

**Summary of the work in project B1b:
Deverbal nominals at the semantics-pragmatics interface**

**as part of the project B1 (Alexiadou & von Heusinger)
“The formation and interpretation of derived nominals”
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Project results

Project B1 has dealt with the multiple ambiguity of deverbal nominals in comparison to root nominals. Our main claim was that only root nominals as e.g. *Schule* ‘school’ can undergo conceptual shift so that they can e.g. refer to a building, an institution etc. (cf. Brandtner 2007 for a comparison of different theories on meaning shift with root-derived nouns). Other projects in the B-area have also dealt with deverbal nominalizations with different aspects of their interpretation in context: concerning their structure in terms of Distributed Morphology (formation part of B1), their diachronic development (B2), their annotation in corpora (B3) and DRT-based representations of their meaning (B4).

If we compare the readings available for the root-derived *Schule* ‘school’ with the verb-derived *Verwaltung* ‘administration’ as in (1) and (2), we recognize similarities:

- (1) Die Schule macht einen Ausflug / Die Verwaltung ist im Urlaub.
‘The school goes on a trip / The administration is on holiday.’
- (2) Die Schule liegt neben der Kirche / Die Verwaltung ist im 2.Stock.
‘The school is next to the church / The administration is on the second floor.’

Root nominals normally do not have an event reading in the first place, but still both root- and verb-derived ones can be interpreted as collectives and locations, but also as institutions¹. The clear-cut differences rather lie elsewhere: it is not clear what the default reading for root nouns is, we rather think of it as a family of readings (cf. Bierwisch 1983). Because of the underlying verb, this is different with nominalizations: the event is primary and e.g. results are dependent on it. The readings hence differ in the relations between them and generally in their distribution as we will see. For deverbal nominals, we have assumed the following (non-exhaustive) list of reading types exemplified by *-ung* nominals in German in Table 1:

¹In examples like *Die Schule macht ihm Spaß / dauerte bis 13 Uhr* ‘He enjoys school’/ ‘School lasted until 1 o’clock’ the noun seems to have a process reading as well.

EVENT	<i>Entführung</i> ‘kidnapping’
RESULT STATE	<i>Absperrung</i> ‘obstruction’
ABSTRACT RESULT	<i>Messung</i> ‘measurement’
RESULT OBJECT	<i>Übersetzung</i> ‘translation’
MEANS	<i>Lüftung</i> ‘air conditioning’
LOCATION	<i>Unterführung</i> ‘underpass’
AGENT	<i>Bedienung</i> ‘waitress’
INSTITUTION/ COLLECTIVE	<i>Verwaltung</i> ‘administration’

Table 1. Readings for deverbal *-ung* nominals

A specific deverbal nominal form can display more than one of these readings and as we can see, they are all related to the event, but not all are eventive themselves and not all refer to an argument of the verb: e.g. the result reading of *Übersetzung* ‘translation’, which is a modified, new item that came about by the event. The non-eventive readings form an ontologically heterogeneous class, they can be abstract or concrete results (an *Übersetzung* ‘translation’ can e.g. be something that has faults or the book or paper with the text), means, which are also concrete entities or physical objects, abstract things as locations and institutions and human beings as agents and collectives.

Looking at the literature and at the work in other SFB projects we recognized that there is no consensus on which readings should be covered by a theory of nominalization, i.e. which are core readings: some only deal with eventive readings and exclude some objects and other readings (e.g. B4). Some include means and object readings (as e.g. Melloni 2007) etc. We have hence aimed at a new motivation for the selection and grouping of readings. While the immaterial eventive readings are treated as clearly transparent core readings, the unclear cases are the non-eventive readings as we have seen: objects, means etc. The analogous readings of root-derived nouns (e.g. *book* as content and object) have been analysed as conceptual shift by Bierwisch (1983), i.e. they are said to come about by enrichment of an underspecified form by referring to the conceptual system². A similar account was taken by von Heusinger (2005, 2009) for different suffixes and derivational means in Italian, which show different, but clearly ambiguous readings. The different readings are derived by an underspecified form with indices that are bound by conceptual information later in the compositional process.

² Bierwisch 1989 makes a similar suggestion for nominalizations.

