

Adverbial anaphoric usage of the German demonstrative 'so'

Carla Umbach (ZAS Berlin)

Workshop *Event semantics and lexical semantics*
Friedrich-Schiller-Universität Jena, 28.-29. Nov 2014

1

Similarity in natural language

Similarity is a core concept in human cognition

Tversky (1977):

"Similarity [...] serves as an organizing principle by which individuals classify objects, form concepts, and make generalizations."

Natural languages provide multiple ways to express similarity,

e.g. adjectives *ein ähnliches Auto / a similar car*
demonstratives *so ein Auto / such a car, a car like this*

2

The German demonstrative *so*

- | | |
|---|------------------------------|
| (1) a. (speaker pointing to a person): | ad-adjectival |
| <i>So groß ist Anna auch.</i> | |
| 'Anna is this tall, too.' | |
| b. (speaker pointing to a table): | adnominal
(ad-determiner) |
| <i>So einen Tisch hat Anna auch.</i> | |
| 'Anna has such a table / a table like this, too.' | |
| c. (speaker pointing to someone dancing): | adverbial |
| <i>So tanzt Anna auch.</i> | |
| 'Anna dances like this, too.' | |

3

Outline

- | | |
|------|---|
| Core | 1. The semantics of <i>so</i> |
| | 2. Spelling out similarity in multi-dimensional attribute spaces and generalized measure function |
| | 4. Features of comparison: adnominal <i>so</i> |
| | 5. Features of comparison: adverbial <i>so</i> |
| | 6. Syntactic reflection |

4

Similarity demonstratives

Umbach & Gust (2014): "Similarity demonstratives"

Demonstratives of verbal manner, nominal quality and adjectival degree, e.g. German *so*, Polish *tak* and Turkish *böyle*

Hypothesis

- speaker points to an **individual** or **event** (not to a property / kind)
 - The relation between the target of the demonstration and the referent is **similarity** (not identity, as in Kaplan's system)
- *so* phrases generate similarity classes based on individuals / events. These similarity classes constitute **ad-hoc kinds** (instead of previously established ones)

⚠ "similarity" is understood as **near identity** or **indistinguishability** with respect to certain features and is not equivalent to the meaning of the adjective *similar*

5

Semantics of ad-nominal *so*

Similarity is a 3-place relation $SIM(x, x_{target}, \mathcal{F})$

x NP referent
 x_{tar} target of the demonstration
 \mathcal{F} representation, including a set of **features of comparison**

$[_{NP} [_{DET} \textit{so ein} \textit{Tisch}]]$ ('such a table')

$[[\textit{so}]] = \lambda D. \lambda P. D(\lambda x. SIM(x, x_{target}, \mathcal{F}) \& P(x))$

$[[\textit{so ein}]] = \lambda P. \lambda Q. \exists x. SIM(x, x_{target}, \mathcal{F}) \& P(x) \& Q(x)$

$[[\textit{so ein Tisch}]] = \lambda Q. \exists x. SIM(x, x_{target}, \mathcal{F}) \& table(x) \& Q(x)$

- the set of individuals that are a table and are similar / near-identical to the pointing target;
- a subkind of the kind denoted by *table* such that instances are similar near-identical to the pointing target.

6

Semantics of ad-adjectival *so*

Nominals

- multiple features/dimensions s of comparison
e.g. for *table* HEIGHT, SIZE, FORM, MATERIAL, COLOR, NUMBER OF LEGS
- relating to ratio / ordinal / nominal scales
- selected by the context, restricted by the noun

Adjectives

- (mostly) one feature/dimension of comparison
- relating to a ratio scale
- given by the adjective's meaning

$[\textit{so groß}]$ ('this tall')

$[[\textit{so}]] = \lambda f. \lambda x. SIM(x, x_{target}, \mathcal{F}(f))$

$[[\textit{so groß}]] = \lambda x. SIM(x, x_{target}, \mathcal{F}(\textit{height}))$

7

How to spell out the SIM relation?

