Possessive Marking in Idioms

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- Introduction
- 2 External possessor in German
- 3 Additional datives in German
- Framework of the analysis
 - Lexical Resource Semantics
 - Two-dimensional theory of idioms
- 5 Idioms and German possessive constructions
- 6 Conclusion

Possession marking in English idioms

- (1) Ho (2015)
 - a. wrak one's brain 'think hard'
 - b. eat one's words 'retract a statement'
 - c. twinkle one's thumbs 'do nothing/ be idle'
 - Sag (2012): Obligatory coreference of the possessive pronoun and the subject is a problem for locality assumptions of Sign-Based Construction Grammar (SBCG) => XARG attribute.
 - Ho (2015), Bond et al. (2015):
 - 514 English possessive idioms
 - Classification along various criteria (syntactic pattern, decomposability, ...)
 - ▶ More complicated syntactic patterns: wind someone [PP: around [NP: one's fingers]]

Possessive structures in German

- English-like expression with a possessive pronoun/NP:
 - (2) Alex hat mein Auto gestohlen. (Poss)
 Alex has my car stolen 'Alex stole my car.'
- Possessor:additional dative; Possessum: definite NP:
 - (3) Alex hat mir das Auto gestohlen. (DatDef)
 Alex has me.DAT the car stolen 'Alex stole my car.'
- Possessor: additional dative; Possessum: contains possessive pronoun:
 - (4) Alex hat mir mein Auto gestohlen. (DatPoss)
 Alex has me.DAT my car stolen 'Alex stole my car.'
- Possessor: standard argument of the verb, Possessum: definite NP:
 - (5) Die Katze kratzt mich am Beim. (Def) the cat scratches me.ACC at.the leg 'The cat scratches my leg.'

Alternation of possessive constructions

The same idiom can occur in several possessive constructions

- (6) 'Alex broke my heart.'
 - a. Alex hat mein Herz gebrochen. (Poss)
 Alex has my heart broken
 - b. Alex hat mir das Herz gebrochen. (DatDef)
 Alex has me.DAT the heart broken
 - c. Alex hat mir mein Herz gebrochen (DatPoss)
 Alex has me.DAT my heart broken

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What is a "possessive reading"

Generally assumed: "possession" is a cover relation for a set of possible semantic relations.

- Barker (1995) possessor is ambiguous:
 - when combined with a relational noun: no semantic contribution
 - when combined with a non-relational noun: introduction of some possessor relation
- Wunderlich (1996) Poss(x, y) means "x has y at x's disposal".
- Jensen & Vikner (2004)
 - list a number of possible relations and how they can be linked to the lexical semantics of the possessum.
 - Non-relational nouns can be turned into relational nouns, activating some function from their qualia structure.
 - ▶ If no relational meaning of a noun is used, a posssessor expresses a predicate that is similar to Wunderlich's possessor relation.

External possessor/ Possessor control in German

Existing argument of the verb is interpreted as the possessor of a definite co-argument NP.

- (7) Subject is possessor
 - a. Alex hebt den Fuß. (Def)
 Alex lifts the foot 'Alex is lifting her foot.'
 - b. Alex hebt ihren Fuß. (Poss)
 Alex lifts her foot
- (8) Non-subject is possessor
 - a. Die Katze kratzt mich. the cat scratches me.ACC
 - b. Die Katze kratzt am Stuhlbein. the cat scratches on the chair leg
 - c. Die Katze kratzt mich am Bein. (Def) the cat scratches me.ACC on.the leg 'The cat is scratching my leg.'

