

## Features restricting ad-hoc kind formation

German *so* ('such'/'like this') is one of a class of demonstratives found in various languages that serve as modifiers of quality and/or manner and/or degree, cf (1a-c). These expressions pose the question of how to reconcile their demonstrative characteristics with their modifying capacity. Carlson (1980) analyzes English *such* as directly referring to a sub-kind of the kind denoted by the nominal. Anderson & Morzycki (2015) adapt Carlson's analysis for Polish *tak*, which behaves analogous to German *so* in modifying nominal, verbal and also adjectival expressions, extending the notion of kinds to events and also degrees.

The major problem with a directly kind-referring analysis is, first, that arbitrarily complex kinds have to be assumed to be previously established. It is known in the literature on generics, however, that being previously established has linguistic effects (cf. the generic use of *the Coke bottle* vs. *the green bottle*, Krifka et al. 1995). The demonstrative *so* can be shown to be insensitive to these effects leading to the conclusion that it does not refer to previously established kinds. Secondly, there are restrictions observed that cannot be explained when assuming that arbitrary nominal expressions denote kinds (cf. Carlson 1980: *people in the next room ...*, *\*such people ...*).

In this paper, it will be argued that demonstratives of manner/quality/degree express similarity to the target of the demonstration (instead of identity, as is expressed by demonstratives like *that*), and that the emerging similarity class constitutes an ad-hoc generated kind. Restrictions on the use of the demonstratives will be shown to result from restrictions on licit features of comparison (so-called "respects of similarity") and correspond to principally connected properties discussed in the domain of kind/concept formation (Prasada & Dillingahm 2006). The focus in this paper will be on a recent experimental study addressing the restrictions.

- |                                       |  |
|---------------------------------------|--|
| (1) a. (speaker pointing to a table): | So einen Tisch hat Anna auch.<br>'Anna also has such a table / a table like this.' |
| b. (... to someone dancing):          | So hat Anna auch getanzt.<br>'Anna also danced like this.'                         |
| c. (... to a person):                 | So groß ist Anna auch.<br>'Anna is also this tall.'                                |

Consider the examples in (1). In (1a), Anna's table is characterized as being similar in certain respects to the table the speaker points at. In (1b), Anna's way of dancing is characterized as being similar in certain respects to the dancing event the speaker points at. Finally, in (1c) Anna's height is characterized as being similar to the height of the person the speaker points at. In all of these cases the use of the demonstrative *so* creates a class of items similar to the target of the demonstration including the referent of the demonstrative phrase. Since these similarity classes exhibit kind-like properties (see below), they are justly considered as kinds.

Similarity is spelt out with the help of multi-dimensional attribute spaces integrated into truth-conditional semantics by generalized measure functions. Multi-dimensional attribute spaces are spanned by relevant features of comparison. Generalized measure functions map individuals to points in multi-dimensional spaces, generalizing the notion of measure functions known in degree semantics (cf. Kennedy 1999) from the one-dimensional to the many-dimensional case. Similarity is defined as indistinguishability in a given multi-dimensional space (with respect to fixed features and granularity): two individuals (or events) are *similar* if and only if the points they are mapped to by the generalized measure function cannot be distinguished.

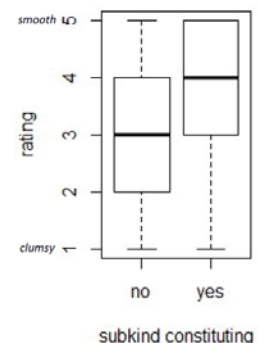
**Features of comparison.** The example in (2) demonstrates that some but not all properties of the antecedent qualify as features of comparison. Being a Diesel as well as being a Japanese car licenses anaphoric access by *so* – the second sentence in (2a) is understood such that Berta has a Japanese car and a Diesel, respectively. Being new, however, does not license anaphoric access by *so* – the second sentence in (2b) cannot be understood as saying that Berta has a new car. Similarly, in (3a) preparing a chicken in the wok or by frying can be picked up for comparison. However, preparing it the garden or

secretly do not normally qualify as a features of comparison – (3b) cannot mean that Berta prepared the duck in the garden or secretly.