Multi-dimensional attribute spaces:

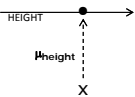
- feature structures + additional structure,
- qualitative (cf. Tversky 1977) rather than geometrical (cf. Gärdenfors 2000)

1. How to integrate attribute spaces into standard semantics?
2. How to define the similarity relation?
3. Which features qualify as features of comparison?

8

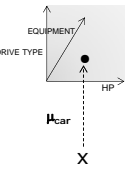
Generalized measure functions

Measure function associated with *tall*
(Kennedy 1999):
 $\mu_{\text{height}}: U \rightarrow \mathfrak{R}$



Suppose, relevant dimensions of comparison for *car* are

- DRIVE_TYPE: {diesel, gasoline, natural gas, electric}
- HORSEPOWER: \mathfrak{R}^+
- DOORS: {1 ...5}
- EQUIPMENT: \wp {rear assistance, lane guide, park pilot, ...}



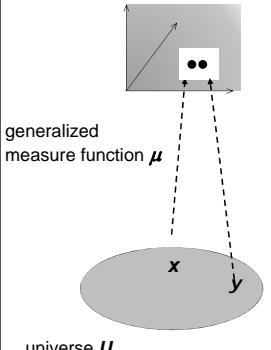
Generalized measure function associated with *car*
(in the context):
 $\mu_{\text{CAR}}: U \rightarrow \text{DRIVE-TYPE} \times \text{HP} \times \text{DOORS} \times \text{EQUIPMENT}$
 where $\mu_{\text{CAR}}(x) = \langle \mu_{\text{DRIVE-TYPE}}(x), \mu_{\text{HP}}(x), \mu_{\text{DOORS}}(x), \dots \rangle$

9

Similarity as indistinguishability

attribute space \mathcal{F}

Conceptual level



generalized measure function μ

Two individuals are **similar** with respect to \mathcal{F} if their images in \mathcal{F} are indistinguishable.

Semantic level

universe U

10

Features of comparison

Similarity is trivial without fixing the "respects of similarity" / features of comparison
(cf. Goodman)

→ which properties qualify as (potential) features of comparison?

Features of comparison: 1. adnominal *so*
 2. adverbial *so*

11

Adnominal modifiers

(5) <i>Anna hat</i> 'Anna has ...'	<i>Berta hat auch</i> 'Berta also has ...'
a. ... <i>ein Rad mit Gangschaltung.</i>	... <i>so ein Rad</i> _{gears}
b. ... <i>ein elektrisches Rad.</i>	... <i>so ein Rad</i> _{electric}
c. ... <i>ein elektrisches Rad mit Gangschaltung.</i>	... <i>so ein Rad</i> _{electric+gears}
d. ... <i>ein Mountain Bike</i> '... bike with gears /electric /mountain bike'	... <i>so ein Rad</i> _{mountain bike} '... such a bike'
e. ... <i>ein griechisches Rad.</i>	?? ... <i>so ein Rad</i> _{Greek}
f. ... <i>ein holländisches Rad.</i>	... <i>so ein Rad</i> _{Dutch}
g. ... <i>ein neues Rad.</i> '... Greek/Dutch/new bike'	# ... <i>so ein Rad</i> _{new} '... such a bike'

12

Adnominal modifiers

- (5) *Anna hat* 'Anna has ...' *Berta hat auch* 'Berta also has ...'
- h. ... *ein neues Mountain Bike* ... *so ein Rad*_{mountain bike}
- g. ... *ein altes verrostetes Rad* ... *so ein Rad*_{old+rusty}
- '... new Mountainbike / old and rusty bike' '... such a bike.'
- (6) a. *Anna's Auto ist ziemlich verbeult. Berta hat auch so ein Auto.*
'Anna's car is heavily dented. Berta has such a car, too.'
- b. *Anna's Auto hat ein Ticket. ?? Berta hat auch so ein Auto.*
'Anna's car has a parking ticket. Berta has such a car, too.'
- (7) a. *Anna hat ein neues I-Phone. Berta hat auch so eins.*
'Anna has a new I-Phone. Berta has one, too.'

