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Brandt, Patrick

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Modification versus predication and binding: Prenatal particle verb and prefix verb structures in German*

Patrick Brandt

Leibniz-Institute for the German Language

Abstract: Before modification of their GOAL prepositional phrase by a directional adverb makes them so, prepositional particle verb structures in German like UMschreiben 'rewrite' or DURCHweben 'weave through' serve to derive in an applicative diathesis prepositional prefix verb structures like umSCHREIBen 'circumscribe' or durchWEBen 'interweave' (where capitals signal word accent). The diathesis creates an extra inner predication structure (Basilico 1998), introducing a GOTH subject of predication and grammatical object that binds in a reflexive-like (lambda-)relation the original GOAL and THEME. The predication counters an offending asymmetry in the coupling of semantic roles and grammatical functions. In the particle verb case, the offense is redressed externally, via upcycling of a feature that remains locally uninterpretable due to the violation of harmonic linking.

Keywords: Prepositional particle verbs, Prepositional prefix verbs, Modification, Predication, Reflexive Binding, Redress

1. Background and outline

Natural language grammars achieve the interface between syntactic structures and semantic representations, i.e., derive pairs of sound and meaning representations <PF, LF> that can be articulated and assessed with regard to truth and falsity respectively.[1] Important part of the process of generating and pairing syntactic structures and meaning representations is governed by rules strictly followed by the grammar engine. For example, a robust cross-linguistic generalization captures that given a transitive predicate and associated structure, the AGENT is coupled to the grammatical function subject and the THEME or PATIENT is coupled to the grammatical function object. At the same time, the productivity of many types of pairs of form and meaning tells us that these should be automatically derived just as well while we do not know which rules are actually being followed; take, e.g., the often passive or modal meaning of formally reflexive structures in the case of inchoatives or middles. We continue to argue here that what might be called the rule – derivation gap between forms and meanings can be mitigated if we acknowledge that grammar derives structures as well that violate rigorous interface

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[1] In more recent minimalism, this process is genuinely cyclic in that syntax manipulates LFs (and PFs) that are fed to interpretive semantics in phases (Chomsky 1995).

conditions, where the violation gets redressed in a particular manner and the redress becomes part of the automatic derivation (Brandt 2019).

Empirically, the present investigation draws on a collection and taxonomy of about 800 types of prepositional particle and prefix verbs in German that at the same time feature a GOAL-denoting prepositional complement (Brandt 2024). The structure of the investigation is as follows: Section 2 lays out background assumptions concerning the syntax-semantics interface. In particular, semantic roles as well as grammatical functions are 'horizontally' ordered in hierarchies and 'vertically' coupled with linking rules. Harmonic Linking dictates that a higher semantic role be associated with a higher grammatical function. In pairs of roles, possessing the higher role implicates having a certain semantic property that the argument carrying the lower role needn't have.

We then argue that prepositional particle verbs such as UMschreiben 'rewrite' or DURCHweben 'weave through' violate harmonic linking. As a consequence, part of a DIFFerence feature cannot be locally interpreted and upcycles from the computational cycle marked by the verbal projection to the computational cycle marked by the temporal projection. It is interpreted in the terms customary there, giving rise to the typical but hitherto unexplained change of state meaning of particle verb constructions.

Section 3 fleshes out the derivation of prepositional prefix verbs like umSCHREIBen 'circumscribe' or durchWEBEN 'interweave' from prenatal prepositional particle verb structures. An applicative diathesis reintroduces the original GOAL as an inner subject of predication with the semantic role GoTH, that 'bundles' (Reinhart 2002) the original THEME and GOAL. The spatiotemporal inclusion of this subject in the predicate redresses internally the offense occurring in prepositional particle verb structures. Section 4 concludes with a summary of the investigation.

2. Prepositional particle verbs and upcycling

2.1. The harmonic role function form switchyard

Let us conceive of the interface between semantic roles and grammatical functions, as identifiable by formal marking, typically, in terms of the two-dimensional Gestalt given in figure 1.

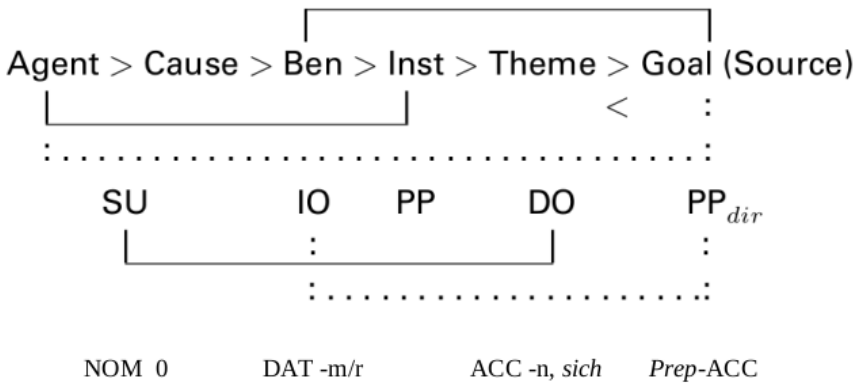

Figure 1: The harmonic role function form switchyard

In the horizontal dimension, semantic roles as well as grammatical functions are ordered by prominence relations. In the vertical dimension, harmonic linking couples semantic roles and grammatical functions respecting (1).

(1) Higher semantic roles are associated with higher grammatical functions that are marked by lesser means.

In German, indirect objects with dative case would seem to go against (1) in that they are more marked than direct objects with accusative case. As we argued in Brandt (2003), these argument expressions really have the status of inner subjects of predication. In essential analogy, we argue here for the applied objects or THEME arguments of prepositional prefix verbs that they, too, relate to lower GOAL arguments as prototypically introduced by prepositional elements which are more marked than datives (and applied objects) as they should be.

