EXPRESSING SIMILARITY: ON SOME DIFFERENCES BETWEEN ADJECTIVES AND DEMONSTRATIVES[1]

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1 Introduction

Similarity is considered as fundamental in cognitive activities such as learning and categorization. This is reason to assume that it plays a prominent role in natural language, too. Ways to express similarity are given, e.g., by comparison constructions and by lexical items like *similar, such, like, resemble.* In Umbach & Gust (2014) the German demonstrative *so* ('such' / 'like that') is investigated. It is argued that the demonstrative *so* expresses similarity, instead of identity, between the referent of the phrase and the target of the accompanying pointing gesture. As a result a similarity class is generated representing an ad-hoc kind. Demonstratives relating to their target by similarity instead of identity are called *similarity demonstrative*s in Umbach & Gust. Such demonstratives are found across languages and include, e.g., English *such*, Polish *tak* and Turkish *böyle*.

Given that there are demonstratives expressing similarity, the question arises of how these demonstratives relate to adjectives expressing similarity like English *similar* and German *ähnlich* ('similar') – are they equivalent in meaning? This paper focuses on German *so/solch* ('such') and *ähnlich* ('similar'). The examples in (1) in fact suggest that they are equivalent – in (a) as well as (b) Anna is said to own a dress similar to the one pointed at by the speaker.[2]

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[2] German *so* in nominal phrases has a pre-determiner position like English *such* while the adjective *ähnlich* has a pre-nominal position. When comparing *so* and *ähnlich* in this paper, word order is neglected. This is justified by the fact that German *solch*, which is equivalent in meaning to *so* (even if slightly old-fashioned), can take both positions without change in meaning, cf. 2.3.

(1)   (Speaker pointing to a dress in a shop window)
      a. Anna hat so ein Kleid / ein solches Kleid.
      b. Anna hat ein ähnliches Kleid.
          'Anna has such a dress / a similar dress.'[3]

There are, however, a number of contexts in which demonstratives and adjectives expressing similarity cannot be exchanged without affecting the meaning and/or acceptability of the sentences. Three of these contexts will be considered in this paper. The first one relates to definiteness. The demonstrative *so* as well as the adjective *ähnlich* appear reluctant to combine with the definite article, cf. (2a,b), indicating a semantic conflict between similarity and uniqueness. If uniqueness is enforced by lexical means (*einzig* 'unique'), the sentences are acceptable but differ substantially in meaning. In (3a) the dress the speaker points at has to be identical to Anna's dress, so there is only one dress at issue (requiring an interpretation such that, e.g., that Anna gave her dress on a sale-or-return basis to the second hand shop). In (3b) there are two distinct dresses, Anna's dress and Berta's dress.

(2)   a. *Anna trägt so das Kleid.
      b. ??Anna trägt das ähnliche Kleid.
          'Anna is wearing such the dress / the similar dress.'
(3)   a. (The speaker pointing to a dress in a second hand shop window)
          Anna besitzt das einzige solche Kleid.
          'Anna has the only such dress.'
      b. Berta hat ein indisches Hippie Kleid.
          Anna besitzt das einzige dem von Berta ähnliche Kleid.
          'Berta has an Indian hippie dress. Anna has the only dress similar to Berta's.'

Another case of non-equivalence of the demonstrative *so* and the adjective *ähnlich* are additive contexts, as in (4). The question under discussion ('*Which cars do Otto and Anna drive?*') has been partially answered by the preceding sentence – *Otto drives a Mercedes Benz*. Adding another Mercedes Benz driver requires an additive particle. This is unproblematic in the sentence containing the demonstrative, cf. (4a). But the sentence with the adjective in (4b) is hardly acceptable in the given context.

(4)   (Otto drives a Mercedes Benz – what about Anna?)
      a. Anna fährt auch so ein Auto.
      b. #Anna fährt auch ein ähnliches Auto.
          'Anna drives such a car / a similar car, too.'

The third case of non-equivalence is illustrated in the example in (5) where the (a) and the (b) versions differ strikingly in meaning. The NP *so ein Geschenk* ('such a present') in (a) seems to relate to presents similar in value or quality or rareness. In contrast, the NP *ein ähnliches Geschenk* ('a similar present') in (b) is interpreted as a present similar to a Panda bear, maybe

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[3] A more colloquial translation of *so/solch* in (1a) would be *like this*. In the translations of the examples in this paper *such* is used because it facilitates structural parallelism to the German sentence.

another exotic animal, which is unsuited as an argument of the predicate in (5). These contexts will be called '*secondary description contexts*'.

(5) (The prime minister received a Panda bear from the Chinese government.)
  a. So ein Geschenk zeigt die Wertschätzung des Gasts.
  b. #Ein ähnliches Geschenk zeigt die Wertschätzung des Gasts.
    'Such a present / a similar present demonstrates appreciation for the guest.'

The cases of non-equivalence shown in (2) - (5) could be viewed as suggesting that there are different notions of similarity encoded by the demonstrative *so* and the adjective *ähnlich*. It could be argued that the demonstrative expresses similarity relating to inner qualities while the adjective expresses similarity relating to, e.g., mere appearance. This assumption would explain the contrast in (5) and maybe also the contrast in (4) assuming that similarity in appearance is too weak to license additive particles.

This paper will take a different route. Instead of postulating separate similarity relations we will hypothesize that there is a unique similarity relation underlying the meaning of both the demonstrative and the adjective, and that the differences in meaning and distribution can be accounted for by different instantiation of parameters and additional constraints.

The paper will focus on the occurrence of German *so* and *ähnlich* in nominal phrases as shown in (1). In section 2, a summary of the analysis of similarity demonstratives in Umbach & Gust (2014) will be given. In section 3, the three cases of non-equivalence shown above will be discussed – definiteness, additivity and secondary description contexts. There are a number of further cases of non-equivalence, for example the fact that the adjective *ähnlich* unlike the demonstrative *so* is gradable, which have to be left for future research.

1 The Analysis of Similarity Demonstratives in Umbach & Gust

1.1 The Notion of Similarity Demonstratives

It is commonly agreed that, although there is a wide range of uses, German *so* is first of all a demonstrative expression which occurs as a modifier in adjectival, nominal and verbal phrases and can be used deictically, accompanied by a demonstration gesture, and anaphorically.[4] This is shown in (6)-(8), where the (a) examples are deictic and the (b) examples are anaphoric. Note that the demonstrative has to be accented when used deictically and deaccented when used anaphorically. In (6) the demonstrative combines with an adjective, in (7) it combines with a noun,[5] and in (8) it combines with a verb. The adjective must be gradable while the noun and the verb can be either gradable or non-gradable.

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[4] Polish *tak* and Turkish *böyle* are similarly flexible, whereas English *such* only combines with nominal phrases.
[5] More precisely, it combines with a determiner. However, since it will turn out that there is no semantic difference between the pre-determiner position and the pre-nominal position in compositional semantics (cf. 2.3), we will speak of adnominal *so* throughout this paper.

(6) a. (The speaker pointing to a person) So groß ist Anna auch.
     b. Berta ist 1,80m. So groß ist Anna auch.
        'Berta is 1.80m. Anna is that tall, too.'
(7) a. (Speaker pointing to a car in the street) So ein Auto hat Anna auch.
     b. Bertas Auto hat eine Ladeklappe. So ein Auto hat Anna auch.
        'Berta's car has a hatch. Anna has such a car, too.'
(8) a. (Speaker pointing to someone dancing) So tanzt Anna auch.
     b. Berta tanzt immer mit ausgebreiteten Armen. So tanzt Anna auch.
        'Berta dances with outstretched arms. Anna dances like that, too.'