13

Adnominal modifiers

The puzzle:

Why do *electric* and *with gears* and *old and rusty*, but not *new*, qualify as features of comparison in establishing ad-hoc subkinds of the bike kind?

And why does *new* qualify as a feature of comparison when combined with *IPhone*?

- (8) a. *A bike with gears is a kind of bike.*
 b. *An old an rusty bike is a kind of bike.*
 c. *?? A new bike is a kind of bike.*
 d. *The new IPhone is a kind of IPhone.*

14

Principled connections

Prasada et al (2013) (Cognitive Psychology)

- Principled vs. statistical connections between kinds and properties
- Principle connection properties are properties an entity has because it is the kind of thing it is.

- (9) a. *Dogs, in general, are four-legged.*
 b. *Dogs, by virtue of being the kinds of things they are, are four-legged.*
 c. *A dog should be four-legged.*
 d. *Dogs are four-legged. / A dog is four-legged.*
- (10) a. *Barns, in general, are red.*
 b. *# Barns, by virtue of being the kinds of things they are, are red.*
 c. *# A barn should be red.*
 d. *Barns are red. / # A barn is red.*

see also Greenberg (2003) 15

Features of comparison

Hypothesis:

Features of comparison in establishing ad-hoc subkinds via similarity have to be principally connected to the (superordinated) kind

e.g., possible features of comparison in *so ein Fahrrad* have to be features the target of demonstration has because it is a bike.

Caveat:

features are dimensions -- properties are features + values

critical dimensions (Umbach & Gust 2013)

properties an entity **may have** because it is the kind of thing it is.

- (11) a. *A bike may have gears (or not) in virtue of being a bike.*
 b. *?? A bike may be new (or old) in virtue of being a bike.*

16

Adverbial modifiers

- (11) *Anna hat das Huhn* *Berta hat die Ente auch*
 a. ... *im Wok zubereitet.* ... *so zubereitet*_{in the wok}
 b. ... *fettarm zubereitet.* ... *so zubereitet*_{low-fat}
 c. ... *gebraten.* ... *so zubereitet*_{fried}
 'Anna prepared the chicken in the wok / low-fat/ fried.' 'Berta prepared the duck like this, too.'
- (12) *Anna hat das Huhn* *Berta hat die Ente auch*
 a. ... *im Garten* # ... *so zubereitet*_{in the garden}
 b. ... *müheless zubereitet.* # ... *so zubereitet*_{easily}
 'Anna prepared the chicken in the laundry / skillfully.' 'Berta prepared the duck like this, too.'

17

Features of comparison: Adverbial modifiers

- (13) a. *Anna hat das Huhn schnell zubereitet.*
 # *Berta hat die Ente auch so zubereitet.*_{fast}
 b. *Anna ... Berta hat die Ente auch so schnell zubereitet.*_{fast}
 'Anna prepared the chicken quickly. Berta did it this way / quickly, too.'
- (14) *Anna hat laut die Vereinshymne gesungen.*
 a. # *Berta hat sie auch so gesungen.*
 b. *Berta hat sie auch so laut gesungen.*
 'Anna sang the club song loudly. Berta sang it like this, too. / lit: sang it so loud, too.'
- (15) *Anna hat die Einleitung der Arie laut / forte gesungen.*
Berta hat sie auch so gesungen.
 'Anna sang the introduction of the aria forte. Berta sang it like this, too.'
 (Martin Schäfer p.c.)

18

Adverbial modifiers

Same puzzle as in the adnominal examples:

→ Why do *in the wok* and *low-fat*, but not *in the garden*, *easily* and *quickly*, qualify as features of comparison in establishing ad-hoc subkinds of the preparing chicken (event) kind?