The lines in figure 1 stand for relations within the Gestalt which are associated with means to manipulate the linking. Diatheses can change the association between semantic roles and grammatical functions, e.g., by promoting the THEME to subject function in passive structures. A similar case very pertinent to the discussion here are formally reflexive structures coupled with inchoative, viz. passive-like interpretations of causatives. Building on work by Chierchia (2004), we argue in Brandt (2019) that in relevant structures like *sich ordnen*, 'order' or *sich öffnen* 'open', linking of semantic roles to grammatical functions is "the wrong way around" as the CAUSE is present only as an abstraction over the THEME and therefore semantically weaker or more inclusive than the latter. However, at the same time, it is more prominent in the hierarchy of semantic roles. Very much like in the case of prepositional particle verb structures in focus here, this offending asymmetry leads to uninterpretability of and upcycling of a certain part of the LF of DIFFerence, namely, the negation of the property distinguishing the subject from the object. This effects the change of state or modal (in the case of middles) semantics so typically associated with these structures (cf. Brandt 2019: chapter 4.1).

In the following, we argue that in the case of prepositional particle verbs, material semantics contradicts Harmonic Linking. This is because the GOAL includes from the relevant spatiotemporal perspective the THEME, in violation of the ordering of semantic roles – and grammatical functions, in consequence of harmonic linking – that we take to be based on the condition in (2).

(2) $X > Y$ iff $\exists P\ \Box P(x_X) \wedge \neg\Box P(y_Y)$
'A role X is higher than a role Y iff the referent of X necessarily has a certain property that the referent of Y need not have.'

2.2. Uneasy GOALs, accusative case and upcycling for a change

The prepositional particle verb structures discussed here feature structurally low prepositional phrases indicating directionality and realizing GOAL arguments. Such directional locative phrases are singled out in English by exhibiting subject properties in important respects. The hallmark of this subject-like behavior is locative inversion where the directional locative phrase appears in clause-initial position as in (3), the verbal complex of which translates into the directional particle verb *hereinkommen* in German.

(3) "We shall name it after the first person who comes in," and **in through the door** came Father Hippolyte Leduc. (https://www.leduc.ca/history-leduc)

German (4) similarly illustrates the extraordinary options that directional locative phrases have with regard to word order. In particular, these phrases may appear before the direct object although it is clear that they form a constituent with the verb to the exclusion of the direct object as shown by VP fronting in (5).

(4) Der niederländische Kaffeekonzern bestellt **zum neuen**
the dutch coffee.company appoints to.the new
Vorstandsvorsitzenden Rafael Oliveira […]
chairman Rafael Oliveira […]
'The Dutch coffee company appoints Rafael Oliveira new chairman.'
(Frankfurter Allgemeine Zeitung 21 October 2024)

(5) a. Zum neuen Vorstandsvorsitzenden bestellt wurde R. O.
to.the new chairman appointed was R. O.
b. *R. O. bestellt wurde zum neuen Vorstandsvorsitzenden.
R. O. appointed was to.the new chairman.

In (4), the directional phrase takes on the semantics of finality, which in German is regularly expressed by prepositional phrases headed by *zu* 'to' (cf. section 3.2). Beyond exceptional word order properties, directional locative phrases in English show subject properties as well in other respects. Bresnan (1994: 95ff) discusses that they behave like subjects unlike any other grammatical function with regard to raising, *that*-trace effects and *do*-support. We would like to propose that this aspiration to subject in English and its fulfilment in English is a really a reaction to an offense against harmonic linking: the THEME referent is included spatiotemporally in the GOAL referent and therefore has no property that the GOAL wouldn't have as well in contradiction to role ordering, given harmonic linking. The grammar may (but needn't actually) react by promoting the GOAL to a more prominent syntactic position, in the case at hand, to grammatical subject as regularly unmarked and unspecific regarding its semantic role.

The offense of harmonic linking occurs at the level of the VP which we take to code the result state of the event (Givon 1972, cf. below). We assume that at this level, individuals are exclusively identified spatiotemporally. Spatiotemporal location is the basis for our understanding of what it means to be the same or different to begin with according to e.g. Leibniz, who lets Philateles say the following in his *essays on human understanding* (Leibniz 1765, p. 229).

> Nous ne trouvons jamais et ne pouvons concevoir qu'il soit possible que deux choses de la même espece existent en même temps dans le même lieu.
>
> We never find and cannot conceive that it is possible that two things in the same space exist at the same time in the same place.

Strawson presents the fundamental quality and importance of spacetime as follows when it comes to thinking about the individuation of particulars (Strawson 1959, pp. 25f):

> [T]he system of spatio-temporal relations has a peculiar comprehensiveness and pervasiveness, which qualify it uniquely to serve as the framework within which we can organize our individuating thought about particulars.

We make reference to ordinary individuals as well as to their spacetimes in the first order representations that we use for semantic representation. (6) asserts that the beaver is in the hunter, e.g., as a result of the hunter having eaten the beaver).

(6) $\text{hunter}(x) \wedge \text{beaver}(y) \wedge x \supset y$
'The hunter spatiotemporally includes the beaver.'

Given (6), (7) is true as well as the intersection of hunter and beaver is nonempty.

(7) $\text{hunter}(x) \wedge \text{beaver}(y) \wedge x \cap y \neq \emptyset$
'The hunter and the beaver spatiotemporally overlap.'

Regarding what it means to be different, we adopt the definition of the relation in terms of a generalized quantifier given in Brandt (2019).[2]

(8) $\textsc{Diff} = \lambda S \lambda P \exists x\, S(x) \wedge P(x) \wedge \exists x\, S(x) \wedge \neg P(x)$
'The sets S and P such that there is an element of S that is in P and there is an element of S that is not in P.'

Quite importantly, DIFFerence is an asymmetric relation, i.e., x may be different from y without y being different from x. Note that a modal version of DIFFerence defines as well the semantic role hierarchy given above (cf. (2)); in section (3.2.4), we use another derivative of DIFFerence to define binding relations which are asymmetric as well in that the binder may have properties the bindee does not have.

The prepositional particle verbs that we investigate – as well as their prepositional prefix verb cousins – feature so-called "Wechselpräpositionen" (for the most part) which can assign both dative and accusative case with consequences for semantic interpretation. If dative is assigned, a stative interpretation results. Only if accusative is assigned, a change of state interpretation results, as in (9b). As is normal in spoken language, the examples do not feature a verb that would signal this.

