Verbs and their modifiers —
a pilot study on German *schlagen*

Wilhelm Geuder & Ekaterina Gabrovksa
SFB-Colloquium, 7 Jan 2016
Today's topics:
1 Project B09 and (ad)verb semantics
2 Analysing schlafen: variation in agentivity
3 Schlagen and the problem of "affectedness"
4 Directionality and the target argument, with a conclusion on the meaning of schlagen and hit

Overarching questions:
• Challenges for Frame modelling?
• How are attributes reflected in modification data?
1) The semantics of adverbial modification (by adjectives):

- distinguishing modifier types; defining "manner" as opposed to other event-related predications

Analysing modification as the interaction of two frames

- rules of construal that explain how manner modifiers target attributes of the event and restrict their values; and other construals of the same adj.

2) Lexical semantics of verbs:

- determine the availability of attributes according to lexical meaning or inferences
- structuring of attributes into domains, correlations among them
- ontological status of attributes / "manners" that are being referred to (discuss commonalities with degrees)
Project B09: Verbs and their Modifiers

1) The semantics of adverbial modification (by adjectives):
   - distinguishing modifier types; defining "manner"
   - as opposed to other event-related predications
   - Manner modifiers target frame attributes in specific conceptual domains.

2) Lexical semantics of verbs
   - Examples of domains (yielding "verb classes" if verb meanings are in one single domain):
     - dimension of measurement (verbs: wiegen / weigh…)
     - localisation / path (verbs of directed motion: enter, pass by)
     - manner of movement (verbs: rollen / roll, steigen /climb, rise; schwimmen / swim, float…)
     - force exertion (verbs: swim; schlagen / hit)
The verb *hit* is remarkable in that it is not resultative (≠ *break*) but appears to belong to the class of semelfactives (like *knock, flap*, etc.). It shows constructional variation with different meanings, including ±agentive pairs (but no anticausative).

German counterparts: *schlagen* and *treffen*. No 1:1 correspondences between German and English wrt. verbs and constructional variation:

*Er schlug...auf das Pflaster*  
"**prallte/traf** (gegen) einen Baum"  
"*Er schlug auf den Tisch*"  
"... **mit** der Faust auf den Tisch"  
"schlug den Ball in die gegnerische Hälfte*"
Problems with detecting adverbial adjectives in German corpora which are not yet solved:
• Tagged corpora provide a classification "±attributive"; but "–attributive" is not congruent with "adverbial".
• B09/C10 currently working on machine learning solutions

