate conventionally. I cannot go into this here in sufficient detail, but I would like to propose that this expressive content is conventionally present in the English non-base alternant of the *swarm* alternation, too: *The garden is swarming with bees* (Hole & Fraser forthcoming). It operates on top of the holistic effect, it is non-at-issue, and it leads to an obligatory second focus accent: The garden is SWARMing with BEES. I dub this use-conditional content 'scalarity' (Hole 2015, 2017; as opposed to at-issue theme abundance, which is also operative in the *swarm* alternation). A diagnostic is the embeddability under *consider*, which is taken in the literature to necessarily involve speaker evaluation. That's why *Some consider East Jerusalem to be a part of Israel* is good, while *Some consider Burgundy to be a part of France* is not. In a similar vein, broad focus readings of consider complements are only good in the marked *swarm* alternant, wheras *finden* as in (ii) leads to anomaly in the SLA[+] irrespective of the focusing facts; cf. (i) and (ii). (I mimic *consider* by using *finden* 'find' in German.)

(i)   a.   *I consider* [*the garden to be swarming with bees*]F.
           b.   #*I consider* [*bees to be swarming in the garden*]F.
(ii)   a.   *Ich finde, dass der Gang mit Kartons vollsteht.*
                'I consider the hallway to be [standing] full of cardboard boxes.'
           b.   #*Ich finde, dass Kartons im Gang stehen.*
                #'I consider cardboard boxes to be standing in the hallway.'

and up to the point where I develop my proposal for the internal structure of the small clause in the SLA⁺, I will continue to use mostly examples with *mit*-PPs complementing *voll*. It is hoped that this enhances perspicuity for readers without deeper knowledge of German.

Before moving on to the next characteristic property of the SLA⁺, we should take a look at a coercion phenomenon which links the analytic *voll-mit* strings closely to the *voller* variant.

(18) *Das   Zimmer   lag   voll   **mit   dem   Kostüm**.*
      the   room   lay   full   with   the   costume
      'The room was [lying] full of the costume.'

Even though (18) features a singular definite prepositional object, its interpretation in the SLA⁺ is coerced into a collective, or a mass reading. The costume must either encompass several parts, or the costume must be so big that it fills the room the way a mass referent like a huge piece of cloth could. On either coerced reading, *dem Kostüm* is not interpreted as an atomic individual. This shows, then, that the restriction that we observed for singular count nouns like *Handtuch* 'towel' in (16′) with its special *voller* form is active in (18) with its more canonical DP syntax just the same. (In fact, *Handtuch* 'towel' in (16′) may also be coerced into a mass reading, and then the deviance will vanish. However, real-world likelihood for such an eventuality is certainly smaller than for an eventuality as described by (18).) As stated before, a true difference that remains between the two variants is that with *voller* the locatum must be a bare nominal, whereas with *voll mit* there is just a strong preference for bare nominals.

By way of a summary, we may say that the SLA⁺ not only "demotes" the locatum referent to a *mit*-PP (or some variant thereof), but it also restricts locatum referents to non-atomic—i.e. collective, plural, or mass—entities.

2.4 Holistic effect
Given that the SLA⁺ features the adjective *voll* 'full', it may appear trivial to say that this structure carries a holistic meaning in the sense that the location referent must be completely affected by, i.e. be full of, the locatum material. The reason why this observation deserves closer scrutiny is that the holistic meaning carried by *voll* 'full' is arguably identical to (part of)[13] the holistic component of meaning of other better-studied alternations without 'full' words (Michaelis &

---

[13] Cf. fn. 12.

Ruppenhofer 2000: 346-348). (19) and (20) contrast examples from the English (Dynamic) Locative Alternation with the German SLA.

(19) English Dynamic Locative Alternation (Levin 1993)

    a. *They loaded hay **on trucks.***

    b. *They loaded **trucks** with hay.*

(20) German Stative Locative Alternation

    a. *Kartons   stehen im   Gang.*

       cardboard.boxes stand   in.the   hallway

       'There are cardboard boxes standing in the hallway.'

    b. [a] *Der Gang   steht   voll mit Kartons.*

       the   hallway   stands   full with cardboard.boxes

       'The hallway is [standing] full of cardboard boxes.'

The robust intuition for the contrast between (19a) and (19b) has it that each truck of (19b) must have been full after the event described in the sentence, whereas this need not be the case in (19a). I hasten to add that the "fullness" that is implied by (19b) has some contextual leeway attached to it. If our context for (19b) is such that the old trucks can only be loaded with 150 lbs of hay each such that only part of their load floor is actually covered with hay, then this will still count as a case of the trucks being full in the sense of the holistic effect under scrutiny here. The same effect is observed in (20); the hallway must in some sense be full without there being a need for the hallway to be so full that a passage is impossible. As said above, the 'full' implication of the SLA[+] in German does not come as much of a surprise, simply because the word *voll* 'full' is a definitional constituent of its non-base alternant. The reason why I still devote a separate subsection to the holistic effect is that the identity between the implications in (19) and (20) lends support to the idea that the Locative Alternation of English likewise involves a 'full' morpheme in its non-base alternant. To be sure, it must be a silent element, either as a constituent in its own right, or incorporated into some other element.

       There is another important reason why special attention must be paid to *voll* in this structure. I said above that it is an integral part of the SLA[+]. This very morpheme must be used. Synonyms like *gefüllt* 'filled' or *bepackt* 'packed' lead to deviance, as illustrated by (21).

(21) *Der   Gang   steht   voll/*gefüllt/*bepackt mit   Kartons.*
    the   hallway   stands   full/filled/packed   with cardboard.boxes
    'The hallway is [standing] full of cardboard boxes.'

I take this to mean that *voll* is a functional element heading a dedicated functional-adjectival projection of its own. This will become important for the analysis, because this offers a way to deal with a problem that would arise if *voll* 'full' headed a run-of-the-mill lexical projection.

2.5 Reference to substructures

When the pragmatic leeway of the 'full' predicate was discussed a moment ago, an example with load floors of trucks was used. What was full in the discussion of (19a) were load floors, and not complete trucks. Similarly, the hallway of (20b) need not be full in in this sense that it is filled/full all the way up to the ceiling. It is enough if the floor of the hallway is full in the sense of Section 2.4. This may seem like a purely pragmatic effect, but I would like to argue that it is not. That the difference may be substantial can be seen from examples as in (22) and (23).

(22) a. *Der   Turm   hing   voll   mit   Gemälden.*
       the   tower   hung   full   with paintings
       'The tower was [hanging] full of paintings.'
   b. *Der   Turm   war voll   mit   Gemälden.*
       the   tower   was full   with paintings
       'The tower was full of paintings.'
(23) a. *Die   Zitrone steckte voll   mit   Saft.*
       the   lemon   stuck   full   with juice
       'The lemon was [sticking] full of juice.'
   b. *Die   Zitrone war voll   mit   Saft.*
       the   lemon   was full   with juice
       'The lemon was full of juice.'

The a-sentences in (22) and (23) do not entail the b-sentences. What is full in (22a) are probably the walls, but not the complete inside of the tower. The latter is, however, the preferred reading of (22a). What is full in (23a) is the flesh, or the segments of flesh inside the lemon, but not the complete and otherwise unstructured lemon. Again, the latter is the only meaning that (23b)

has. I submit, then, that the 'full' property is not really predicated of the subjects of (22a/b), but really of (proper) substructures of those referents. These substructures can easily be rendered explicit in SLA$^+$ structures; cf. (24).

(24) a. *Der Turm hing (an den Wänden) voll mit Gemälden.*
   the tower hung on the walls full with paintings
   'The tower was [hanging] full of paintings (on its walls).'/'The walls of the tower were full of paintings hanging there.'
   b. *Die Zitrone steckte (innen) voll mit Saft.*
   the lemon stuck inside full with juice
   'The lemon was [sticking] full of juice (inside).'

This is a novel observation, one that was merely foreshadowed in Hole (2013). Another way to render visible the reference to substructures in the SLA$^+$ is the deviance that results if locata from different neighborhood regions are conjoined; cf. (25).

(25) a. [A Halloween nightmare prepared by a maniac; the cloves are outside, the glass splinters are somehow hidden inside:]
   Die Orange steckte voll mit Nelken ($^\#$und Glassplittern).
   the orange stuck full with cloves and glass splinters
   'The orange was [sticking] full of cloves (and glass splinters).'
   b. [The moths are inside, the leeches at the surface:]
   Die Tagesdecke saß voll mit Motten ($^\#$und Egeln).
   the duvet sat full with moths and leeches
   'The duvet was [sitting] full of moths ($^\#$and leeches).'
   c. *Der Kühlschrank klebte voll mit Zetteln ($^{\#/\checkmark}$und verschütteter Sahne).*
   the fridge glued full with sticky notes and spilled cream
   'The fridge was [glued/sticking] full of sticky notes (and spilled cream).'

Oranges may have cloves stuck inside their surfaces for decoration and olfactory purposes, and a maniac may hide glass splinters inside for Halloween. In principle, either state of affairs may be rendered by using the LSA$^+$ with *stecken* 'stick'.However, (25a) with the second conjunct added is deviant. This follows if we assume that there is covert material in (25a) that makes reference to a substructure of the orange—its surface, in this case. This will then be the wrong

substructure for the second conjunct, hence the second conjunct is bad. In (25b), similarly, the moths are inside the filling of the duvet, whereas the leeches are on top of the duvet, or at its surface. (25c), lastly, is deviant if the sticky notes are on the outside of the refrigerator and the cream was spilled inside. It is good if both locata are at the outside (or inside). Note that normal 'full' predications are not subject to such a restriction. This is shown in (26), where no zeugmatic effects are obtained.

(26) a. *Die Orange war voll mit Nelken und Glassplittern.*
        'The orange was full of cloves and glass splinters.'
    b. *Die Tagesdecke war voll mit Motten und Egeln.*
        'The duvet was full of moths and leeches.'
    c. *Der Kühlschrank war voll mit Zetteln und verschütteter Sahne.*
        'The fridge was full of sticky notes and spilled cream.'

This property of the SLA$^+$, viz. that the 'full' property really holds of a substructure or neighborhood regions of subject referents that are often made available through context, will become crucial for the analysis that I will propose in Section 4.

This concludes the survey of descriptive generalizations pertinent to the SLA. In the next section, I will review the proposals from the literature to analyze this alternation, and Section 4 will be devoted to presenting my new analysis.

