

Classifiers and Semantic Type Coercion: Motivating a New Classification of Classifiers¹

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Abstract

This paper argues that the traditional view that nouns refer only to classic individuals is inadequate. Instead, we argue that nouns are coerced by different types of classifiers to refer to kinds and events as well as to individuals. This finding is important because 1) the semantics of nouns involves more than just individuals, and 2) it is the first time that the previously abstract semantic distinctions between **kinds**, **individuals** and **events** is found to be instantiated in a particular system of a natural language grammar, namely, the classifier system.

1. Introduction

There have been two views of categorizing measure words in Mandarin Chinese. The traditional view does not differentiate measure words from classifiers. For example, Chao (1968:584-620) refers to classifiers as individual measures, and subsumes them under the rubric of "measure words". Li and Thompson (1981:106) state that "any measure word can be a classifier." More recently Tai (1990) has pointed out that there is an important distinction between the two notions in that classifiers can only classify over a limited and specific group of nouns, while measure words can be used as a measure for a wide variety of nouns. His definition is as follows: 'A classifier categorizes a class of nouns by picking out some salient perceptual properties, whether physically or functionally based, which are permanently associated with the entities named by the class of nouns; a measure word does not categorize but denotes the quantity of the entity named by a noun.' Underlying the concept that a classifier categorizes a class of nouns based on permanent perceptual properties is the idea that the basic semantic function of nouns is to refer to classic individuals. In what follows we will show that it is inadequate to only allow nouns to refer to classic individuals, and that instead nouns can be coerced by different types of classifiers to refer to kinds and events as well as to individuals. This finding is important not only for its emphasis in understanding the semantics of nouns to be more than just having to do with individuals, but also because it is the first time that the previously abstract semantic distinctions between **kinds**, **individuals** and **events** has been found to be instantiated in a particular system of a natural language grammar, namely, the classifier system.

2. The Kind Reading

The **kind** reading of Mandarin bare NPs is one of the most difficult to account for among a wide range of possible semantic interpretations (1a). Although the **kind** reading is previously thought to be one of the generic

reading typical of bare nominals (Carlson 1977, Chierchia 1982), it does occur with a subset of classifiers in Mandarin (1b, from Huang (1989)).²

- (1)a. *gou bi mao da*
dog compare cat big
'Dogs are bigger than cats. [preferred reading]'
OR 'This dog is bigger than this cat.'
- b. *zhe-zhong ma zai huabei hen changjian*
this-CLS_KD horse at China-north very common-seen
'This kind of horse is very commonly seen in Northern China.'
- c. *zhe-zhong dongwu bi na-zhong dongwu da*
this-CLS_KD animal Comp that-CLS_KD animal big
'This kind of animals are bigger than that kind of animals.'

With the **kind** reading exemplified in (1), it is important to note that the NPs do not refer to any specific individual. Hence (1a) does not logically entail that a specific dog is bigger than a specific cat, contrary to the prediction of an account where the bare NP refers to either an individual animal or some subset of the animals. The same semantic effect is achieved when the **kind** meaning is marked by a classifier. (1b) does not entail that any specific individual horse is in north China, nor does it entail that a majority of this kind of horse is there. The fact that (1c) serves as a paraphrase of (1a) also supports our observation that the existence of classifiers such as *zhong3* achieve the same semantic effect of **kind** reading. The free variation of Mandarin nouns between **kind** and **individual** readings is accounted for with type-shifting (Huang 1989, Chierchia et al. 1989). It is interesting to observe, however, that the use of the classifier *zhong3* in (1b&c) entails that there is obligatory type-shifting and the sentence is unambiguous with the **kind** reading.

2.1. Kind Classifiers and Their Semantics

As observed above, a **kind classifier** explicitly marks that the nominal element that it selects has a **kind** reading. If there was only one **kind** classifier, then one could argue that the notion of **kind**, like **shape** or **dimension**, is just one of the salient perceptual concepts utilized in the classifier system of the language. In this scenario, the **kind** reading is just one of the nominal semantic features picked by the classifier. In fact, we will show that there is a whole set of different **kind classifiers** selecting different semantic **kinds**. This fact suggests that **kind** is treated as a primary semantic type which is ascribed to nominals and allows subtyping selection by classifiers. Thus the Mandarin classifier system will offer the first known evidence that the semantic notion of **kind** is grammaticalized in a language.

In addition to the mostly commonly used *zhong3*, there are at least eleven more **kind classifiers** including: *lei4* 'class, genre,' *yang4* 'type,' *shi4*

'style,' *kuan3* 'style, design,' *ma3(zi)* 'kind,' and *dang3(zi)* 'kind'. All these **kind classifiers** have the following common grammatical characteristics: they select a broad class of nouns, unlike the highly idiosyncratic selection of the **individual classifiers**. Semantically, this follows from the fact that **kind classifiers** select the **kinds** represented by nouns, not the individuals referred by them. Hence, the natural kind delimited by certain noun classes would be selected by the appropriate **kind classifier**. Thus *lei4* selects the kinds defined by properties over concrete objects, *lei4* can also refer to a kind defined by a collection of smaller kinds; *yang4* selects the kinds defined by shape and outlook; *shi4* is similar to *yang4* with the emphasis that the outlook is artificially styled; *kuan3* selects the kinds defined by intensive design; and lastly, *ma3* and *dang3* select events. This leaves *zhong3* as the neutral **kind classifier**, not unlike the neutral **individual classifier** *ge* (Ahrens 1994), but even more prominently so since it co-occurs with virtually all nouns, concrete or abstract.