No "possessor raising" in German

Possessor raising:

- (9) Alex kissed [NP.acc: Kim's cheek] \Longrightarrow Alex kissed [NP.acc: Kim] [PP: on the cheek].
 - Raised possessor has structural case.
 - Raised possessor does not receive a thematic role from the verb.
 - Haspelmath (1999): Very common in the languages of the world.
- (10) Eminem spyr ham i ansiktet. (Norwegian) Eminem vomits him in face.DEF (Lødrup, 2009) 'Eminem vomits in his face.'
- (11) a. *Eminem spuckt ihn ins Gesicht. (German)
 Eminem vomits him.ACC in.the face
 - b. Eminem spuckt ihm.DAT ins Gesicht. (German)

German: External possessor readings

- German does not have a valence-changing possessor raising rule.
- However, there is a special possessor interpretation, living on existing valence patterns.
- External possessor readings are not common in the languages of the world, but typical for European languages (Sprachbund phenomenon of Standard Average European, Haspelmath (1999))

(12) External Possessor Rule:

A definite NP can be interpreted as being possessed by a co-argument.

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Adding dative arguments

- (13) a. *Eminem spuckt ihn ins Gesicht.

 Eminem vomits him.ACC in.the face
 - b. Eminem spuckt ihm ins Gesicht.
 Eminem vomits him.DAT in.the face
- (14) a. Eminem spuckt in sein Gesicht.

 Eminem vomits in his face
 - b. *Eminem spuckt ihn/ ihm
 Eminem vomits him.ACC/ him.DAT
 - Possessor is realized in an obligue case.
 - Possessor receives a thematic role from the verb (Hole, 2005, 2006, 2014).

Hole (2014): Three participant entailments of additional datives

Affectee: Participant that is causally affected by and consciously involved in the eventuality

(15) dass Paul Nico auf den Mantel tritt. that Paul.NOM Nico.DAT on the coat steps 'that Paul is stepping on Nico's coat.'

Landmark: Region within which the eventuality holds.

(16) dass der Kiste Füllmaterial aus den Ritzen quillt. that [the box].DAT filling material from the XX XX 'That filling material is XX from the box's XX'

P-Experiencer: Participant that will benefit from the eventuality.

(17) dass Popeye Olive Oyl einen Stein sauberwischt that Popeye Olive Oyl a stone clean.wipes '...that Popeye wipes a stone clean for Olive Oyl to sit on.'

Rule for additional datives in German

Additional Dative Argument Rule (ADAR):

The ARG-ST list of a predicate can be extended by a dative argument if

- a corresponding thematic role (Affectee, Landmark, P-experiencer) is added,
- the participant is not correferential with any other participant of the eventuality or at least not with one that has the same thematic entailments.
- (18) a. Popeye wischt den Stein sauber.
 Popey wipes the stone clean
 - Popeye wischt Olive Oyl den Stein sauber.
 Popeye wipes Olive Oyl.DAT the stone clean

```
\exists e(\mathsf{wipe-clean}(e) \\ \land \mathsf{Agent}(e,\mathsf{popey}) \land \mathsf{Patient}(e,\iota x : \mathsf{stone}(x)) \\ \land \mathsf{P-exp}(e,\mathsf{olive-oyl}))
```

Predictions of the ADAR

- No datives with coreferential experiencer subject:
 - (19) Alex ist (*sich) gestorben.
 Alex is herself died
 'Alex died.'
- No datives with Affectee-like, correferential direct object:
 - (20) a. Du hast $(*sich_i)$ [den Kranken]_i versorgt. you have himself.DAT [the sick.person].ACC treated
 - b. Du hast [dem Kranken] [die Wunde]
 you have [the sick.person].DAT [the wound].ACC
 versorgt.
 treated
 'You treated the wound of the sick person.'

Interaction of ADAR and EPR

ADAR adds an additional argument. This argument can serve as an external possessor.

- (21) waschen (wash): subject (agent), direct object (patient)

 Alex wäscht ein Auto.

 Alex washes a car 'Alex is washing a car.'
- (22) waschen (wash)+ADAR: subject (agent), dative object (affectee), direct object (patient)

Alex wäscht mir ein Auto.

Alex washes me.DAT a car 'Alex is washing a car for me.'

(23) waschen (wash)+ADAR+EPR: subject (agent), dative object (affectee), direct object (patient/possessum)

Alex wäscht mir die Haare.