Let us focus on the deictic cases. In (6a) information is provided about a degree of height, (7a) is about a quality of cars, and (8a) is about a manner of dancing. Accordingly, *so* functions as a degree modifier in (6a) and a nominal modifier in (7a),[6] and a manner modifier in (8a). However, neither the degree nor the nominal quality nor the manner are explicitly mentioned. The information is instead provided by the demonstrative or rather, the accompanying pointing gesture. This raises the question of how a demonstrative expression can act as a modifier and what is more, as a degree modifier and as a nominal modifier and as a manner modifier at the same time. This puzzle led to the main hypothesis in Umbach & Gust:

(*) Similarity demonstratives, for example German *so* and English *such*, denote similarity between the target of the demonstration gesture and the referent of the phrase it occurs in, thereby generating similarity classes representing ad-hoc kinds.

In the remainder of this section the idea of similarity demonstratives will be detailed along the following questions:
   (i)   What is the target of the demonstration gesture?
   (ii) How do similarity demonstratives fit into the standard Kaplanian theory of demonstratives, and what is the (compositional) semantics of *so*?
   (iii) How to spell out the similarity relation? What are the features of comparison?

As mentioned in the introduction, the focus in this paper will be on adnominal occurrences. For technical details the reader is referred to Umbach & Gust (2014) (abbreviated as U&G). For an analysis of these demonstratives from a typological point of view see König (2012)

2.2   The Target of the Demonstration Gesture

The information contributed to the interpretation by the demonstrative *so* is a degree in (6), a nominal property in (7), and a verbal manner in (8). So one might think that the pointing gesture accompanying the demonstrative targets degrees in (6), nominal properties in (7) and verbal properties in (8). In Carlson (1980), English *such* is in fact assumed to refer to (nominal) kinds. Starting from Carlson's analysis of English *such*, Anderson & Morzycki (2013) analyze German *so* and Polish *tak* by kinds of various types − nominal kinds when combined with nominal phrases, event kinds when combined with verbs, and degree kinds when combined with

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[6] See the previous footnote.

adjectives. In contrast to the analyses by Carlson and by Anderson & Morzycki, in U&G it is assumed that the target of the demonstration gesture accompanying the demonstratives is not a degree kind or nominal kind or event kind and instead the object or event pointed at by the speaker.

Evidence against a (directly) kind referring analysis stems from comparing adnominal *so* to kind referring (generic) uses of the demonstrative *dieser* ('this'). It is well-known that generic uses of definite NPs require that the kinds they refer to are "well-established", which is the reason why a generic use is possible for *the bottle* and *the Coke bottle* but not for *the green bottle*, cf. Krifka et al (1995). Now compare (9a) and (10a). *Dieses Auto* ('this car') in (9a) allows for a generic/type reading regardless of the context it occurs in because car subkinds are well-established in any type of context. In contrast, *dieser Tisch* ('this table') in (10a) does not allow for a generic/type reading in the given context of a bar. It does so only in contexts in which table subkinds are well-established, for example, when shopping at Ikea. In the case of *so*, however, there is no restriction to well-established kinds: (9b) and (10b) both mean that Anna will buy a car /a table similar to the one the speaker points to.

(9)   (Speaker pointing to a car in the street)
      a. Dieses Auto will Anna kaufen.   'Anna wants to buy this car.' (token/type)
      b. So ein Auto will Anna kaufen.   'Anna wants to buy such a car.'
(10) (Speaker pointing to a table in a bar)
      a. Diesen Tisch will Anna kaufen.   'Anna wants to buy this table.' (token only)
      b. So einen Tisch will Anna kaufen.   'Anna wants to buy such a table.'

We take the absence of the well-established kind requirement in the case of the demonstrative *so* as evidence that *so*-phrases do not directly refer to kinds and instead generate similarity classes based on the target of the demonstration gesture. These similarity classes can be seen as ad-hoc kinds. However, in contrast to Carlson (1980) and Anderson & Morzycki (2013), these kinds are not given in advance and instead ad-hoc generated by similarity.

2.3   The Semantics of the Demonstrative *so*

Similarity demonstratives are directly referential in the sense of Kaplan (1989) since they cannot be shifted across worlds, cf. (22) below and (10) in U&G. On the other hand, the Kaplanian notion of direct reference presupposes identity of the target of the demonstration gesture and the interpretation of the demonstrative expression. The identity presupposition is abandoned in Nunberg's (1993) adaptation of Kaplan's theory in order to capture cases of so-called deferred reference, for example, '*She is usually a man*.' uttered when pointing to a female minister of defense. Following Nunberg, the semantics of demonstratives involves (i) a deictic component picking out the target of demonstration, (ii) an interpretation contributed to the proposition, and (iii) a relation between the target of demonstration and the interpretation which need not be identity.[7] Nunberg claims that the nature of the relation between the target of demonstration and the interpretation is arbitrary, which may be too liberal. Making use of Nunberg's theory, U&G

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[7] We skip over Nunberg's classificatory component including, e.g., a proximal / distal feature.

assume that in the case of similarity demonstratives the relation between the target of demonstration and the interpretation is similarity.

As pointed out by Nelson Goodman in his famous 'Seven strictures against similarity' (Goodman 1972) the notion of similarity is trivial as long as the relevant respects of similarity are not fixed. For this reason similarity is not simply a binary relation between two items but instead has to be encoded as a three place relation including two individual arguments and a set of features of comparison. Features of comparison (or respects / dimensions of comparison – we will use these terms interchangeably) are properties of properties. For example, in the case of cars features might be *color*, *number of doors*, *type of drive* etc. Features must not be mistaken for (first-order) properties – while *red* is a property, *color* is a feature.

The semantics of the demonstrative *so* is given by a three-place similarity $SIM(x, x_{target}, F)$, where x represents the interpretation/ referent contributed to the proposition, x_{target} represents the target of the demonstration gesture and F represents a set of relevant features of comparison. The latter two parameters are free variables. In (12) a compositional semantic interpretation of adnominal *so* is presented. It combines with the determiner taking the pre-determiner position of *so* into account, cf. (11a). In (13) a semantic interpretation of prenominal *solch*, as in (11b), is presented. Please note that the resulting quantifier is the same in both cases – (12c) and (13c) are identical, corresponding to the fact that there is no difference in meaning between (11a) and (b). We will therefore call the occurrence of *so* in (11a) ad-nominal even it is in an ad-determiner position.

(11) (Speaker pointing to a dress in a shop window)
   a. Anna hat so / solch ein Kleid.
       'Anna has such a dress.'
   b. Anna hat ein solches Kleid.
       'Anna has such a dress.'

(12) a. $[[so]]$ $\quad = \lambda D. \lambda P. D(\lambda x. SIM(x, x_{target}, F)\ \&\ P(x))$
   b. $[[so\ ein]]$ $\quad = \lambda P. \lambda Q. \exists x. SIM(x, x_{target}, F)\ \&\ P(x)\ \&\ Q(x)$
   c. $[[so\ ein\ Kleid]]$ $\quad = \lambda Q. \exists x. SIM(x, x_{target}, F)\ \&\ dress(x)\ \&\ Q(x)$
(13) a. $[[solch]]$ $\quad = \lambda P. \lambda x. SIM(x, x_{target}, F)\ \&\ P(x)$
   b. $[[solches\ Kleid]]$ $\quad = \lambda x. SIM(x, x_{target}, F)\ \&\ dress(x)$
   c. $[[ein\ solches\ Kleid]]$ $\quad = \lambda Q. \exists x. SIM(x, x_{target}, F)\ \&\ dress(x)\ \&\ Q(x)$

Let us finally consider the interpretation of ad-adjectival *so*. Assume that adjectives are associated with measure function (cf. Kennedy 1999). Ad-adjectival *so* is interpreted by similarity such that the measure function associated with the adjective represents the (only) feature of comparison – *so groß* in (14a) is interpreted as 'similar with respect to height'.