Since the available readings seem to be analogous to the readings for deverbal nominals, one could be tempted to classify them as outcome of more general principles as well. Our next question was hence, whether the distribution of readings differs in any respect from root nominals and e.g. *-er* nominals and whether or how they should be subdivided. Our aim was to substantiate the intuition that some readings of deverbal nominals are more similar to or accessible from the event than others: We have identified the characteristic features that the types of readings for deverbal nominals have and found out that they build up a scale as shown in Table 2:

	Event	Result State	Abstract Result	Result Object	Means	Agent/ Collective	Location
duration	+	+	-	-	-	-	-
dynamic	+	-	-	-	-	-	-
immaterial	+	+	+	-	-	-	-
resultative	-	+	+	+	-	-	-
volitional	-	-	-	-	-	+	-
cause event	-	-	-	-	+	+	-

Table 2. Features determining the reading types

Table 2 shows that we have a clear-cut point of origin for deverbal nominals and not a family of readings and while we go down the scale the shared features with the event become less. The question is where we have to draw the line to divide the readings central for nominalization from the ones achieved by general principles and whether this feature sharing has grammatical effects.

What is special about these nominalizations is that some of their readings are closely intertwined with the event reading because of the resultative feature: they come about by the event. While collecting data for these readings in context, we recognized that this feature makes it even possible to combine readings from ontologically distinct classes as e.g. events and physical objects in one token in a so called copredication structure (cf. also Asher & Pustejovsky 2004):

- (3) Paul [legt]_{RESULT OBJECT} die [fehlerhafte]_{ABSTRACT RESULT} Übersetzung auf den Tisch.
 ‘Paul puts the faulty translation on the table.’

The different readings of *-ung* nominals are suggested by so called reading indicators, which correspond to the selectional restrictions of certain modifiers and predicates: duration, time

frame predicates and dates indicate for example eventive readings, while physical change and appearance predicates suggest an object reading. For (3), however, we find two competing indicators for the nominal: You can only put something somewhere, if it is a physical object, but on the other hand *fehlerhaft* ‘faulty’ describes the abstract content of the physical object.

The features in Table 2 build up a scale and are mirrored in the language in this structure, since they explain where we have to draw the line between a close semantic unit (events and their abstract or concrete outcome) and conceptually shifted readings or participants in the event: means, agent, collective and locative readings, which do not share any features with the event and do not result from it, cannot be unified with it as shown in (4) and (5):

- (4) ?Die [regelmäßige]_{EVENT} Lüftung der Kinderzimmer ist wichtig, aber [kaputt]_{MEANS}.
 ‘The regular ventilation of the children’s rooms is important, but damaged.’
- (5) ?Die Verwaltung ist [mühselig]_{EV} und seit Montag [im Urlaub]_{COLLECTIVE}.
 ‘The administration is troublesome and on vacation since Monday.’

Nevertheless, copredication was not only used as a diagnostic for the relations between readings in this project (as e.g. in Cruse 2000), but as a structure that needs its own explanation. There are many theories that deal with the disambiguation of deverbal nominals in context, but they have no explanation for cases like these where the disambiguation process is not straight forward: it is not clear how to interpret the nominal since we have two competing indicators. Theories that deal with copredication do not pay special attention to deverbal nominals. Apart from that, projects that work with corpora and identify reading indicators to annotate the tokens of deverbal nominals as e.g. project B3 had a problem here since there are two competing indicators.

For these special cases, we developed an analysis complementary to the strategies pursued in the other B-projects, assuming that we also need meaning shift for verb-derived nominals (and not only for root-derived ones) and their default readings in that environment. Contrary to e.g. Pustejovsky (1995), who assumes a special lexical type for these nominals and leaves the interpretation on the sentence level open, we tried to avoid meaning shift on the nominal. To accomplish this, we have applied the notion of predicate transfer developed in Nunberg (1995, 2004). In these papers on similar kinds of conflicts Nunberg establishes the viewpoint, that in a mismatch situation, e.g. between a noun and its predicate, we always have to

consider, which part can be adjusted to the other and under which circumstances. Nunberg's theory of predicate transfer is exemplified in the following example, where we have a mismatch between the pronoun and the predicate *parked out back* normally applying to cars.

(6) I am parked out back.

Instead of shifting the meaning of the pronoun to refer to the car itself, the mismatch is here solved by enrichment of the predicate *parked out back* so that it fits the selectional restrictions of a human and can accordingly apply to persons as well, as in (6'), while the pronoun still refers to the driver.