And why does loudly qualify as feature of comparison when singing arias but not when singing club songs

- (16) a. *Preparing chicken in the wok is a kind of preparing chicken.*
 b. ?? *Preparing chicken in the garden is a kind of preparing chicken.*
 b. ?? *Preparing chicken easily is a kind of preparing chicken.*

19

External vs. internal event modifiers

external vs. **-internal** event modifier (Maienborn&Schäfer 2011)

external: modifying the event

internal: modifying a manner dimension of the event

Event-internal adverbials denote **manner objects** (Schäfer 2013)

- (17) a. *Anna hat laut La Paloma gesungen.*
 b. *Anna hat La Paloma forte gesungen.*
 'Anna sang La Paloma loudly / forte.'
 a'. $\exists e$ [... & SING(e) & LOUD(e)]
 b'. $\exists e$ [... & SING(e) & $\exists m$ [MANNER_{MUSIC}(m,e) & FORTE(m)]]

20

Syntactic reflection: base position of adverbial modifiers

Frey (2003):

sentence adverbials > frame adverbials > **event-external** adverbials
> the highest ranked argument > **event-internal** adverbials >
process-related adverbials > verb

- (18) a. ... *weil sie in Berlin das Huhn in Zitrone gekocht hat.*
b. # ... *weil sie in Zitrone das Huhn in Berlin gekocht hat.*
'because she cooked the chicken in lemon in Berlin.'

21

Syntactic reflection: default order of adjectival modifiers

Is there a syntactic reflection in the case of adjectival modifiers?

Duden (1984) on the default order of adjectives:

number < time/space < quality/color < material/origin

Bouchard (2005): The easier the adjectival property can be understood as denoting an ad-hoc concept when combined with the head noun, the closer to the noun will it be positioned.

- (19) a. *ein neues japanisches Auto*
b. # *ein japanisches neues Auto*
'a new Japanese car / a Japanese new car'

22

Summary + conclusion

There is a class of demonstratives – **similarity demonstratives** –
e.g. German *so*.

- expressing similarity instead of identity,
- generating **ad-hoc** kinds (nominal, verbal).

Similarity is spelt out in **many-dimensional attribute spaces**

- attributes are given by relevant features of comparison
- individuals / events are mapped to points in attribute spaces by **generalized measure functions**.
- similarity is defined as **indistinguishability** with respect to a given set of features (+ classification functions) – which is an equivalence relation.

23

Summary + conclusion

- Features of comparison (to be picked up by *so*) are subject to similar restrictions in the adnominal and in the adverbial case:

adnominal: **principled connection** properties (dimensions)

adverbial: **event-internal**, modifying a manner dimension

→ Manner dimension of verbal concepts seem to correspond to principled connection dimensions of nominal concepts.

(even with respects to the syntactic position of the corresponding expressions)

- From an ontological point of view, **degrees**, (pure) **manners** and principled connection **nominal qualities** seem to play the same role: descriptions on a conceptual level.

24

References

- Anderson, C., and M. Morzycki. 2013. Degrees as kinds. To appear in *Natural Language and Linguistic Theory*.
- Barsalou, L. W. 1983. Ad hoc categories. *Memory & Cognition* 11: 211–27.
- Carlson, G. N. 1980. *Reference to kinds in English*. New York and London: Garland.
- Carlson, G. (2010). Generics and concepts. In F. J. Pelletier (ed.) *Kinds, Things and Stuff*. Oxford, Oxford University Press, 16–36.
- DUDEN (1984): Grammatik der deutschen Gegenwartssprache. 4.. völlig neu bearbeitete Auflage. Herausgegeben und bearbeitet von Günther Drosdowski et ul. Mannheim/Wien,Zürich.
- Frey, W. 2003. Syntactic conditions on adjunct classes. In Lang, Fabricius-Hansen, Maienborn (eds.) *Modifying Adjuncts*. Berlin: Mouton de Gruyter, 163–209.
- Gärdenfors, P. 2000. *Conceptual Spaces*. Cambridge MA: MIT Press.
- Goodman, N. 1972. Seven strictures on similarity. In *Problems and Projects*, ed. N. Goodman, 437–447. Indianapolis and New York: The Bobbs Merrill Company.
- Hole, D. & Klump, G. (2000) Definite Type and Indefinite Token: The article *son* in Colloquial German. *Linguistische Berichte* 182, 231–244.
- Kaplan, D. (1989). Demonstratives. In Almog, Perry & Wittstein (eds.), *Themes from Kaplan*, Oxford University Press, 481–563.