(9) a. der/den Leduc in dem Raum
the-NOM/ACC Leduc in the-DAT room
'Leduc [is] in the room'
b. der/den Leduc in den Raum
the-NOM/ACC Leduc in the-ACC room
'[send/let] Leduc into the room'

The semantics of (9a) corresponds to the result state of (9b) which additionally conveys that before the event, the THEME was not at the GOAL. In other words, (9b) codes a change

[2] Note that DIFFerence is also part of a well-known Gestalt, namely, it combines the I and O corners of the traditional square of opposition. Cf. Brandt (2019: 39ff) for discussion.

of state unlike (9a) which just codes a state; the accusative case marking thus appears to be responsible for the change of state semantics.

Using Gehrke's (2008) insight that accusative case in German PPs is structural, we recycle DIFFERENCE and formulate the from-function correspondence in (10) for German, which is like principle B (Reinhart 1976) or obviation (Hellan 1988) tied to structural case (nominative and accusative).

(10) In German, two structural cases trigger DIFFerence = the first argument must have a property that the second one doesn't have

In so-called nominative-accusative languages, it is of course these two core structural cases that serve to distinguish the main complements in the clause, and thereby also the referents of these complements.[3] But (10) also captures more complex cases of e.g. prepositional particle verbs with direct objects; here it requires that the referent of the accusative case-marked direct object is different from the referent of the accusative case-marked complement of the preposition (but not necessarily the other way around). It is thus eventually accusative that marks difference of the referents of structurally case-marked argument expressions, making some sense of the fact that what cannot be locally interpreted is the negation of an independently coded property, namely, the property that sets the first argument apart from the second one.

We see the call for such a positive property in certain Gestalt effects associated with accusative case on directional PPs. (11), adopted from Sluckin (2021: 199), shows that adding a directional PP helps license agentive adverbials which appear odd without it.

(11) Johann kam vorsichtig *?(in den Raum).
John came carefully into the-ACC room
'John came carefully into the room.'

Recalling Burzio's generalization, the accusative in (11) calls for a distinguishing property – agentivity – that is negated for the second argument. With Givón (1972), we contend that the verbal projections of our structures code the result state of the event – a situation where the GOAL includes spatiotemporally the THEME, i.e., there is no spacetime of the THEME which is not as well as spacetime of the GOAL. Assuming the spatiotemporal relations exclusively distinguish referents at this level of representation and interpretation, the material semantics contradicts harmonic linking. Therefore, the negation of the property that distinguishes the higher argument from the lower one cannot be interpreted. The corresponding logical form ¬P(x) goes literally vertical and upcycles from the VP to the TP as the computational cycle that negotiates temporal relations. The property P is identified with the already computed VP meaning and its argument x with a time; the result is the negated VP meaning that corresponds to the pre-state of the change of state.

[3] Gunkel et al. (2017: 914) write (my translation): The case systems of German and the contrast languages (English, French, Polish, Hungarian) belong to the accusative type, i.e., the distinction of the core complements […] is achieved where it is marked by a patient-specific case (accusative) which is opposed to nominative case that specifies no role.

Figure 2 sketches the analysis of the particle verb structure.[4]

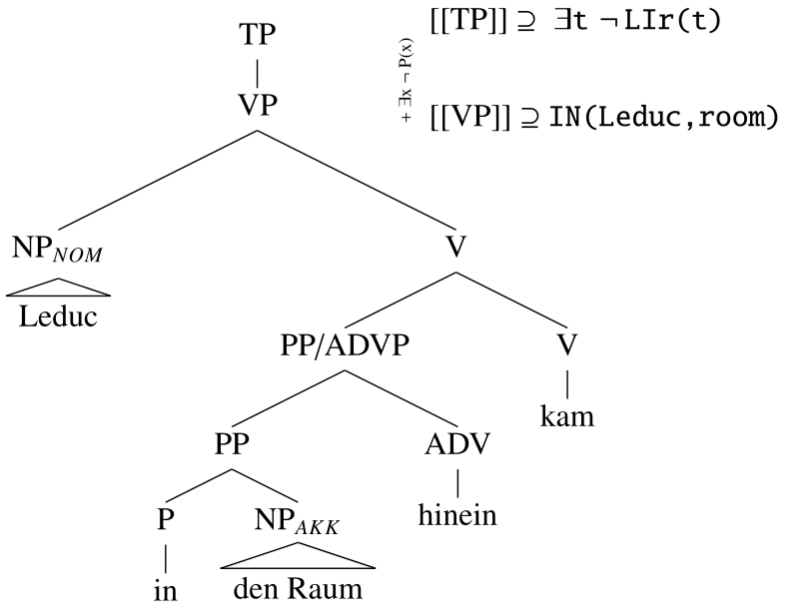

Figure 2: Upcycling in prepositional particle verb structures

Note in anticipation of the derivation of prepositional prefix verbs in terms of head movement that the particle of particle verbs corresponds to a phrasal adjunct to VP which redundantly modifies the prepositional phrase (cf. for an early analysis along these lines Adelung (1971 [1782]) and den Dikken (1994) for a more up to date version). If present, this phrase blocks merger of the prepositional head of the prepositional phrase and the verbal head (Travis 1985). Prepositional prefix verbs must therefore derive from prenatal particle verbs, predicting that particle verb structures proper (with a particle doubling the PP) and prefix verb structures proper exclude each other (cf. section 3.2.2).

3. Prepositional particle and prefix verbs

For prepositional particle verbs featuring one of the prepositional elements *durch* 'through', *um* 'around', *über* 'above, over' or *unter* 'below, under', there are corresponding prefix verb forms, where the divide runs along the superficial formal properties of accentuation and separability. In addition, there are very many prefix verbs with the element *be-* that behave like the prepositional prefix verbs discussed here. However, this is not the case in a good portion of the cases where the derivation (if any) is unclear.[5] For the most part, the prepositional elements occurring in particle verbs are accented and get stranded in verb second, while the prepositional elements occurring in prefix verb

[4] For ease of presentation, we stay with the simple nominative-accusative structure; the relevant structure is the same though for prepositional particle verb structures featuring as well a direct object, as in, e.g., *John pushed Leduc in through the door*.