3. Previous accounts

There are two strands of research dealing with the SLA. Two articles from around 1990 deal with the Dutch SLA (Mulder and Wehrmann 1989; Hoekstra and Mulder 1990). The German SLA was inconclusively discussed by Hole (2013), and Bücking and Buscher (2015) provided the first elaborate account. We will look at the Dutch tradition and Bücking and Buscher (2015) in turn.

3.1 The Dutch tradition

Mulder and Wehrmann (1989: 112) and Hoekstra and Mulder (1990: 21-23) develop a movement account for the SLA in which both the base alternant and SLA$^+$ involve movement of a

small-clause subject to the embedding verbal structure.[14] Crucially, there is no underlying structure which is common to both alternants. (27) depicts their analysis, applied to German examples.

(27) a.   [**NP**_{MATERIAL}   LOC]_{SC}   V   (base)

         [*dass **Kisten**$_i$*   [t$_i$ *im*   *Gang*]   *stehen*].

         that   boxes   in.the   hallway   stand

         'that boxes are standing in the hallway.'

    b.   [**NP**_{LOC}   *voll*   MATERIAL]_{SC}   V   (SLA$^+$)

         [*dass* [*der   Gang*]$_i$ [t$_i$ *voll*   *mit*   *Kisten*]   *steht*].

         that   the   hallway   full   with   boxes   stands

         'that the hallway is [standing] full of boxes.'

In the base alternant in (27a), the material/locatum subject moves out of the small clause to receive/check/value nominative case and become the subject of the entire sentence. In (27b), an analogous movement occurs, however this time the internal structure of the small clause is not projected by the preposition, but rather by the adjective *voll* 'full'. *Voll* takes an internal material/locatum argument and a locative argument. It is this locative that moves out to become the subject of the entire sentence.

     This analysis captures most of the properties and effects that were described in Section 2. Location "promotion" in the SLA$^+$ follows from the fact that the locative is the subject of the small clause in (27b) if one assumes that only subjects can move out of small clauses. Locatum "demotion" is a consequence of the fact that the material/locatum argument stays inside the small clause as the internal argument of *voll* 'full'. The non-atomicity requirement can be made to follow from a selectional restriction that *voll* imposes on its material/locatum argument (even though the Dutch researchers didn't implement this). As said in 2.4 already, the holistic effect is not really an issue of analysis, as it obviously is an entailment of *voll* 'full'.

---

[14] Both articles present the same analysis. However, Hoekstra and Mulder (1990) couch their analysis within a much broader array of existential and locative constructions that are all given similar analyses involving small clauses from which external arguments move out to become the higher subject.

Still, Mulder and Wehrmann's (1989) and Hoekstra and Mulder's (1990) proposal faces serious obstacles. The tenor of the discussion will be that movement is probably not the best way to implement the distance relationship between the matrix subject and the small clause position in the SLA$^+$. First, and this is acknowledged by Mulder and Wehrmann (1989) themselves, it is not entirely clear how the partially parallel subcategorization requirements for the locata/material arguments in both alternants can be derived; consider (28).

(28) a.   [**NP_{MATERIAL}** LOC]_{SC}   V   (base)

           [*dass **Kisten**$_i$*   [t$_i$ *im*   *Gang*]   *stehen/$^\#$liegen*].
           that   boxes   in.the   hallway   stand/lie
           'that boxes are standing/$^\#$lying in the hallway.'

     b.   [**NP_{LOC}**   *voll* MATERIAL]_{SC} V   (SLA$^+$)

           [*dass* [***der Gang***]$_i$ [t$_i$ *voll* *mit* *Kisten*]   *steht/$^\#$liegt.*
           that the   hallway   full   with boxes   stands/lies
           'that the hallway is [standing/$^\#$lying] full of boxes.'

Standing requires a dominant, or non-minimal, vertical axis. Lying requires a dominant horizontal axis of the locatum referent (Lang 2001). As boxes have no dominant horizontal axis, the variants with *liegen* 'lie' in (28) are infelicitous. At least in the case of (28b), it is clear that *Kisten* 'boxes' and the verbs of posture are never in a local configuration in which such subcategorization requirements could be checked. Mulder and Wehrmann (1989: 114) are well aware of this problem of non-locality. In response to this challenge they submit that one "can assume that in these cases selectional requirements are imposed on the relation between the verb and the [small clause] as a whole, irrespective of the [small-clause-]internal order of MAT[ERIAL] and LOC[ATIVE]." Needless to say, this is not fully satisfactory, as a problem of non-locality is simply denied. My own account to be presented in section 4 will solve an analogous problem in the pragmatics, thereby denying the grammatical nature of the selctional restriction at issue here. (Note the use of the hash mark in (28b).)

    Second, and this is something that the authors do not discuss, there are complications arising from the theta criterion. The small-clause subject positions in (28a) and (28b) are theta-marked by *in/im* 'in' and *voll* 'full', respectively. In the case of (28a), though, it is quite obvious

that the position into which *Kisten* moves is likewise a theta position, at least on the authors'
account. This is so because *stehen* 'stand' has a subject theta role to be dealt with, and the
authors are silent about this. This would, then, be a non-standard case of A-movement, because
the theta criterion is not abided by. A type of movement which leads to conjoined theta entail-
ments (or presuppositions) picked up in different positions has been argued to exist (cf., among
many others, Hornstein 2000, or Lee-Schoenfeld 2006 for German possessor datives, for in-
stance), but it is certainly not undisputed (cf. Hole 2012, 2014 for arguments against movement
analyses of German possessor datives).

The argument just reviewed concerned the subject of the base alternant. The argument
against the Dutch tradition to be developed now deals with the subject argument of the SLA[+].
It rests on the empirical observation made in Section 2.5. It was argued there that the SLA[+]
invariably involves reference to a substructure of the location argument. The data from (24)
rendering two such substructures explicit are repeated here as (29).

(29) a. *Der Turm hing (an den Wänden) voll mit Gemälden.*
        the tower hung on the walls full with paintings
        'The tower was [hanging] full of paintings (on the walls).'/'The walls of the tower
        were full of paintings hanging there.'
     b. *Die Zitrone steckte (innen) voll mit Saft.*
        the lemon stuck inside full with juice
        'The lemon was [sticking] full of juice (inside).'

The parenthesized locative expressions of (29) will be excellent candidates to merge as the
NP$_{LOC}$ arguments that Mulder and Wehrmann (1989) and Hoekstra and Mulder (1990) assume
in the small clauses of the SLA[+]. This is precisely the line of implementation that I will propose
in Section 4, and it will be couched in an analysis in which a variable in those locative terms
gets bound by the higher subjects. As a consequence, the resulting embedded structure will be
a kind of aspectual phrase with a binding (or control) relation that bridges the distance between
the matrix subject and the pronominal element in the expression referring to the substructure of
the subject referent inside the FullP. Like this, the problems that arose from the Dutch move-
ment analyses (mostly theta criterion violations) will be avoided.

3.2 Bücking and Buscher (2015)

3.2.1 Type of analysis and syntactic assumptions

Bücking and Buscher (2015) develop a lexicalist type coercion analysis in Asher's (2011) type composition logic framework. The analysis is surface-oriented and shifts the burden that empty elements or movements carry in the Dutch syntax tradition to a rich lexicon with presuppositional and selectional adjustments which are triggered as needed in the course of composition. The syntax assumed by the authors can be summarized as in (30).

(30) ... *dass*   [*der*   *Turm* [[*voll*   [*mit*   *Gemälden*]]   *hing*]].
       that   the   tower   full   with   paintings   hung
   '…that the tower was [hanging] full of paintings.'

Voll selects a material argument (*mit Gemälden* 'with paintings'), and a container argument (*der Turm* 'the tower'). However, saturation of the second argument is protracted until after the verb has been merged. Abstracting away from its coarse-grainedness, this syntax is probably uncontroversial. It is, for instance, fully compatible with the surface analysis of Mulder & Wehrmann (1989) and Hoekstra & Mulder (1990) after movement.

3.2.2 Semantics

In (31)-(34), I provide a semantic derivation of Bücking & Buscher's implementation. It makes use of the Heim & Kratzer (1998) format. (For the uninitiated, Bücking & Buscher's notation in the tradition of Asher (2011) is very difficult to see through. That's why I adjust it here. For the time being, I ignore the fact that, for Bücking & Buscher, being full is a Kimian state; more on this below.[15])

Bücking & Buscher's (2015) derivation, translated into a notation à la Heim & Kratzer (1998)

(31) ⟦*hängen*⟧ 'hang' =

λx_e : x is a locatum. λs_s : s is a Davidsonian state . $\exists y$: y is a location [hang(y)(x)(s)=1]

type: $\langle e, \langle s, t \rangle \rangle$

---

[15] Note that, in Asher's (2011) framework, semantic domain restrictions (the portions between the colons and the full stops in (31)-(33) are checked after the interpretive interface. This is highly plausible, but not easily expressed in Heim & Kratzer's (1998) notation, simply because both morphosyntactic domain restrictions (which must be pre-interpretive) and semantic ones are written between colons and full stops, thus aborting derivations even if it is only a semantic restriction that is not adhered to.

(32) ⟦*voll mit Gemälden*⟧ 'full of paintings' =

$\lambda f_{\langle e,\langle s,t\rangle\rangle}$. λz_e : z is a container . λs . $\exists u$ [f(u)(s)=1 & full-of(u)(z)(s)=1 & u are paintings]

type: $\langle\langle e,\langle s,t\rangle\rangle,\langle e,\langle s,t\rangle\rangle$

(33) ⟦*voll mit Gemälden*⟧(⟦*hängen*⟧) =

λz_e : z is a container . λs . $\exists y$: y is a location $\exists u$ [hang(y)(u)(s)=1 & full-of(u)(z)(s)=1 & u are paintings]

type: $\langle e,t\rangle$

Voll 'full' with its saturated material/locatum argument *mit Gemälden* 'with paintings' in (30) selects the verb *hängen* and an individual argument, a container referent. In this construction, a suitably adjusted variant of the verb *stehen* 'stand' has its locatum argument existentially bound already in the lexicon. After it has been taken as argument of ⟦*voll mit Gemälden*⟧, the location argument can be added; cf. (34).