schlagen: What has been done so far

– A first study on schlagen and variation with respect to the implication of force features: Goldschmidt & al. (2015, Tbilissi)
– B09: Establishing conceptual domains involved in schlagen, and semantic variation according to different syntactic patterns
– B09: Preliminary collection of modifiers that occur with schlagen in corpora
<table>
<thead>
<tr>
<th>Adj</th>
<th>Constr.</th>
<th>1 UNACC.</th>
<th>2 RESULTV</th>
<th>3 TRANSTV</th>
<th>4 OBLIQ</th>
<th>5 ?case?</th>
<th>5aDBL acc</th>
<th>5b DBL dat</th>
<th>601</th>
<th>32</th>
<th>63</th>
<th>129</th>
<th>176</th>
<th>47</th>
<th>32</th>
<th>122</th>
</tr>
</thead>
<tbody>
<tr>
<td>heftig</td>
<td></td>
<td>106</td>
<td>7</td>
<td>3</td>
<td>37</td>
<td>23</td>
<td>15</td>
<td>7</td>
<td>7</td>
<td>7</td>
<td>18</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>leicht</td>
<td></td>
<td>62</td>
<td>2</td>
<td>3</td>
<td>6</td>
<td>19</td>
<td>7</td>
<td>7</td>
<td>7</td>
<td>7</td>
<td>18</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>kräftig</td>
<td></td>
<td>60</td>
<td>1</td>
<td>6</td>
<td>5</td>
<td>27</td>
<td>8</td>
<td>1</td>
<td>1</td>
<td>12</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>brutal</td>
<td></td>
<td>59</td>
<td>keine</td>
<td>8</td>
<td>31</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>11</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>wütend</td>
<td></td>
<td>58</td>
<td>keine</td>
<td>14</td>
<td>2</td>
<td>34</td>
<td>keine</td>
<td>keine</td>
<td>keine</td>
<td>8</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>hart</td>
<td></td>
<td>51</td>
<td>12</td>
<td>3</td>
<td>12</td>
<td>13</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>sanft</td>
<td></td>
<td>47</td>
<td>2</td>
<td>1</td>
<td>5</td>
<td>15</td>
<td>3</td>
<td>6</td>
<td>15</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>fest</td>
<td></td>
<td>29</td>
<td>2</td>
<td>5</td>
<td>3</td>
<td>12</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>spielerisch</td>
<td></td>
<td>18</td>
<td>keine</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>3</td>
<td>keine</td>
<td>9</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>wild</td>
<td></td>
<td>13</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>6</td>
<td>keine</td>
<td>keine</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>begeistert</td>
<td></td>
<td>12</td>
<td>keine</td>
<td>3</td>
<td>keine</td>
<td>3</td>
<td>1</td>
<td>1</td>
<td>5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>stark</td>
<td></td>
<td>11</td>
<td>1</td>
<td>keine</td>
<td>6</td>
<td>3</td>
<td>keine</td>
<td>keine</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>grausam</td>
<td></td>
<td>9</td>
<td>keine</td>
<td>keine</td>
<td>9</td>
<td>keine</td>
<td>keine</td>
<td>keine</td>
<td>keine</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>sacht</td>
<td></td>
<td>8</td>
<td>1</td>
<td>keine</td>
<td>keine</td>
<td>2</td>
<td>keine</td>
<td>keine</td>
<td>5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>scharf</td>
<td></td>
<td>7</td>
<td>keine</td>
<td>2</td>
<td>keine</td>
<td>1</td>
<td>1</td>
<td>keine</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>liebevoll</td>
<td></td>
<td>6</td>
<td>keine</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>keine</td>
<td>1</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>bewusst</td>
<td></td>
<td>6</td>
<td>keine</td>
<td>1</td>
<td>3</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>beherzt</td>
<td></td>
<td>6</td>
<td>keine</td>
<td>5</td>
<td>keine</td>
<td>1</td>
<td>keine</td>
<td>keine</td>
<td>keine</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>blindwütig</td>
<td></td>
<td>5</td>
<td>keine</td>
<td>keine</td>
<td>3</td>
<td>keine</td>
<td>keine</td>
<td>keine</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>lässig</td>
<td></td>
<td>4</td>
<td>1</td>
<td>2</td>
<td>keine</td>
<td>1</td>
<td>keine</td>
<td>keine</td>
<td>keine</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>verbissen</td>
<td></td>
<td>4</td>
<td>keine</td>
<td>1</td>
<td>3</td>
<td>keine</td>
<td>keine</td>
<td>keine</td>
<td>keine</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>hemmungslos</td>
<td></td>
<td>4</td>
<td>keine</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>keine</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>quer</td>
<td></td>
<td>3</td>
<td>1</td>
<td>keine</td>
<td>keine</td>
<td>keine</td>
<td>keine</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>schwungvoll</td>
<td></td>
<td>3</td>
<td>keine</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>keine</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>schräg</td>
<td></td>
<td>2</td>
<td>1</td>
<td>keine</td>
<td>1</td>
<td>1</td>
<td>keine</td>
<td>keine</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>schwach</td>
<td></td>
<td>2</td>
<td>1</td>
<td>keine</td>
<td>1</td>
<td>1</td>
<td>keine</td>
<td>keine</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>geschickt</td>
<td></td>
<td>2</td>
<td>keine</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>keine</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>unbewusst</td>
<td></td>
<td>2</td>
<td>keine</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>keine</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>hektisch</td>
<td></td>
<td>1</td>
<td>keine</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>keine</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>herzlich</td>
<td></td>
<td>1</td>
<td>keine</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>keine</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td>601</td>
<td>32</td>
<td>63</td>
<td>129</td>
<td>176</td>
<td>47</td>
<td>32</td>
<td>122</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Schlagen and its subjects

• Fillmore (1970): *hit* may occur with agentive or "instrument" subjects. 
  