[5] According to Grimm and Grimm (1854-1961) and other sources, *be-* relates to the preposition *bei* which has much the same meaning as *at*.

structures are unaccented and inseparable (cf. however section 3.2.4).[6] Also, the prefix *ge-* marks the perfect participle for participle verbs and occurs between the particle and verb stem (e.g., *durchgebohrt*) but is absent in prepositional prefix verbs (e.g., *durchbohrt*). Nonetheless, it looks like the basic ingredients to the two types of structures are the same. Table 1 gives some examples with translations.[7]

Prepositional Particle verbs	Prepositional Prefix verbs
UMfassen 'change grips'	umFASSen 'comprise, clasp'
UMlagern 'relocate'	umLAGern 'beleager'
UMschreiben 'rewrite'	UmSCHREIBen 'circumscribe'
DURCHweben 'weave through'	DurchWEBen 'interweave'

Table 1: Prepositional particle verbs and prepositional prefix verbs

At an abstract level, the prepositional particle verbs code some kind of change of state unspecifically. The prefix verbs however receive a specific 'holistic' interpretation according to which the direct object referent is 'completely affected' in the eventuality. Grimm 1819: 780 (1878: 788) writes the following regarding the makeup and interpretation of the prefix verb *besprenkeln* 'besprinkle' (my translation).

> [...] the prefix verb usually expresses the application of the verb's concept to an object that carries accusative case. If a noncomposed verb were used, the relation would have to be designated by various prepositions or at least a different case.
>
> the *be-* designates the all-round impact, the whole and complete accomplishment. I do not be-cut the tree yet if I cut something off it, but only if I do it all-round; *be-*sprinkling affects the whole surface

Let us look in more detail at prepositional particle and prefix verb variants respectively that feature the element *durch* 'through'. *Durch* is particularly interesting from a grammatical perspective as it always assigns accusative case to its complement (cf. above). Remarkably as well, *durch* appears more apt to saturate its internal argument slot silently as an alternative to using a pronominal directional element like *hin* 'hither' (such that *hindurch* and *durch* are largely interchangeable, cf. Brandt 2024). The corpus examples in (12) about corrupt social relations ("Klüngel" 'dawdle', 'clique') in Cologne and (13) picturing life as a carpet growing slowly even if the individual weaving moves causing and substantiating the growth are quick.

(12) Die "Klüngel-Fäden" sind immer bis an die Spitze DURCHgewoben gewesen.
the "corruption-threads" are always up to the top through.woven been
'The threads of corruption have always been woven through to the top.'
(Nürnberger Nachrichten, 9 March 2002, p. 3)

[6] Cf. for discussion of exceptions Brandt (2024).
[7] Cf. Olsen 1996 for comprehensive general discussion of particle and prefix verb structures in German and Kühnhold 1973 for an excellent overview and corpus-based collection of particle and prefix verb types in German.

(13) Schnell werden die Fäden DURCHgewoben, und trotzdem wächst der Teppich
quickly are the threads through.woven and yet grows the carpet
nur langsam.
only slowly
'The threads are woven through quickly, yet the carpet grows only slowly.'
(Mannheimer Morgen, 14 July 2001)

These examples are prototypical in that they convey that something is done "from beginning to end" or "from top to bottom" or "from one side to the other". Strictly spatiotemporally speaking, an act of *DURCHweben* amounts to replacing a tiny bit of matter out of a larger whole with a tiny bit of a different matter – a thread, as it were.

In contrast, the prefix verb *durchWEBen* conveys that the larger whole is completely if maybe diffusely affected in the eventuality, cf. the corpus examples (14) about the kid's world according to Picasso and (15) about weather-proof tents.

(14) Die Kinder- und Bilderwelt ist durchWOBen von Mustern und
the kids- and picture.world is through.woven by patterns and
Binnenstrukturen.
internal.structures
'The kid's world and world of pictures is interwoven with patterns and internal structures.' (Nürnberger Nachrichten, 12 September 1995, p. 17)

(15) Diese [Großzelte] sind mit Glasfasern durchWOBen und einer
these [big.tents] are with glass.fibers through.woven and a
Teflon-Schicht überzogen.
teflon.layer covered
'These big tents are interwoven with glass fibres and covered with a layer of teflon.' (Vorarlberger Nachrichten, 29 March 1999, p. D8)

The point of (14) is that it is a general trait of the world of kids and pictures that patterns and internal structures are woven throughout them, even if it is not so clear what these patterns and structures are and how exactly the are related to each other or the larger whole of the worlds being described. The point of (15) is that glass fibres are woven throughout all of the cloth making up the big tents and that this cloth is also completely covered by a layer of teflon; indeed if the coverage were only partial, it would make little sense to begin with in the case of tents that better be weather-proof everywhere. The question is how the meaning aspect of complete affection of the THEME that is robustly associated with prepositional prefix verbs comes about.