(34) ⟦*voll mit Gemälden hängen*⟧(⟦*der Turm*⟧) =

$\lambda s.\exists y$: y is a location $\exists u$[hang(y)(u)(s)=1 & full-of(u)(the tower)(s)=1 & y are paintings]

Voll is the functional core of this analysis. It brings with it the argument slots for its complement PP, the one for *hängen* and the one for the subject location argument. Like this the semantic compatibility between the verb denotation and the locatum, as well as the container presupposition of the subject can easily be captured. A rather high type for *voll* buys this: $\langle\langle s,t\rangle,\langle\langle e,\langle s,t\rangle\rangle,\langle e,\langle s,t\rangle\rangle\rangle\rangle$. This analysis has the effect that the SLA$^+$ has basically the same meaning as if a copula were used: 'There is a state s of the tower being full of paintings, and s is a state of something hanging somewhere'.

3.2.3 Two problems with Bücking & Buscher's analysis

The generality and restrictiveness of Bücking and Buscher's (2015) proposal is difficult to pin down, as no other related constructions like the *spray/load* alternations, or the *swarm* alternation, are discussed side by side with the SLA$^+$. What can be said in favour of it is that Asher's (2011) spirit is well preserved in the authors' implementation. However, I see two major problems with the analysis. The first issue concerns the analysis of *voll* 'full' states as Kimian states. Frankly speaking, the claim that a figure/ground predicate like *voll* 'full' should describe a non-localizable state strikes me as utterly counter-intuitive. Why should a state that has something

filling something else completely not be localizable? What is more, the data in (35) shows beyond doubt that *voll* predications are localizable and must, hence, be Davidsonian states.

(35) a. *Jede Jacke war (an den Ärmeln) voll mit Fusseln.*
     each jacket was at the sleeves full with lint
     'Each jacket had its sleeves full of lint.' (lit.: 'The jacket was full of lint on its sleeves.')

   b. *Kein Flur war (am Eingang) voll mit Unrat.*
     no hallway was at.the entrance full with debris
     'No hallway was full of debris at the entrance door.'

The intuition is clear that the parenthesized PPs localize the states of being full of lint and debris, respectively, and not the lint or the debris alone. The PPs are event-internal locative modifiers in Maienborn's (2001) terminology, and as such they can only occur as modifiers of Davidsonian states. What is more, they have an implicit bound variable bound by the subject DPs. The bridging definites *an den Ärmeln* 'on its sleeves' and *am Eingang* 'at its entrance' must be interpreted as the sleeves of the jackets in the domain of quantification, and as the entrance doors of the halls in the domain of quantification. The availability of this interpretation requires c-command, because variable binding requires c-command. This will mean, then, that it is impossible to analyze the parenthesized constituents in (35) as frame-setters in the sense of Krifka & Musan (2012), or as frame-setting modifiers in the sense of Maienborn (2001), a move that one might consider to defend the Kimian statehood of *voll* states.[16] I return to bridging definites with obligatorily bound variables in subsection 5.3.

     Consequently, the evidence that Bücking and Buscher (2015: 96) adduce in favor of Kimian statehood for *voll* states as embedded in the SLA⁺ does, in my opinion, not hold up to closer scrutiny either; consider (36). (Judgments are Bücking and Buschers', but I changed the tense in the examples from present tense to preterite.)

(36) a. *Ich sah Fahrräder im Keller stehen.*
     I saw bicycles in.the basement stand
     'I could see bicycles standing in the basement.'

   b.* *Ich sah Fahrräder im Keller sein.*

---

[16] An anonymous reviewer proposed this line of argumentation.

	I	saw	bicycles	in.the	basement	be

'I could see bicycles be in the basement.'

c.^{??} *Ich*   *sah*   *den*   *Keller*   *voll*   *mit*   *Fahrrädern*   *stehen.*

	I	saw	the	basement	full	with	bicycles	stand

'I saw that that the basement was [standing] full of bicycles.'

(36a) is good, because standing is a Davidsonian state, which may be embedded under a verb of perception, because it can be localized. (36b) is degraded, and the reason that the authors give is that being inside the basement is a Kimian, non-localizable, state (sic!). (36c) is said to be intermediate in acceptability, and the authors claim that this is due to the fact that the reported event has mixed Davidsonian/Kimian properties. (Honestly speaking, Bücking & Buscher's 2015 text under their (17) is so complicated that I fail to fully understand it.)

       I would like to propose different judgements and different reasons for degraded judgments in (36). (36b) is bad because it competes with the less prolix (37).

(37) *Ich sah*   *Fahrräder*   *im*   *Keller.*

	I	saw	bicycles	in.the	basement

'I could see bicycles in the basement.'

I would thus like to argue that the preposition *in* comes with a Davidsonian state argument, and not with a Kimian state argument. (36c), finally, is impeccable if it is embedded in a discourse as in (38).

(38)   [I came home yesterday, and I noticed immediately that something was different. The front door was open. I entered the hall, and I saw mud and soil on the floor, obviously stemming from dirty bicycle tires. I followed the tracks down into the basement, and…]

…*ich*   *sah*   *den*   *Keller*   *voll*   *mit*   *Fahrrädern*   *stehen.*

	I	saw	the	basement	full	with	bicycles	stand

'…I saw that the basement was [standing] full of bicycles.'

In a way, these problems are not a real threat for Bücking and Buscher's (2015) proposal. If the criticism just stated is justified, the authors could simply say that no coercion is needed in the end and that, on this assumption, the Davidsonian states of standing in (36a)/(38), and the one

of hanging as in (30), simply embed other Davidsonian states of being full of bicycles, or paintings. This move would simplify their analysis to a considerable extent.

There is, however, another cluster of properties that will probably require further adjustments. In Section 2.5, it was argued that the external argument referent of *voll* 'full' in the SLA$^+$ cannot be the same as the subject referent of the whole construction. The crucial data is summarized in (39).

(39) a. *Der Turm hing voll mit Gemälden.*
 the tower hung full with paintings
 'The tower was [hanging] full of paintings.'

 --/--> *Der Turm war voll mit Gemälden.* 'The tower was full of paintings.'
 b. *Die Zitrone steckte voll mit Saft.*
 the lemon stuck full with juice
 'The lemon was [sticking] full of juice.'

 --/--> *Die Zitrone war voll mit Saft.* 'The lemon was full of juice.'

(39a) may be true in a scenario in which a large tower used for exhibitions has not a single thing standing on its floor, but its walls are filled with paintings all over. Put differently, only a substructure of the tower is full of paintings. Therefore, the negated entailment stated in the last line of (39a) holds. In a similar vein, in a scenario in which a lemon was bursting with juice as in (39b), it is not true to conclude that the lemon is full of juice. Only a suitable substructure is, maybe its pulp, or the individual sections of its flesh. It follows from Bücking and Buscher's (2015) analysis, though, that the negated entailments of (39) should hold. As, on their account, the subject of the SLA$^+$ is fed into composition as the second argument of *voll* 'full' after the main verb has been merged to contribute its posture or configuration entailments, there is no way around this conclusion.

Therefore, one may probably say that Bücking and Buscher's (2015) proposal does not do full empirical justice to the facts that constrain the use of the SLA$^+$ and that it ultimately does not illustrate the kind of type coercion rendered possible by Asher's (2011) flexible type logic calculus.

4. A proposal in terms of an aspectual Full head, functional glue and Theta-Induced Binding

In this section, I will present an account of the SLA$^+$ which replaces the movement account of the Dutch tradition with a binding account. I am not concerned with the base alternant in this article.[17] My proposal forms part of a larger endeavor to establish clause-level binding as induced by verbal functional heads, or theta heads (Kratzer 2009; Hole 2012, 2014). This context will be reviewed in Section 5.

The properties of the SLA$^+$ that characterize it vis-à-vis the base alternant ought to follow from the account. They are repeated in (40) and exemplified by (41) for convenience.

(40) a.   verb class restriction: stative localizing verbs relating to a (solid) supporting object

   b.   location "promotion"

   c.   locatum "demotion"

   d.   non-atomicity of the locatum referent

   e.   holistic effect

   f.   reference to substructures

(41) *dass   der   Turm   (an   den   Wänden)   voll   mit   Gemälden   hing.*
   that   the   tower   on   the   walls   full   with   paintings   hung
   'The tower was [hanging] full of paintings (on its walls).'/'The walls of the tower were full of paintings hanging there.'
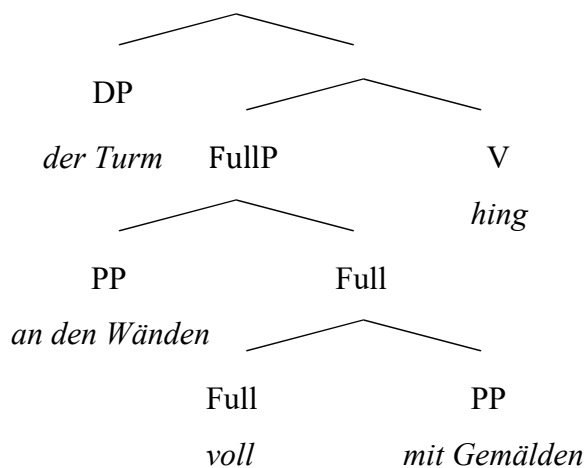
The syntax I assume is basically the one of the previous proposals, with two important exceptions. Neither do I assume movement of the locatum DP out of the *voll* 'full' predication as Mulder and Wehrmann (1989) and Hoekstra and Mulder (1990), nor do I assume that the saturation of the subject argument of the *voll* 'full' predication is postponed until the higher subject is merged, as Bücking and Buscher (2015) do. However, on my account the specifier of the FullP hosts a PP (a PP subject, so to speak), not a DP. It could not be otherwise, as the nonfinite FullP cannot provide the "subject" of the FullP with case. For this reason, the most general locative preposition *an* is required here.[18] This yields the preliminary structure in (42) for (41).

---

[17] I would like to note, however, that I do not assume the base alternant and the SLA$^+$ to have the same underlying structure. (An anonymous reviewer made the assumption that I defend underlying identity, which I don't.) I assume that the base alternant receives straightforward analyses in competing frameworks. I assume furthermore that the verb and the locative PP form a constituent in the base alternant before further structure above the VP licenses the locatum argument.

[18] In the semantics, I will assume the PP to be of type e in this case.

(42)

```
            ┌──────────┴──────────┐
           DP            ┌─────────┴─────────┐
        der Turm       FullP                 V
                    ┌────┴────┐              hing
                   PP        Full
              an den Wänden ┌──┴──┐
                          Full    PP
                          voll  mit Gemälden
```

(preliminary)

Just as in previous proposals, *voll* 'full' selects the material/locatum DP as its first argument.[19]
Its second argument is the PP mentioned a moment ago. I take the FullP to be a functional
(aspectual) projection; recall the generalization drawn from (21), repeated here as (43).

