

Separating Numerical Identity from Qualitative Identity: Evidence from Mandarin

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A widely adopted view [4, 1] of the semantics of *same* is that it measures similarity between objects in terms of contextually relevant properties, and corresponds to maximal similarity. Under this view *same* essentially expresses qualitative identity, i.e. identity of properties (QI); and numerical identity (NI) is a special case where the context takes into account every single property. This accounts for the availability of two readings of (1):

- (1) John drove a Honda. Mary once drove the same car.
- a. ‘Mary once drove John’s car’. (‘strict’ QI = NI)
 - b. ‘Mary once drove a car of the same model, e.g. Honda’ (‘loose’ QI)

Claim. This paper argues the distinction between NI and QI cannot be reduced to pragmatics, at least in some languages. In particular, Mandarin lexicalizes the distinction into two syntactically different items: the determiner-like *tong* and the morphologically related adjective *xiangtong*, as in (2).

- (2) a. $\llbracket \text{tong} \rrbracket = \lambda y \lambda x . x = y$ (NI)
 b. $\llbracket \text{xiangtong} \rrbracket = \lambda y \lambda x . \forall P \in C [P(x) \leftrightarrow P(y)]$ (QI)

Key data. Mandarin *tong* is determiner-like in that it precedes the Numeral-Classifier cluster; *xiangtong* is adjectival since it takes the modificational marker *de* when modifying nouns [5], as in (3). Interestingly, their semantics represent a clear split between NI and QI. When *tong* is used, there is one single car both John and Lisi drove (NI); when *xiangtong* is used, it is quite clear that Lisi drove a different car than John’s car, though the two cars can be exactly similar (QI).

- (3) Yuehan kai-guo Honda_i. Lisi kai-guo {**tong** yi-liang che /**xiangtong**-de che}
 John drove Honda Lisi drove *tong* one-CL car /*xiang.tong*-MOD car
 ‘John drove a Honda. Lisi drove {one and the same car /the exactly similar car}.’

QI is not NI between kinds. While (3) indeed falls under the account of NI and QI distinction, a potential alternative (Token-Kind Account) for the data is that *tong* expresses NI between tokens while *xiangtong* expresses NI between kinds (assuming kinds are also type *e* objects in the domain as in [2]). Here are two predictions where my account (NI-QI Account) and Token-Kind Account explicitly depart. **First**, NI-QI Account predicts the nominal modified by *xiangtong* can be indefinite. Assuming the first argument of *xiangtong* is saturated by the index of a previously-mentioned discourse referent (i.e. *Honda_i*), it then denotes a property of being exactly similar to *g(i)* in the relevant aspects, as in

(4a). Since multiple cars can be exactly similar to John’s Honda, the property denoted by (4a) will not entail any referential uniqueness of the object that has the property. Thus (4c) should be able to further combine with numeral-classifiers to yield an indefinite interpretation.

- (4) a. $\llbracket \text{xiangtong-de} \rrbracket^g = \lambda x. \forall P \in C [P(x) \leftrightarrow P(g(i))]$
 b. $\llbracket \text{che} \rrbracket^g = \lambda x. \text{car}(x)$
 c. $\llbracket \text{xiangtong-de che} \rrbracket^g = \lambda x. (\forall P \in C [P(x) \leftrightarrow P(g(i))]) \wedge \text{car}(x)$

In contrast, Token-Kind Account predicts *xiangtong-de che* is obligatorily definite since if *xiangtong* expresses NI between kinds, it ultimately picks out the unique car-kind that is exactly John’s car-kind:

- (5) $\llbracket \text{xiangtong-de che} \rrbracket^g = \lambda x. (x = g(i)) \wedge \text{car-kind}(x)$ (Token-Kind Account)
 $\rightsquigarrow \iota x [(x = g(i)) \wedge \text{car-kind}(x)]$
 (ι -closure is forced covertly as Mandarin has no overt definite article)

(6) shows that *xiangtong-de che* is in fact compatible with an indefinite interpretation, contra to the prediction of Token-Kind Account.