3.1. Attempts at internal redress: predication and prepositional prefix verbs

We would like to propose that the 'holistic' semantics is an effect of the grammar's attempt to solve the problem posed by (prenatal) particle verbs "internally", i.e., without the last resort of delaying interpretation of the negative property that cannot be locally represented semantically. Specifically, we contend that in the derivation of prepositional prefix verbs from prenatal prepositional particle verbs, there is, firstly, abstraction over a GOTH variable z and, secondly, its saturation by the subject of predication. The GOTH variable's referent is spatiotemporally included in the intersection the original THEME and

GOAL. Thirdly, the binding relation established in the predication is very much like reflexive binding in that indifferent restrictions appear as subject and part of the predicate, i.e., in different argument positions. (16) and (17) formulate abstraction and saturation of the newly built predicate, which can be conceived of as a function from individuals or rather their spatiotemporal locations into truth or falsity.[8]

(16) $\lambda z_{\text{GoTh}}\ \exists x,y\ \text{thread}_{\text{Theme}}(x) \wedge \text{shirt}_{\text{Goal}}(y) \wedge x \cap y \neq \emptyset \wedge (x \cap y) \supset z$
'the spacetimes z such that there is a thread and a shirt and thread and shirt overlap spatiotemporally and their intersection contains z'

(17) $\exists x,y\ \text{thread}_{\text{Theme}}(x) \wedge \text{shirt}_{\text{Goal}}(y) \wedge x \cap y \neq \emptyset \wedge (x \cap y) \supset \text{the.shirt}$
'There is a thread and a shirt and thread is at shirt and thread and shirt overlap spatiotemporally and their intersection contains the shirt.'

The beginning and end of the syntactic derivation of prepositional prefix verbs from prenatal prepositional particle verbs via head movement is given in figure 3.

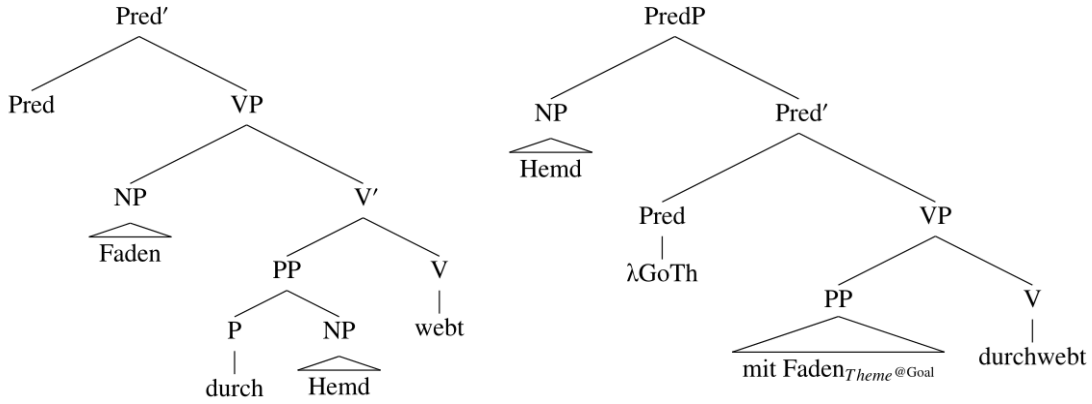

Figure 3: Derivation of prepositional prefix verbs (right hand side) from prenatal prepositional particle verbs (left hand side)

The tree on the left hand side shows the prenatal particle verb structure, i.e., the particle verb structure before adjunction of a directional adverb to the PP (cf. figure 2 above). The local structural relation between P and V allows them to merge via head movement, according with the locality of the reflexive binding relation. Note as well that the GOTH subject of the inner predication occupies a different (higher) syntactic position than the original THEME in the specifier of VP that gets case-licensed (if it is articulated) by the preposition *mit* 'with'.[9] While these are only first steps toward proper formalization, the analysis already makes a range of predictions.

[8] We assume for concreteness that at the VP level, THEME x and GOAL y are not quantified yet but get bound higher up, entailing existential closure.

[9] German *mit* 'with' is the most grammaticalized preposition in German; it appears that in all of its prominent functions, i.e., as an element introducing an instrument or a comitative (including the discontinuous reciprocal (cf. section 3.2.3), the phrase case-licensed by *mit* depends parasitically on an independently assigned semantic role.

3.2. Extra predication: consequences

The consequences of the analysis range from argument structure realization (including reflexivization and inchoativization) and the irregularity of prepositional particle-plus-prefix and prefix-plus-particle verbs to the scope of adverbs and quantifiers; we discuss them in this order.

3.2.1. Missing GOALs or Purposes

As the GOAL argument is bound to the inner subject of predication, we predict it to be less available for independent operations. Indeed directional phrases that in shallowly metaphorized senses often indicate finality (cf. (4) above) cannot be added to prepositional prefix verb structures, as (18) illustrates.

(18) Die Pflanz-Gefäße müssen dunkelwandig sein. [...] Früher hat man dafür
the plant.containers must dark.walled be. [...] once has one for.that
breite Korken genommen, die [*zu einem Pflanz-Gefäß] durchbohrt wurden.
broad cork used which [to a plant.container] through.drilled were
'...they were drilled through in order to become plant containers.'
(Berliner Morgenpost, 13 November 1999, p. 25)

Even though it is natural for cork to be used as a container for plants and even though it is for this purpose that the cork is drilled through, it is not possible to code this with a GOAL-designating *zu*-PP. Elsewhere, this is perfectly possible, as in (19)

(19) Die TME will das Fett in einer eigenen Verbrennungsanlage zu Strom
The TME wants the fat in a own combustion.facility to power
und Dampf umwandeln.
and steam transform
'The TME wants to transform the fat into power and steam in a combustion facility of its own.' (St. Galler Tagblatt, 11 February 1998)

Note incidentally that even though a PP headed by *zu* denotes a GOAL prototypically and is therefore associated with directedness, it always assigns dative case unlike the Wechselpräpositionen in focus here (cf. above). Having accusative assignment within the PP seems to be ruled out indeed, and arguably so because accusative case is already realized on the inner subject (direct object); it appears that more than two occurrences of structural case in a local structural domain cannot be produced.[10]

[10] The verb *lehren* 'teach' that can license two accusative objects next to a nominative subject looks like an exception; however, many speakers nowadays choose dative case on the argument expressing the person being taught as in the example in (i).