(43) *Der   Gang   steht   voll/*gefüllt/*bepackt   mit   Kartons.*
    the   hallway   stands   full/filled/packed   with cardboard.boxes
    'The hallway is [standing] full of cardboard boxes.'

---

[19] It would probably be more adequate to project the whole FullP in (42) in a right-headed fashion, as German is OV and the
unmarked word order is as in (i).

(i)   *…dass   der   Turm   an   den   Wänden mit   Gemälden   voll-hing.*
              that   the   hall   on   the   walls   with   paintings   full-hung
        '…that the hall was [hanging] full of paintings on its walls.'

I use the structure with the locally extraposed first argument of *voll* throughout the article to discourage analyses which take at
face value the orthographic tradition of univerbation for *vollhängen* '(lit.) hang full of'. The structures in the main text show
beyond doubt that the univerbation under adjacency, if linguistically relevant at all, is a superficial phenomenon. Topicalization
structures as in (ii) corroborate this view.

(ii)   *Voll   hing   nur   der   Flur   mit   Gemälden,   nicht   das   Wohnzimmer.*
        full   hung   only   the   hallway with   paintings   not   the   living-room
   'It was only the hallway that was [hanging] full of paintings, and not the living-room.'

In (ii), *voll* 'full' alone occupies the *Vorfeld* position, thereby demonstrating beyond doubt that it does not form a compound
together with the inflected verb *hing* 'hung' in its V2 position.

The fact that no near-synonymous words may be used instead of *voll* in the SLA[+] speaks in favor of a functional head analysis. What is more, its semantics is, metaphorically speaking, aspectual, though in the locative domain. Its truth-conditions entail that the inside, surface or edge at hand is homogeneously filled with the locatum material (*modulo* contextual and pragmatic leeway). This is very much akin to the aspectual homogeneity of durative aspect. Hence I assume that we are dealing with a small clause that has the size of an Outer Aspect phrase. As this is a category which is smaller than TP, no subject case can be taken care of. Its specifier *must* be a PP, whose head provides the substructure location argument with case.[20]

In the Dutch tradition, *der Turm* would merge as the subject of the FullP first, and would then move up to the higher inflectional structure to receive, or otherwise deal with, nominative case (recall that the Dutch tradition makes no reference to substructure expressions such as *an den Wänden* 'on its walls'). In (42), the location DP *der Turm* 'the tower' has not moved at all, and the structure does not yet encompass the functional structure which licenses it. It certainly cannot be theta-marked by *hing* 'hung', because this verb would select a locatum as its DP argument in the base variant. Its nominative case will, just as in the Dutch tradition, be dealt with in the inflectional system of the clause. At the same time, something has to be said about the locative PP that would normally be the first argument of *hängen* 'hang' in the base alternant (*an der Wand hängen* 'hang on the wall').

(44) fixes this problem by assuming an empty functional head F which takes *hing* as its complement, and the FullP as its specifier (a functional glue morpheme in the sense of von Fintel and Matthewson 2008). To comply with standard assumptions about complements, I assume that the verb actually expands to a maximal projection (VP in (44)).

(44)
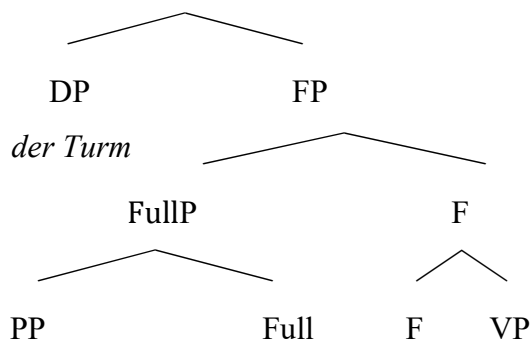
---

an den Wänden		*hing*
Full	PP	
voll	*mit Gemälden*	

<div align="center">(preliminary)</div>
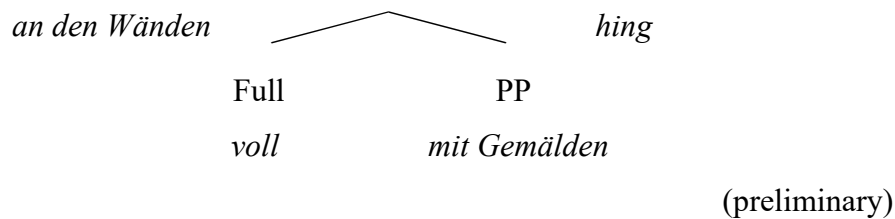
This head will existentially bind the two individual argument positions of the verb stem (the location argument and the locatum argument), as well as the stative event argument; see the appendix and (46) below for details. This is simlar to Bücking and Buscher's (2015) account, as these authors also have the lexical verb enter the derivation with its locatum variable existentially bound. I follow the general generative trend here to assume constituents that function like the type shifting rules of older stages of the theory (Kratzer 2005: 196). The verb which has been "semantically truncated" by F combines with the FullP in Spec,FP. The semantic link between the hanging predicate and the denotation of the FullP is stative causation (Kratzer 2000): the hanging of something somewhere causes the walls to be full of paintings (stative interpretation).[21]

By having the functional head F project the structure which ultimately glues together the main verb and the FullP in (44), the proposal made here faces the same problem that Mulder & Wehrmann (1989) and Hoekstra & Mulder (1990) first stated twenty years ago. The Dutch authors assume some ad hoc device that allows the selectional requirement to somehow percolate up the tree. In contradistinction to this, I prefer the idea that this problem of subcategorization is in fact post-syntactic (cf. the hash mark in (28b) repeated as (45) here for convenience; no ungrammaticality ensues).

(45) [*dass* [*der Gang*]$_i$ [t$_i$ *voll mit Kisten*] *steht/$^{\#}$liegt.*
      that the hallway   full with boxes   stands/lies
      'that the hallway is [standing/$^{\#}$lying] full of boxes.'

---

[21] Kratzer uses the example in (i) to illustrate stative causation.

(i)   Because of congenital malformation, tissue obstructed the blood vessel.

(i) the causal adverbial present restricts its interpretation to one involving stative causation. The tissue being where it is causes the (permanent) obstruction. I submit that the relationship between the hanging state and the full state in our example is stative in this sense too, and that this generalizes to all SLA^{+} structures.

I would like to thank Maribel Romero (p.c.) to have proposed stative causation as the "missing link" in my analysis.

(46) provides the denotation of F; cf. the sample calculation in the appendix for details.

(46) a. $[\![F]\!]=\lambda f_{\langle e,\langle e,\langle s,t\rangle\rangle\rangle} . [\lambda g_{\langle s,t\rangle} . \lambda s . \exists x\exists y\exists s' [f(x)(y)(s') \& s' \text{ CAUSE}_{\text{STATIVE}} s \& g(s)=1]$,

defined iff g is the denotation of a FullP

b. f will be saturated by $[\![hing]\!]$

c. g will be saturated by $[\![an den Wänden voll mit Gemälden]\!]$

(47) introduces a theta head which semantically licenses the DP *der Turm* 'the tower'. It is the Landmark theta head of Hole (2012, 2014).[22] It selects a state-to-be-located as its complement and merges an individual DP as its specifier. The semantics of the landmark head maps the DP referent in its specifier to its neighborhood regions and entails that the complement state of the walls being full of paintings hanging there holds within those neighborhood regions (again, see the appendix and Hole 2014: Ch. 11 for compositional detail).
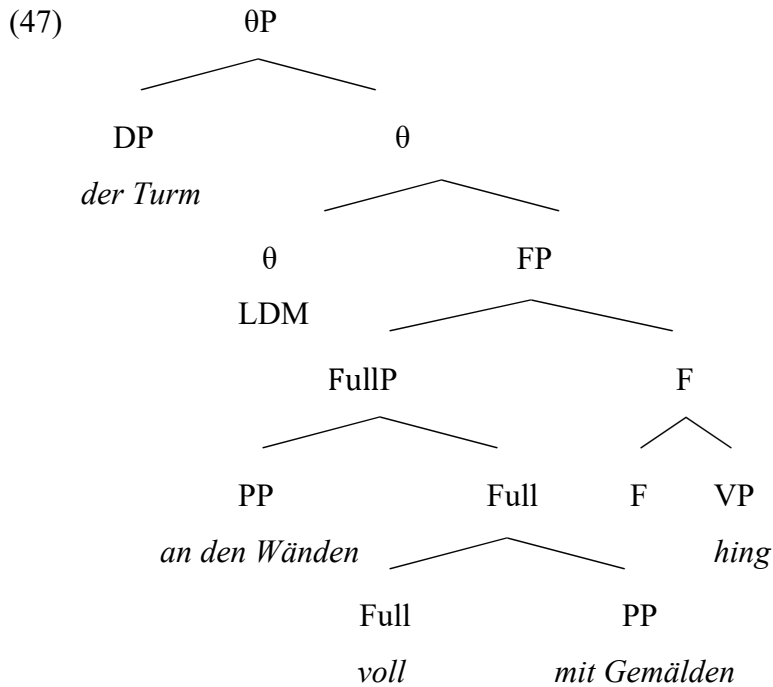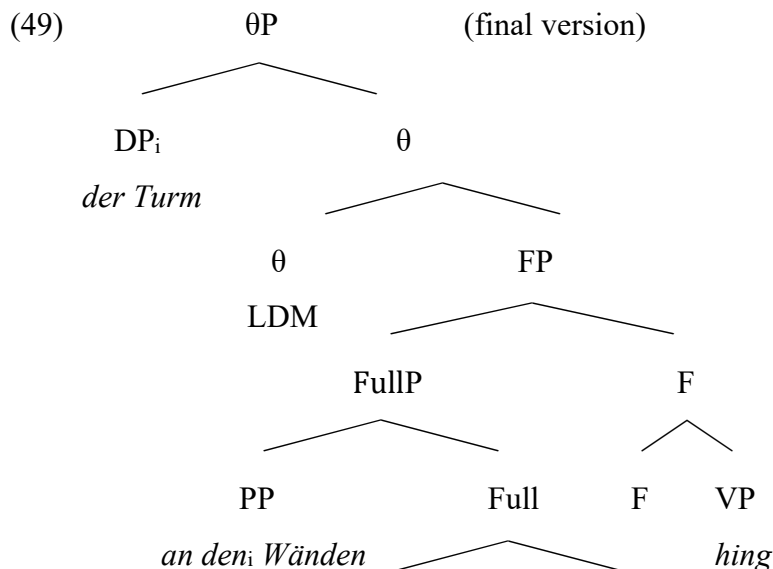
(47)

(preliminary)

The Landmark θ-head LDM as proposed by Hole (2012, 2014) comes with a binding require-ment. Stated in terms of (47), this means that there must be co-indexation in the syntax as used in (49) for the first time. In section 5 I will review Hole's (2012, 2014) notion of Theta-Induced Binding in the spirit of Kratzer (2009) and implement the pertinent variable binding along these lines. No matter if the bridging definite or the overtly possessive structure in (48) is used, the meaning is always the same. The walls must be the walls of the tower, thereby instantiating variable binding.