  *John hit the tree with a rock*  /  *A rock hit the tree.*

• Actually, instruments are hardly acceptable as subjects of *schlagen*:

  *Der Hammer schlug ein Loch ins Parkett*
  
  = *The hammer [was flung across the room and]*
  
  *made a hole in the parquet*

  ≠ *Somebody hammereded on the parquet*

The German example involves a theme subject, which has to be distinguished from instruments (contrary to Vogel 2013).
The minimal *schlagen* scene:

a theme moving forcefully against a **TARGET**.**THEME**

The classification of constructions into intransitive / unaccusative presents problems, however:
Schlagen and its subjects

• Unaccusative structure with animate subject (here, PPs with mit /with are not instruments but specify a part of the theme):

  *Er fiel und schlug mit dem Kopf auf das Pflaster*

  He fell and "hit" with his head [onto] the pavement

• Unaccusative or intransitive structures with inanimate subjects:

  i. *Der Regen ist / hat gegen das Fenster geschlagen.*

     The rain 'is' / 'has' against the window 'hit'

ii. a. *Ventile sind gegen die Kolben geschlagen und abgebrochen.*

     valves 'are' against the pistons 'hit' and broken off

     b. *Da haben sich 2 Schrauben gelockert (...) und die Schraubenköpfe haben gegen die Vorderachse geschlagen.*

     2 screws became loose [in the gears of a tractor]... and the heads of the screws 'have' against the front axis 'hit'
Schlagen and its subjects

- Unaccusative or intransitive structures with inanimate subjects:
  i. *Der Regen ist / hat gegen das Fenster geschlagen.*

Conclusion:
- The minimal scene THEME→TARGET comes in 2 variants; inanimate subjects with agent-like properties seem possible.
- ...probably depending on whether the moving entity is conceptualised as a bearer of 'impetus', or as moving passively.
  (cf. Geuder & Weisgerber 2008)

- Consequence: Different types of "agentivity" with different degrees of involvement, and hence of event complexity.
Schlagen and its subjects

• Consequence: Different types of "agentivity" with different degrees of involvement, and hence of event complexity.

— Caus(er): a detached participant, does not interact with the process:
   Der Wind schlug die Fenster zu
   the wind slammed the windows shut

— Agent (possibly using an instrument): not part of the impact, but interaction with manner features of the event
   Der Bauer schlug mit der Faust auf den Tisch
   The farmer hit with his fist onto the table

— Theme with impetus of its own: not separable from the impact:
   Wellen haben gegen die Kaimauer geschlagen
   waves have against the quay hit
Questions for Frame modelling?

Preliminary thoughts on Frame modelling of *schlagen* (Goldschmidt, Gabrovska, Gamerschlag, Petersen & Geuder forthc. 2016):

- General problem of how to integrate argument roles vis-à-vis conceptual domains.
- Specifically, to which extent is the agent independent of the core event?
Schlagen and its subjects: patterning of modifiers?

- Our sample may not be representative, no statistics done so far.
- No analysis for the factor "animateness" conducted so far.

- From preliminary inspection:
  - Adjective meanings clearly involving agency / intentionality are absent from unaccusative constructions in our sample (viz. *brutal*, *wütend*, *spielerisch*). Otherwise, details of the semantics of the adjectives are not yet known (e.g. whether *kräftig* should be agentive or not)
  - Apparently, no modifier is specific to the class UNACC.
3 Schlagen and the problem of "affectedness"

• The prototypical example: a simple transitive construction.  
  Wenn ein Bauer einen Esel hat, dann schlägt er ihn.  
  If a farmer owns a donkey, then he beats it.

• Generalisation on German schlagen:
  i. Der Bauer schlug den Esel.  
     The farmer hit the donkey.  
  ii. * Der Bauer schlug den Tisch.  
     The farmer hit the table.  
  iii. Der Bauer schlug den Tisch in Stücke.  
     …smashed it to pieces.