(i) Der Geselle lehrte ihm andere nützliche Dinge
the fellow taught him-DAT other useful things
'The fellow taught him other useful things' (Süddeutsche Zeitung, 18 October 1997)

3.2.2. Noncompositional particle+be-prefix verbs and be-prefix+particle verb back-formations

According to an analysis deriving prepositional prefix verbs from prenatal prepositional particle verbs in the manner sketched above (section 3.1), there should be no verbs as of custom that are both particle verb and prefix verb at the same time: The modifying directional adverb adjoined to the VP would block the head movement constitutive for prepositional prefix verbs. When we look at the corpus data we do seem to find a few particle-prefix verbs and fewer prefix-particle verbs. Belonging to the historically more worn out and less transparent *be*-prefix class (cf. above), these verb types still do not mean what we would expect them to, namely, the action coded by the prefix verb modified by a directional phrase. Table 2 gives more frequent, typical examples.

Part+Prf-verb	Actual meaning	Expected meaning
ein+be+ziehen	involve	into+cover.with.cloth
ein+be+rufen	draft	into+cover.with.calls
vor+be+pflanzen	pre-plant	in.front.of+cover.with.plants
vor+be+stellen	Pre-order	in.front.of+cover.with.sth.

Table 2: noncompositional particle+be prefix verbs

Some of the actual meanings appear intuitively close to the expected ones, as in the case of e.g. *einberufen* 'draft', which could translate into sth like *call in by way of covering with calls*; also, a shift from locative to temporal uses is an oft-observed step in meaning change. We may still put down that there are only few actual examples for particle+prefix verbs; the belong to the less transparent and historically loaden *be*-prefix verb type. Still they do not quite mean what we would expect them to given their probable structure and compositionality. The other unpredicted type of Prefix-Particle verbs is still less attested and more obviously irregular in even frequent cases in that there is no verb corresponding to the prefix verb form without the prefix. In table 3, the middle row indicates what this verb would have to look like (*Aufsicht* 'watch' is a noun in German, pointing to a back-formation from a deverbal noun). The third row indicates the putative structure. Again, the putative examples of prefix + particle verb structures belong to the *be*-prefixed type, which may well have been reanalyzed as a simplex verb in many cases.

Verb	regular verb	actual structure
beanspruchen	*beansprechen	[$_V$ be + [$_N$ anspruch]]
beaufsichtigen	*aufsichtigen	[$_V$ be + [$_N$ aufsicht]]

Table 3: Prefix+particle verb backformations

3.2.3. Inherent reflexivization

Regarding prepositional prefix verbs in German, the generalization in (20) appears to hold:[11]

[11] The generalization emerged in my 2020 spring seminar on "verbs and their arguments" and was tested in Dora Hinderer's (2021) bachelor thesis at the University of Mannheim.

(20) Generalization (German):
Prepositional prefix verbs are not inherently reflexive.

Looking at inherent reflexivization as a step towards silent reflexivization, we would like to suggest that (20) follows from inherent reflexivization being too similar to the reflexive-like binding relation established in the predication (section 3.1) for both of them to apply in the same local domain. Apparent counterexamples are arguably not derived from prenatal particle verbs by applicativization as sketched above: They either turn out not to be inherently reflexive (but regularly reflexive), or they not receive the passive-like interpretation associated with the (inherently) reflexive structures relevant here (cf. 2.1). Some representative examples with reasonably frequent use are given in table 4; corpus data show that they are (or used to be) derived by regular reflexivization or reciprocalization.[12]

sich mit etwas befassen 'concern oneself with sth.'		regularly reflexive
Sich mit etwas begnügen 'contend oneself with something'	*gnügen	regular reflexive until 17th century
Sich mit ewas überbieten 'outdo each other with sth.'		regular reciprocal
Sich mit etwas/jemand umgeben 'surround oneself with sth./sb.'		regular reflexive/reciprocal

Table 4: Putative inherently reflexive verbs

A form-based partial corpus search for structures with prepositional prefix verbs together with *sich* produces many cases; the more frequent types are given in table in 5 together with translations and frequency of use in one eighth of the German Reference Corpus (DeReKo).

verb	translation	Frequency
sich umgeben	'surround oneself with sth./sb.'	188
sich umkreisen	'circle one another'	15
sich umschlingen	'clasp each other'	11
sich umgarnen	'beguile each other'	7
sich umspielen	'play around each other'	5
sich umwerben	'court each other'	3

Table 5: Discontinuous reciprocal interpretations of prepositional prefix verbs with *sich*

[12] Thus *befassen* can be easily found in transitive use in corpus data as in (i).
(i) Er befaßte den Senat der Universität mit der Causa.
He concerned the senate of.the university with the cause
'He addressed the university senate to deal with the cause.'
The verb *begnügen* seems to be related to the adverb *genug* 'enough'; in present day German, however, there is only a verb *genügen* 'being enough' taking a dative or oblique object, but there is no verb stem *gnügen* from which *begnügen* could be transparently derived via prefixation.

These cases and in fact all cases found talk about human beings actively participating in reciprocal actions, and not about a THEME undergoing a change (without an obvious CAUSE) as a derivation akin to the applicative diathesis sketched above would predict.[13] They are derived by the rule deriving productively the so-called discontinuous reciprocal construction (Dimitriadis 2008) and constitute no counterexamples to the generalization in (20).[14]

3.2.4. Inanimate CAUSE but no inchoative structure

Related in an interesting way to the generalization discussed last, the prepositional prefix verbs under discussion here appear to be exceptions to the famous crosslinguistic generalization in (21), cf. Smith (1970), Levin & Rappaport Hovav (1995).

(21) If a verb allows for an inanimate CAUSE in transitive use then it also allows for an (intransitive) ergative/inchoative/unaccusative use.

Like e.g. *öffnen* ('open', taking overt *sich*) or *zerbrechen* ('break', not taking overt *sich*), the prepositional prefix verbs typically allow inanimate causes in their transitive realization. However, an intransitive variant is unavailable with or without *sich*.

(22) a. The wind opened the door.
b. The door opened.

(23) a. Die Kugel durchbohrte die Wand.
the bullet through.drilled the wall
'the bullet drilled (itself) through the wall.'
b. *Die Wand durchbohrte (sich).
the wall through.drilled (SICH)
'The wall was drilled through.'