(48) *dass   der   Turm   (an   seinen/den   Wänden)   voll   mit   Gemälden   hing.*
     that   the   tower   on   its/the   walls   full   with   paintings   hung
     'The tower was [hanging] full of paintings (on its walls).'/'The walls of the tower were full of paintings hanging there.'

This binding relationship is represented syntactically in (49), alongside a refinement relating to the complement of *voll* which again takes up the issue of the quantizing properties of the *voll(er)* complement and the functional endowment of the inflected *voll* variant *voller* (cf. 2.3).[23] I choose this fused form here, because I consider it the analytically more interesting form than the run-of-the-mill case *voll mit Gemälden*.

(49)   θP   (final version)

       DP$_i$ θ
      der Turm

         θ   FP
       LDM

          FullP   F

      PP   Full   F   VP
    an den$_i$ Wänden   *hing*

---

[23] Cf. Section 5 and the appendix for compositional binding details in the spirit of Kratzer (2009) and Hole (2012, 2014). The theory of clause-level binding defended there has predicate abstraction originate in the theta head (sic!). In section 5, I also discuss how the bound variable in *an den Wänden* gets "found" by Predicate Abstraction.

Full∘D∘Num∘Cl	NP
voller	*Gemälde*

The intuition behind the proposed analysis for *voller* is that this word form combines the meaning of *voll* with the indefinite non-atomic referential status information carried by the D-Num-Cl cascade of its complement DP (cf. 2.3), leaving only room for an NP constituent as the complement of the multiply fused head category *voller*.[24] As stated in Section 2.3, there is a difference in the range of contexts in which the *voller* + NP variant may be used if compared to the contexts in which *voll* + PP constituents are good. By and large they are the same, but if the material/locatum referent is definite, only the *voll* + PP construal is licit; cf. (50) again.

(50) a. *Der   Tisch   klebte   voller   **(*der/*des)*** *Zettel/Butter/Unrat/*Handtuch.*
       the   table   glued   full.NAQ   the.GEN   sticky notes/butter/debris/towel
       'The fridge was [sticking] full of sticky notes/butter/debris/*towel.'

    b. *Der   Tisch   klebte   voll   mit   den   Zetteln/   der   Butter.*
       the   table   glued   full.NAQ   with   the   sticky notes/   the   butter
       'The fridge was [sticking] full of the sticky notes/the butter.'

I consider this behavior to be evidence to the effect that the D head which is fused in *voller* is [-definite]; i.e., even in the absence of definite determiners in (50a), which are probably ungrammatical because only an NP category can complement *voller*, *voller* is restricted to an indefinite material/locatum semantics. Moreover, I take it that Num in *voller* dominates [-singular], and that Cl in *voller* dominates [-atomic referent]. While the Num and Cl specifications appear to be the same for *voll* + PP construals and for *voller* + NP construals, *voll* + PP construals allow for variance concerning the definiteness feature (cf. (50b)).

    In Section 2.3 above, it was stated that the quantizing properties of *voller* hint at interaction with an aspectual head. Elaborating on this idea, we may now assume that the FullP of (49) is actually an aspectual head. Like this, the small clause as part of the SLA[+] will be an instance of Stowell's (1991) and den Dikken's (2008) non-restructuring small clauses, and the substructure PP will be the "subject" of this structure.

---

[24] The semantics can easily take care of such fused heads by way of function composition; cf. the appendix. Syntactically, this fused element may well have come into being by way of movement. Cf. Cheng & Sybesma (1999) as proponents of classifier heads Cl for Chinese, and Ott (2011) as an analysis that assumes a classifier projection for German, too.

As mentioned in several places, the compositional semantics of the SLA$^+$ is developed in the appendix. At the present point, I just want to give the reader an impression of what the truth-conditions of a structure as in (49) look like and how they map to the elements in it. (51) provides two paraphrases. (51a) is the general schema of interpretation, and (51b) applies it to the case at hand.

(51) a. 'The referent x referred to by DP is the landmark of a V-state which statively causes x's contextually identified or overtly expressed substructure to be full of non-atomic NP material.'

b. 'The tower x is the landmark of a state of something hanging somewhere which statively causes x's walls to be full of paintings.'

Table 1 summarizes the functions that the empty elements that I assume fulfill in the syntax and in the semantics.

	Syntax	Semantics
F	(i) head of FP (ii) takes VP as complement (iii) hosts FullP in its specifier	(i) existential closure of the individual arguments and the state argument of the stative localizing verbs (ii) stative causation conjunct
LDM	(i) head of Landmark Phrase (ii) takes FP as complement (iii) hosts Landmark in its specifier (iv) introduces a bare numerical index underneath (cf. Section 5)	(i) Landmark conjunct (entails the state denoted by its complement to hold within the Landmark referent's neighborhood regions) (ii) triggers Predicate Abstraction (cf. Section 5)
Cl (not really empty, but fused in *voller*)	(i) head of Classifier Phrase	(i) presupposes the locatum argument to be non-atomic

(ii) takes NP as complement

Table 1: Major functions of empty elements in the analysis of the SLA$^+$

My analysis has the following advantages over previous proposals. First, it tackles for the first time the hitherto overlooked obligatory reference to substructures of the landmark referent. Like this it avoids the wrong predictions concerning what is entailed to be full that both existing accounts make in this domain. Second, my account identifies for the first time stative causation as the relation holding between the posture state and the state of being full. This seems intuitively just right, and it improves truth-conditions for the SLA$^+$ significantly. Note that Bücking & Buscher (2015) actually propose something like 'There is a state s of something hanging somewhere and s is a state of the tower being full of paintings' as the truth-conditions of a sentence like *Der Turm hing voll mit Gemälden*. No relation other than conjunction is proposed to hold between the two states. This is clearly too weak. The Dutch tradition is silent on the semantics. Third, my account identifies Hole's (2012, 2014) theta-induced "Knight Move Binding" as operative in the SLA$^+$, an empirical and theoretical domain that none of the previous accounts ever identified. (We will see this in much greater detail below: Knight Move Binding targets co-phasal variables on left branches of DPs.[25]) Section 5 will be devoted to demonstrating the surprisingly wide empirical reach of Theta-Induced Knight Move Binding.

This concludes the presentation of the proposal that I make to cover the SLA$^+$. In the ensuing section, I would like to discuss the theoretical significance of this proposal and argue that some of its ingredients can be put to use in a wide variety of alternations.

5. Theoretical significance and generality

5.1. Binding is widespread in argument alternations

As the sample in (52) through (58) shows quite clearly, the binding relationship that features crucially in the above analysis of the SLA$^+$ is a recurrent feature of many argument alternations as, for instance, compiled in Levin (1993). The a/b-examples introduce the alternations, with the b-examples displaying the alternants of interest here, and with indexations as standardly

The underlying metaphor motivating my choice of terminology is the game of chess, where knights move "two squares away horizontally and one square vertically, or two squares vertically and one square horizontally" (https://en.wikipedia.org/wiki/Knight_(chess); last visited 06/02/2019).

used in the syntactic literature. The c-examples provide my analysis of the theta heads that introduce the arguments in their specifiers, or analyses in this vein that have been put forward in recent publications. I will comment on the i-indices following the theta heads after reviewing all cases in (52) through (57) in subsection 5.3. Curly brackets enclose material that, if not overtly present, may always be pronounced *salva veritate* in the form given, or in a slightly more general fashion. I will return to this point shortly, too.

(52) German Stative Locative Alternation

    a. *Kartons   stehen im   Gang.*

       cardboard.boxes stand   in.the hallway

       'There are cardboard boxes standing in the hallway.'

    b. *Der Gang$_i$ steht {am$_{i/*j}$ Boden}   voll mit Kartons.*

       the hallway stands on.the   ground full with cardboard.boxes

       '[The hallway]$_i$ is [standing] full of cardboard boxes {on the/its$_{i/*j}$ floor}.'

    c. Der Gang $\varnothing_{\textbf{Landmark}}$ **i** steht {am$_i$ Boden} voll mit Kartons.[26]

(53) English Locative *have* Alternation (den Dikken 1997)

    a. *There is a nest in the tree.*

    b. [*The tree*]$_i$ *has a nest in it$_{i/*j}$.*

    c. The tree **has$_{\textbf{Landmark}}$** **i** a nest *(in it$_{i/*j}$).

(54) German Landmark *Haben* Structure (Hole 2002)

    a. *Der Arm   ist verbunden.*

       the arm   is bandaged

       'The arm is bandaged.'

    b. *Paul$_i$ hat   den/seinen$_{i/*j}$ Arm verbunden.*

       Paul has   the/his   arm bandaged.

       'Paul has a bandaged arm.'/lit.: 'Paul has the/his arm bandaged.'

    c. Paul **hat$_{\textbf{Landmark}}$** **i** den/seinen$_{i/*j}$ Arm verbunden

---

[26] I use left-headed theta-heads in German structures in this section, even though they are probably right-headed. This is done to ensure readability

(55) English Location Subject Alternation (Levin 1993: 82)

    a. *Five people sleep in each room.*

    b. [*Each room*]$_i$ *sleeps five people* {*in it*$_{i/*j}$}.

    c. Each room ∅$_{Landmark}$ **i** sleeps five people {in it$_{i/*j}$}.

(56) German Locative Alternation with *be-* (Geist & Hole 2016)

    a. *Paula hat Eigelb   auf den Kuchen gestrichen.*

        Paula has egg.yolk$_{ACC}$ on the cake   smeared

        'Paula spread egg yolk on the cake.'

    b. *Paula hat* [*den Kuchen*]$_i$ {*an seiner*$_i$ *Oberfläche*} *mit Eigelb be-strichen.*

        Paula   has the cake$_{ACC}$ at its   surface   with egg.yolk BE-smeared

        'Paula coated [the cake]$_i$ with egg yolk {at its$_{i/*j}$ surface}.'

    c. P. hat [den Kuchen] ∅$_{Landmark}$ **i** {an seiner$_{i/*j}$ Oberfläche}mit Eig. bestrichen.