(14) (Speaker pointing to a person)
   a. So groß ist Anna.
   b. $[[so]]$ $\quad = \lambda f. \lambda x. SIM(x, x_{target}, f)$
   c. $[[so\ groß]]$ $\quad = \lambda x. SIM(x, x_{target}, height)$

2.4   Respects of Similarity

The core question when spelling out the notion of similarity used in (12)-(14) is the question of how to determine the respects/features/dimensions of similarity. This is easy in the adjectival case since adjectival comparison involves only one dimension (in one actual comparison).[8] Moreover, adjectives wear their dimensions on their sleeves – adjectival dimensions are determined by lexical meaning. In contrast, nouns may relate to more than one dimension in an actual comparison (cf. example (18), (19) in U&G), and it seems to be a matter of context which dimensions are relevant. Still, dimensions are not arbitrary. As shown in (15) there are constraints imposed by the lexical meaning of the noun: A's reply to B in (15a) is unmarked because having a natural gas engine as well as having a hatch are essential properties of cars. The reply in (15b) is also unmarked because being dented is a typical appearance of cars. The reply in (15c), however, is marked – having a CD-player seems not essential for cars.

(15) A: (pointing to a car in the street)
> So ein Auto ist Annas Auto auch.
> 'Anna's car is one like this, too.'
> B: In welcher Hinsicht?
> 'In which respect?'
> a. A': Anna's Auto hat auch einen Gasantrieb und eine Ladeklappe.
>   'Anna's car also has a natural gas engine and a hatch.'
> b. A': Anna's Auto ist auch vollkommen verbeult.
>   'Anna's car is also heavily dented.'
> c. A': ???Anna's Auto hat auch einen CD-Spieler.
>   'Anna's car also has a CD player.'

Strong contextual support may turn entertainment devices into relevant features of comparison such that (15c) is no longer marked (cf. example (22) in U&G). Still, the effect in (15) is evidence that not all features are equally suited in determining similarity. Analogous effects are discussed in Carlson (1980) considering infelicitous uses of *such* as, e.g., in *people in the next room … ?? Such people …*, where the attribute *in the next room* is said to be unfit for selecting a subkind. In a recent paper in (2010) Carlson gets back to the issue of how to distinguish kind-selecting attributes exploiting the relation between generic sentences, kinds, and (psychological) concepts. In particular, he refers to Greenberg (2003) and to Prasada & Dillingham (2006).

Greenberg (2003) argues that indefinite singular generics, but not bare plurals, require principled connections – phrased as "in virtue of" generalizations – between the kind and the predicated property. Ad-hoc categories lead to unacceptable indefinite singular generics if there

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[8]We consider here only adjectives like *tall* and *heavy*. Sassoon (2011) argues that adjectives may have more than one dimension, for example, *healthy with respect to blood pressure, cholesterol, sugar* etc. She does not claim, however, that there may be more than one dimension involved in an actual comparison. On the contrary, she argues that adjectival dimensions are integrated by logical operations while nominal dimensions are integrated through similarity. Integrating adjectival dimensions by, e.g., conjunction, amounts to considering them one-by-one, yielding a list of (simple) comparisons: Berlin is larger than Hamburg with respect to the number of inhabitants but not with respect to the area. From this point of view, her distinction between adjectives and nouns is close to the one proposed in this paper.

is no principled connection. For example, (16a) does not allow for a generic reading because there is no principled connection between being a carpenter in Amherst and giving all one's sons names ending with 'a' or 'g'. In contrast, with a principled connection (the sitting causes the flatness of the banana) the indefinite singular generic is acceptable, cf. (17a), (even though it is low frequency).

(16) a. A carpenter in Amherst gives all his sons names ending with 'a' or 'g'.
     b. Carpenters in Amherst give all their sons names ending with 'a' or 'g'.

(Greenberg 2003, p.33)

(17) a. A banana that has been sat on by a rhinoceros is flat.
     b. Bananas that have been sat on by a rhinoceros are flat.

(Carlson 2010, 17/18)

Prasada & Dillingham (2006) present an experimental study showing that humans represent principled connections between concepts and some, but not all, of the concept's properties. They distinguish *k-properties* – properties ascribed to entities because they are the kind of things they are – from *t-properties*, which are factual and statistical properties. Consider the generic statements in (18a)/(19a). Both allow for a paraphrase including *in general*, cf. the (b) versions. But only (18a) allows for the *in virtue of the kind it is* paraphrase, as in (c). Being four-legged is a property of dogs because they are what they are, even if there are some three-legged dogs. But although most barns are red (in the US), being red is not a property of barns because they are barns, which is the reason why (19c) is not acceptable, (cf. 1, 2 in Prasada & Dillingham 2006).

(18) a. Dogs are four-legged.
     b. Dogs, in general, are four-legged.
     c. Dogs, by virtue of being the kinds of things they are, are four-legged.
(19) a. Barns are red.
     b. Barns, in general, are red.
     c. #Barns, by virtue of being the kinds of things they are, are red.

Prasada & Dillingham's findings provide a perfect explanation for the effect observed in (15): Having a natural gas engine is a k-property of cars while having a CD player is not – a car has a an engine in virtue of being a car but it doesn't have a CD player in virtue of being a car. We cannot straightforwardly adopt Prasad & Dillingham's notion of k-properties because we need dimensions instead of properties. But the *in virtue of the kind it is* paraphrase can easily be adopted to dimensions: A car has some engine by virtue of being a car but it doesn't have a some entertainment device by virtue of being a car. Dimensions selecting k-properties are called *criterial dimensions* in U&G.

The restriction to criterial dimensions in interpreting adnominal *so*-phrases entails that their denotation is not just an arbitrary subset of the noun denotation. The denotation of *so*-phrases is characterized by means of k-properties and can thus be considered as a subkind. But since it is ad-hoc generated by similarity to the target of the demonstration it need not be a previously established kind in a well-established taxonomy. So the analysis in U&G finally agrees with Carlson (1980) that adnominal *so*-phrases denote kinds. But the similarity interpretation of *so* reveals how these kinds come into existence.

2.5 Multi-Dimensional Attribute Spaces and Generalized Measure Functions

For the interpretation of *so/solch* in (12), (13) to gain substance a notion of similarity is required which is not a semantic primitive. U&G propose to take advantage of the findings on similarity in Artificial Intelligence, implementing similarity with the help of multi-dimensional attribute spaces. These spaces are close to Gärdenfors' (2000) conceptual spaces, but they provide a qualitative similarity measure instead of a geometrical one. Spelling out the notion of similarity in multi-dimensional attribute spaces raises two questions: (i) What are the features of comparison providing the dimensions of the space? and (ii) How to integrate multi-dimensional attribute spaces into standard semantics? Below, the account in U&G is outlined (for details the reader is referred to the original paper).

Ad (i), in the adjectival case there is a single feature of comparison determined by the meaning of the adjective, for example *height* in (14). In the nominal case there may be several features of comparison constrained by the meaning of the noun as shown in the previous section. Ad (ii), combination of multi-dimensional attribute spaces with standard semantics will be achieved by *generalized measure functions*, generalizing the notion of adjectival measure functions suggested in Kennedy (1999): While adjectival measure functions are one-dimensional and relate to ratio scales (at least for adjectives like *tall*), in the case of nominals more than one dimension must be taken into account simultaneously and dimensions relate to scales of various types – ratio, ordinal, or even nominal. Thus, while adjectival measure functions map individuals to degrees in a single dimension, generalized measure functions map individuals point-wise into multi-dimensional attribute spaces. In (20a) the standard measure function HEIGHT associated with the adjective *tall* is shown. It maps individuals to real numbers. In (20b) a multi-dimensional generalized measure function associated with the noun *car* is shown. Assuming that the criterial dimensions include DRIVE TYPE and HORSE POWER, with a nominal scale for DRIVE TYPE (diesel, natural gas, electric,…) and a metrical scale for HORSE POWER, the generalized measure function in (20b) maps individuals point-wise to values in the respective dimensions.