"Some languages resist expressing the surface [i.e., TARGET] as a 
direct object, especially when inanimate, apparently requiring a high 
degree of ‘affectedness’ for objecthood." (Levin 2015)

Note: This only holds when the object depends on the verb (ii.). 
In a resultative construction (iii.), the effect disappears: here, the 
object is thematically dependent on the result predicate.
**schlagen** and the problem of "affectedness"

<table>
<thead>
<tr>
<th>Number</th>
<th>German</th>
<th>English</th>
</tr>
</thead>
<tbody>
<tr>
<td>i.</td>
<td>Der Bauer schlug den Esel.</td>
<td>The farmer beat the donkey</td>
</tr>
<tr>
<td>ii.</td>
<td>* Der Bauer schlug den Tisch</td>
<td>The farmer hit the table</td>
</tr>
<tr>
<td>iii.</td>
<td>Der Bauer schlug den Tisch in Stücke.</td>
<td>...smashed it to pieces.</td>
</tr>
</tbody>
</table>

• Lundquist & Ramchand (2012): This is a regular phenomenon involving a whole group of verbs (viz. verbs for *kick, push*...).

**Hypothesis:**

– The direct object has to be affected, in the sense that it undergoes change; hence (iii.) represents the standard case,
– For animate entities, affectedness can be posited due to their experiencing a situation, even in the absence of a result predication; so the interpretation of (i.) can be aligned with (iii.).

• Question 1: What exactly is different with English *hit*?
• Question 2: Does the animateness effect arise from coercion into an affected reading?
schlagen and the problem of "affectedness"


Knock allows a direct object only in resultative constructions (or with idiosyncratic meanings):

a. Mike had knocked his leg against a table
b. * Mike knocked his finger [idiosyncratic meaning: hurt]
c. He knocked a couple of nails into the door
d. They knocked him to the ground
e. They knocked a hole for the doorway. [: create]
f. They knocked loudly (at the door).
schlagen and the problem of "affectedness"


— Treffen and berühren (touch) do not impose an animateness / affectedness constraint on their objects: The car went off the road and hit a tree. / ...traf (gegen) einen Baum.

Hypothesis:
- Verbs like hit and treffen assign a semantic role "location of impact" to their objects. ⇒ No affectedness/animacy restrictions.
- schlagen assigns ( / would want to assign) a semantic role "antagonist of forceful impact", which cannot be expressed as a simple direct object.
Der Bauer schlug den Esel. The farmer beat the donkey
* Der Bauer schlug den Tisch The farmer hit the table

• Question 2: Does the animateness effect arise from coercion into an affected reading?
  — Hypothesis: It rather seems to come with a polysemic variant of the verb. In German, simple transitives with *schlagen* occur in a large variety of idiomatic readings; the construction with animate objects may be one such variant, specifically denoting an interaction of two sentient beings
**schlagen** and the problem of "affectedness"

Lexicalised collocations with schlagen allow inanimate and even unaffected objects (cf. c) in a simple transitive construction:

**a) Created objects** (productive)

*ein Loch / einen Krater schlagen*  'to make a hole / crater'

**b) Cutting wood**

*Vorerst darf kein gesundes Holz mehr geschlagen werden,*  
'For the time being, no healthy wood may be [cut / felled] ,  
*sondern nur beschädigte Bäume.*  
*but only damaged trees*

**c) With musical instruments** (unaffected)

*die Trommel schlagen*  ('to beat the drum')  
*die Laute / die Orgel schlagen*  ('to play the lute / organ')

**d) Defeat**

*Das Computerprogramm schlägt jeden menschlichen Spieler*  
The computer programme beats any human player
Lexicalised collocations with *schlagen* allow inanimate and even unaffected objects (cf. c) in a simple transitive construction:

a) Created objects  
b) Cutting wood  
c) Musical instruments  
d) *Defeat*

Hypothesis: 
- The simple transitive variants of *schlagen* are lexicalised variants.  
- This list includes the scenario which shows the animacy constraint.

e) 'Violence involving sentient participants'
schlagen and the problem of "affectedness"

• Note: The animateness constraint extends to **subjects**. This points to a more narrow meaning than just affectedness of the object:

   A rebounding twig hit me.ACC

   A wave hit me.ACC hard

• It is only the simple transitive construction that shows this constraint:

    A rebounding twig slapped me.DAT in the face

iv. *Die Wellen schlugen mir heftig entgegen.*
    The waves struck me.DAT hard in (my) way
    'The waves struck hard against me'
**schlagen** and the problem of "affectedness"

Hypothesis: The simple transitive variants of *schlagen* are lexicalised variants. This includes a variant "acts of violence involving sentient participants".