(57) German Free Dative Alternation (Lee-Schoenfeld 2006, Hole 2006, 2012, 2014)

    a. *Paul ist auf Emils Fuß   getreten.*

        Paul is   on Emil's foot   stepped

        'Paul stepped on Emil's foot.'

    b. *Paul ist Emil*$_i$ *auf den/seinen*$_{i/*j}$ *Fuß   getreten.*

        Paul is   Emil.DAT on the/his   foot   stepped

        'Paul stepped on Emil's foot.'/lit.: 'Paul stepped Emil$_i$ on the/his$_{i/*j}$ foot.'

    c. Paul ist Emil$_{DAT}$ ∅$_{Landmark/Exp}$ **i** auf den/seinen$_{i/*j}$ Fuß getreten

(58) German Predicative Alternation (Geist to appear)

    a. *Leas Beruf   ist Schauspielerin.*

        Lea's profession is   actor

        'Lea's profession is to act.'

    b. *Lea*$_i$ *ist Schauspielerin* {*von* (*ihrem*$_{i/*j}$) *Beruf*   (*her*)}

        Lea is actor   by   her   profession PART

        'Lea is an actor by profession.'

    c. dass Lea ∅$_{SocialIndividual}$ **i** Schauspielerin {von (ihrem$_{i/*j}$) Beruf (her)} ist

(52) illustrates the SLA one more time. The material in curly brackets is, of course, too specific to be applicable in each and every case in which (52b) is used. The hallway could, for instance,

also be full by virtue of cardboard boxes standing on tables all over the hallway. The condition that any such contextually determined location has to fulfill is that it must be a substructure or a neighborhood region (Hole 2014: 251) of the Landmark subject. A more precise, though simultaneously more clumsy, content of the curly brackets in (52b) would, hence, be "{at its contextually determined substructure/neighborhood region}". Probably the potential neighborhood regions are constrained even further to be edges, surfaces and insides; cf. subsection 2.1. They would then coincide with those neighborhood regions that are available with productively formed *be*-structures as exemplified in (56). The English Locative *Have* Alternation as exemplified in (53) likewise introduces a Landmark subject, but this time, for lack of a lexical verb, the theta head lexicalizes as *have* (Den Dikken 1997). Quite similarly, the German alternation illustrated in (54) introduces its Landmark subject by way of *haben* 'have'. What is different than in (53) is that, for many speakers, the subjects of the German Landmark *haben* Structure must be animate or human (*Die Oper hat die Fassade eingerüstet* lit. 'The opera has its façade scaffolded (stative)' receives mixed judgments). (55) again has curly bracket content which is overly specific, as prepositions other than *in* do occur (*The sofa sleeps three people on it*). (56) provides an example of the German Dynamic Locative Alternation with *be-* as recently analyzed by Geist & Hole (2016). Here the Landmark argument ends up as the accusative argument, which binds the possessor of the constructionally restricted surface neighborhood region of the accusative referent. The much-discussed Free Dative Alternation in (57) (a.k.a "possessor raising/ascension" or "external possession"; cf. Lee-Schoenefeld 2016, Bosse 2011, among many others) comes with the feature of dative antecedence of the bound variable in the PP. Moreover, the theta entailments typically combine Landmark and Experiencer components. For more details, see Hole (2012, 2014). It is this construction that I will review in more detail in subsection 4.3. (58), finally, shows a recent application of the general alternation-plus-binding mechanism as proposed here to an antecedent-variable pair where the antecedent denotes the sum of social roles borne by an individual, and the bound variable denotes the bearer of the individual role or social aspect related to in the PP (Geist to appear).

The subsection to follow will present some preliminary reasoning dealing with the question as to why so many argument alternations feature binding relationships. I will then turn to the specific binding implementation chosen here (cf. subsection 4.3).

5.2. Motivation

In my opinion, the very widespread and hitherto mostly overlooked occurrence of binding relationships in argument alternations as reviewed here is a very promising and important research topic that should be explored in much greater detail. On the face of it, nothing in the syntactic apparatus per se calls for these instances of binding. However, one should keep in mind that all the alternations reviewed here, in their non-base alternants and assuming the analyses put forward here, add event structure as a result of adding a theta entailment. Like this, they license an additional argument. Now, by enforcing a binding relationship between these extra arguments and a possessor further down in the structure, the amount of discourse referents to keep track of does not grow on a par with the addition of the extra argument. Typically, there is a part-whole relationship holding between the extra arguments and the possessed or part arguments. Like this, the increase in event structure is not accompanied by a parallel increase in the number of discourse referents, and the cognitive load of dealing with one more participant is kept to a minimum. While this line of argumentation is in need of empirical corroboration—a task that I will not attend to in the present article—I will now turn to the specific binding implementation chosen here (based on Hole 2006, 2012, 2014 and Kratzer 2009). We will see that it directly implements the frequently observed link between the theta licensing of extra arguments and binding.

5.3 Theta-Induced Binding

In a dramatic shift away from previous accounts, Kratzer (2009: 194) presents an implementation of reflexivization in an agent-severed system. The semantic details are not my primary concern in the present article (cf. the appendix and Hole 2012, 2014, though), but Kratzer ties reflexive binding to the agentive Voice head. Binding is triggered by introducing a "reflexive variant" of Voice (technically, the bare index which triggers Predicate Abstraction is inserted right underneath Voice, and this was reflected in the c-lines of (52) through (58)). Hole (2012, 2014) extends this idea, namely that an agentive theta head triggers binding, to the case of Landmark and Experiencer theta heads with Free Datives as in (57b), and he speculates on a much wider domain of application. The present paper has fleshed out empirically this extension by documenting binding relationships triggered by theta heads in a wide array of argument

alternations. This sort of binding triggered by theta heads has very interesting empirical properties: it is strictly clause-bound, and it targets only left branches of more deeply embedded arguments (Hole's "Knight Move Binding"/"Rösslsprungbindung").[27]
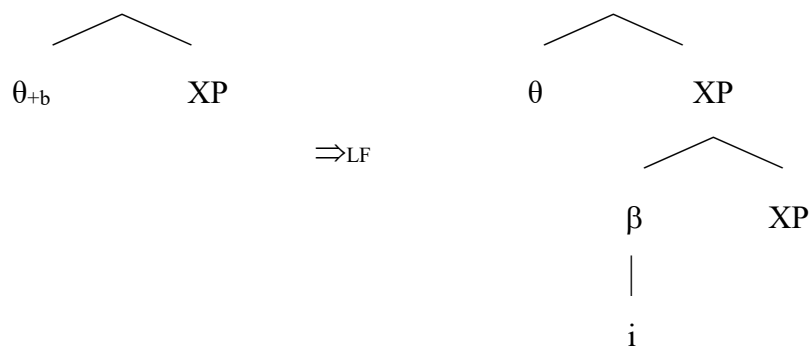
(59a) adduces the index-introducing rule BR-R for reflexivity that Hole (2012, 2014) proposes. Its general format, which abstracts away from a specific theta roles and specific syntactic environments, is given in (59b). (The kind of expansion rule championed here is also found in Büring 2005, but there it inserts the index/binder prefix right underneath DPs, as is also the case in the standard implementations following Heim & Kratzer 1998).

(59) a.   Binder Rule for the Agent-Oriented Reflexive Voice (BR-R)[28]

```
        ╱╲                              ╱╲
  AGENTIVE+b    VP                AGENTIVE      VP
                    ⇒LF                        ╱╲
                                            β       VP
                                            |
                                            i
```
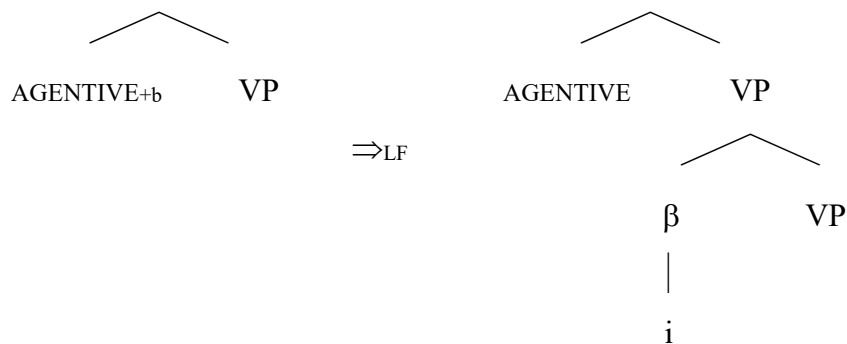
b.   Binder Rule for Theta-Induced Binding (BR-X)

```
        ╱╲                              ╱╲
    θ+b      XP                      θ        XP
                    ⇒LF                        ╱╲
                                            β       XP
                                            |
                                            i
```

---

[27] Note that, for the left branch generalization to go through, *The shelf has a book on it* as in (53) must be analyzed to be *The shelf has a book on its surface/upper side* at the relevant level of representation. An analogous argument must be made for *The room sleeps five people in it*. Cf. Geist & Hole (2016: 280) for an explicit proposal in this vein. Note, moreover, that recent implementations of reflexivity (Reuland 2011, Hole 2014) will have reflexive pronouns sit at left edges of agreement DPs, too.

[28] Given the recent development to assume both Voice and little v (as denoting the dynamic CAUSE predicate), VP in (59a) should more aptly be labeled 'CauseP (Kratzer 2005).

The Voice head AGENTIVE in (59a) comes with a feature that triggers the rule of index insertion. The index then triggers Predicate Abstraction (Heim & Kratzer 1998) and, eventually, binding. (59b) abstracts away from the agentive Voice head and generalizes the rule to all theta heads. If they come with the [+b] feature, the rule applies. In order not to apply vacuously, the VP of (59a) and the XP of (59b) must encompass a pronominal element with index i.

To state this quite clearly, I hypothesize BR-X to be the source of all local binding relationships, and that local binding relationships are only triggered by them, thereby taking Kratzer's (2009) view, which was limited to agentive binder configurations, one step further. Its fruitfulness has been demonstrated in a number of studies that were mentioned in the contexts of the alternations in(52)-(57) .

This appears to fly in the face of what one commonly assumes about binding as a distance relationship that is *not* local; cf. the binding into the complex DP island in (60).

(60) [*No reviewer*]$_i$ *later returned to the books they$_i$ had supported so much.*

As is well known, movement cannot escape a complex DP like *the books they had supported so much*, but binding into it is possible. How does this go together with the claim defended here that binding ought to be local? The answer is that there are two kinds of binding: one dependency that can stretch infinitely deep into the c-command domain of the binder, and another dependency that is clause-bound (Cable 2005, Kratzer 2009).

