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

NOMINALIZATIONS ACROSS LANGUAGES
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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]

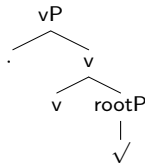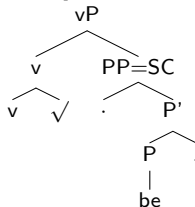 *-ung*-noun   no *-ung*-noun

```
den Tisch säubern , reinigen          den Tisch putzen, wischen
the table clean                       the table wipe
```

```
einen Zettel mit  Zahlen              Zahlen   auf  einen Zettel schreiben
a     paper with Numbers              numbers onto a    paper  write
beschreiben
PREF-write
```
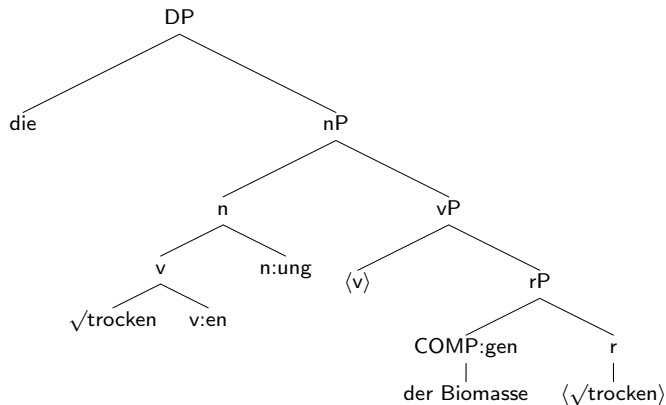
[Marantz:2005] bi-eventive syntactic structure

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.
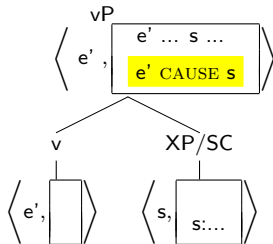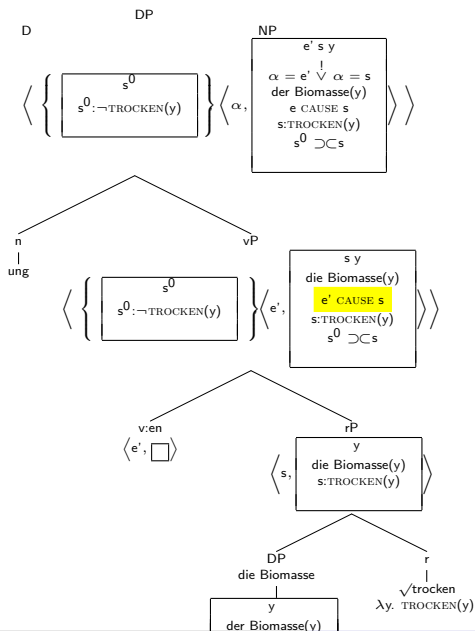
syntactic constraints on the formation of *ung*-nouns

die Trocknung der Biomasse
the drying of the bio-material

```
                          DP
                         /  \
                        /    \
                       /      \
                     die      nP
                             /  \
                            /    \
                           /      \
                          n       vP
                         / \      / \
                        /   \    /   \
                       v   n:ung ⟨v⟩  rP
                      / \           /  \
                     /   \         /    \
                √trocken v:en  COMP:gen  r
                                  |       |
                            der Biomasse ⟨√trocken⟩
```

Semantics construction

einen Brief   schreiben
a   letter write

vP

s y x
res(s,e')
s:EXISTS(y)
Brief(y)
SCHREIB(e')
x = Agent(e')
$s^0 \supset\subset s$

s^0
s^0: ¬
y
Brief(y)

$\langle$ e', $\rangle$

DP
einen Brief
y
Brief(y)

v
$\langle$ e',
x
SCHREIB(e')
x = Agent(e')
$\rangle$

v
$\langle$ e', $\rangle$

√schreib
λe
x
SCHREIB(e)
x = Agent(e)

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

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 beyound 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/ qickly/ PREF-plant-PARTICPLE 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
the	bio-material	be:aux:pst	dried

die	Trocknung	der	Biomasse
the	drying	of the	bio-material

2

die	Zementmasse	war	gemischt
the	cement-mass	be:aux:pst	mixed

die	Mischung	der	Zementmasse
the	mixing	of the	cement-mass

3

der	Platz	war	gepflastert
the	square	be:aux:pst	paved

die	Pflasterung	des	Platzes
the	pavement	of the	square

- An *ung*-noun has a target state reading if and only if the past particple 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?