- (6) ...Lisi kai-guo san-liang **xiangtong-de** che
 ...Lisi drove three-CL *xiang.tong*-MOD car
 ‘...Lisi drove three exactly similar cars’

Second, since QI contains the context variable C in its semantics (2b), NI-QI Account predicts *xiangtong-de che* can refer to a car that is exactly similar to John’s Honda in a random aspect, as long as it is contextually relevant (e.g. appearance, color, etc). In contrast, Token-Kind Account predicts *xiangtong-de che* can only be used when Lisi’s car and John’s car are of the same brand, model but not when the two cars share any relevant property, since kinds are usually considered to be the nominalization of constant properties. (7) sets up a context in which *xiangtong-de mogu* can be interpreted as ‘a mushroom that is exactly similar in appearance’. In fact, (7) can be followed naturally with ‘But only Lisi got poisoned’ thus the two relevant mushrooms must NOT be the same kind of mushrooms here:

- (7) Yuehan chi-le yi-zhi piaoliang-de mogu. Lisi chi-le yi-zhi (wanquan)
 John ate one-CL pretty-MOD mushroom Lisi ate one-CL exactly
 xiangtong-de mogu.
xiang.tong-MOD mushroom
 ‘John ate [a pretty mushroom]_i. Bill ate an exactly similar mushroom’

NI between kinds is expressed by *tong*. While *tong* indeed expresses NI between tokens in the above examples (3), it is mainly because the classifiers following *tong* in them are token-denoting. Assuming the bare N in Mandarin denotes a set of both N-tokens and N-kinds and $\text{CL}_{\text{token}}(/ \text{CL}_{\text{kind}})$ restrict the set into only N-tokens(/N-kinds) [6, 3], we expect *tong one-CL_{kind} car* denotes the unique car-kind that is exactly John’s car-kind, as in (8c).

- (8) a. $\llbracket \text{tong} \rrbracket^g = \lambda x.x = g(i)$ (the 1st argument is saturated by the index i)
 b. $\llbracket \text{tong one-CL}_{token} \text{ car} \rrbracket^g = \iota x[(x = g(i)) \wedge \text{car}(x) \wedge \text{token}(x) \wedge |x| = 1]$
 (ι -closure is forced)
 c. $\llbracket \text{tong one-CL}_{kind} \text{ car} \rrbracket^g = \iota x[(x = g(i)) \wedge \text{car}(x) \wedge \text{kind}(x) \wedge |x| = 1]$
 (ι -closure is forced)

Moreover, both (8b) and (8c) won't be compatible with an indefinite interpretation since *tong* contributes a semantically unique property. Indeed, (9) shows that adding *yixie* 'several' is not possible, even under the NI-of-kinds reading:

- (9) ...Lisi kai-guo (*yixie) **tong yi-{liang/kuan}** che
 ...Lisi drove several *tong* one-CL_{token}/CL_{kind} car
 '...Lisi drove (*several) one and the same {car-token/car-kind}'

Mapping to English. Summarizing the pattern of Mandarin data in (10), now I further extend it to English. I argue English also formally distinguishes between NI and QI: prenominal *same* expresses NI while the post-nominal modifier *the same* expresses QI. Since English do not need overt classifiers, *the same N* is ambiguous between the NI-of-tokens reading and NI-of-kinds reading.

| | Mandarin | English |
|---------|---|------------------------------|
| (10) NI | tong one-CL _{token} N (NI of tokens) | prenominal: the [same] N |
| | tong one-CL _{kind} N (NI of kinds) | |
| QI | xiangtong-de N | predicative: (be) [the same] |

Two pieces of evidence are attested for this mapping. First, *same N* can only be definite, even under the NI-of-kinds reading; while the nominal modified by the post-nominal *the same* can be indefinite, as in (11). Second, post-nominal *the same* can target random properties (by overtly adding an adverbial phrase) while prenominal *same* cannot, as in (12).

- (11) a. John drove a Honda. Mary drove {the/*a} same car.
 b. John drove a Honda. Mary drove {the/a} car which is the same.
 (12) a. John drove a Honda. Mary drove the same car (*in color/*in brand/*in appearance).
 b. John drove a Honda. Mary drove a car that is the same (in color/in brand/in appearance).

References

- Alrenga, P.: Dimensions in the semantics of comparatives. Ph.D. thesis, University of California, Santa Cruz (2007)
- Dayal, V.: Number marking and (in) definiteness in kind terms. *Linguistics and philosophy* **27**(4), 393–450 (2004)
- Jenks, P.: Articulated definiteness without articles. *Linguistic inquiry* **49**(3), to appear (2018)
- Lasersohn, P.: Pragmatic halos. *Language* pp. 522–551 (1999)

5. Liao, W.w.R., Wang, Y.: The same difference: Comparative syntax-semantics of english same and chinese tong/xiang-tong. *Chinese Syntax in a Cross-Linguistic Perspective* p. 128 (2014)
6. Trinh, T.: Nominal reference in two classifier languages. *Sinn und Bedeutung* 15 p. 629 (2011)