Hole (2012, 2014) describes in some detail two diagnostics in the domain of German Free Datives that single out the obligatorily local kind of binding: the locality of Bound Bridging Definites with Free Datives and the sheer obligatoriness of binding once an extra dative argument is added. Data from Hole (2014a: 147, 2014b) is provided in (61) and (62).

(61) Locality of Bound Bridging Definites
Klara guckte jedem$_i$ so streng [auf **die**$_{i/*j}$ Wurst], dass **der**$_{*i}$ Appetit verschwand.
Klara looked everyone so strictly on the   sausage that the   appetite disappeared
'Klara was looking at everybody's sausage in such a strict way that the appetite went away immediately.'

(62) Obligatory Sloppy Identity
[*Dem Umzugshelfer*]$_i$ *fiel eine Kiste auf den$_i$ Fuß, und dem Hausherrn auch.*
'It happened to the helper that a box fell on his foot, and the same happened to the

landlord.'

✓'The box dropped by the helper fell on the helper's foot, and the box dropped by
the landlord fell on the landlord's foot.'

*'The box dropped by the helper fell on the helper's foot, and the box dropped by
the landlord fell on the helper's foot.'

In (61), the definite *die Wurst* 'the sausage' must be interpreted as *seine Wurst* 'their sausage',
with the possessor variable obligatorily bound by dative *jedem*. In the embedded clause, though,
der Appetit 'the appetite' may not be interpreted as 'their appetite', though the whole content
of the example would appear to support this interpretation. This example demonstrates quite
clearly that the binding into covert possessors of bridging definites is a strictly local phenome-
non. (62) serves to show that free datives invariably trigger binding. The robust sloppy-identity
effect observed in this example makes this come out in a clear way.

If we look at the same kind of examples with overt possessive pronouns, we get the data
in (63) and (64).

(63) Locality of Bound Bridging Definites

Klara guckte jedem$_i$ so streng [auf **seine$_{i/*j}$** Wurst], dass **sein$_{i/j}$** Appetit verschwand.

Klara looked everyone so strictly on the sausage that his appetite disappeared

'Klara was looking at everybody's sausage in such a strict way that their appetite went
away immediately.'

(64) Obligatory Sloppy Identity

[*Dem Umzugshelfer*]$_i$ *fiel eine Kiste auf seinen$_i$ Fuß, und dem Hausherrn auch.*

'It happened to the helper that a box fell on his foot, and the same happened to the
landlord.'

✓'The box dropped by the helper fell on the helper's foot, and the box dropped by
the landlord fell on the landlord's foot.'

*'The box dropped by the helper fell on the helper's foot, and the box dropped by
the landlord fell on the helper's foot.'

The locally bound possessive pronoun in (63) is again obligatorily bound. The one across the
clause boundary may now be bound, but it need not be bound. The interpretive possibilities of

(64) vis-à-vis (62) stay the same. The interested reader is referred to Hole (2012: 218-219) and Hole (2014: chs. 6/7, especially p. 157) for further detail.

This pattern can be made sense of if we assume that Free Datives always trigger a local binding requirement. This binding is triggered by BR-X. Moreover, they can, qua the general CP-crossing binding mechanism described by Cable (2005), bind whatever any other DP may also bind. This binding is instantiated by the optional binding of the embedded possessive pronoun in (63). In German, at least, Bound Bridging Definites as in (61) and (62) are a very good empirical device to probe into BR-X binding. This is so because the bound interpretation is obligatorily triggered in the absence of a possessive pronoun, and this only works locally. In short, forced binding with Bound Bridging Definites hints at Theta-Induced Binding.

In the present subsection I have made a case for binding triggered by theta heads as first devised by Kratzer (2009) and then generalized with the help of BR-X by Hole (2012, 2014a). According to this proposal, all obligatorily clause-level binding is theta-triggered, and only obligatorily clause-level binding is theta-triggered.

6. Conclusions

In this paper, I set out to pursue two goals. First, I aimed to give the hitherto most complete description and analysis of the Stative Locative Alternation in German. Second, I couched this attempt within the larger context of typically overlooked binding dependencies in marked alternants of argument alternations. The most important features of the analysis defended here, features that are of general importance for research into argument alternations, are as follows. (i) Rearrangements of argument structure as found in argument alternations are crucially dependent on theta heads, heads that introduce thematic entailments in the syntax. Like this, they semantically license arguments in positions different from, or altogether unrelated to, verbal lexical entries. Theta heads extend the reach of Kratzer's (1996) Severing Hypothesis from agent arguments to experiencers, landmarks and other relations. (ii) The non-base alternants of many argument alternations involve binding of a possessor/whole variable by the theta-head licensed argument. My technical implementation, inspired by Kratzer (2009), ties this kind of binding to the theta heads. This appears to be empirically justified. I argued that all obligatorily local binding relationships ought to be implemented this way. (iii) Findings of a somewhat more limited scope include (a) the activity of a functional glue morpheme that establishes a stative-causation link between the main verb and the FullP; (b) the postulation of empty 'full' morphemes in Locative Alternations with holistic effects, but without pronounced 'full' words (as

in English); and (c) independent support for Kaufmann's (1995) German verb class of Stative Localizing Verbs.

References

Asher, N. 2011). *Lexical meaning in context: A web of words*. Cambridge: Cambridge University Press.

Bosse, S. J. 2011. *The syntax and semantics of applicative arguments in German and English*. Doctoral dissertation, University of Delaware.

Bücking, S., and F. Buscher. 2015. Stative Locative Alternations as Type Coercion. In *Proceedings of the 32nd West Coast Conference on Formal Linguistics*, 92-102.

Cable, S. 2005. Binding local person pronouns without semantically empty features. *Ms.* University of Massachusetts at Amherst.

Cheng, L. L. S., and R. Sybesma. 1999. Bare and not-so-bare nouns and the structure of NP. *Linguistic Inquiry*, 30(4), 509-542.

Den Dikken, M. 1997. The syntax of possession and the verb have. *Lingua* 3(101), 129-150.

Den Dikken, M. 2008. Small Clauses, Phases, and Phase Extension—The Case of Scope and Object Shift. *Paper presented at the 31st GLOW Colloquium*.

von Fintel, K., and L. Matthewson. 2008. Universals in semantics. *The Linguistic Review* 25(1-2), 139-201.

Geist, L., and D. Hole. 2016. Theta-head binding in the German Locatie Alternation. In: N. Bade, P. Berezovskaya, and A. Schöller (eds.). *Proceedings of Sinn und Bedeutung 20, University of Tübingen, September 2015*, 270-287.

Geist, L. to appear. Predication over aspects of human individuals. *Linguistics*.

Gutzmann, D. 2015. *Use-conditional meaning: Studies in multidimensional semantics*. Oxford: Oxford University Press.

Heim, I., and A. Kratzer. 1998. *Semantics in Generative Grammar*. Oxford: Blackwell.

Hoekstra, T., R. Mulder. 1990. Unergatives as copular verbs; locational and existential predication. *The Linguistic Review*, 7(1), 1-80.

Hole, D. 2002. *Er hat den Arm verbunden* – Valenzreduktion und Argumentvermehrung im Haben-Konfigurativ' In: Japanische Gesellschaft für Germanistik (eds.). *Grammatische Kategorien aus sprachhistorischer und typologischer Perspektive. Akten des 29. Linguisten-Seminars (Kyoto 2001)*, 167-186. München: Iudicium.

Hole, D. 2006. Extra argumentality—affectees, landmarks, and voice. *Linguistics* 44(2), 383-424.

Hole, D. 2012. German free datives and knight move binding. *Local Modelling of non-local dependencies in syntax*, ed. A. Alexiadou, T. Kiss, and G. Müller, 213-246. Tübingen: Niemeyer.

Hole, D. 2013. Der Himmel hängt voller Geigen—The German Stative Locative Alternation. *Paper presented at the 35th Annual Meeting of the Deutsche Gesellschaft für Sprachwissenschaft/University of Potsdam.*.

Hole, D. 2014. *Dativ, Bindung und Diathese*. Berlin/Boston: de Gruyter.

Hole, D. 2016. Semantic markedness as a predictor of non-literal uses in antonym/co-hyponym pairs—a pilot. *Poster presented at the workshop "New empirical and theoretical perspectives on the literal/non-literal meaning divide"/Oct 10-11 2016*, University of Stuttgart.

Hole, D. 2017. A crosslinguistic syntax of scalar and non-scalar focus particle sentences: the view from Vietnamese and Chinese. *Journal of East Asian Linguistics*, 26(4), 389-409.

Hornstein, N. 2000. *Move! A minimalist theory of construal*. Hoboken, NY: Wiley-Blackwell.

Kaufmann, I. 1995. *Konzeptuelle Grundlagen semantischer Dekompositionsstrukturen: Die Kombinatorik lokaler Verben und prädikativer Komplemente*. Berlin/New York: de Gruyter.

Kratzer, A. 2000). Building statives. In *Annual Meeting of the Berkeley Linguistics Society* 26, No. 1, 385-399.

Kratzer, A. 2005). Building resultatives. *Event arguments: Foundations and applications*, eds. C. Maienborn, and A. Wöllstein, 177-212. Tübingen: Niemeyer.

Kratzer, A. 2009. Making a pronoun: Fake indexicals as windows into the properties of pronouns. *Linguistic Inquiry* 40(2), 187-237.

Krifka, M., & Musan, R. 2012. Information structure: Overview and linguistic issues. *The expression of information structure*, eds. M. Krifka, and R. Musan, 1-44. Berlin/Boston: de Gruyter.

Lang, E. 2001. Spatial dimension terms. *Language Typology and Language Universals. An International Handbook, Vol. 2*, eds. M. Haspelmath, E. König, W. Oesterreicher, and W. Raible, 1251-1275. Berlin/New York: de Gruyter.

Lee-Schoenfeld, V. 2006. German possessor datives: raised and affected. *The Journal of Comparative Germanic Linguistics* 9(2), 101-142.

Lemmens, M. 2002. The semantic network of Dutch posture verbs. *The Linguistics of Sitting, Standing and Lying*, ed. P. Newman, 103-140. Amsterdam: Benjamins.

Levin, B. 1993. *English Verb Classes and Alternations: A preliminary investigation*. Chicago: University of Chicago Press.

Maienborn, C. 2001. On the position and interpretation of locative modifiers. *Natural Language Semantics* 9(2), 191-240.