• Note also: animate subjects are only required in the constructional meaning "violence among sentient beings", but not in transitive constructions with other kinds of affected objects, like created objects:

  Der Hammer traf gegen die Wand und schlug dort ein Loch.
  The hammer hit against the wall and (knocked?) there a hole.

---

i. ? Ein zurückschnellender Zweig schlug mich.
   A rebounding twig hit me.ACC
**schlagen: Interim summary**

Components (domains) that could be separated:

a. Movement + Impact (of theme and target)

b. Agency, including use of instruments

c. Effect

d. "Violence among sentient beings": ...effect / intention / moral evaluation?

i. Ventile *sind* gegen die Kolben *geschlagen* und abgebrochen.
   - valves 'are' against the pistons 'hit' and broken off

ii. *Er fiel und schlug mit dem Kopf auf das Pflaster*
   - 'He fell and "hit" with his head [onto] the pavement'

iii. *Der Meteorit schlug einen Krater.*
   - ...made a crater

iv. *Der Bauer schlug mit der Faust auf den Tisch.*
   - The farmer beat his fist on the table
schlagen: Interim summary

Components (domains) that could be separated:

a. Movement + Impact (of theme and target)

b. Agency, including use of instruments : variable

c. Effect usually compositional, or lexicalised

d. "Violence among sentient beings": ...effect / intention / moral evaluation?

: lexical variant, d added on top of a,b

v. Der Bauer schlug den Tisch mit der Axt in Stücke.
...hacked the table to pieces with the axe.

vi. Der Bauer schlug den Esel (mit dem Stock) (auf den Rücken)
The farmer beat the donkey with the stick on its back.
Questions for Frame modelling?

- *Schlagen* should consist of a core scene ("Schlag" in our first attempt), combined with other components / domains …
- Some of these would come in via semantic composition, some others would be due to lexical variants richer in meaning. — Dealing with polysemy remains a desideratum…

- Modifiers of a "core scene" should be observed with other variants, too, but not vice versa. [ √ : No modifier specific to UNACC]
Schlagen and affectedness: patterning of modifiers?

– The modifiers *brutal* and *grausam (cruel)* show a clear peak in the simple transitive construction.
– They are arguably the only adjectives in the sample that refer to a moral dimension of action and need two sentient participants in this.

<table>
<thead>
<tr>
<th>Adj \ Constr.</th>
<th>1 UNACC.</th>
<th>2 RESULTV</th>
<th>3 TRANSTV</th>
<th>4 OBLIQ</th>
<th>5 ?case?</th>
<th>5aDBL acc</th>
<th>5b DBL dat</th>
</tr>
</thead>
<tbody>
<tr>
<td>heftig</td>
<td>106</td>
<td>7</td>
<td>3</td>
<td>37</td>
<td>23</td>
<td>15</td>
<td>7</td>
</tr>
<tr>
<td>leicht</td>
<td>62</td>
<td>2</td>
<td>3</td>
<td>6</td>
<td>19</td>
<td>7</td>
<td>7</td>
</tr>
<tr>
<td>kräftig</td>
<td>60</td>
<td>1</td>
<td>6</td>
<td>5</td>
<td>27</td>
<td>8</td>
<td>1</td>
</tr>
<tr>
<td>brutal</td>
<td>59</td>
<td>keine</td>
<td>8</td>
<td>31</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>wütend</td>
<td>58</td>
<td>keine</td>
<td>14</td>
<td>2</td>
<td>34</td>
<td>keine</td>
<td>keine</td>
</tr>
<tr>
<td>hart</td>
<td>51</td>
<td>12</td>
<td>3</td>
<td>12</td>
<td>13</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>sanft</td>
<td>47</td>
<td>2</td>
<td>1</td>
<td>5</td>
<td>15</td>
<td>3</td>
<td>6</td>
</tr>
<tr>
<td>fest</td>
<td>29</td>
<td>2</td>
<td>5</td>
<td>3</td>
<td>12</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>spielerisch</td>
<td>18</td>
<td>keine</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>3</td>
<td>keine</td>
</tr>
<tr>
<td>wild</td>
<td>13</td>
<td>1</td>
<td>2</td>
<td>6</td>
<td>keine</td>
<td>keine</td>
<td>keine</td>
</tr>
<tr>
<td>begeistert</td>
<td>12</td>
<td>keine</td>
<td>3</td>
<td>keine</td>
<td>3</td>
<td>1</td>
<td>keine</td>
</tr>
<tr>
<td>stark</td>
<td>11</td>
<td>1</td>
<td>keine</td>
<td>6</td>
<td>3</td>
<td>keine</td>
<td>keine</td>
</tr>
<tr>
<td>grausam</td>
<td>9</td>
<td>keine</td>
<td>keine</td>
<td>9</td>
<td>keine</td>
<td>keine</td>
<td>keine</td>
</tr>
<tr>
<td>sacht</td>
<td>8</td>
<td>1</td>
<td>keine</td>
<td>2</td>
<td>keine</td>
<td>keine</td>
<td>keine</td>
</tr>
<tr>
<td>scharf</td>
<td>601</td>
<td>32</td>
<td>63</td>
<td>129</td>
<td>176</td>
<td>47</td>
<td>32</td>
</tr>
</tbody>
</table>

