

Syntactic and semantic constraints in the formation and interpretation of *ung*-nouns

NOMINALIZATIONS ACROSS LANGUAGES
Antje Roßdeutscher

Universität Stuttgart
Institut für maschinelle Sprachverarbeitung
– Logik und Sprachphilosophie –
Azenbergstr. 12
D 70174 Stuttgart
antje@ims.uni-stuttgart.de

December 1st, 2007

Research objectives of B4

- ▶ B4: A theory of word-formation and interpretation in context
 - ▶ word formation is inspired by principles of the research program 'Distributed Morphology'(DM). Verbs and derived nominals are constructed from 'roots'
 - ▶ we assign a semantics to the roots
 - ▶ constructions are assigned a compositional semantics, determined by their syntactic trees.
- ▶ (i) When is *ung*-nominalisation possible?
- ▶ (ii) What are the possible meanings of *-ung*-nouns?

syntactic constraints on the formation of *ung*-nouns

Core-transitive verbs [Levin:1999], [Kratzer:2005]

-*ung*-noun

no -*ung*-noun

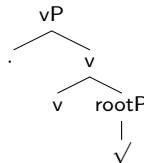
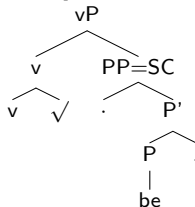
den Tisch säubern , reinigen
the table clean

den Tisch putzen, wischen
the table wipe

einen Zettel mit Zahlen
a paper with Numbers
beschreiben
PREF-write

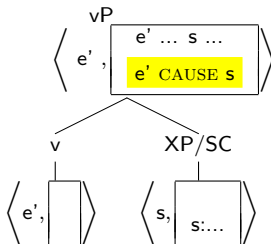
Zahlen auf einen Zettel schreiben
numbers onto a paper write

[Marantz:2005] bi-eventive syntactic structure



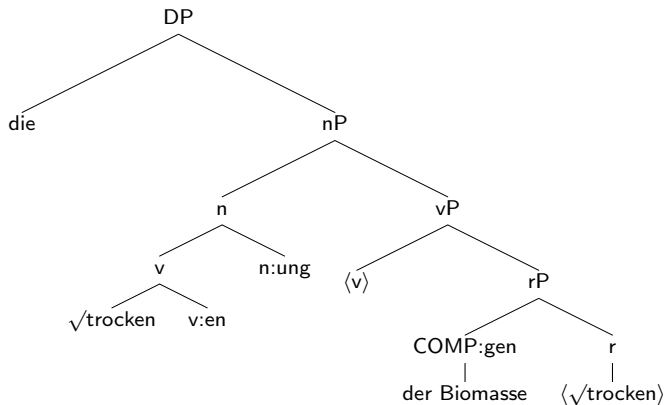
syntactic constraints on the formation of *ung*-nouns

- ▶ *ung* is a 'deverbal' nominalisation operator, in the following sense:
 - ▶ *-ung* operates above vP and below voiceP
 - ▶ *-ung* requires as input a 'syntactically transparent' cause-result structure where the semantic representation of vP contains a condition of the form 'e' CAUSE s' and where this condition results from the combination of one daughter contributing e' and the other daughter contributing s.