Michaelis, L. A. and J. Ruppenhofer. 2000. Valence creation and the German applicative: The inherent semantics of linking patterns. *Journal of Semantics* 17, 335-395.

Mulder, R., & Wehrmann, P. 1989. Locational verbs as unaccusatives. *Linguistics in the Netherlands 1989*, 111-122.

Ott, D. 2011. Diminutive-formation in German. *The Journal of Comparative Germanic Linguistics* 14(1), 1-46.

Reuland, E. 2011. *Anaphora and Language Design*. Cambridge, MA: MIT Press.

Stowell, T. 1991. Small clause restructuring. In *Principles and parameters in comparative grammar*, ed. by R. Freidin, 182-218. Cambridge, MA: MIT Press.

Appendix

(A) provides a syntax-semantics sample derivation of an SLA$^+$ structure. Wherever the tree design allows it, denotations of individual nodes are provided in the immediate vicinity of these nodes. In cases where this is impossible, denotations are listed separately underneath the tree.

The analysis has three important ingredients:
(a) *voller*;
(b) the functional head F;
(c) LDM$_{[+b]}$ with the ensuing structure expansion that inserts a bare index right underneath the landmark head.

(A) depicts the structure after the application of BR-X; cf. (59b).

(a) *Voller*: (A) features the fused *voller* head which, arguably, encompasses not just the 'full' semantics of *voll*, but also divisibility implications pertinent to its complement denotation that stem from the fused D, Num and Cl structure (cf.(49)). It has a contextual variable built into it that allows for pragmatic leeway regarding the matter as to what should count as 'completely full' (cf. 2.4). Its specifier is a PP. I assume it is a PP for mere case reasons. Only finite structures can provide subjects with case, and hence *den Wänden* must "bring its own case" by way of coming with a preposition. However, I submit that the semantic type of the specifier is simply e (an individual).

(b) F: F is the most important element in the structure. It provides functional alternation glue (von Fintel & Matthewson 2008), as it projects the structure which takes the verb as its complement and the FullP as its specifier. It existentially binds the individual variables and the state argument of its sister. As developed in Section 4 above, I assume it ties the hanging predicate and the denotation of the FullP together by way of stative causation. The denotation of F comes with a c-selectional restriction which selects for a FullP (recall that Full is a functional head). This ensures that not just any function of type ⟨s,t⟩ is allowed to occur in Spec,FP. Readers who are suspicious about F and all the things that it does may wish to consider two things: a. the alternative would be to assume a very high—and hence unattractive—type for Full; b. F, or slight variants of it, can be put to use in other argument alternations such as the Dynamic Locative Alternation (*to load the wagon with hay*).

(c): LDM$_{[+b]}$ with its binder feature is a theta head which, as a consequence of its binder feature [+b], triggers the structure expansion as introduced in (59) and as rendered visible by the bare index underneath it in (A). As a result of this expansion, the binder feature has been eliminated. The make-up of the FP$^+$ subtree of (A) triggers Predicate Abstraction (Heim and Kratzer 1998). As a consequence, a predicate is abstracted over the pronominal location/whole argument inside *an den Wänden* 'on its walls'. The two daughter nodes of θ' are combined by (Davidsonian) Predicate Modification (Hole 2012, 2014). In this case, Predicate Modification does not just ensure binding by a single lambda of the state arguments s, but also of the individual arguments x. Like this, a true semantic binding relationship between the Landmark referent *der Turm* 'the tower' and the whole of which the walls form a part obtains. (A) uses a rather informal denotation of LDM for perspicuity. The underlying formalization from Hole (2014: 254) is as follows.

(d) For any assignment a, number i and context C:

$[\![LDM]\!]^{a,\,C} =$

$\lambda x : \neg\exists y[x \sqsubset y \;\&\; y \in C] . \lambda s . \exists s'[\text{the location of } s \sqsubset \text{ neighborhood}_C \text{ of } x(s') \;\&\; s' \text{ holds at } a(i)]$
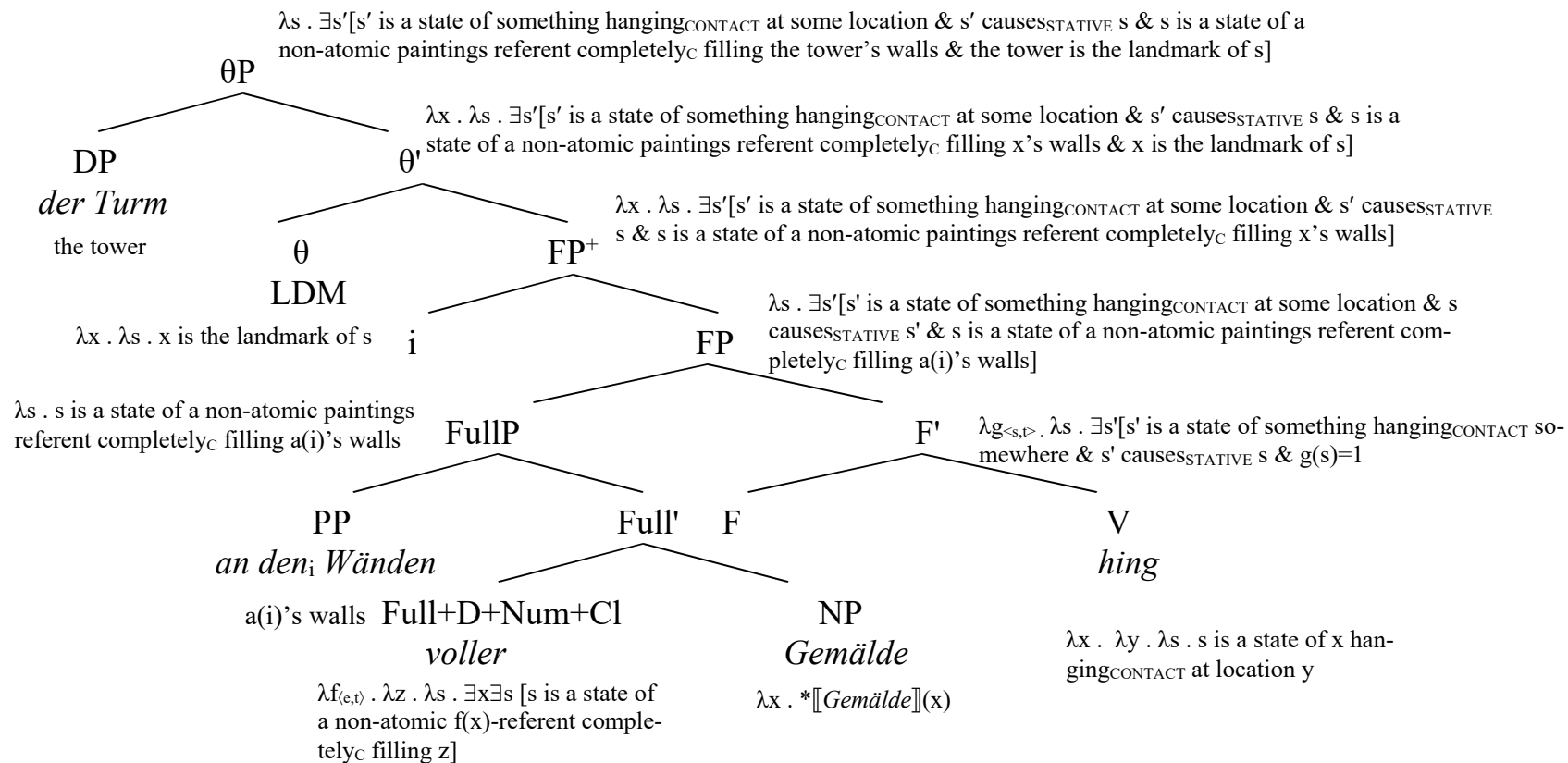

where C is a contextually salient subset of D
and "neighborhood" is defined as in (e) (Hole 2014: 179)

(e)   Neighborhood of a referent x
        Generalized union of all sets N_1 to N_n of adjacent points in space which, in a given
        context, define a neighborhood region of x

(A) For any assignment a, context C and number i:

θP

$\lambda s . \exists s'[s'$ is a state of something hanging$_{CONTACT}$ at some location & s′ causes$_{STATIVE}$ s & s is a state of a non-atomic paintings referent completely$_C$ filling the tower's walls & the tower is the landmark of s]

DP
der Turm
the tower

θ'

$\lambda x . \lambda s . \exists s'[s'$ is a state of something hanging$_{CONTACT}$ at some location & s′ causes$_{STATIVE}$ s & s is a state of a non-atomic paintings referent completely$_C$ filling x's walls & x is the landmark of s]

θ
LDM
$\lambda x . \lambda s .$ x is the landmark of s

FP$^+$

$\lambda x . \lambda s . \exists s'[s'$ is a state of something hanging$_{CONTACT}$ at some location & s′ causes$_{STATIVE}$ s & s is a state of a non-atomic paintings referent completely$_C$ filling x's walls]

i

FP

$\lambda s . \exists s'[s'$ is a state of something hanging$_{CONTACT}$ at some location & s causes$_{STATIVE}$ s' & s is a state of a non-atomic paintings referent completely$_C$ filling a(i)'s walls]

$\lambda s .$ s is a state of a non-atomic paintings referent completely$_C$ filling a(i)'s walls

FullP

F'

$\lambda g_{<s,t>} . \lambda s . \exists s'[s'$ is a state of something hanging$_{CONTACT}$ somewhere & s' causes$_{STATIVE}$ s & g(s)=1

PP
an den$_i$ Wänden
a(i)'s walls

Full'

F

V
hing

Full+D+Num+Cl
voller

$\lambda f_{\langle e,t \rangle} . \lambda z . \lambda s . \exists x \exists s$ [s is a state of a non-atomic f(x)-referent completely$_C$ filling z]

NP
Gemälde

$\lambda x . *[\![Gemälde]\!](x)$

$\lambda x . \lambda y . \lambda s .$ s is a state of x hanging$_{CONTACT}$ at location y

$[\![F]\!] = \lambda f_{\langle e, \langle e, \langle s,t \rangle \rangle \rangle} . [\lambda g_{\langle s,t \rangle} . \lambda s . \exists x \exists y \exists s' [f(x)(y)(s')$ & s' causes$_{STATIVE}$ s & g(s)=1], defined iff g is the denotation of a FullP

$[\![Full']\!] = \lambda y . \lambda s . \exists x[s$ is a state of a non-atomic paintings referent completely$_C$ filling y]

48