(6') I am {the owner of a car that is [parked out back]}.

We applied this view point to copredication examples with deverbal nominals to solve the competing requirements on the noun without having to shift the nominal's meaning as in (7'), which is the enriched form of (7):

(7) Die [langwierige]_{EVENT} Übersetzung [verkaufte sich millionenfach]_{RESULT O}.
'The tedious translation sold million-fold.'

(7') Die [langwierige]_{EVENT} Übersetzung [hatte ein Resultat, das [sich millionenfach verkaufte]_{RESULT OBJECT}]_{EVENT}.
'The tedious translation has a result that sold million-fold.'

As shown in (7'), the nominal has only one fixed reading in this sentence while the context is adjusted to it, so that we have two event predicates applying to the nominal *Übersetzung* 'translation'. By applying predicate transfer to copredication cases with deverbal nominals we discovered a new aspect- the application is not unconstrained: in examples (8)–(10) the unacceptable examples involve indicators for the same readings as in the acceptable version, but are still odd and hence we were able to show that copredication does not only depend on the specific nominal form:

(8) ?Die [einfache]_{EV} Übersetzung [verkaufte sich millionenfach]_{RO}.
'The easy translation sold million-fold.'

- (9) i. ?Die [abblätternde]_{RO} Bemalung [war mit roter Farbe durchgeführt worden]_{EV}.
 ‘The scaly painting has been done with red paint.’
 ii. Die [abblätternde]_{RO} Bemalung [war mit alten Ölfarben durchgeführt worden]_{EV}.
 ‘The scaly painting has been done with old oil paint.’
- (10) i. ?Die [umständliche]_{EV} Bestellung [wiegt 2 kg]_{RO}.
 ‘The cumbersome order weighs 2 kg.’
 ii. Die [umständliche]_{EV} Bestellung [wurde endlich verschickt]_{RO}.
 ‘The cumbersome order was finally sent.’
- (11) i. ?Die Absperrung [aus Holz]_{RO} [hat drei Tage gedauert]_{EV}.
 ‘The wooden obstruction has taken three days.’
 ii. Die [aus über 100 Teilen bestehende]_{RO} Absperrung [hat drei Tage gedauert]_{EV}.
 ‘The obstruction consisting of over 100 parts has taken three days.’

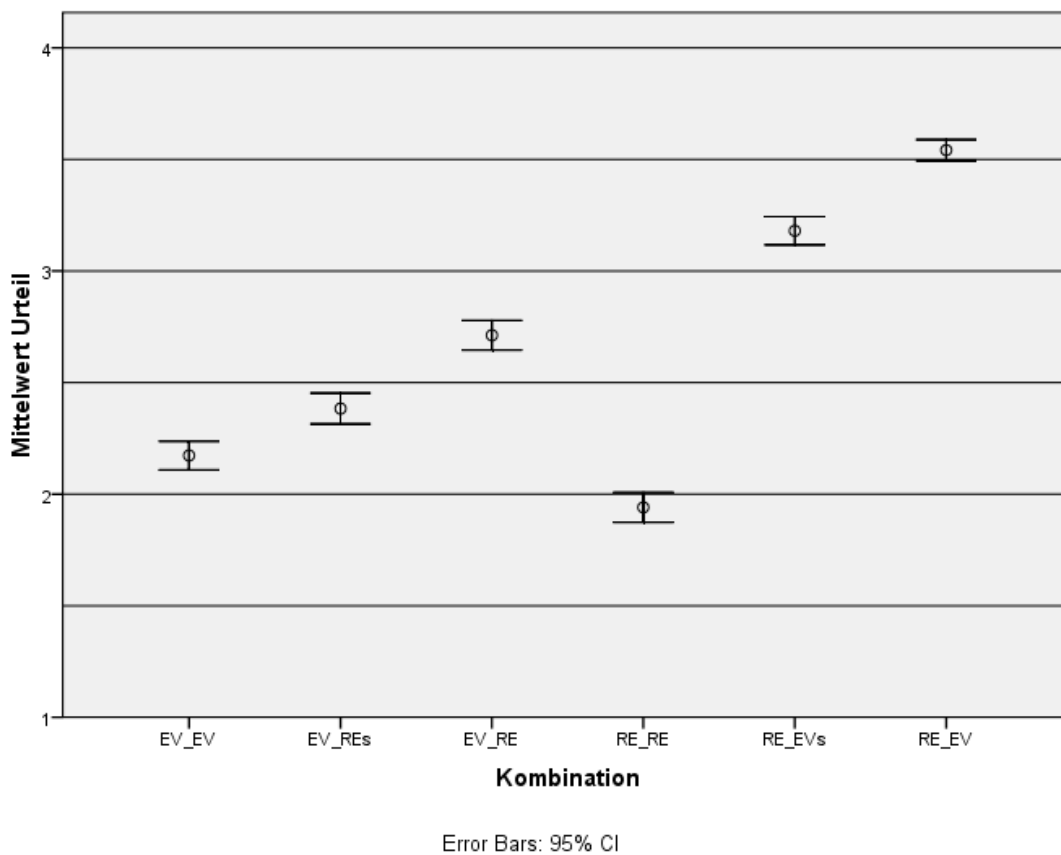
According to Nunberg there are two requirements for licensing predicate transfer, i.e. for using predicates normally applying to one domain also for other domains (e.g. car predicates as driver predicates): (i.) there has to be a salient correspondence between the bearers of the properties, and (ii) the property contributed by the new enriched version has to be “noteworthy” for the identification or classification of the bearer (Nunberg 2004). However, these restrictions are not spelled out especially for copredication.