Alex washes me.DAT the hair 'Alex is washing my hair.'

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Framework

- HPSG (Pollard & Sag, 1994)
- Lexical Resource Semantics (LRS, Richter & Sailer (2004)): linguistically motivated version of underspecified semantics (Pinkal, 1996; Egg, 2011)
- Highly lexicalized theory of idioms (Bargmann & Sailer, 2015)

ADAR and EPR as Lexical rules

Valence alternation is modeled by lexical rules (Müller, 2006) (technically: non-branching trees with words as nodes)

- ADAR:
- EPR:
 - Input: Predicate with at least two elements on its ARG-ST list Output: Same predicate, same ARG-ST list, but a possession relation (**Poss**) holding between two of its arguments.

LRS: External content

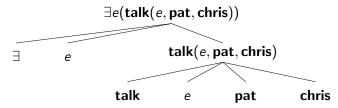
The logical form of a sentence is a semantic expression, occurring in its EX-CONT value:

(24) Pat talked to Chris.

[EXCONT $\exists e(\mathsf{talk}(e, \mathsf{pat}, \mathsf{chris}))]$

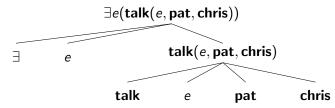
The logical form consists of several subexpressions:

(25) Subexpressions of $\exists e(talk(e, pat, chris))$:



LRS: Lexical semantic contributions

(26) Subexpressions of $\exists e(talk(e, pat, chris))$:



Constraint-based lexical semantics:

A word specifies in its PARTS list, which subexpressions must occur in the semantic representation of a sentence containing that word.

(27) Lexical constraints:

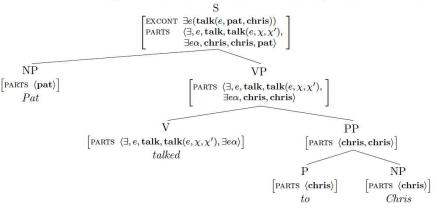
Pat: $\left[\text{Parts } \left\langle \text{pat} \right\rangle \right]$ Chris $\left[\text{Parts } \left\langle \text{chris} \right\rangle \right]$

to: $\left[\text{PARTS } \left\langle \text{chris} \right\rangle \right]$ talked: $\left[\text{PARTS } \left\langle \exists, e, \exists e \alpha, \text{talk}, \text{talk}(e, \chi, \chi') \right\rangle \right]$

LRS: Combinatorics

For sentences: The sem.rep. of a sentence must consist exactly of the elements of the sentence's PARTS list. (Everything on the PARTS list must be used, nothing else can be used)

Figure 1: Semantic constraints contributed by the nodes in the tree



LRS: Further constraints on readings

Words and structures may impose constraints on how the bits of sem.rep. can be combined:

- talk: $talk(e, \chi, \chi')$ is a subexpression of α (short: $talk(e, \chi, \chi') \triangleleft \alpha$)
- Linking theory: The index of the subject must be a subexpression of χ , the index of the direct object must be a subexpression of χ' .
- (28) Sketch of the lexical entry of *talk*:

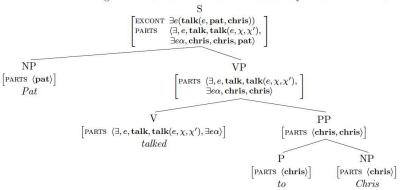
$$\begin{bmatrix} \text{PHON} & \langle \textit{talked} \rangle \\ \text{SYNSEM} & [\text{LOC} \mid \text{CONT} \mid \text{INDEX} & e] \\ \text{ARG-ST} & \langle \text{NP}[\text{INDEX} & \textbf{I}], \text{PP}[\textit{to}, \text{INDEX} & \textbf{2}] \rangle \\ \text{LRS} & \left[\text{PARTS} & \langle \exists, e, \exists e\alpha, \textbf{talk}, \textbf{talk}(e, \chi, \chi') \rangle \right] \end{bmatrix}$$

and talk(
$$e, \chi, \chi'$$
) $\triangleleft \alpha$ and $\boxed{1} \triangleleft \chi$ and $\boxed{2} \triangleleft \chi'$