(20) a. μ_{HEIGHT}: $U \to \Re$

b. μ_{CAR}: $U \to$ <DRIVE-TYPE, HP …>,

where $\mu_{CAR}(x) = <\mu_{DRIVE\text{-}TYPE}(x), \mu_{HP}(x), …>$

and $\mu_{DRIVE\text{-}TYPE}(x) \in \{diesel, natural\ gas\ …\}, \mu_{HP} \in \Re …$

Multi-dimensional attribute spaces facilitate defining similarity as indistinguishability. [9] Roughly, two individuals are similar if and only if they are indistinguishable with respect to a given set of dimensions. This notion of similarity is close in spirit to Nunberg's idea of

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[9] To be precise, multi-dimensional attribute spaces are given by a set *F* of dimensions associated with classification functions. Classification functions mirror relevant natural language predicates on individuals yielding corresponding truth values. The role of classification functions is two-fold. First, while generalized measure functions take individuals to points in attribute spaces, classification functions link these points back to regular predicates, thereby warranting the integration of attribute spaces into truth-conditional semantics. Secondly, they determine the level of granularity: Similarity is defined such that two individuals are similar with respect to a set of relevant features iff the classification functions yield the same result when applied to corresponding points in the attribute space, cf. (*) where C(F) is the set of classification functions associated with the dimensions in F. This relation corresponds to the notion of indistinguishability in rough set theory (Pawlak 1998), which is an equivalence relation:

(*) $sim(x, y, F)$ iff $\forall p^* \in C(F): p^*(\mu_F(x)) = p^*(\mu_F(y))$

coarsening the granularity of the domain (cf. Nunberg 2004). He argues that uttering a sentence like '*She is usually a man.*' while pointing to a female minister of defense is felicitous only if the pronoun does not pick out exactly the individual the speaker points to, but instead picks out a range of things associated with the individual including the minister of defense position. In the similarity account coarsening of the domain is achieved by generating similarity classes. This requires similarity to be an equivalence relation – reflexive, symmetric and transitive – which was challenged in Tversky (1977). When comparing the demonstrative *so* to the adjective *ähnlich* ('similar') it will turn out that reflexivity has to be discarded in the interpretation of *ähnlich* but not in the interpretation of *so*.

3   Comparing *so* and *ähnlich*

As laid out in the introduction, the core question in this paper is the question of how the notion of similarity expressed by demonstratives compares to that expressed by adjectives – what is the semantic difference between, e.g., the German demonstrative *so* and the German adjective *ähnlich* ('similar')? Although the two expressions appear equivalent at first sight, there are a number of contexts in which they cannot be exchanged without affecting the meaning and/or acceptability of the phrase they occur in. The demonstrative *so* and the adjective *ähnlich* will be compared in this section with respect to (i) lexical category, (ii) compatibility with definite articles, (iii) licensing/blocking of additive particles, (iv) dimensions of comparison in secondary description contexts. The observed effects will be explained by differences concerning constraints on the similarity relation and the instantiation of parameters.

3.1   Lexical Category

Although occurring in a broad range of uses, the expression *so* is first of all a demonstrative expression combining with nominal, verbal and adjectival expressions, cf. the examples in (6)-(8). In the literature *so* is often called a demonstrative pronoun or demonstrative adverb, which is both misleading since *so* cannot substitute for a noun phrase and is not always an adverb (the difficulties in assigning a grammatical category to the demonstrative *so* are well-known, see Ehlich 1986). Like other demonstratives, *so* has a deictic and an anaphoric use. The deictic use is accompanied by a demonstration gesture targeting the comparison base and the referent of the *so*-phrase is similar to the target of the demonstration.

In contrast, *ähnlich* is a relational adjective and the comparison base fills the second argument slot. The comparison base may be given by a dative NP or a PP, cf. (21a/b), or by reciprocal construction, as in (21c). Finally, the comparison base of *ähnlich* may also be given anaphorically, cf. (21d).[10] It has to be noted, however, that even if the comparison base is ana-

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[10]As with other anaphoric expressions the antecedent may be given in the utterance situation instead of the preceding text. This usage is often considered as deictic since it usually involves a pointing gesture. It has to be noted, however, that while the pointing gesture accompanying the demonstrative *so* has to be temporally aligned with the utterance of *so* this is not the case with *ähnlich,* which is evidence that there is no genuinely deictic use even if the antecedent of the second argument is given in the utterance situation.

phoric the noun phrase itself need not be anaphoric. Anaphoricity of the noun phrase requires previous mentioning, as in (21e).

(21) a. Anna trägt ein dem von Berta ähnliches Kleid.
     b. Anna trägt ein ähnliches Kleid wie Berta.
        'Anna is wearing a dress similar to Berta's dress.'
     c. Anna und Berta tragen (sich) ähnliche Kleider.
        'Anna and Berta are wearing similar dresses.'
     d. Berta trägt ein indisches Hippie Kleid. Anna trägt ein ähnliches Kleid.
        'Berta is wearing an Indian hippie dress. Anna is wearing a similar dress.'
     e. Berta fährt ein ähnliches Auto wie Otto. Anna fährt auch ein ähnliches Auto wie Otto.
        'Berta drives a similar car as Otto. Anna drives a similar car as Otto, too.'

The fact that *so* is a demonstrative whereas *ähnlich* is a (relational) adjective is reflected by their behavior in counterfactual sentences. As is the case for demonstratives in general, the interpretation of *so* cannot be shifted across worlds. In (22a) the conditional shifts the world of evaluation to one where Anna's Cabrio has tail fins. This results in a highly marked sentence – using *so* you can pick up Anna's car in the actual world but not the one in a counterfactual world. In contrast, the interpretation of *ähnlich* can be shifted. In (22b) the sentence is unmarked – using *ähnlich* you can pick up Anna's car in a counterfactual world. This is evidence that *so* is directly referential in the Kaplanian sense while *ähnlich* is not directly referential and instead behaves like regular adjectives.[11]

(22) a. ??? Wenn Annas Cabrio Heckflossen hätte, dann wäre das Auto von Bruno auch so eins.
     b. Wenn Annas Cabrio Heckflossen hätte, dann wäre das Auto von Bruno dem ähnlich.
        'If Anna's cabrio had rear fins, then Bruno's car would be like that, too. / be similar.'

Finally, there is another important difference between the demonstrative *so* and the adjective *ähnlich*. Like other adjectives *ähnlich* can be used in comparative form, which is impossible for *so*, cf. (23a, b). Without going into details, the fact that *so* resists a comparative form supports the interpretation of similarity as indistinguishability in the case of *so*, cf. section 2.5 – an object cannot be more or less indistinguishable from another one.

(23) (Bertas Kleid ist dem von Marilyn Monroe in 'Some like it hot' wenig ähnlich.)
     a. Anna hat ein ähnlicheres Kleid.
        'Anna has a more similar dress.'
     b. * Anna hat ein Kleid, das mehr so ist.
        lit.: 'Anna has a dress that is more such.'