Prepositional prefix verbs which do appear with *sich* constitute potential counterexamples to (21). One type features *sich* in dative position (as can be seen by replacement with visibly case-marked first or second person pronouns) and has an inalienable interpretation; it is not the accusative structure we are looking for; (24) about a young handyman drilling holes with a drilling machine is an example of this kind.

(24) Dabei kam er gegen 15 Uhr mit der linken Hand zu nahe an die
in.doing.so got he around 15 hours with the left hand too close to the
Maschine und durchbohrte sich die Handfläche.
Maschine und durchbohrte sich die Handfläche.
'...and pierced his palm.' (Tiroler Tageszeitung, 13 August 1998)

[13] Interestingly in the case of *sich umgeben*, the reciprocal meaning of *socialize* arises with human referents of the (optional) *mit*-Phrase, while inanimate complements lead to the meaning of *surround*. As elsewhere serving to derive prepositional prefix verbs in the manner sketched above.

[14] Dimitriadis (2008) argues that the discontinuous construction is allowed exactly if the predicate in question is strongly symmetric, i.e. the participants' involvement in the eventuality is exactly the same.

The apparent counterexample in (25) with accusative *sich* from a review of a performance of Romeo and Juliet is yet more interesting.

(25) Von nun an durchbohrt sich Julia mit Romeos Dolch.
from now on through.drills SICH Julia with Romeo's dagger
'From now on Julia pierces herself with Romeo's dagger.'
(Frankfurter Rundschau, 17 June 1998, supplement, p.3)

Even though superficially-formally we are dealing with a prefix verb, (25) is clearly agentive as witnessed by the instrument phrase *mit Romeos Dolch* 'with Romeo's dagger'. Similarly in the example in (26) about a vegetarian party in Phuket, the noun phrases included in the *with*-phrases denote instruments, indicating agentivity.

(26) Junge Menschen fallen in Trance und durchbohren sich dann mit Ankern,
young people fall into trance and through.drill SICH then with anchors,
Harpunen, Sägen, jungen Bäumen oder eben, wie auf dem Bild zu sehen,
harpoons, saws, young trees or just as on the picture to see,
mit einem Marlin.
with a marlin. (Süddeutsche Zeitung, 23 October 1996, p. 12)

We submit that (25) and (26) are examples of grammatical mimicry, i.e., they are actually hidden prepositional particle verb structures. In particular, the coordination here is with a GOAL-oriented motion verb, and they do not seem to receive the typical 'holistic' interpretation. Indeed it is hard to see how the young people could have anchors, harpoons, saws, young trees pierced all through and through themselves, and it is hard to imagine how complete affectedness could be achieved with the indefinite singular *mit einem Marlin* 'with a Marlin'. Such examples appear indistinguishable from a truth-conditional perspective from their particle verb cousins, in particular, as soon as the prepositional particle uses encompass reflexive *sich* and repeated *durch* as in (27) and (28).

(27) Von nun an bohrt Julia Romeos Dolch durch sich hindurch
From now on drills Julia Romeo's dagger through SICH hither.through
'From now on, Julia drills Romeo's dagger through and through herself.'
(28) Junge Menschen bohren Anker ... durch sich hindurch.
young people drill anchors... through SICH hither.through
'Young people drill anchors...through through themselves.'

Overt *sich* regularly signals reflexivization, i.e., what happens silently in creating the inner predication structure in the prefix verb structure. At rock bottom, reflexivization is a kind of repetition of one and the same variable in different argument slots of the same predicate (understood as an n-ary tuple). What the particle verb structures in (27) and (28) exhibit beyond use of *sich* is exactly repetition of *durch* in different slots, even if to no

obvious semantic avail,[15] mimicking something like reflexivization-as-repetition in a brute force manner.

The exceptional status of prepositional prefix verbs with respect to the generalization in (21) may thus follow from their derivation in terms of reflexive binding, squaring with and giving support to approaches deriving inchoatives (in German) by way of reflexivization (cf. for recent discussion Beavers and Koontz-Garboden 2013).

3.2.5. Frequency adverbs and quantifiers (Basilico 1998)

Let us, finally, address so-called scope-freezing effects associated with the prepositional prefix verbs discussed. Regarding frequency adverbs, Basilico gives the examples in (29) and to show the freezing effect in English that is effective as well in German.

(29) a. During the holdup, the robbers stuffed a wad of cash frequently into a bag.
b. During the holdup, the robbers stuffed a bag frequently with a wad of cash.

Basilico (1998) states the difference in terms of only wide scope of the indefinite *a bag* in object position and positioned before the adverb in the prefix verb structure, but also scope below the adverb in object position and positioned before the adverb (p. 560):

> For example, in (37c) [(29b)] we are talking about the same bag which the robbers over and over again stuffed with cash. However, in (37a) [(29a)] we need not be discussing the same wad of cash (although we can be).

Analogously, if two quantified NPs are involved as core argument expressions, the indefinite object must be interpreted with wide scope over the NP in the *with*-phrase, taking Basilico's perspective. Alternatively, the problem may be with quantifying the NP within the *mit*-PP to begin with. This seems to us more likely, observing that relevant examples cannot seem to be found in corpora. In an attempt to construct a plausible context for an invented example, then, suppose that a fashion designer authorizes each one of a set of one hundred shirts by weaving one of a hundred special threads through it. You could then say (30a) but not (30b).

(30) a. Er webte einen (einzelnen) speziellen Faden durch jedes (einzelne) Hemd.
he wove one (single) special thread through every (single) shirt
b. ?Er durchwebte ein (einzelnes) Hemd mit jedem (einzelnen) speziellen
he through.wove one (single) shirt with every (single) special
Faden.
thread

That GOAL arguments viz. directional PPs are generally apt to take wide scope is well attested. Thus in the example in (31), there is distribution over different balls, and (32) appears paradoxical as the authorities appear to outscope the NP modified by *fake*, such that even though they stem from the authorities, they are fake.

[15] Interestingly in the context of redundancy and repetition regarding *durch*, Gruber (1970: 5ff) notes that if its English cousin *through* does not occur when the verb *pierce* is used, it is still implied, such that expression of *through* is redundant from the start.