LRS: General properties

- Redundant contribution: Several words can contribute the same bit of logical form (chris)
- Mulitple occurrences: An element that occurs only once on the PARTS list can nonetheless be used several times inside the overall semantic representation (e)

Figure 1: Semantic constraints contributed by the nodes in the tree



Two-dimensional theory of idioms

- Follows the tradition of Wasow et al. (1983), Nunberg et al. (1994),
 Kay & Sag (ms.)
- Constructional dimension of idiosyncrasy: Any syntactically idiosyncratic idom (kingdom come) is licensed by a phrasal lexical entry
- Collocational dimension of idiosyncrasy: Any syntactically regular idiom is licensed by the regular combinatorial mechanism. The words in the idiom may have idiom-specific semantics. Their co-occurrence is regulated by collocational specifications
 - decomposable idioms (spill the beans, pull strings): The words have a clearly identifiable semantics.
 - ▶ non-decomposable idioms (*kick the bucket*): some of the words have an empty semantics (Kay & Sag, ms.) *or:* some of the words make a redundant semantic contribution (Bargmann & Sailer, 2015)

Analysis of spill the beans (decomposable)

(29) Alex spilled the beans $\exists e(\text{spill_id}(e, \text{alex}, (\iota x : \text{bean_id}(x))))$

| word | PARTS | constraints | collocation |
|---------|---|---|--------------------|
| Alex | alex | | |
| spilled | \exists , e , spill_id, | $spill_id(e, \chi, \chi') \triangleleft \alpha,$ | x occurs in |
| | $spill_id(e, \chi, \chi'), \exists e \alpha$ | alex $\triangleleft \chi$, $x \triangleleft \chi'$ | $bean_id()$ |
| the | $\iota, x, (\iota x : \beta)$ | $x \triangleleft \beta$ | |
| beans | x , bean_id, bean_id(x) | | x occurs in |
| | | | $spill_id(\dots)$ |

Analysis of kick the bucket (non-decomposable)

Bargmann & Sailer (2015)

(30) Alex kicked the bucket. $\exists e(\text{kick-bucket_id}(e, \text{alex}))$

| word | PARTS | constraints | collocation |
|--------|---|---|--------------------------|
| Alex | alex | | |
| kicked | \exists , e , kick-bucket_id, | kick-b. $(e, \chi) \triangleleft \alpha$, | selects NP[INDEX e] |
| | kick-b. $(e, \chi), \exists e \alpha$ | alex $\triangleleft \chi$ | with kick-bucket_id |
| the | \exists , e , \exists e β | <i>e</i> ⊲ β | |
| bucket | e, kick-bucket_id, | | selected by $V[INDEX e]$ |
| | kick-b. (e, χ') | | with kick-bucket_id |

The collocational constraints enforce that: $\alpha=\beta$ and $\chi=\chi'$

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Four potential possessive constructions

- (31) a. Das kannst du an den Fingern abzählen. (Def) this can you on the fingers count 'You can tick this off on your fingers.'
 - b. Das kannst du an deinen Fingern abzählen. (Poss)
 - Das kannst du dir an den Fingern abzählen. (DatDef)
 - d. Das kannst du dir an deinen Fingern abzählen. (DatPoss)