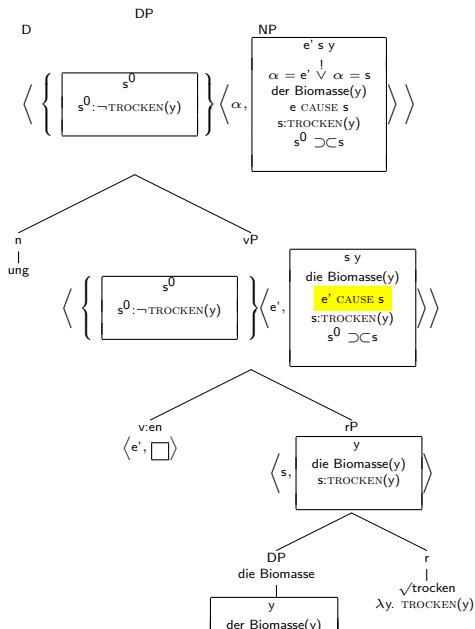


syntactic constraints on the formation of *ung*-nouns

die Trocknung der Biomasse
the drying of the bio-material

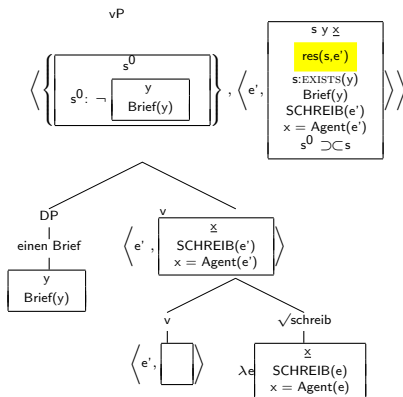


Semantics construction



inherently intransitive verbs have no *ung*-nominal

einen Brief schreiben
a letter write



$\text{res}(s,e')$ — e' CAUSE s : the semantics of the vP does not suffice that an *ung*-nominalization **die Schreibung eines Briefes* is not possible. But the verbal constructions are different in syntactic respects.

No syntactic route to the interpretation of 'result nominals'

contra [Grimshaw:1990], [Alexiadou:2001]

damit eine **eilige** **Lieferung** den Kunden noch schneller erreicht
for a hurry(ADJ) instalment the customer even faster reaches

die dahinter liegende **großzügige Bepflanzung** ist leider fast völlig entfernt worden
the beyond situated generous PRE-plant+ing has-been alas almost entirely removed

Eine **reiche Bepflanzung** wird schon bald die ersten Blüten treiben ...
a rich plantation will soon the first flowers grow ...

Alle Bestandteile des Teegartens (Schöpfbecken, Wartepavillon und die **sparsame**
All parts of the Japanese garden (basin, pavillon and the sparse
Bepflanzung) dienen
plantation) do good ...

die sehr **großzügige, dichte Bepflanzung** und die nur einstöckigen Bauten, ...
the very generous, dense plantation and the only one-floor buildings, ...

Die Drainage und die **schnelle Bepflanzung** des Gartens haben sich bezahlt gemacht. (ambiguous)
the drainage and the quick plantation of the garden paid off.

großzügig/ dicht/ reich/ sparsam/ schnell/ be-pflanz-te Beete
generously/ densely/ richly/ sparsely/ quickly/ PREF-plant-PARTICIPLE beds

	Beete (beds)	Gärten (gardens)	Parks (parks)
großzügig(e) (generous)	yes	yes	yes
dicht(e) (dense)	yes	yes	yes
reich(e) (rich)	no evidence	(yes)	no evidence
sparsam(e) (sparse)	no evidence	no evidence	weird
schnell(e) (quick)	weird	weird	weird

Interpretation: the range of readings of *ung*-nouns

- ▶ range of possible readings of *ung*-nouns and past participles
- ▶ working hypothesis: two sides of the same coin.

1

die Biomasse	war	getrocknet	die Trocknung	der Biomasse
the bio-material	be:aux:pst	dried	the drying	of the bio-material

2

die Zementmasse	war	gemischt	die Mischung	der Zementmasse
the cement-mass	be:aux:pst	mixed	the mixing	of the cement-mass

3

der Platz	war	gepflastert	die Pflasterung	des Platzes
the square	be:aux:pst	paved	the pavement	of the square

- ▶ An *ung*-noun has a target state reading if and only if the past participle of the corresponding verb has one.
- ▶ an *ung*-noun has an other-reading if the corresponding verb is built from a sortal root

Is the root class decisive?

√trocken(dry), √weit(wide)	√sauber(clean),	→	property of individuals	1 e, ts
√bild _{sort} (build), √samm _{sort} (collect)	√misch _{sort} (mix),	→	entity which is brought about by the event	2: e, o
√pflaster _{sort} (pavement), √muster _{sort} (pattern)	√würze _{sort}	→	entity which the internal argument is made to have	3: e, ts, o

Expectation: the range of readings of *ung*-nouns and past participle depends on the class of the roots

Our experience: We find productive patterns along the lines 1, and 3.

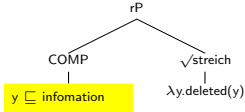
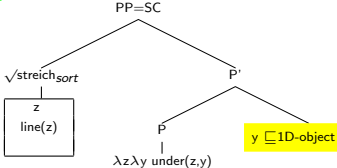
Hypothesis:

Some roots can belong to more than one class at once; they adjust semantics accordingly.