- (2) a. Anna hat einen Diesel / ein japanisches Auto. Berta hat auch so ein Auto (nämlich einen Diesel/ ein japanisches Auto).  
 b. Anna hat ein neues Auto. Berta hat auch so ein Auto (\*nämlich ein neues Auto).  
 'Anna has a Diesel / a Japanese car / a new car. Berta has such a car, too (namely a Diesel / Japanese car / new car).'
- (3) a. Anna hat das Huhn im Wok zubereitet / gebraten. Berta hat die Ente auch so zubereitet (nämlich im Wok / gebraten).  
 b. Anna hat das Huhn im Garten / heimlich zubereitet. Berta hat die Ente auch so zubereitet (\*nämlich im Garten / heimlich).  
 'Anna prepared the chicken in the wok / by frying /. Berta prepared the duck like this, too (namely in the wok / by frying / in the garden/ secretly).'

Clues as how to explain these restrictions are found in different areas of semantics, following the different research traditions in the nominal and the verbal domain. In the area of genericity, Carlson (2010) discusses the experimental studies by Prasada & Dillingham (2006) showing that there are principled connections between kinds and particular properties. In the area of event semantics, Maienborn & Schäfer (2011) discuss event-internal adverbials modifying a dimension within the verbal kind/concept. Bringing these insights together we hypothesize that the restrictions in (2)/(3) are due to the fact that features of similarity comparison correlate to properties relevant in establishing kinds – a Japanese car is a kind of car while a new car is not, and preparing a chicken in the wok is a kind of preparing a chicken while preparing it in the garden is not.

An on-line study was conducted presenting 10 nominal and 10 verbal stimuli analogous to the examples in (2)/(3) (plus filler items). Stimuli were balanced between those involving kind constituting properties, cf. (2a/3a), and those with accidental properties, cf. (2b/3b). 30 subjects rated the items on a 5 point scale from *clumsy* to *smooth*. The overall results confirmed the predictions: The difference in rating between stimuli predicted to be smooth and those predicted to be clumsy is significant across categories, cf. fig. 1, and also within nominal and verbal items.



There is, however, a problem with this result: whether an item is predicted to be smooth or clumsy depends on whether the property to be picked up by *so* is acceptable in a sub-kind specifying sentence (e.g. *A Japanese car is a kind of car*). These sentences have to be controlled for. A follow-up experiment including sub-kind specifying sentences has been launched recently.

Summing up, the experiment described above was encouraging as a start. Assuming that the follow-up experiment is successful, the study will provide empirical evidence that the observed restrictions are restrictions on the constitution of sub-kinds. While Anderson & Morzycki (2015) refer to these restrictions as a "possibly-metaphysical puzzle", the similarity interpretation solves the puzzle by assuming that the kinds denoted by manner/quality/degree demonstratives are ad-hoc generated by similarity and the restrictions are restrictions on licit features of similarity comparison.

Anderson, Curt & Marcin Morzycki (2015) Degrees as Kinds. To appear in *Natural Language and Linguistic Theory*.  
 Carlson, G. N. 1980. Reference to Kinds in English. Garland, New York & London.  
 Carlson, G. (2010). Generics and concepts. In F. J. Pelletier (ed.) *Kinds, Things and Stuff*. OUP, 16-36.  
 Kennedy, C. (1999) Projecting the adjective. Garland Press, New York.  
 Krifka, M. , Pelletier, F. J., Carlson, G., ter Meulen, A., Link, G. & Chierchia, G. (1995) Genericity: An introduction. In Carlson, G. & Pelletier, F. J. (eds.) *The Generic Book*. Chicago: University of Chicago. 1-124.  
 Maienborn, C. & M. Schäfer (2011) Adverbials and Adverbs. In *Semantics. An international handbook of natural language meaning.*, vol. 2, 1390–1420. Berlin: Mouton de Gruyter.  
 Prasada, S., and E. M. Dillingham. 2006. Principled and statistical connections in common sense conception. *Cognition* 99:73–112.