Modeling nominalization in frames

A case study of –ment suffixation on causative verbal bases

Lea Kawaletz
Heinrich-Heine-Universität
Background

Starting point: Affix polysemy

Frames
Affix polysemy

• Various readings formed by one affix (Bauer et al. 2013, ch. 10)
  
  EVENT: assessment  
  RESULT: containment  
  STATE: contentment  
  PRODUCT: pavement  
  INSTRUMENT: entertainment  
  LOCATION: embankment
How do we get such readings?

• Certain base verbs evoke certain readings (Bauer et al. 2013, 212)
  • Verb requires instrument → INSTRUMENT nominalization
    • to wrap → wrap
    • to refresh → refreshment

• Shift to a syntactic argument of the verb
  
  *John purchased a car.* His wife approves of this *purchase.*

• Not restricted to syntactic arguments though
  
  *My granny used to *embroider pillowcases.* I love the *embroidery* on this one.*
An interplay of verb and suffix

Verb semantics  

Noun semantics

-ment
Frames

(e.g. Barsalou 1992 a,b; Löbner 2013; Petersen 2007)

• a means to model mental representations of concepts as well as linguistic phenomena

• grounded in cognitive reality
Modeling semantics in frames

Frame graph of the verb *walk* (e.g. Barsalou 1992 a,b; Löbner 2013; Petersen 2007)

- **Central / referent node**
- **Functional attributes**
- Specified by values
- Rectangles = arguments
- Recursive
Modeling semantic shifts in frames

Frame graphs for three nouns derived from the verb *walk*  
(Löbner 2013, Figure 12.9)
Our study
Issues concerning the productivity of *-ment*

- Nominal suffix attaching mainly to verbal bases

- Very productive in Early Modern English (15\textsuperscript{th}-17\textsuperscript{th} c.); nowadays still somewhat productive (Bauer et al. 2013, 199)

- Many (often highly lexicalized) derivatives, e.g.:
  - *movement* 1393
  - *department* c. 1450
  - *treatment* 1560

- Aim: synchronic analysis of the productive process
  ➢ Neologisms (1900-today)
Method: -ment data

- Data sources: Neologisms (Oxford English Dictionary) & Hapax Legomena (Corpus of Contemporary American English)
- 90 types derived from 24 verb classes (Levin 1993 / VerbNet)
- Largest classes: PSYCH verbs (N=16), CHANGE OF STATE verbs (N=13)
- Attestations from other sources (GloWbE, WebCorp, BNC, Twitter, Google)
- Semantic classification of derivatives
PSYCH verb bases
Definition of PSYCH verbs

• Semantically heterogeneous: psych states & changes of psych states (cf. Levin 1993, 188-193)
• Typically two arguments: STIMULUS & EXPERIENCER
• Traditional categories (Pesetsky 1995): OBJECT EXP & SUBJECT EXP
• Four subcategories following Levin (1993) / VerbNet:

<table>
<thead>
<tr>
<th>Subject Experiencer</th>
<th>Object Experiencer</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Transitive Verbs</strong></td>
<td></td>
</tr>
<tr>
<td>ADMIRE verbs</td>
<td>AMUSE verbs</td>
</tr>
<tr>
<td><em>The tourists admired the paintings</em></td>
<td><em>The clown amused the children</em></td>
</tr>
<tr>
<td><strong>Intransitive Verbs with PP</strong></td>
<td></td>
</tr>
<tr>
<td>MARVEL verbs</td>
<td>APPEAL verbs</td>
</tr>
<tr>
<td><em>Megan marveled at the beauty of the Grand Canyon</em></td>
<td><em>This painting appeals to Malinda</em></td>
</tr>
</tbody>
</table>

• **AMUSE** verbs = Complex events (causing subevent + caused subevent)
Some examples for attestations

• **Psych causation event**
  Today’s evangelicals dance, listen to popular music, partake in public amusements and diversions, and attend the theater. (COCA_Acad_2010)

• **Result state (of a psych causation event)**
  I know a lot of our compatriots also feel the same angst, consternation and confoundment. (GloWbE_Art_2012)

• **Stimulus (in a psych causation event)**
  The Education Secretary arrived having just made her first big policy declaration - dressed up as a reassurance to Middle England that A-levels will be retained and that other exams may be made harder. (OED_News_2005)
  No federal agency regulates portable amusements, and no state employee inspects mobile rides. (COCA_News_2012)
Types in our dataset (N=16)

- affrightment
- approvement
- bumfuzzlement
- confoundment
- dumbfoundment
- endullment
- enragement
- enrapturement
- nonplusment
- perturbment
- reassurement
- upsetment
- soothement
- staggerment
- marvelment
- worriment
Results: Overview

• AMUSE verbs are preferred over the other three subcategories

• Semantic output:
  • PSYCH CAUSATION EVENT (Transposition) ✓
  • STIMULUS ✓
  • RESULT STATE ✓
  • ACTIVITY (causing subevent) ✓
  • CHANGE OF PSYCH STATE (caused subevent) ✓ (probably)
  • EXPERIENCER ✗
Base selection: AMUSE verbs are preferred