3.2 Definiteness

At first sight, the demonstrative *so* and the adjective *ähnlich* both resist combination with definite determiners. (24a) is ungrammatical, and the (b) version, with pre-nominal *solch* instead

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[11] Adding a *wie*-phrase in (22a) – *so eins wie das von Anna* – improves acceptability. But then the expression *so* is no longer used as a demonstrative and instead as a correlate.

of pre-determiner *so*, is also ungrammatical, which is evidence that incompatibility with the definite determiner does not hinge on the pre-determiner position.

(24)   (Speaker pointing to a dress in a shop window)
      a. *Anna hat so das Kleid.
      b. *Anna hat das solche Kleid.
        'Anna is wearing such the dress

The ban on *so/solch* combined with definite determiners can be explained by a conflict between uniqueness and similarity. The definite NP *so das Auto* would have to denote "the unique individual x which is a car and is similar (with respect to relevant dimensions) to the car pointed to".

We assumed in section 2.5 that the SIM relation interpreting *so* is an equivalence relation, that is, symmetric, transitive and, in particular, reflexive: every x is similar to itself. Given that similarity in the case of *so* means indistinguishability (with respect to relevant features), reflexivity seems reasonable – every individual is of course indistiguishable from itself. On the other hand, in order to guarantee uniqueness the similarity relation would have to be a function, that is, for every individual x there is a unique individual y standing in SIM relation to x. Since SIM is reflexive this individual has to be x itself. Thus the uniqueness requirement imposed by the definite determiner can only be satisfied if the similarity relation is interpreted as the identity function.

But this is not what we want. From the point of view of scalar strength identity is stronger (satisfying more requirements) than similarity. Following the Gricean maxims there is an implicature excluding the stronger interpretation when the weaker one is expressed – if you want to express identity you should not use the term for similarity. The scalar implicature associated with the use of the demonstrative *so* guarantees non-uniqueness – there is more than one individual y standing in similarity relation to x – thereby preventing similarity from boiling down to identity. The unacceptability of (24) can now be explained as resulting from a conflict between the implicature of non-uniqueness and the uniqueness condition imposed by definiteness.

Combination of a definite determiner with *ähnlich*, as in (25a), appears at first sight as bad as combination with *so*. Consider, however, (25b) where the comparison base is explicitly mentioned. Although the sentence is still marked, it is no longer ungrammatical. In a scenario where dresses come in pairs – for every dress there is exactly one other similar dress – (25b) makes perfect sense. This is evidence that there is no semantic conflict between the uniqueness requirement of definiteness and similarity as expressed by *ähnlich*. Uniqueness seems hard to accommodate but once we fix a suitable scenario, the sentence is acceptable. (It remains to be explained why the (b) version is much better than the (a) version. One could argue that mentioning the comparison base facilitates accommodation, but there may also be some other factor involved. We have to leave this problem open.)

(25) (Berta hat ein indisches Hippie Kleid.)
      a. (?) Anna hat das ähnliche Kleid.
      b. Anna hat das dem Hippie Kleid von Berta ähnliche Kleid.
        'Berta has an Indian hippie dress. Anna has the similar dress / the dress similar to Berta's.'

It was argued in the case of *so* that there is a scalar implicature ruling out the identity interpretation of similarity and thereby blocking the uniqueness requirement of definiteness. In the case of *ähnlich* we saw that the uniqueness requirement of definiteness can be satisfied provided that the context supports uniqueness. So why is that impossible in the case of *so*?

Consider the sentences in (26) (= (3) in the introduction) where uniqueness is explicitly postulated by adding the adjective *einzig* ('unique'). Now, with *so* as well as *ähnlich* definiteness is unmarked. But there is a crucial difference between (26a) and (b): The (a) version entails that there is exactly one dress at issue, that is, the dress in the shop window must be Anna's dress (leading the hearer to infer, e.g., that Anna gave her dress on a sale-or-return basis to the second hand shop).[12] In contrast, the (b) version entails that there are two dresses at issue, Berta's dress and Anna's dress. Even though uniqueness is explicitly postulated the context has to be such that there are two dresses around, which appears paradoxical at first sight.

(26) a. (Speaker pointing to a dress in a second hand shop window)
   Anna besitzt das einzige solche Kleid.
   'Anna has the only such dress.'
   b. (Berta hat ein indisches Hippie Kleid.)
   Anna besitzt das einzige dem von Berta ähnliche Kleid.
   'Berta has an Indian hippie dress. Anna has the only dress similar to Berta's.'

The apparent paradox in the case of *ähnlich* disappears when taking the domain the uniqueness requirement pertains to into account. Assuming that the domain does not include Berta's dress – the set of things that are similar in the sense of *ähnlich* to Berta's dress does not include Berta's dress itself – uniqueness is easily satisfied. Such a domain results from assuming that the similarity relation denoted by *ähnlich* is not reflexive – *ähnlich* carries an in-built distinctiveness condition. So while the similarity relation denoted by *so* is reflexive the one denoted by *ähnlich* is irreflexive. This entails that in the case of *so* the domain uniqueness pertains to includes the comparison base, but in the case of *ähnlich* it does not. In the case of *so* there is an implicature blocking the uniqueness requirement of definiteness by ruling out the identity interpretation of similarity, which is cancelled in (26a). But in the case of *ähnlich* non-identity is a semantic constraint and is part of the assertion.

Here is one final observation concerning definiteness: A brief corpus search yields a number of definites combined with *ähnlich*. Interestingly, many of these are possessive NPs with a reciprocal interpretation, like (27). The possessive construction licenses definiteness (cf. Barker 2000), and the plural construction allows the elements of the plural group to mutually function as the comparison base – the designations of the Council of Europe, the European Council, and the Council of the European Union are similar to each other. While a reciprocal construction is unmarked with the adjective *ähnlich* it is definitely excluded with the demonstrative *so* – *solche Bezeichnungen* 'such designators' can never be designators similar to each other. This observation points to another difference between similarity demonstratives and similarity adjectives which has to be left for future research: While the former require a deictic or anaphoric comparison base, the latter license elements in a group to provide a comparison base for each other.

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[12] In (26a) *solch* is used instead of *so* in order to be combined with the adjective *einzig* ('unique').

(27)   Die ähnlichen Bezeichnungen von Europarat, Europäischem Rat und Rat der Europäischen Union führen häufig zur Verwechslung.
'The similar designations of the Council of Europe, the European Council, and the Council of the European Union frequently lead to confusion.'

3.3 Additivity

In this section the demonstrative *so* and the adjective *ähnlich* are compared with respect to their behavior in additive contexts, that is, contexts which (normally) require additive particles. Following Beaver & Clark (2008), additive particles are licensed when the current question under discussion (*qud*) has been answered partially. The current sentence answers the remaining part of the *qud* such that the previous answer constitutes an alternative. We will consider two types of additive contexts, contrastive topic constructions with the additive particle *auch* ('also', 'too') and plain NP coordination with the additive particle *noch* ('still', 'another').

3.3.1   Contrastive Topics

Contrastive topic constructions are such that the *qud* is answered stepwise addressing the elements of the question topic one by one, as in (28). The elements of the question topic addressed in the answer usually carry a raising accent and are called *contrastive topics*. If the answers for subsequent contrastive topics are the same, additive particles are required – saying the same thing about Anna that has been said about Otto would be bad without the additive particle, cmp. (b) and (c). In contrastive topic constructions the additive particle must be stressed, which has been the subject of a broad discussion starting with Krifka (1999). We will follow Umbach (2012) in assuming that stress on additive particles does not represent a focus on its own and is instead due to deaccenting requirements imposed on associated elements.