- The modifiers *brutal* and *grausam (cruel)* show a clear peak in the simple transitive construction.
- They are arguably the only adjectives in the sample that refer to a moral dimension of action and need two sentient participants in this.
German allows for the "target" not to be contacted

- Construction with *nach*:
  the feature 'contact' is not specified any more.

(i) a. *Der Mann schlug nach Peter.*
   The man hit at Peter.

   b. *Maria schlug nach dem Hund.*
   Maria hit at the dog.

(ii) *Maria schlug nach der Fliege, und traf sie.*
    M. ['hit'] aimed at the fly and hit it.
    [cf. … ?? *aber traf sie* ]
    but

Contact is neither asserted nor excluded [but is at issue].
Directionality and the target argument

• …Construction with nach: the feature 'contact' is unspecified…

(iii) Der Mann schlug nach Peter, traf aber Otto.

The man aimed at Peter, but hit Otto instead.

• Compare: English conative construction:

(iv) He hit at the table.

Does German nach also mark a conative construction?

(v) a. Er schlug nach den Kameran. but ??Er schlug die Kameran.

He hit at the cameras. He hit the cameras.

b. Sie schlug nach seiner Hand. but ??Sie schlug seine Hand.

She hit at his hand. She hit his hand.

: No, this could not be called an "alternation"
Directionality and the target argument

Construction with *in Richtung*: the feature 'contact' is unspecified.

(i) *Er schlug in Peters Richtung (traf aber Otto)*
He "?" in Peter's direction (hit however Otto)
'He aimed at Peter (but hit Otto instead).

(ii) *Er schlug kräftig in meine Richtung.*
He ? strongly in my direction.
(force-related modifiers possible in the absence of contact)

Can we hit in English in the same way?

(iii) *The ball was hit in his direction.*
⇒ *The ball was hit!*  
(special particle verb)

(iv) *He hit out at the robber.*
Construction with *Ins Leere/Nichts/Nirgendwo*: No contact.

(i) *Der Stock schlug ins Leere/Nichts/Nirgendwo.*
    The stick beat into the void.

(ii) *Er schlug ins Leere/Nichts/Nirgendwo.*
    He beat into the void.

How about English? Can we hit nowhere?
Construction with *daneben*: contact is unspecified.

(i) \(\text{Er schlug daneben} \quad \text{(und der Schlag ging ins Leere)}\)
He 'hit beside' [ = missed] (and the blow went nowhere)

(ii) \(\text{(Er versuchte, einen Nagel in die Wand zu schlagen, aber)}\)
\(\text{er schlug daneben und traf seinen Finger}\)
He 'hit beside' and hit his finger

(iii) \(\text{Er schlug heftig daneben}\)
He 'hit beside' vigourously

- Similarly: *vorbei schlagen* "hit past [something]"
Movement paths and localisation of contact

- **Prepositional complement with *auf/gegen*: contact point = end point of the path**

  (i)  \( Er \ schlug \ auf/gegen \ den \ Tisch. \)
  
  He  hit   on/against   the table.

- **With *durch* (through): contact point ≠ end point**

  (ii)  
  a.  \( Er \ schlug \ mit \ der \ Faust \ durch \ den \ Tisch. \)
  
  He hit   with his fist   through the table.

  b.  \( Ein \ Stein \ schlug \ durch \ das \ Fenster. \)
  
  A stone   "hit"   through the window
  (i.e., flew through the window, smashing the pane).
Summary on movement paths

• *Schlagen* does not specify whether a target is contacted or not. However, movement is always present as a component.