While there are some considerations around concerning copredication in general (Asher & Pustejovsky 2004, Cruse 2000, Bierwisch 1983), the constraints have not been explained in detail before. Our aim was hence to find the requirements for licensing copredication to fill this gap. We found out, that copredication also depends among others³ on pragmatic factors such as noteworthiness: we found that it is not only crucial which two reading indicators are involved, but also what their semantic content is and whether the relation between their semantic contributions is noteworthy. We claim, hence, that the noteworthy relation does not have to exist between the indicator and the nominal as in Nunberg’s examples, but between the two indicators itself for copredication examples: Accordingly, (11i.) is not acceptable because there is no correlation between the material of the obstruction and the duration of constructing it, while in (11ii.) this is the case: many parts mean that it is a complex action.

³Apart from that we found constraints concerning the combination of types in general (secondary readings cannot be combined with core ones, cf. (4) and (5)) and structural ones (subordination vs. coordination etc.). For a full picture, cf. Brandtner 2010.

We tested the acceptability of examples like these by using questionnaires (cf. Weiland 2009). The informants were presented with sentences with combinations of two event (EV) or result (RE stands for result object here) indicators in one sentence, and with copredication examples with a noteworthy relation between event and result (EV_REs) and without it as in the example pairs above. Table 3 shows the examples of our first main study on noteworthiness.

Table 3. Acceptability of copredication with and without noteworthiness



As can be seen in table 3 the examples involving noteworthiness were judged better (1=sounds very good, 4=sounds very bad) and hence we were able to show that additional pragmatic principles play a role for nominalizations in context and for the distribution of their readings.

To make sure, that the examples were not odd for reasons other than noteworthiness, we did preparatory studies for another main questionnaire, where we e.g. examined 40 nominalizations derived with *-ung* with regard to the homogeneity of their readings and tested

the indicators more carefully in combination with unambiguous nominals. The second main experiment used the indicators judged in this preparatory study to examine, in line with the first study, the different combinations of positions and readings of the indicators and the influence of noteworthiness on all sentence types: the ones with two event or two result indicators and copredications with EV-RE and RE-EV order (cf. Featherston et al. in preparation). The results of this last experiment will be available soon.

We were able to show in this project, how deverbal nominals are interpreted in different contexts and especially, how they behave in copredication structures. The structural, semantic and pragmatic constraints we were able to identify have shown, that copredication is not only licensed by a special kind of nominal, but depends on different factors, and thus we have given new insights into the distribution of the variety of readings for deverbal nominals. With these considerations we have shed light on a frequent phenomenon (copredication) that addresses general questions about the character of ambiguity and about disambiguation in context and that is still neglected especially concerning its constraints.

This part of B1 will be terminated by the end of phase 1, but some aspects will be of concern in another project in the second phase: D6 will develop new insights into the resolution of other type mismatches as *a fast coffee*.

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