(28) (Which cars do Otto and Anna own?)
        Otto fährt einen Mercedes. 'Otto drives a Mercedes.'
        a. Anna fährt einen Porsche.
        b. # Anna fährt einen Mercedes.
        c. Anna fährt AUCH einen Mercedes.
            'Anna drives a Porsche / a Mercedes / a Mercedes, too.'

Now consider (29). The first part of the question under discussion has already been answered – Otto has a Mercedes. In the phrase *so ein Auto* ('such a car') in (29a,b) the demonstrative is used anaphorically taking Otto's Mercedes as its antecedent. Depending on the relevant features of comparison the referent of the phrase may be another Mercedes or a comparably prestigious car etc. Saying about Anna that she drives *so ein Auto* requires an additive particle – (a) is bad while (b) is fully unmarked. Substituting *ähnlich* for *so* (while shifting it to the pre-nominal position to preserve grammaticality) yields the reverse finding. The sentence is good without an additive particle and is marked when the particle is added, cf. (c, d). This is surprising: presuming that *so ein Auto* as well as *ein ähnliches Auto* ('such a car / a similar car') denote a car

similar to a Mercedes, it is not clear at all why the former allows for combination with additive particles while the latter does not.

(29) (Which cars do Otto and Anna own?)
Otto fährt einen Mercedes. 'Otto drives a Mercedes.'
a. #Anna fährt so ein Auto.
b. Anna fährt AUCH so ein Auto.
'Anna drives such a car / such a car, too.'
c. Anna fährt ein ähnliches Auto.
d. #Anna fährt AUCH ein ähnliches Auto.
'Anna drives a similar car / a similar car, too.'

3.3.2   NP Coordination

The second additive context to be considered in this section is provided by plain NP coordination. In these examples the additive particle *noch* is used instead of *auch*. Since in English there is no equivalent particle, one would use enumerative phrases like *another, one more*. Following Umbach (2012) *noch* is a scalar additive creating a list of alternatives such that elements can be distinguished from each other by their index. Creating a list of alternatives instead of a mere set *noch* allows to add alternatives that cannot be distinguished otherwise.

Suppose that *so ein Auto* in (30a, b) is interpreted as being anaphoric to the first conjunct, that is, *so ein Auto* denotes another Mercedes or comparable car. While (30a) is unacceptable (with anaphoric / unstressed *so*) the (b) version is fine. Substituting *so* by *ähnlich* findings are again reversed: The sentence without the additive particle in (30c) is good and the one in (d) with the particle is unacceptable raising the same question as in the contrastive topic contexts: Assuming that *so ein Auto* as well as *ein ähnliches Auto* denote a car similar to a Mercedes – why does the former but not the latter allow for combination with additive particles?

(30) (What's going on in the courtyard?)
a. # Im Hof sind ein Mercedes und so ein Auto.
b. Im Hof sind ein Mercedes und NOCH so ein Auto.
'There is a Mercedes in the courtyard and a car like this / another car like this.'
c. Im Hof sind ein Mercedes und ein ähnliches Auto.
d. # Im Hof sind ein Mercedes und NOCH ein ähnliches Auto.
'There is a Mercedes in the courtyard and a similar car / another similar car.'

When considering the combination with definite determiners in the previous section it has already been argued that *ähnlich* differs from *so* in carrying an in-built distinctiveness condition. The distinctiveness condition will also explain the findings with additive particles. This is shown for contrastive topic constructions below and applies analogously to NP coordination.

In (31a) *einen Mercedes* ('a Mercedes') counts as given and must be deaccented because the antecedent alternative, that is, Otto's car is also a Mercedes. This is the reason why the additive particle *auch* is stressed (cf. Umbach 2012). Similarly, in (31b) *ein Luxusauto* ('a luxury car') must be deaccented because Otto's car is a Mercedes, which is also a luxury car. In (31c) *so ein Auto* ('such a car') must be deaccented because Otto's car is the one generating the similarity class, and since similarity is reflexive in the case of *so*, Otto's car is contained in the similarity

class. So in all of (31a-c) the antecedent alternative is included in the description used for Anna's car, therefore requiring that the description is deaccented while the additive particle is accented. Now consider the phrase *ein ähnliches Auto* ('a similar car') in (31d). Since similarity is irreflexive in the case of *ähnlich*, Otto's car is not contained in the similarity class generated by this phrase. Accordingly, this phrase counts as novel and must not be deaccented.

This is reason to assume that the unacceptability of (31d) (as well as 29d) and (30d) is due to a conflict in accenting requirements: The phrase *ein ähnliches Auto* ('a similar car') does not count as given because the comparison base is not included in its denotation, and thus it requires an accent. If, however, the description carries an accent, the particle has to be deaccented. Deaccenting the particle, as in (31e), is perfect if considered in isolation. But it entails that the antecedent alternative for the additive particle has to be another car driven by Anna, which is at odds with the preceding sentence and the question under discussion in (31).

(31) Otto fährt einen Mercedes. 'Otto drives a Mercedes.'
    a. Anna fährt AUCH einen Mercedes.
    b. Anna fährt AUCH ein Luxusauto.
    c. Anna fährt AUCH so ein Auto.
    d. #Anna fährt AUCH ein ähnliches Auto.
    e. #Anna fährt auch ein ÄHNliches Auto.
        'Anna drives a Mercedes / a luxury car / such a car / a similar car, too.'

Eckardt (2012) presents experimental results showing that the use of additive particles is not per se obligatory which is frequently assumed in the literature. As a side remark, she argues that additive particles compare to indefinite determiners in noun phrases in that they mark distinctiveness of referents coming with the same description (*a man, another man,…*). Following this line of thought, *auch* in (28) marks distinctiveness of the Mercedes driven by Otto and the one driven by Anna. As argued above the adjective *ähnlich* ('similar') denotes a similarity relation which is irreflexive and thus carries a distinctiveness constraint. In expressing distinctiveness *ähnlich* is an additive on its own.[13]

3.3.3   The Semantics of *ähnlich*

The data concerning definiteness and additivity are evidence that the core semantic difference between the similarity demonstrative *so* and the similarity adjective *ähnlich* is distinctiveness. The similarity relation underlying the demonstrative *so* is reflexive and the demonstrative triggers a scalar implicature such that similarity does coincide with identity, that is, include reflexive pairs only. The scalar implicature accounts for the markedness of (24) (*das solche Kleid 'the such dress') and is cancelled in (26a) by explicitly postulating uniqueness (*das einzige solche Kleid* 'the only such dress'). The similarity relation underlying the adjective *ähnlich* can never be reflexive, that is, reflexive pairs are always excluded – *ähnlich* comes with a semantic distinctiveness constraint. Distinctiveness entails that the denotation of *ähnlich* never includes the comparison base and thus the uniqueness requirement imposed by the definite article can be

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[13] Beaver and Clark (2008) in their list of English additives subsume adverbs like *similarly, likewise* and *analogously* under the notion of 'vague additives' (p.72). They don't provide an analysis, but the basic idea of employing similarity to convey additivity seems to be the same.

satisfied in certain contexts although the referent is distinct from the comparison base (cf. the two dresses in (25) and (26b)). The semantics of *so/solch* and *ähnlich* is shown in (32) (for ease of comparison pre-nominal *solch* is used instead of pre-determiner *so*).