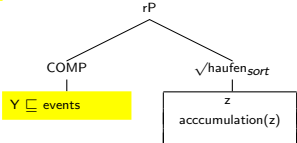|			
√trocken(dry), √sauber(clean), √weit(wide)	→	property of individuals	**1** e, ts
√bild$_{sort}$(build), √misch$_{sort}$(mix), √samm$_{sort}$(collect)	→	entity which is brought about by the event	**2** : e, o
√pflaster$_{sort}$ (pavement), √würze$_{sort}$ (spice), √muster$_{sort}$ (pattern)	→	entity which the internal argument is made to have	**3** : e, ts, o
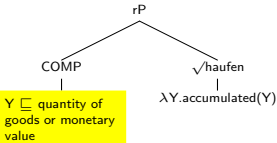
Expectation: the range of readings of *ung*-nouns and past participle depends on the class of the roots

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

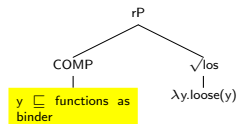| **1**	**2**	**3**
rP	rP	
COMP —— √haufen	COMP —— √haufen$_{sort}$	
$Y \sqsubseteq$ quantity of goods or monetary value — $\lambda Y.\text{accumulated}(Y)$	$Y \sqsubseteq$ events — z, acccumulation(z)	
die Häufung der Vorräte the accumulation of stocks	die Häufung der Unfälle the accumulation of the accidents	
die wieder gehäuften Vorräte (restit.)	die Unfälle häufen sich wieder (repet.)	

Roots switch semantics wrt. sortal restrictions

1		3
rP COMP √streich y ⊑ infomation λy.deleted(y)		PP=SC √streich$_{sort}$ P' z line(z) P y ⊑1D-object λzλy under(z,y)
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
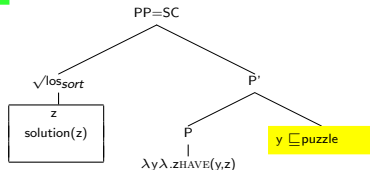**the wall paint , through the area wander**

Roots switch semantics wrt. sortal restrictions

1

```
              rP
            /    \
         COMP      √los
                    |
   ┌──────────┐  λy.loose(y)
   │ y ⊑ functions as │
   │ binder           │
   └──────────┘

die   Lösung        der
the undoing of the
Schraube
screw
```

3

```
                    PP=SC
                  /       \
          √los_sort         P'
         ┌────────┐       /    \
         │   z    │      P    ┌────────┐
         │ solution(z) │  |    │ y ⊑ puzzle │
         └────────┘  λyλ.zHAVE(y,z) └────────┘

die   Lösung        des Rätsels
the solution of the puzzle
```
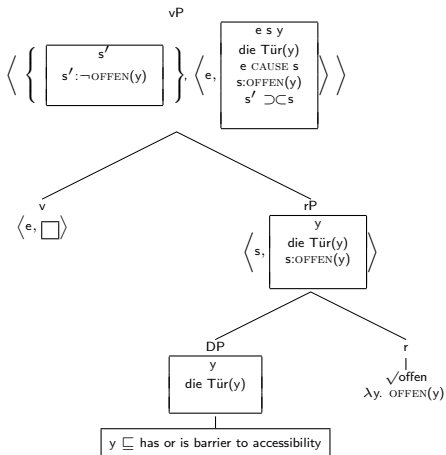
Roots switch semantics wrt. sortal restrictions

1

rP
COMP   √offen
y ⊑ has or is barrier to accessibility
λy.OFFEN(y)

2

rP
COMP   √offen*sort*
y⊑hole-like region
x
HOLE(x)

3

PP=SC
√offen*sort*   P'
x
HOLE(x)
P   y⊑3D-region with topological skin
λxλyHAVE(y,x)