Roots switch semantics wrt. sortal restrictions

1 A syntactic tree with root rP. The root branches into $COMP$ and $\sqrt{\text{häufen}}$. $COMP$ is associated with a yellow box containing the text $Y \sqsubseteq \text{quantity of goods or monetary value}$. $\sqrt{\text{häufen}}$ is associated with the lambda expression $\lambda Y. \text{accumulated}(Y)$.	2 A syntactic tree with root rP. The root branches into $COMP$ and $\sqrt{\text{häufen}}_{\text{sort}}$. $COMP$ is associated with a yellow box containing the text $Y \sqsubseteq \text{events}$. $\sqrt{\text{häufen}}_{\text{sort}}$ is associated with a box containing the variable z and the text $\text{accumulation}(z)$.	3
die Häufung der Vorräte the accumulation of stocks	die Häufung der Unfälle the accumulation of the accidents	
die wieder gehäuften Vorräte (restit.)	die Unfälle häufen sich wieder (repet.)	

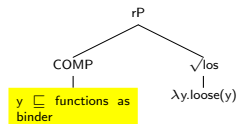
Roots switch semantics wrt. sortal restrictions

1 		3 
die Streichung des the deletion of the Absatzes paragraph		die Unterstreichung der Zeile the underlining of the line

die Wand streichen , durch die Gegend streichen
the wall paint , through the area wander

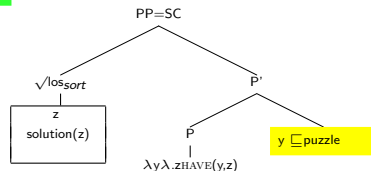
Roots switch semantics wrt. sortal restrictions

1



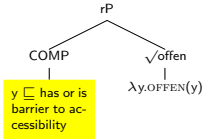
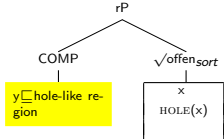
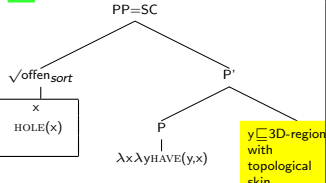
die Lösung der
the undoing of the
Schraube
screw

3

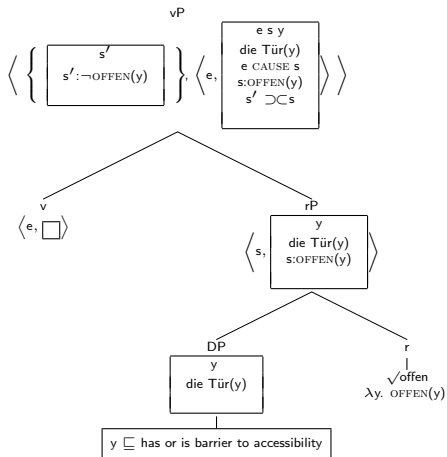


die Lösung des Rätsels
the solution of the puzzle

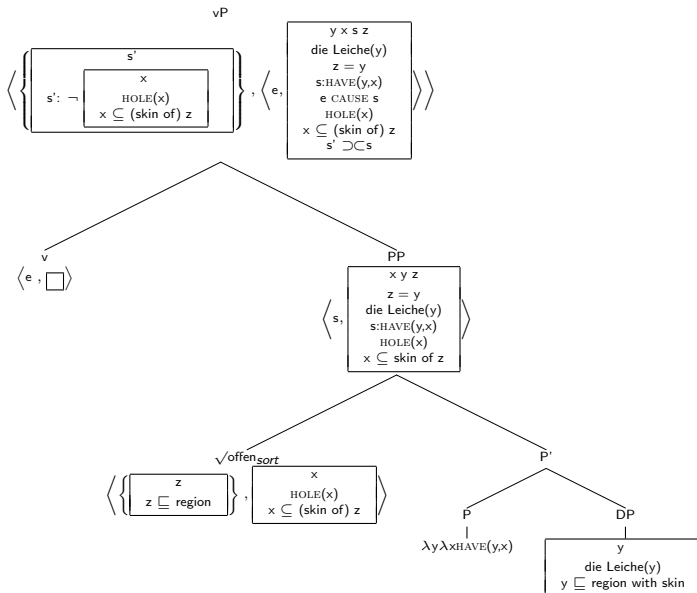
Roots switch semantics wrt. sortal restrictions