  — The German constructions support the assumption that contact and movement should be treated as separate meaning components of the verb *schlagen*.

• In German, contact depends on the interpretation of the individual directional adverbial (PP etc.).

  — In contrast, in English, the contact feature can be left unspecified only by the use of the conative alternation of *hit* or the phrasal verb *hit out*.
Resultative constructions also indicate that the role of the target is different with *schlagen* and *hit*:

- A constraint on the interpretation of the resultative construction in English (Erteschik-Shir & Rapoport 2010):
  - The target has to be realised. Either the direct object or the reference object of the PP provide the location of the impact.

(i) *He hit his fist into the palm of his other hand.*
- The PP introduces the target.
(ii) *He hit the ball into the hole.*
- Here, the PP cannot provide a target (i.e., antagonist).
- Then, the direct object must be the target of hitting.
The target argument in resultative constructions

• No such restriction in German:

(i)  *Sie schlug den Staub *aus* *den Kleidern*

  she beat    the dust      out of the clothes.

– Compositional interpretation of *Kleider / clothes* as target is not possible because of the source preposition *aus*.

(ii) *Der Aufprall schlug mir  *das Gebiss *aus* *dem Mund.*

  the impact   'hit'      me.DAT  the denture out of my mouth.

– The denture is not the target.

– Its relation to the hitting event is unspecified

German allows nonthematic direct objects with *schlagen*, and constructions where the target is not expressed at all.
The target argument in resultative constructions

• Roles of the direct object in German resultative constructions:
  (i) Target (stationary)

       Sie schlug das Glas kaputt  (She smashed the glass to pieces).

(ii) Target, + movement effected by the hit

       Sie schlug den Nagel in die Wand  (She hit the nail into the wall).

(iii) Moving object / instrument

       Sie schlug mir ihre Faust in die Magengrube  (…the fist into the guts).

(iv) Moving object / pure effected movement

       Der Aufprall schlug mir das Gebiss aus dem Mund.
Summary on German resultative constructions

• The object of the resultative construction is licensed by the change-of-state component, i.e. compositionally, not lexically.

• The direct object in a directional resultative always represents an entity in motion — however, the relation between this movement and the "force+contact" component is unspecified.

• Participants of the core event (esp. the target) may have to be reconstructed via inference.

All the previous findings converge on the generalisation that, unlike hit, the meaning of German schlagen is not about the localisation of an impact.

(so, eventually, Vogelschlag is birdstrike, not birdhit)
Questions for Frame modelling?