(32) a. [[solch]] $\quad = \lambda P. \lambda x. \text{SIM} (x, x_{target}, F) \& P(x)$

b. [[ähnlich]] $\quad = \lambda P. \lambda x. \text{SIM} (x, x_{ante}, F) \& P(x) \& x \neq x_{ante}$

In addition to contexts with definite determiners and additive particles, the distinctiveness constraint can also be observed in neutral contexts like (33). Suppose that *so eine Feuerwehr* ('such a fire brigade') in (a) as well as *eine ähnliche Feuerwehr* ('a similar fire brigade') in (b) relate anaphorically to the previously mentioned team of fire fighters. In the (a) version the referent of the NP is identical with the antecedent. Thus the interpretation of the *so*-phrase makes use reflexivity. For demonstratives like *dieser* ('this') identity is the standard interpretation, and in fact, the mayor could also have used *'diese Feuerwehr' / 'this fire brigade'* without a significant change in meaning.[14]

Substituting the demonstrative *so* by the adjective *ähnlich* ('similar'), as in (33b), the previously mentioned team of fire fighters cannot provide the antecedent and at the same time be the referent of the NP, due to irreflexivity. This is why the mayor seems to praise another fire brigade, different from the successful team, which appears strange in this context.

(33) Bürgermeister Dieter Friedmann sprach den Feuerwehrleuten seinen Dank aus. Er sagte "Es ist ein großer Verdienst der Mannschaft, dass das Feuer nicht auf die angrenzenden Gebäude übergegriffen hat.

a. […] Wir in der Gemeinde freuen uns, dass wir so eine Feuerwehr haben!"

b. […] Wir in der Gemeinde freuen uns, dass wir eine ähnliche Feuerwehr haben!"

'Mayor Dieter Friedmann expressed his gratitude towards the fire fighters. He said "It is a great achievement of the team that the fire did not transfer to adjacent buildings. We are happy to have such a / a similar fire brigade in our community."'

3.4   Secondary Description Contexts

The last type of contexts highlighting the difference between the demonstrative *so* and the adjective *ähnlich* are *secondary description contexts*, as we will call them here. In (34) example (5) from the introduction is repeated. The noun phrase *so ein Geschenk* ('such a present') in (a) is anaphorically related to the Panda bear discourse referent introduced in the first sentence. Like-wise, *ein ähnliches Geschenk* ('a similar present') in (b) takes the Panda bear as an antecedent providing the second argument. Thus, *so ein Geschenk* as well as *ein ähnliches Geschenk* denote presents similar to the previously mentioned Panda bear. However, substituting *so* by *ähnlich* in (34) seems to seriously affect the meaning. While the sentence in (a) is unmarked, the one in (b) doesn't make sense. Intuitively, *so ein Geschenk* in (a) is something valuable or big which can reasonably be considered to demonstrate appreciation for the guest. In contrast, *ein ähnliches*

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[14] There is a small difference in meaning between *so eine Feuerwehr / such a fire brigade* and *diese Feuerwehr / this fire brigade*. Intuitively, the former expression focusses on properties of the fire brigade while the latter focusses on the referent. It is unclear, however, how to spell that out in semantic terms.

Geschenk in (b) seems to be something Panda-like, e.g., an exotic animal. But why should an exotic animal be particularly suited to demonstrate appreciation for the guest?

(34) (The prime minister received a Panda bear from the Chinese government.)
    a. So ein Geschenk zeigt die Wertschätzung des Gasts.
    b. #Ein ähnliches Geschenk zeigt die Wertschätzung des Gasts.
       'Such a present / a similar present demonstrates appreciation for the guest.'

In search of an explanation it has first to be noted that the effect in (34b) is not a problem of the NP per se. When choosing a different verbal predicate, as in (35a) below, the sentence is fine. Next, it suggests itself to start with what we found in the previous section, that is, (ir)reflexivity. That would imply that *ein ähnliches Geschenk* in (34b) is bad because the referent is not identical to the Panda bear (analogous to the fire brigade case in 33). This idea is refuted by (35b) where the referent is different from the Panda bear and nevertheless suited to show appreciation for Nixon.

There is, however, an important difference between (34a) and (35b). While the latter is about a particular event, the former is a generic sentence talking about 'such presents' in general, which is indicated by present tense. Genericity is supported by the fact that the NP *so ein Geschenk* may be kind-denoting – recall that according to the analysis in section 2 nominal *so* phrases denote ad-hoc subkinds generated by similarity. Therefore, *so ein Geschenk* allows for a kind paraphrase – *so eine Art von Geschenk* ('such a kind of present'). In contrast, *ein ähnliches Geschenk* can not be paraphrased by *eine ähnliche Art von Geschenk* ('a similar kind of present') and seems unsuited to refer to a kind in a generic sentence. This is a surprising result, which must be left for future research though.

(35) (The prime minister received a Panda bear from the Chinese government.)
    a. Ein ähnliches Geschenk brachte ihm im Vorjahr die Kritik der Tierschützer ein.
       'A similar present evoked protests by animal right activists last year.'
    b. Ein ähnliches Geschenk zeigte beim Besuch Nixons im Jahr 1972 die Wertschätzung der chinesischen Regierung für ihren Gast.
       'When Nixon visited China in 1972 a similar present demonstrated appreciation for the guest by the Chinese government.'

The contrast between kind denoting and individual denoting NPs explains only part of the puzzle. There is still the effect that *so ein Geschenk* is understood as something valuable or big etc. while *ein ähnliches Geschenk* is understood as something Panda-like an exotic animal. Intuitively, *so ein Geschenk* is first of all a present whereas *ein ähnliches Geschenk* is first of all of the antecedent kind, that is in (34b), an exotic animal.

In order to explain this effect we have to consider the features of comparison involved in the similarity relation. In the case of *so* it was argued that they are provided by k-properties of the noun. Thus the verbal predicate in (a) must be compatible (in the sense of selectional restrictions) with properties of the present qua being a present. This suggests that the features of comparison the similarity relation has access to differ for *so* and *ähnlich*. In the case of *so* features of comparison have to be k-properties of the noun kind (cf. 2.4). This is the reason why *so ein Geschenk* is first of all a present. In the case of *ähnlich* features of comparison are provided by properties of the antecedent (k-properties as well as accidental ones). Thus *ein ähnliches*

Geschenk is first of all something Panda-like, e.g., an exotic animal. Similarity demonstratives and similarity adjectives are obviously subject to different constraints on the set of features of comparison:

(36) a. [[so ein N]] $\quad = \quad$ $\lambda Q.\ \exists x.\ \text{SIM}\ (x, x_{target}, F)\ \&\ N'(x)\ \&\ Q(x)$ where features in F relate to k-properties of N'

b. [[ein ähnliches N]] $\quad = \quad$ $\lambda Q.\ \exists x.\ \text{SIM}\ (x, x_{ante}, F)\ \&\ N'(x)\ \&\ Q(x)\ \&\ x \neq x_{ante}$ where features in F relate to properties of x_{ante}

Secondary description contexts like (34) are rare. They require an NP with a lexical meaning orthogonal –neither hyponymic nor hyperonymic – to the one introducing the antecedent,. Such lexical meanings are typically provided by abstract nouns because they are suited to apply to (nearly) any kind of objects – presents range from chocolate over Panda bears to islands. Other abstract nouns suited for secondary description contexts would be *Wunder, Sensation, Hilfe* ('miracle', 'sensation', 'support') which apply to any kind of event. In (37) another example of a secondary description context is shown. Initiating legislations to reduce exploitation is described as an effort. The verbal predicate *look good in the CV of a politician* is fully compatible with efforts but odd with initiating special legislations for a special group of people.

(37) (Er will Gesetzgebungen auf den Weg bringen, die die Ausbeutungsrisiken dieser Gruppe verringern.)
'He wants to initiate legislations that reduce the risk of exploitation for this group.'
a. Solche Anstrengungen machen sich gut im Lebenslauf eines Politikers.
b. # Ähnliche Anstrengungen machen sich gut im Lebenslauf eines Politikers.
'Such efforts / similar efforts look good in the CV of a politician.'

