Diachronic Construction Grammar

Using evidence from synchronic corpora

Muriel Norde
Outline

• Theoretical preliminaries
  • Construction Morphology (CxM)
  • Constructionalization and Constructional Change in CxM

• Prefixoids
  • Prefixoids as morphological constructions
  • Debonding of prefixoids

• Case study: debonded *kei* ‘boulder’, *hammer* ‘hammer’ and *kanon* ‘cannon’: Constructionalization or Constructional Change?
  • Synchronic corpora
    • Part of Speech (PoS) of the R1
    • Collexemes
    • Productivity

• Summary and conclusions
Construction morphology

Synchonic and diachronic
Construction Morphology

- Basic schema ( Booij 2010 )
- \([a]_{X_i} \leftrightarrow [SEM]_i\)
  - \(a\): phonological string
  - \(X\): part of speech
  - \(i\): lexical index
  - \(\leftrightarrow\): symbolic unit between form (left) and meaning (right)
- **Example 1: right-headed binominal compound**
  - \([[a]_{Ni}[b]_{Nj}]_{Nk} \leftrightarrow [SEM]_j \text{ with relation } R \text{ to } SEM_i]_k\)
- **Example 2: suffixal derivation deriving } N \text{ from } A**
  - \([[a]_{Ai} b]_{Nj} \leftrightarrow [[SEM]_i SEM]_j\)
"Constructionalization is the creation of form new-meaning new (combinations of) signs. It forms new type nodes, which have new syntax or morphology and new coded meaning, in the linguistic network of a population of speakers. Minimally, constructionalization involves neoanalysis of morphosyntactic form and semantic/pragmatic meaning (...). Formal changes alone, and meaning changes alone cannot constitute constructionalization.“ (Traugott & Trousdale 2013: 22)
Constructional properties

- syntactic properties
- morphological properties
- phonological properties

- semantic properties
- pragmatic properties
- discourse-functional properties

CONSTRUCTION
FORM
Symbolic correspondence (link)
(CONVENTIONAL)
MEANING

Croft 2001: 18
New nodes (1)
New nodes (1)

e.g. *a lot of* as quantifier
New nodes (2)
New nodes (2)

e.g. epistemic modals
Constructional change (1)

“A constructional change is a change affecting one internal dimension of a construction. It does not involve the creation of a new node.” (Traugott & Trousdale 2013: 26)
Constructional change (2)

- **Constructional change** selectively seizes a conventionalized form-meaning pair of a language, altering it in terms of its form, its function, any aspect of its frequency, its distribution in the linguistic community, or any combination of these. (Hilpert 2013: 16)

- “[E]ven if a change does not create new functions or new structures, a **rearrangement of relative frequencies still brings about a constructional change**” (Hilpert 2013: 17)
Guiding question

• “Just after how many constructional changes exactly do we have a construction that counts as a new node?” (Hilpert 2015: 134)
Prefixoids

Status

Cross-linguistic and intra-linguistic observations

Debonding
Prefixoids

- Affixoids are “not yet affixes because they correspond to lexemes, that is, unbound forms, but their meaning differ from that when used as independent lexemes.” (Booij 2010: 57)

- Example: intensifying / evaluative prefixoids
  - Dutch *reuzegezellig* ‘very cosy’; *reuzekerel* ‘great guy’ (< ‘giant’)
  - Swedish *kanontrött* ‘very tired’, *kanonpris* ‘good price’ (< ‘canon’)
  - German *hammerlieb* ‘very sweet’; *Hammerstimme* ‘great voice’ (< ‘hammer’)

- Changes in form
  - Dutch vowel: lengthening, stress on prefix
  - German: stress shift (from 1st to 2nd compounding element): ‘*Hammerklavier* ‘fortepiano’ – *Hammer’klavier* ‘outstanding piano’ (Schlücker 2013: 457)
Semantic developments