(31) A (different) ball rolled into every yard.
(32) gefälschte Dokumente von Behörden.
'faked documents from authorities'

These facts square with the observation that GOAL arguments more generally aspire to be subject. In locative inversion in English as initially discussed, they do indeed raise into subject position. Quantification of the THEME on the other hand and giving it wide scope appears impossible and appears in fact odd as such. We think that this relates to the nature of the predicate licensing the GOTH in the prepositional prefix structure. As a one place function taking ordinary individual arguments or their spacetimes respectively as arguments, there is just no way to incorporate a distributive quantifier in it that could scope over the subject.

Table 5 summarizes the consequences discussed in the latter part of this section from the perspective of predication – a subject predicate relation involving tense – as characterized by Strawson's (1959) criteria to distinguish subject and predicate.

SUBJECT	PREDICATE	witness
yields itself to quantification	doesn't	Quantifier scope
carries a presupposition of definite empirical fact	doesn't	Quantifier scope
restricts reference time	doesn't	Scope of frequency adverbs
doesn't	carries assertive symbolism	*be-*, *um-*, *durch-*, *über-*, *unter-*

Table 5: Strawson's criteria distinguishing subject and predicate

The only positive feature designating predicates in Strawson's list is that of "carrying assertive symbolism" – indeed we could say that the prepositional forms incorporated in the prefix verb structures take exactly this role.

4. Summary: from external to Internal Redress

4.1. Offending asymmetries

Prepositional particle verb structures are defined by modification of their GOAL prepositional phrases by directional adverbs. We argued that there is a material semantic asymmetry between THEME and GOAL in that the latter spatiotemporally includes the former. This offends harmonic linking given the hierarchy of semantic roles, as the GOAL is realized lower structurally than the THEME at the same time. For convenience, role ordering is repeated in (33).

(33) $X > Y$ iff $\exists P\ \Box P(x_X) \wedge \neg\Box P(y_Y)$
'A role X is higher than a role Y iff the referent of X necessarily has a certain property that the referent of Y need not have.'

In tandem with harmonic linking, (33) requires the referents of higher grammatical functions to be different from those of lower ones but not necessarily the other way around. We proposed that the negation of a property independently given and distinguishing in its positive form the higher argument from the lower one – i.e., $\neg P(y_Y)$ in (33) – cannot

be locally interpreted and is upcycled – as a last resort, presumably – to be interpreted as the pre-state of the event coded (section 2).

4.2. Symmetrizing indifference

In the derivation of prepositional prefix verbs, the offending asymmetry is compensated for or redressed by relating the original GOAL and THEME to a GOTH subject of an inner predication in the manner of reflexive-like binding. We define this indifferent binding as in (34) in terms of the general Gestalt of DIFFerence.

(34) x indifferently binds y (= y is indifferent from x)
iff $\neg\exists P\,(P(y) \wedge \underline{\neg P(x)}$
(= $\forall P\,(P(y) \rightarrow P(x))$)
'x indifferently binds y iff x has all y's properties'

In legal binding relations, the binder may have properties the bindee does not have. The other way around leads to offenses (or counter-offenses) against (or back to) harmonic linking. We proposed that in the applicative derivation of prepositional prefix verbs, the spatiotemporal intersection of THEME and GOAL includes spatiotemporally the GOTH subject of predication, whence the semantics of complete affectedness. At the level of LF, inclusion amounts to universal quantification over spacetimes, which by the law of quantifier negation entails that there is no spacetime of the included (subject) that is not as well in the including (predicate). Therefore, the relevant LF contains symbolism that describes exactly the negative property that we argue cannot be locally interpreted due to the violation of harmonic linking. It seems nearby then to suppose that in the prepositional prefix verb structure, $\neg P(x)$ opportunistically piggybacks on this symbolism and is gotten rid of technically in this way.[16]

That the spatiotemporal intersection of THEME and GOAL include the GOTH subject in the applicative diathesis discussed here may seem like a stipulation. It leaves the option though to take datives to constitute the opposite case of spatiotemporal inclusion of the intersection of THEME and GOAL in the GOTH subject, as appears empirically warranted (cf. Basilico 1998 or Brandt 2003). As would seem predicted, prepositional particle verb structures but not prepositional prefix verb structures appear to be regular dative licensors, but we have to leave discussion to another occasion.

[16] Incidentally, superlative adverbs in German might provide evidence that the uninterpretable property $\neg P(x)$ can be quite directly and literally healed by some form of universal quantification that by the law of quantifier negation translates (in part) into exactly this logical form (as can be seen as well in the definition of indifferent binding). Taking an "A not A" approach to comparatives, the universal quantification picks up the comparandum $\neg P(x)$ that cannot be realized in superlatives generally. Interestingly, expressing the universal meaning aspect of superlatives by means of *aller* 'all' in German may proceed redundantly, yielding infinitely many types like, e.g., *bestens* 'in the best way; *allerbestens* 'in the very best way', *allerallerbestens* 'in the very very best way' etc. Cf. for discussion Brandt 2020: 88ff).

4.3. Backwind from individual level predication

We conceive of the predication licensing the GOTH subject as a function from a spatio-temporally complete ordinary individual into truth or falsity. Such functions instantiate individual level predicates (Carlson 1978) and involve an additional asymmetry that goes from subject to predicate in that its subject includes reference time, i.e., the temporal interval with respect to which the predicate is evaluated. This is seen in so-called lifetime-effects that arise with individual-level predicates, cf. (35) from Musan 1997: 289f).

(35) Gregory was from America.
The speaker has expressed the proposition that there is a time t* such that t* is a subinterval of Gregory's time of existence, and t* < now, and Gregory is from America at t*.

In tandem with informativity, (35) derives the lifetime effect as in order to convey that Gregory is American now, the speaker would have used present tense. Presumably, this temporal inclusion of the predicate in the subject helps redress the original problem in terms of predication and gives backwind to grammar's attempt to reinstall harmony in the mapping from semantic roles to grammatical functions.

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