1 	2 	3 
die Öffnung der the open+ung of the Tür door	die Öffnung eines the open+ung of a Loches in der hole in the Wolkendecke unbroken cloud	die Öffnung einer Leiche 'a postmortem on a body'
die wieder geöffnete Tür	wieder hat sich ein Loch in der Wolkendecke geöffnet	

die Tür öffnen 1



eine Leiche öffnen 3



range of readings of the *ung*-nominals

1 *die Öffnung* $\rightsquigarrow$ $\left\langle \left\{ \begin{array}{c} y \\ y \sqsubseteq \text{has or is barrier} \\ \text{to accessibility} \end{array} \right\}, \left\langle \alpha, \begin{array}{c} e \ s \\ (\alpha = e) \overset{!}{\vee} (\alpha = s) \\ e \text{ CAUSE } s \\ s: \text{OFFEN}(y) \end{array} \right\rangle \right\rangle$

2 *die Öffnung* $\rightsquigarrow$

$\left\langle \left\{ \begin{array}{c} z \\ z \sqsubseteq \text{region} \end{array} \right\}, \left\langle \alpha, \begin{array}{c} e \ s \ x \\ (\alpha = e) \overset{!}{\vee} (\alpha = x) \\ e \text{ CAUSE } s \\ s: \text{HOLE}(x) \\ x \sqsubseteq (\text{skin of}) \ z \end{array} \right\rangle \right\rangle$ *die Öffnung eines Loches* $\rightsquigarrow$ $\alpha \not\equiv x$; 'disjoint reference'

3 *die Öffnung* $\rightsquigarrow$

$\left\langle \left\{ \begin{array}{c} z \\ z \sqsubseteq \text{region} \end{array} \right\}, \left\langle \alpha, \begin{array}{c} e \ s \ x \\ (\alpha = e) \overset{!}{\vee} (\alpha = s) \overset{!}{\vee} (\alpha = x) \\ e \text{ CAUSE } s \\ s: \text{HOLE}(x) \\ x \sqsubseteq (\text{skin of}) \ z \end{array} \right\rangle \right\rangle$

Remark on the restriction of a change of root semantics

1

um auch bei Kantung der
for also at edge+ung of the
OP-Tisch-Lagerfläche eine senkrechte
operation-table a orthogonal
Position des Infusionshalters zu
position of the infusion-holder to
ermöglichen
yield

Von der Knöpfung des Anzugs bis zum
from the buttoning of the costume to the
passenden Moment, um die Visitenkarte
right moment to the visiting-card
abzugeben, lassen die Autorinnen nichts
hand leave the authors nothing
aus
out

3

die Kantung des Luftleitbleches muss
the edge+ung of the air-sheet-metal must
immer Richtung Innenseite zeigen
allways towards interior be-directed

englische Möbel: Bei der Knöpfung wird
english furniture: at the botton+ung is
grundsätzlich das gleiche Leder verwendet,
generally the same leather used,
also keine vorproduzierten Knöpfe.
so no preproduced buttons

So kann z.B. aus der Endung des Wortes
so can e.g. from the ending the word
auf die Wortart geschlossen werden
the category inferred be

als sich um 23.00 Uhr das Ende / die
when at 11 h the end / the

***Endung** des Konzerts abzeichnete
ending of the concert showed

Conclusion

- ▶ compositional semantics for verbs and determined by their roots and structures
- ▶ structural ambiguity of verbs and *ung*-nouns as determined by different types of roots
- ▶ predictions of the meaning ranges of *ung*-nouns from their root based structure

Questions on the agenda

- ▶ necessary conditions for 'other'-readings
- ▶ the role of epistemically new entities
- ▶ ontological representations of 'other'-readings of type3 constructions

Alexiadou, A.: 2001, *Functional Structure in Nominals*, John Benjamins Company.

Kamp, H. and A. Roßdeutscher.: ms. From roots to semantic representations of words and sentences. Paper presented on the workshop 'Lexical Decomposition'. 2nd -3rd March, 2007, Stuttgart.

Kratzer, A.: 1996. Severing the external argument from its verb, in J. Rooryck and L. Zaring (eds), *Phrase Structure and the Lexicon*, Dordrecht:Kluwer, pp. 109–137.

Kratzer, A.: 2002. Telicity and the meaning of objective case. ms.

Kratzer, A.: 2005. Building resultatives, in C. Maienborn and A. Wölstein-Leisten (eds), *Events in Syntax, Semantics and Discourse*, Tübingen (Niemeyer), pp. 177–212.

Marantz, A.: ms. Objects out of the lexicon: Objects as events. Handout. June 11, 2005.

Levin, B.: 1999. Objecthood. An event structure perspective, *CLS 35*, Chicago Linguistic Society, pp. 223–47.