Alternation patterns

| (150) | Def | Poss | DatDef | DatPoss | example idiom |
|-------|-----|------|--------|---------|--------------------------------------|
| 2 | ok | ok | ok | ok | (sich) etwas an den Fingern abzählen |
| 2 | ok | ok | ok | * | sich etwas aus dem Ärmel ziehen |
| 0 | ok | ok | * | ok | _ |
| 31 | ok | ok | * | * | die Augen schließen |
| 1 | ok | * | ok | ok | (sich) die Ärmel hochkrempeln |
| 2 | ok | * | ok | * | jm. unter die Haut gehen |
| 0 | ok | * | * | ok | _ |
| 6 | ok | * | * | * | die Nase voll haben |
| 18 | * | ok | ok | ok | jm. das Herz brechen |
| 14 | * | ok | ok | * | jm. aus den Augen gehen |
| 0 | * | ok | * | ok | _ |
| 1 | * | ok | * | * | in jms. Fußstapfen treten |
| 35 | * | * | ok | ok | sich die Hacken ablaufen |
| 37 | * | * | ok | * | jm. im Weg stehen |
| 1 | * | * | * | ok | sich seine Gedanken machen |

jemandem das Herz brechen (break someone's heart)

(32) Chris hat $\frac{ihm_y}{das}$ das Herz gebrochen. Chris has him.DAT the heart broken. 'Chris broke his heart.' $\exists e(break_id(e, chris, (\iota x : heart_id(x) \land Poss(y, x))) \land Aff(e, x))$

Lexical semantic contributions:

```
\begin{array}{ll} \textit{ihm}_y \; (\textit{him.DAT}) & \textit{y} \\ \textit{das} \; (\textit{the}) & (\iota \textit{x} : \_\_\_) \\ \textit{sein}_y \; (\textit{his}) & (\iota \textit{x} : \_\_\_ \land \mathsf{Poss}(\textit{y}, \textit{x})) \\ \textit{Herz} \; (\textit{heart}) & \mathsf{heart\_id}(\textit{x}) \\ \textit{brechen} \; (\textit{break}) & \exists e(\mathsf{break\_id}(e, \_\_, \_\land \mathsf{Poss}(\_\_, \textit{x}))\_\_\_) \end{array}
```

The verb requires a possession relation but does not contribute it!

Poss: Chris brach sein Herz.

| | $\exists e(break(e,chris,(\iota x : heart(x) \land Poss(y,x)))$ |
|----------|--|
| Chris | chris |
| brach | $\exists e(break(e, \underline{\hspace{1cm}}, \wedge Poss(\underline{\hspace{1cm}}, x))$ |
| $sein_y$ | $(\iota x: \wedge Poss(y,x))$ |
| Herz | heart(x) x |
| | |

DatPoss: Chris brach ihm sein Herz.

| | $\exists e(break(e,chris,(\iota x : heart(x) \land Poss(y,x)) \land Aff(e,y))$ |
|--------------|---|
| Chris | chris |
| brach + ADAR | $\exists e(break(e, \underline{\hspace{1cm}}, \wedge Poss(\underline{\hspace{1cm}}, x)) \land Aff(e,\underline{\hspace{1cm}}))$ |
| ihm_y | y y |
| $sein_y$ | $(\iota x: \underline{\hspace{1cm}} \land Poss(y, x))$ y |
| Herz | $\mathbf{heart}(x)$ x |
| | |

Redundant contribution: Two words contribute the participant y.

DatDef: Chris brach ihm das Herz.

| | $\exists e(break(e,chris,(\iota x : heart(x) \land Poss(y,x)) \land Aff(e,y))$ |
|------------|--|
| Chris | chris |
| brach+ADAR | $\exists e(break(e, \underline{\hspace{0.5cm}}, \land Poss(\underline{\hspace{0.5cm}}, x)) \land Aff(e,\underline{\hspace{0.5cm}}))$ |
| +EPR | |
| ihm_y | y y |
| das | (\(\ell x : \) |
| Herz | heart(x) |
| | |

Multiple occurrences: Participant *y* only contributed by one word, but used twice.

Def: *Chris brach das Herz.

| | $\exists e(break(e,chris,(\iota x : heart(x) \land Poss(y,x)))$ | |
|-------|--|--|
| Chris | chris | |
| brach | $\exists e(break(e, \underline{\hspace{1cm}}, \wedge Poss(\underline{\hspace{1cm}}, x))$ | |
| das | (\(\ilde{\epsilon}\) : | |
| Herz | heart(x) | |
| | | |

Sentence is ungrammatical because the verb requires a **Poss** relation in the logical form, but no word contributes this relaton.