• seems to be a general tendency
Base selection: AMUSE verbs are preferred

• Artefact of lexical distribution: Only five APPEAL verbs, three of which are very infrequent

• Preference for other derivational processes
  • MARVEL verbs: conversion (sorrow, freakout)
  • ADMIRE verbs: -ation (reaffirmation, adoration) and conversion (mistrust, grudge)
Output semantics: RESULT STATE is dominant

• Not surprising: has been observed by many (e.g. Marchand 1969)
• It has been stated that STIMULUS & EVENT nominalizations should be impossible
• Pesetsky (1995, 71):

   Now consider the nominalizations that are related to causative ObjExp verbs like annoy. These nominalizations uniformly lack all causative force (as observed first, perhaps, by Lakoff (1970:126)). The present analysis is allows an interesting alternative description of this fact in morphological surprise. Rather, they are nominalizations of corresponding noncausative predicates. Thus, annoyance does not mean ‘the process of making annoyed’, but ‘the state of being annoyed’. Amusement does not refer to something amusing someone, but to the state of being amused.

• Our data provide counter-evidence to these views (cf. e.g. Bauer et al. 2013; Melloni 2011 for Italian)
Output semantics: EXPERIENCER is not attested

• Affix rivalry
  • Suffix for EXPERIENCER and PATIENT: –ee (or –er)

• Verb class might disallow it
  • Not convincing, cf. soothee and sufferer

• -ment might disallow it
  • EXPERIENCER isn’t mentioned in the pertinent literature
  • Data set: no [+animate] readings (except, potentially, STIMULUS)
  • At least a preference for [-animate]!

Lea Kawaletz, Heinrich-Heine-Universität
Modeling PSYCH causation

(cf. Löbner 2013, Naumann 2013, Osswald & Van Valin 2014)
Modeling affix polysemy
CHANGE OF STATE verb bases
Definition of **CHANGE OF STATE** verbs

<table>
<thead>
<tr>
<th>OTHER ALTERNATING VERBS OF CHANGE OF STATE (Levin 1993: 244-6)</th>
<th>REMEDY verbs (VerbNet)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bill dried the clothes.</td>
<td>The clothes dried.</td>
</tr>
<tr>
<td>Bill repaired the tractor.</td>
<td>The tractor repaired.</td>
</tr>
<tr>
<td>Bill dried the clothes with a hairdryer.</td>
<td>The hairdryer dried the clothes.</td>
</tr>
<tr>
<td>Bill repaired the tractor with duct tape.</td>
<td>The duct tape repaired the tractor.</td>
</tr>
</tbody>
</table>
## Types in our dataset (N=13)

<table>
<thead>
<tr>
<th>OCOS</th>
<th>REMEDY</th>
</tr>
</thead>
<tbody>
<tr>
<td>congealment</td>
<td>bedragglement</td>
</tr>
<tr>
<td>decenterment</td>
<td>befoulment</td>
</tr>
<tr>
<td>discolorment</td>
<td>besmirkment</td>
</tr>
<tr>
<td>embrittlement</td>
<td>debauchment</td>
</tr>
<tr>
<td>increasement</td>
<td>embetterment</td>
</tr>
<tr>
<td>progressment</td>
<td></td>
</tr>
<tr>
<td>redoublement</td>
<td></td>
</tr>
<tr>
<td>worsenment</td>
<td></td>
</tr>
</tbody>
</table>
Results: Overview

• Five of the seven verb categories are not attested with -ment.

• Semantic output:
  • CAUSATION EVENT (Transposition) ✓
  • STIMULUS ✓ (✓)
  • RESULT STATE ✓
  • ACTIVITY (causing subevent) ✓
  • CHANGE OF PSYCH STATE (caused subevent) ✓
  • PATIENT ×
  • RESULT OBJECT ✓
Modeling affix polysemy
Modeling affix polysemy

RESULT OBJECT: I set down the scrap of doll's dress, a bedragglement of loose lace hem (COCA_FIC_1999)

⇒ Animacy constraint
Open questions (cos verbs)

• Are there systematic semantic differences between the derivations of OCOS verbs and those of REMEDY verbs?
• Can the change of state node be selected for all base verbs?
• Is the presence/absence of STIMULUS readings systematic?
• How exactly is the STIMULUS reading related to the RESULT OBJECT reading?
Summary

• *-ment* has clear preferences for certain types of base verb (*AMUSE*, *OCOS*, *REMEDY*).

• Resulting derivatives show a well restricted set of possible readings (e.g. transposition, *RESULT STATE*, *STIMULUS*; no *EXPERIENCER*).

• Shifts can target argumental and non-argumental components of the semantic representation.

• Shifts are governed by certain constraints and/or preferences.
Conclusion

• Affix semantics:
  The potential to induce particular kinds of shift in the semantic structure of the base

• Possible readings of –ment nominalizations emerge from the predictable interaction of base semantics with affix semantics

• Future work: finalize cos analysis and test modelling of semantically different verb bases (problem: far fewer types)
References


Thank you very much for your attention!