25

References

- Katz, G. & Umbach, C. (2006) *Das auch so*: Anaphoric reference to event predicates and event predicate modifiers. Talk at *Sinn und Bedeutung 11*, Barcelona, 09/2006.
- Kennedy, C. (1999) *Projecting the Adjective: The Syntax and Semantics of Gradability and Comparison*. Garland Press, New York.
- König, E. 2012. Le rôle des déictiques de manière dans le cadre d'une typologie de la deixis. *Bulletin de la Société de Linguistique de Paris* CVII.
- Maienborn, C. and M. Schäfer. 2011. Adverbials and Adverbs. In *Semantics. An international handbook of natural language meaning.*, vol. 2, 1390–1420. Berlin: Mouton de Gruyter.
- Nunberg, G. (1993) Indexicality and Deixis. *Linguistics and Philosophy* 16: 1–43.
- Pinon, C. 2008. From properties to manners: a historical line of thought about manner adverbs. *Papers of the Linguistic Society of Belgium* 3.
- Prasada, S., and E. M. Dillingham. 2006. Principled and statistical connections in common sense conception. *Cognition* 99:73–112.
- Prasada, S., Khemlani, S., Leslie, S-J, Glucksberg, S. (2013). Conceptual distinctions amongst generics. *Cognition*, 126, 405–422.
- Quine W. V. (1969) *Ontological Relativity and Other Essays*. New York, Columbia, University Press.
- Sassoon, G. 2011. Adjectival vs. nominal categorization processes. *Belgian Journal of Linguistics* 25:104–147

26

References

- Sassoon, G. 2011. Adjectival vs. nominal categorization processes. *Belgian Journal of Linguistics* 25:104–147
- Schäfer, M. 2013. Positions and interpretations. German adverbial adjectives at the syntax-semantics interface. Berlin: De Gruyter Mouton.
- Seiler, Hansjakob (1978): Determination: A functional dimension for interlanguage comparison. In: Seiler, Jansjakob (Hg.): *Language Universals. Papers from the Conference held at Gummersbach/ Cologne, Germany, October 3 - 8 . 1976. Tübingen. (= TBL. Bd. 1! I)*, S. 301–328.
- Soh, Hooi Ling. 2001. The Syntax and Semantics of Phonological Phrasing in Shanghai and Hokkien. *Journal of East Asian Linguistics* 10(1), 37–80.
- Tversky, A. 1977. Features of similarity. *Psychological Review* 84:327–352.
- Umbach, C. & Ebert, C. 2009. German demonstrative *so*-intensifying and hedging effects. *Sprache und Datenverarbeitung (International Journal for Language Data Processing)* 1-2/2009, 153–168.
- Umbach, C., and H. Gust. 2014. Similarity Demonstratives. To appear in *Lingua*.
- Umbach, C. 2014. Expressing similarity: On some differences between adjectives and demonstratives. *Proceedings of IATL 2013*, MIT Working Papers in Linguistics.
- Umbach, C. and H. Gust. 2014b. Interpreting similarity using attribute spaces and generalized measure functions. Talk at CTF'14, Düsseldorf (slides, paper in prep.).
- Umbach, C. (to appear) Evaluative propositions and subjective judgments. In Huitnik, J. and C. Meier (eds), *Subjective Meaning*.

27