Observations

All expressions have a syntactically regular form \implies Lexical analysis! (Bargmann & Sailer, 2015)

If the idioms are syntactically fully regular, we expect:

- Alternation expectation 1: Whenever DatPoss is possible, where the dative is an Affectee, DatDef should be, too.
- Alternation expectation 2: Whenever there an Affectee dative is possible with a possessive interpretation, we expect to find a plain possessive, i.e., Dat should imply Poss (joint work with Stella Markantonatou)
- Alternation expectation 3: Whenever DatDef is possible, DatPoss be possible as well.

Why Expectation 1?

- DatPoss and DatDef have identical logical forms.
- In DatPoss: redundant contribution of the possessor
 In DatDef: multiple occurrences of the possessor.
- In LRS: Blocking of redundant contributions possible (Penn & Richter, 2004); blocking of mutliple occurrences not.
- Expectation more or less confirmed: Only 1 idiom in the collection that has DatPoss but not DatDef: sich so seine Gedanken machen (oneself so one's thoughts make, 'begin to wonder')

Potential problem for the explanation

Potential problem: 9 of our idioms have a subject that is coreferential with the dative.

(33) Alex $_{\kappa}$ hat sich $_{\kappa}$ nach so einer Gelegenheit die Finger Alex has herself.DAT for such an opportunity the fingers geleckt.

'Alex has been dying for such an opportunity.'

If the subject and the dative contribute the possessor redundantly, why should there be no additional possessive pronoun?

Potential problem (cont.)

(34) Correferential subject and dative, but no DatPoss:

| DatDef-idioms | |
|------------------------------------|---------------------------------------|
| sich nach NP die Finger lecken | 'be dying for NP' |
| sich für NP die Hand abhacken | 'stake one's life on NP' |
| sich die Beine abstehen | 'be standing around for ages' |
| sich für NP die Beine ausreißen | 'do an effort for NP' |
| sich nach NP die Augen auskucken | 'eagerly look for NP' |
| sich die Augen aus dem Kopf weinen | 'cry one's eyes out' |
| sich die Kehle ausschreien | 'cry one's throat out' |
| sich das Hemd ausziehen lassen | 'let oneself be taken to the cleaner' |
| Def, Poss, DatDef | |
| (sich) NP aus dem Ärmel schütteln | 'whip out NP' |

Possible solution

Technical solution for DatDef-only idioms:

Idiomatic verb looks like output of ADAR and EPR.

As no possessive pronoun is possible, the verb is lexically specified as contributing a **Poss** relation. This **Poss** relation is banned from being redundantly contributed.

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Summary

- Possessive idioms are very prominent in both English and German.
- German has several possessive-like structures, which are used in the translation of English possessive idioms.
- Two processes: (i) adding a dative argument, (ii) external possessor interpretations.
- Lexical approach to idioms seems better equipped to account for possessive idioms than a phrasal approach.
- The combinatorial mechanism of LRS accounts for redundant marking of possession.
- LRS makes interesting predictions on alternations.

Where to go from here

- Explore other correlations in the alternation patterns.
- Cross-linguistic comparison: (English, Modern Greek [with Stella Markantonatou], romance languages)
- Kinegrams: Many possessive idioms describe a non-verbal expression in their literal meaning (*shrug one's shoulders*). This may good data to explore the relation between literal and idiomatic meaning.
- Many possessive idioms contain bodyparts. When used with adjectives, modification of the conjunctive type (?) is extremely frequent, though unanalyzed so far.
- (35) In Cindy liebt mich nicht spielt Schick einen coolen Barkeeper,

dem das butterweiche Herz gebrochen wird. whom.DAT the butter-soft heart broken is

"... Schick plays a cool barkeeper whose really soft heart is broken."

Thank you for your attention!

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