- Force dynamics and spatial relations as two different domains.
  - Their correlations have to be captured
  - however, these are subject to lexical/constructional variation.
<table>
<thead>
<tr>
<th>Adj</th>
<th>Constr</th>
<th>1 UNACC</th>
<th>2 RESULTV</th>
<th>3 TRANSTV</th>
<th>4 ORLIO</th>
<th>5 ?case?</th>
<th>5aDBL acc</th>
<th>5b DBL dat</th>
</tr>
</thead>
<tbody>
<tr>
<td>heftig</td>
<td>106</td>
<td>7</td>
<td>3</td>
<td>37</td>
<td>23</td>
<td>15</td>
<td>7</td>
<td>14</td>
</tr>
<tr>
<td>leicht</td>
<td>62</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>kräftig</td>
<td>60</td>
<td>1</td>
<td>6</td>
<td>5</td>
<td>27</td>
<td>8</td>
<td>1</td>
<td>12</td>
</tr>
<tr>
<td>brutal</td>
<td>59</td>
<td>keine</td>
<td>8</td>
<td>31</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>11</td>
</tr>
<tr>
<td>wütend</td>
<td>58</td>
<td>keine</td>
<td>14</td>
<td>2</td>
<td>34</td>
<td>keine</td>
<td>keine</td>
<td>8</td>
</tr>
<tr>
<td>hart</td>
<td>51</td>
<td>12</td>
<td>3</td>
<td>12</td>
<td>13</td>
<td>3</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>sanft</td>
<td>47</td>
<td>2</td>
<td>1</td>
<td>5</td>
<td>15</td>
<td>3</td>
<td>6</td>
<td>15</td>
</tr>
<tr>
<td>fest</td>
<td>29</td>
<td>2</td>
<td>5</td>
<td>3</td>
<td>12</td>
<td>2</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>spielerisch</td>
<td>18</td>
<td>keine</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>3</td>
<td>keine</td>
<td>9</td>
</tr>
<tr>
<td>wild</td>
<td>13</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>6</td>
<td>keine</td>
<td>keine</td>
<td>2</td>
</tr>
<tr>
<td>begeistert</td>
<td>12</td>
<td>keine</td>
<td>3</td>
<td>keine</td>
<td>3</td>
<td>1</td>
<td>keine</td>
<td>5</td>
</tr>
<tr>
<td>stark</td>
<td>11</td>
<td>1</td>
<td>keine</td>
<td>6</td>
<td>3</td>
<td>keine</td>
<td>keine</td>
<td>1</td>
</tr>
<tr>
<td>grausam</td>
<td>9</td>
<td>keine</td>
<td>keine</td>
<td>9</td>
<td>keine</td>
<td>keine</td>
<td>keine</td>
<td>keine</td>
</tr>
<tr>
<td>sacht</td>
<td>8</td>
<td>1</td>
<td>keine</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>keine</td>
<td>5</td>
</tr>
<tr>
<td>scharf</td>
<td>7</td>
<td>keine</td>
<td>2</td>
<td>keine</td>
<td>1</td>
<td>1</td>
<td>keine</td>
<td>3</td>
</tr>
<tr>
<td>liebevoll</td>
<td>6</td>
<td>keine</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>keine</td>
<td>2</td>
</tr>
<tr>
<td>bewusst</td>
<td>6</td>
<td>keine</td>
<td>keine</td>
<td>3</td>
<td>1</td>
<td>1</td>
<td>keine</td>
<td>1</td>
</tr>
<tr>
<td>beherzt</td>
<td>6</td>
<td>keine</td>
<td>5</td>
<td>keine</td>
<td>1</td>
<td>1</td>
<td>keine</td>
<td>keine</td>
</tr>
<tr>
<td>blindwütig</td>
<td>5</td>
<td>keine</td>
<td>keine</td>
<td>3</td>
<td>1</td>
<td>1</td>
<td>keine</td>
<td>1</td>
</tr>
<tr>
<td>lässig</td>
<td>4</td>
<td>1</td>
<td>2</td>
<td>keine</td>
<td>1</td>
<td>1</td>
<td>keine</td>
<td>keine</td>
</tr>
<tr>
<td>verbissen</td>
<td>4</td>
<td>keine</td>
<td>1</td>
<td>3</td>
<td>keine</td>
<td>keine</td>
<td>keine</td>
<td>keine</td>
</tr>
<tr>
<td>hemmungslos</td>
<td>4</td>
<td>keine</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>keine</td>
<td>1</td>
</tr>
<tr>
<td>quer</td>
<td>3</td>
<td>1</td>
<td>keine</td>
<td>keine</td>
<td>keine</td>
<td>keine</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>schwungvoll</td>
<td>3</td>
<td>keine</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>keine</td>
<td>1</td>
</tr>
<tr>
<td>schräg</td>
<td>2</td>
<td>1</td>
<td>keine</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>keine</td>
<td>1</td>
</tr>
<tr>
<td>schwach</td>
<td>2</td>
<td>keine</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>keine</td>
<td>1</td>
</tr>
<tr>
<td>geschickt</td>
<td>2</td>
<td>keine</td>
<td>keine</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>keine</td>
<td>1</td>
</tr>
<tr>
<td>unbewusst</td>
<td>2</td>
<td>keine</td>
<td>keine</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>keine</td>
<td>1</td>
</tr>
<tr>
<td>hektisch</td>
<td>1</td>
<td>keine</td>
<td>keine</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>keine</td>
<td>1</td>
</tr>
<tr>
<td>herzlich</td>
<td>1</td>
<td>keine</td>
<td>keine</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>keine</td>
<td>1</td>
</tr>
<tr>
<td>herzlich</td>
<td>1</td>
<td>keine</td>
<td>keine</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>keine</td>
<td>1</td>
</tr>
</tbody>
</table>

Schlagen: path and force modifiers?
References


References