- **[N-N] compounds: German**
  - *Riesenhand* ‘hand of a giant’ (determinative) –
  - *Riesenbühne* ‘giant stage’ (simile) –
  - *Riesenfan* ‘huge fan’ (evaluative)

- **[N-ADJ] compounds: Swedish**
  - *jättelik* ‘giant-like’ (determinative) –
  - *jättestor* ‘as big as a giant’ (simile) –
  - *jättegullig* ‘very cute’ (intensifying)
  - *jätтелiten* ‘very small’ (intensifying, antonymic)
Ambiguous examples

Familienfeier wird zur Riesenparty

20 Jahre RP Online - die Feier im Schlösser Quartier Boheme

FOTO: Tonight.de/Natali Krusevski
Constructional schemas

1) $[[a]_{Ni} [b]_{Aj}]_{Ak} \iff [\text{as SEM}_j \text{ as SEM}_i / \text{very SEM}_j]_k$

2) $<[a]>_{\text{INT}} [b]_{Ai}_{Aj} \iff [\text{very SEM}_i]_j$

3) $[[\text{kei}] [\text{hard}]] \iff [\text{as hard as a boulder}]$

4) $<[\text{kei}> [\text{leuk}] ] \iff [\text{very nice}]$

[Norde & Van Goethem 2015; Norde & Morris 2017]
Debonding

• **Definition:**
  - “a composite change whereby a bound morpheme in a specific linguistic context becomes a free morpheme” (Norde 2009: 186)

• Free uses of prefixoids have been considered debonding

Debonding of prefixoids

• *das spiel hat eine riesen deutsche community wo man genug hilfe findet.*
  • ‘the game has a huge German community where one can find plenty of support’ (DECOW2012)

• *min fredag startade kanon*
  • ‘my Friday started wonderfully’ (SECOW14AX)

• *Onze kinderen hebben zich reuze (*reus) vermaakt*
  • ‘Our kids enjoyed themselves tremendously’ (NLCOW2012)

• *Ein rieses Dankeschön nochmal*
  • ‘A huge thank you, once more’ (DECOW2012)

[Norde & Van Goethem, fc.]
(rieses < riesiges?)

- ein riesiges Dankeschön: 115,000
- ein rieses Dankeschön: 3,900
- ein riesigs Dankeschön: 6
- ein riesies Dankeschön: 4

[raw Google data, May 4th 2017, Zwolle]
Guiding questions

1: Are bound prefixoids and free prefixoids orthographic variants or do they differ in form and/or content?
Orthographical vs morphosyntactic variants

- Cross-linguistic comparison of ‘giant’ prefixoids
  - Norwegian *kjempe*
  - Swedish *jätte*
  - German *R/riesen*
  - Dutch *reuze*
- Right: PoS of R1

[Norde & Van Goethem 2014, Norde 2016]
Guiding questions

1: Are bound prefixoids and free prefixoids orthographic variants or do they differ in form and/or content?

2: If they are different, are these differences best characterized as constructional change(s), or as constructionalization?
Case study

Dutch *kei* (< ‘boulder’)

German *hammer* (< ‘hammer’)

Swedish *kanon* (< ‘cannon’)

-> Norde & Van Goethem, fc.
Corpora

<table>
<thead>
<tr>
<th>COW14 Subcorpora</th>
<th>Number of tokens</th>
<th>Number of sentences</th>
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</thead>
<tbody>
<tr>
<td>NLCOW14AX Dutch subcorpus (Belgian and</td>
<td>4,732,581,841</td>
<td>259,717,960</td>
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<td>Netherlandic Dutch)</td>
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<td>Swiss and German German)</td>
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<tr>
<td>Swedish and Sweden Swedish)</td>
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</tbody>
</table>

COW corpora (Schäfer 2015)
Method

- Colibri\textsuperscript{2} query interface
- 1000 random tokens per construction
  - 6000 tokens in all
- annotation (Excel / Access)
  - R1
  - PoS of R1
  - semantic type (simile, intensifier, qualifier)
  - other properties, e.g. reduplication
- quantitative analysis (Excel, R)
  - R1: types and tokens
  - R1 PoS: tokens
  - When R1 = Adjective: Bleaching
  - Productivity
    - type / token ratio
    - potential productivity
    - distinctive collexeme analysis
**kei**: bound prefixoids