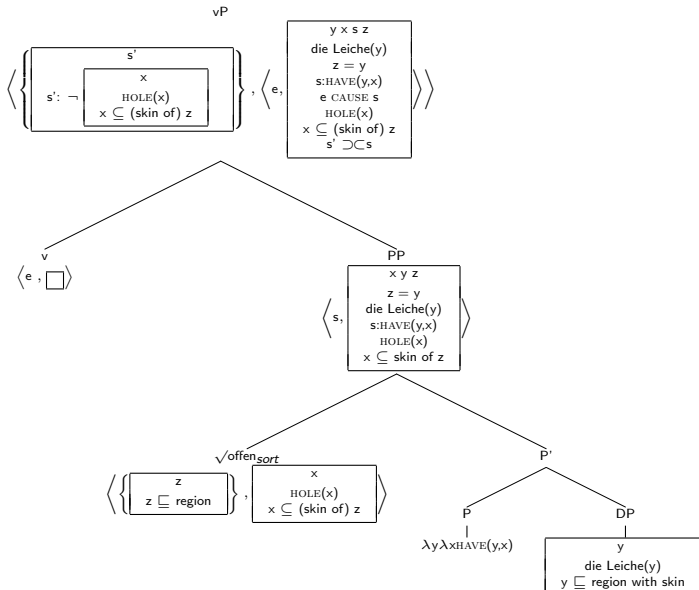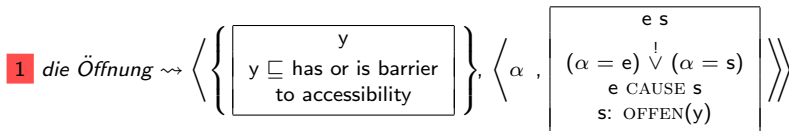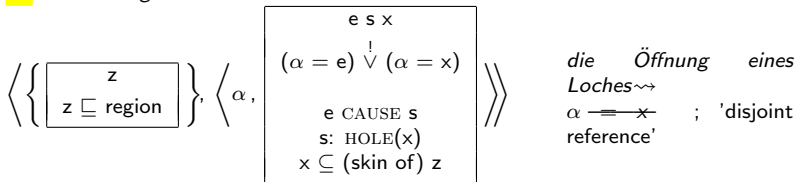|		
die Öffnung der the open+ung of the Tür door	die Öffnung eines the open+ung of a Loches in der hole in the Wolkendecke unbroken cloud	die Öffnung einer Leiche 'a postmortem on a body'
die wieder geöffnete Tür	wieder hat sich ein Loch in der Wolkendecke geöffnet	

ein Loch sich öffnen 2
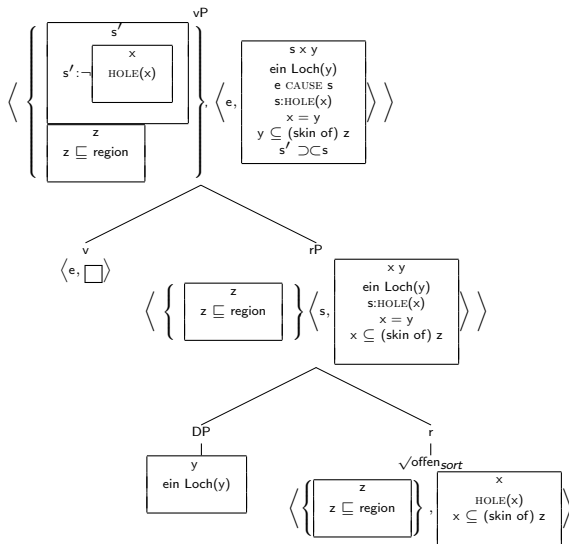
eine Leiche öffnen 3

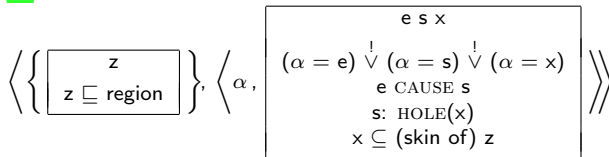# range of readings of the *ung*-nominals

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

2 *die Öffnung* ⤳

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

die Öffnung eines Loches ⤳
$\alpha \overset{\longrightarrow}{\neq} \text{x}$; 'disjoint reference'

3 *die Öffnung* ⤳

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

Remark on the restriction of a change of root semantics

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

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   furnature: 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

- neccessary conditions for 'other'-readings
- the role of epistemically new entities
- ontological repesentations of 'other'-readings of type3 constructions

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

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