4   Conclusion

In this paper, the question was addressed of how the notion of similarity expressed by demonstratives compares to that expressed by adjectives, in particular, how German *so/solch* ('such') compares to German *ähnlich* ('similar'). It was argued that similarity demonstratives differ from run-of-the-mill demonstratives like *dieser* ('this') in expressing similarity – instead of identity – between the target of the demonstration gesture and the referent of the demonstrative phrase, thereby generating ad-hoc kinds. The underlying notion of similarity is the notion of indistinguishability with respects to a given set of features, which is an equivalence relation.

When interpreting demonstratives like *so/solch/such* by similarity, the question arises of how this notion of similarity compares to the one expressed by adjectives like *ähnlich/similar*. Significant differences were found on the linguistic surface in combination with definite determiners and additive particles, and in secondary description contexts. It turned out, first, that in the case of *ähnlich*, but not in the case of *so*, identity of antecedent and referent is ruled out. Secondly, *ähnlich* NPs turned out to be incompatible with accented additive particles. These two observations led to the conclusion that adjectives expressing similarity carry an in-built distinctiveness requirement such that the similarity relation is irreflexive in the case of the adjectives although it is reflexive in the case of the demonstratives. Due to distinctiveness, first, the denotation of *ähnlich/similar* excludes the comparison base thereby licensing definites while

enforcing an additional element. This is why there are two dresses in (25) and a second fire brigade in (33b). Due to distinctiveness, secondly, *ähnlich* NPs count as novel, require accenting and function as an additive marker on their own.

It has been objected that the distinctiveness requirement could be a matter of pragmatics instead of semantics. In favor of a pragmatic solution are sentences like (38a) which seem to indicate that distinctiveness is a mere scalar implicature. It has to be noted, however, that *das gleiche* 'the same' in (38a) denotes type identity instead of token identity. When changing the example such that token identity is the only option, it is no longer acceptable, cf. (38b). This indicates that distinctiveness is semantic after all.

(38) A: Ich habe gehört, dein Bruder hat ein Cabrio. Hast du ein ähnliches Auto?
      'I heard that your brother has a cabrio. Do you have a similar car?'
  a. B: Ja, und nicht nur ein ähnliches, sondern das gleiche.
      'Yes, not only a similar one, but the same one.'
  b. B: *Ja, das Auto gehört uns gemeinsam.
      'Yes, we own the car together.'

Another significant effect when comparing similarity demonstratives and similarity adjectives was found in secondary descriptions contexts. While NPs with similarity demonstratives may have a generic interpretation referring to ad-hoc kinds, the ones with similarity adjectives cannot. This is interesting from a cognitive psychology perspective where ad-hoc categories are well-known but are given only by fully explicit descriptions like *things to sell at a garage sale* (Barsalou 1983).

The core difference found between similarity demonstratives and similarity adjectives was (ir)reflexivity. In his seminal paper in (1977), Tversky presented experimental evidence that similarity (considered as a cognitive notion) is neither symmetric nor transitive, and reflexivity is at least problematic. Tversky used stimuli based on the English adjective *similar* but his studies did not take linguistic details into account. The present paper provides evidence that reflexivity is in fact problematic if similarity is expressed by adjectives like *ähnlich* / *similar* but not by demonstratives like *so* / *such*, indicating that similarity is not a uniform notion.[15]

To conclude, we considered in this paper the contrast between similarity demonstratives like *so* / *such* and similarity adjectives like *ähnlich* / *similar*. We found a core semantic difference – (ir)reflexivity – and a difference with respect to the relevant features of comparison. There are many open issues, for example gradability – *ähnlich/similar* are gradable, *so/such* are not. Another issue only touched upon is (non-)shiftability: Similarity demonstratives are indexicals while similarity adjectives have a denotation varying with worlds, which should have an impact on meaning differences. Finally, similarity is close to identity, suggesting another contrast to be taken into account: Similarity expressions (demonstratives and adjectives alike) vs. identity expressions, e.g., German *das gleiche/dasselbe/dieser* and English *the same/this*. Comparing expressions of similarity to expressions of identity will provide insight in how languages conceptualize difference between similarity and identity, which are two sides of the same coin after all.

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[15] As for symmetry, there is the detailed study by Gleitman et al. (1996) arguing that the asymmetry effect Tversky found for similarity can be explained on the basis of grammar, and that the similarity itself is symmetric. A replication of Gleitman's study for German by the author is on its way.

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.

Beaver, D., and B. Clark. 2008. *Sense and sensitivity: How focus determines meaning*. Wiley-Blackwell.

Carlson, G. N. 1980. *Reference to kinds in English*. New York and London: Garland.

Carlson, G. 2010. Generics and concepts. In *Kinds, things and stuff*, ed. F. J. Pelletier, 16–36. Oxford: Oxford University Press.

Eckardt, Regine, and Manuela Fränkel. 2012. Particles, maximize presupposition and discourse management. *Lingua* 122:1801–1818.

Ehlich, K. 1986. *so* – Überlegungen zum Verhältnis sprachlicher Formen und sprachlichen Handelns, allgemein und an einem widerspenstigen Beispiel. In *Sprache und Pragmatik*, ed. I. Rosengren, Lunder germanistische Forschungen 55, 279–298.

Gärdenfors , P. 2000. *Conceptual Spaces*. Cambridge MA: MIT Press.

Gleitman, L., H. Gleitman, C. Miller, and R. Ostrin. 1997. Similar, and similar concepts. *Cognition* 58:321–376.

Goodman, N. 1972. Seven strictures on similarity. In *Problems and Projects*, ed. N. Goodman, 437–447. Indianapolis and New York: The Bobbs Merrill Company.

Greenberg, Y. 2003. Manifestations of Genericity. New York: Routledge

Kaplan, D. 1989. Demonstratives. In *Themes from Kaplan*, ed. Almog, Perry, and Wittstein, 481–563. Oxford: Oxford University Press.

Kennedy, C. 1999. *Projecting the adjective*. New York: Garland Press.

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.

Krifka, M., F. J. Pelletier, G. Carlson, A. ter Meulen, G. Link, and G. Chierchia. 1995. Genericity: An introduction. In *The Generic Book*, ed. G. Carlson, and F. J. Pelletier, 1–124. University of Chicago.

Krifka, M. 1999. Additive particles under stress. In *Proceedings of SALT 8*, ed. A. Lawson, and D. Strolovitch, 111–128. Ithaca, NY: CLC Publications,.

Nunberg, G. 1993. Indexicality and Deixis. *Linguistics and Philosophy* 16:1–43.

Nunberg, G. 2004. Indexical Descriptions and Descriptive Indexicals . In *Descriptions and beyond*, ed. M. Reimer, and A. Bezuidenhout. Oxford: Oxford University Press.

Pawlak, Z. 1998. Granularity of knowledge, indiscernibility and rough sets. In *Proceedings of the IEEE International Conference on Fuzzy Systems*, 106–110.

Prasada, S., and E. M. Dillingham. 2006. Principled and statistical connections in common sense conception. *Cognition* 99:73–112.

Sassoon, G. 2011. Adjectival vs. nominal categorization processes. *Belgian Journal of Linguistics* 25:104–147

Tversky, A. 1977. Features of similarity. *Psychological Review* 84:327–352.

Umbach, C., and C. Ebert. 2009. German demonstrative *so* - intensifying and hedging effects. *Sprache und Datenverabeitung* 1–2:153–168.

Umbach, C. 2012. Strategies of additivity: German additive '*noch*' compared to '*auch*'. *Lingua* 122:1843–1863.

Umbach, C., and H. Gust. 2014. Similarity Demonstratives. To appear in *Lingua*.