**N**: *Hij is echt een keisukkel (...)!*  
‘He is really a complete idiot (...)!’

**ADJ**: *Vissen leven in een keiharde, stressvolle wereld onder water*  
‘Fish live in a tough, stressful underwater world’
kei: free prefixoids

N: 's avonds kei keelpijn en ziek
‘in the evening (I had a) terrible sore throat and (felt)sick’

ADJ: ik ben echt kei en kei trots op je !!!
‘I'm really super proud of you!!!’

V: We hebben ons kei geamuseerd
‘We have enjoyed ourselves tremendously’
hammer: bound prefixoids

**N:** *der hat echt eine* Hammer-Stimme.
‘he really does have an awesome voice’

**ADJ:** *Vichy Nutrilogie 2, die für hammer* trockene Haut gedacht ist
‘Vichy Nutrologie 2, meant for extremely dry skin’.
**hammer**: free prefixoids

**N:** *Dragon Age ist ein hammer Spiel mit hammer Story* 
(...)
‘Dragon Age is an awesome game with an awesome story’

**ADV:** *Jo: matt du kannst hammer gut küssen* * :) *
‘Yo Matt, you kiss extremely well’

**V:** *er hat es hammer gesungen*
‘he sung it magnificently’

**Predicative:** *Wir leben inner leistungsgesellschaft, und der Druck ist hammer.*
‘We live in a meritocracy, and the pressure is enormous.’

**Predicative:** *aber der absolute hammer is der dirrty look mit den blond / schwarzen haaren.*
‘but the real smasher is the dirty look with blond / black hair’.
**kanon:** bound prefixoids

**N:** *hoppas du haft en kanonkväll på stan!*
‘(I) hope you had a great evening in town!*

**Q:** *Jag jobbade ju hos Lotta o vi hade kanonmycke folk (...)*
‘I was working at Lotta’s and we had a lot of guests (...)’
kanon: free prefixoids

**N:** fotografen, som gjort ett kanon jobb!
‘the photographer, who has done a terrific job!’

**ADJ:** Jag älskar jul och traditioner tycker det är kanon mysigt, gör inte ni?
‘I love Christmas and traditions, I think it’s really cosy, don’t you?’

**V:** Själv sov jag kanon
‘I myself slept very well’

**Predicative:** Två av böckerna är riktigt kanon!
‘Two of the books are really great’
PoS R1

KEI: BOUND  |  KEI: FREE  |  HAMMER: BOUND  |  HAMMER: FREE  |  KANON: BOUND  |  KANON: FREE

999          | 981         | 634           | 685           | 569           | 544

AAQ: 0       | 0           | 0             | 18            | 125           | 170
N: 185       | 172         | 172           | 569           | 544           | 544
V: 0         | 0           | 0             | 0             | 0             | 0
predicative: 0 | 0           | 0             | 0             | 0             | 0
### PoS R1

<table>
<thead>
<tr>
<th></th>
<th>kei</th>
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<tbody>
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<td>&lt; 2.2e-16</td>
<td>&lt; 2.2e-16</td>
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<td>Cramér’s V</td>
<td>0.093</td>
<td>0.746</td>
<td>0.709</td>
</tr>
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</table>
Bleaching

- Simile $<[a] [b]_{ADJ}]_{ADJ}$ constructions:
  
  $\text{keihard}$
  
  $\text{hammerhart}$

$\text{kanonhård}$

Er bekommt einen hammerharten Faustschlag ins Gesicht.
‘He gets an iron hard punch in the face.’ [simile]

Die Coverart ist auf jeden Fall hammerhart!
‘In any event, the cover art is totally cool!’ [intensifier]
Bleaching

- KEI: BOUND
  - simile: 87
  - intensifier: 913

- KEI: FREE
  - simile: 16
  - intensifier: 984

- HAMMER: BOUND
  - simile: 39
  - intensifier: 592

- HAMMER: FREE
  - simile: 0
  - intensifier: 125
Bleaching

<table>
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<td>Cramér’s V</td>
<td>0.161</td>
<td>0.104</td>
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Productivity

R1 = Adjective, Adverb, Quantifier

R1 = Noun
Productivity: R1=AAQ
Productivity: $R_1 = N$
Distinctive collexemes

- Distinctive collexeme test (Gries & Stefanowitsch 2004, Levshina 2015)

- compares the observed frequency of a specific slot filler (R1) to the expected frequency of that R1

- purpose: compute if specific R1s are attracted to one of the two constructions

- `pv.Fisher.collostr()` function of the Rling package (Levshina 2014)
  - Fisher exact p-values for all R1s
  - log-transformed (using the negative base 10 logarithm)
  - cut-off value was set at 1.3 (≈ p-value of 0.05)
  - p > 1.3: R1 is distinctive for the free prefixoid
  - p < -1.3: R1 is distinctive for the bound prefixoid
Distinctive collexemes

<table>
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<tr>
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<tbody>
<tr>
<td><strong>Number of types</strong></td>
<td>163</td>
<td>67</td>
<td>49</td>
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<tr>
<td><strong>Distinctive R1 free form</strong></td>
<td>19</td>
<td>5</td>
<td>0</td>
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<tr>
<td><strong>Distinctive R1 bound form</strong></td>
<td>1</td>
<td>1</td>
<td>1</td>
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<tr>
<td><strong>Ratio</strong></td>
<td>(\frac{20}{163} = 0.12)</td>
<td>(\frac{6}{67} = 0.09)</td>
<td>(\frac{1}{49} = 0.02)</td>
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</table>
**kei:** distinctive AAQ collexemes

<table>
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<tr>
<td>hard</td>
<td>273</td>
<td>893</td>
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**hammer:** distinctive AAQ collexemes

<table>
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**kanon:** distinctive AAQ collexemes

<table>
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A new node?
A new node?
## Bound vs. free: summary

<table>
<thead>
<tr>
<th>Constructional change</th>
<th>kei</th>
<th>hammer</th>
<th>kanon</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>R1: PoS</strong></td>
<td>$\chi^2$: significant difference; Cramér’s V: &lt; 0.01</td>
<td>$\chi^2$: significant difference; Cramér’s V: large effect</td>
<td>$\chi^2$: significant difference; Cramér’s V: large effect</td>
</tr>
<tr>
<td><strong>Bleaching (R1 = AAQ)</strong></td>
<td>$\chi^2$: significant difference; Cramér’s V: small effect</td>
<td>$\chi^2$: significant difference; Cramér’s V: small effect</td>
<td>n.a.</td>
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<tr>
<td><strong>Distinctive collexemes (R1 = AAQ)</strong></td>
<td>small effect</td>
<td>no effect</td>
<td>no effect</td>
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<tr>
<td><strong>Productivity</strong></td>
<td>increase</td>
<td>increase</td>
<td>increase</td>
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- **formal change**
- **semantic change**
Concluding remarks

- Traugott & Trousdale’s (2013: 22) definition of constructionalization: a change in form \textit{and} in meaning
  - which changes are formal?
  - which changes are semantic?
  - how to quantify these changes?

- Other problem: many free prefixoids are multiple source cxns (Van Goethem & Hüning 2015)
  - e.g. BARE NOUN cxn in German (Berman 2009)
    - \textit{Morgens bin ich ganz Papa}
    - ‘In the morning, I am completely daddy’

- ⇒ a separate node for free prefixoids is more adequate
- ⇒ implications for the concept of constructionalization?
- Outlook: further develop statistical methods for measuring constructional changes
THANK YOU
References

References

References