- (2)a. zhei san lei shiwu dou shi richang bixu de
 this three CLS_KD food all be daily required DE
 'All these three types of food are daily requirements.'
- b. ta dai-le san yang shuiguo lai kan ni
 s/he bring-PERF three CLS_KD fruit come see you
 'S/He brought three kinds of fruit to see you.'
- c. fengtian jinnian tuichu-le liang kuan xinche
 Toyota this-year push-out-PERF two CLS-KD new-car
 'Toyota has brought out two lines of new cars this year.'
- d. xunlian he bisai wanquan shi liang mazi shi
 training and competition total be two CLS_KD matter
 'Training and actually playing are two totally different matters.'

The four sentences above exemplify some of the usages of the **kind classifiers**. Note that **kind classifiers** in all these four instances can be replaced by the neutral classifier *zhong3*, but not by the neutral individual classifier *ge*. This further supports the position that **kind classifiers** form a class by themselves and are different from the **individual classifiers**. Also note that, like other Mandarin classifiers, all the instances of **kind classifiers** in (2) involve the numeral-classifier constructions, which shows that kinds are individuated and enumerated.

In sum, we have shown in this section that **kind classifiers** form an integral class within the Mandarin classifier system. They individuate and classify the different **kind** readings that can be obtained from nominal semantics. Thus we have shown that the notion of **kind** is not only crucial to theories of nominal semantics, but is also attested by the grammatical system of a natural language.

3. The Event Reading

In this section, we will show that the Mandarin classifier system contains a sub-class that selects another theoretically significant entity: i.e. **event-type** entities. Chierchia (1982) was one of the first semanticists to propose that events and activities could be referred to as entities. He studied nominalization and the English gerund system and demonstrated that the grammatical system marks the type-shifting from events to **event-type** entities (i.e. names of the events.)

(3) Seeing is believing.

In (3), that the gerund 'seeing' refers to a certain type of event as is obvious from its verbal derivation. Thus the semantics of nominalization is treated by Chierchia as type-shifting which individuates the events. In Mandarin, however, not only is no morpho-lexical marking involved when the **event-type** nominal is deverbal, it is also possible to coerce an **event** type reading from a noun without any derivation. We will show in this section that the **event classifiers** coerce just such an effect. Since there will be no marking on the nouns, it is necessary to develop tests for **event-type** entities to prove that the classifier-noun phrase does have an event reading. It should be noted that **event-type** nominals have eventive semantics, such as event structures. The semantic (not syntactic) nature of events are that they are temporally anchored, and that they take arguments. Thus, the semantic tests we have for event-type nominals are that they occur as temporal delimiters, and that they allow oblique arguments. Two additional syntactic tests are that they satisfy the subcategorization requirement of predicates which take event-type arguments, and that they cannot be replaced by the neutral individual classifier *ge*.

First, an **event** cannot take place without a time frame, either a temporal point of its occurrences or a (relative) time duration of its existence. Thus, temporal reference is an integral part of the semantics of **events**, including **event-type** nominals. The individual classifiers, on the other hand, do not carry temporal reference in their semantics. Thus, an important grammatical characteristics of **event-type** nominals is that they co-occur with temporal subordinator's, such as *yi3hou4* (without any predicates) to establish the temporal (and causal) sequence of **events**. (4a) shows that how such temporal sequence is established with a full clause. In (4b) we show that when the classifier *tang4* is used, the noun *taijiquan* 'TaiChi boxing' can refer to the **event** without any overt predicate.

- (4)a. da-le taijiquan yihou ta shenti shufu duo le
play-LE Tai_Chi after s/he body comfortable more LE
'S/he feels much better after doing Tai Chi.'

- b. san-tang taijiquan yihou ta shenti shufu duo le
 three-CLS_EV Tai_Chi after s/he body comfortable more LE
 'S/he feels much better after (performing) three rounds of Tai Chi.'

Second, it is well-known that event-type nominals preserve their argument structure and take (oblique) arguments, such as the English possessive 'John's promotion' or 'Mary's leaving early'. In Mandarin, a deverbal noun can take a possessive (encliticized with *de*), or preceding oblique arguments, such as the underlined NP's in (5a).

- (5)a. Zhangsan dui Lisi de jianyi
 Zhangsan TO Lisi DE suggestion
 'Zhangsan's suggestion/advice for Lisi (i.e. Zhangsan advised Lisi)'
 b. zhongtong de yi-tong dianhua
 president DE one-CLS_EV telephone
 'a call from the President (i.e. the President made the phone call)'

In (5b), it is shown that when an **event classifier** is used, the nominal head takes an **event** reading and the possessor is interpreted as an argument of the head.

Last, it can be shown in Mandarin that the **event** reading is selected by a few small classes of verbs, such as light verbs *jin4xing2* 'to proceed' (Huang et al. 1995), happenstance verbs *fa1sheng1* 'to happen', and **event**-evaluation verbs *hua1* 'to cost'. For instance, *hua1* takes a nominal subject that refers directly to an event (6a), or a clause describing an event (6b).

- (6)a. xishi hen hua qian
 happy-event very cost money
 'Weddings cost a lot.'
 b. jiehun hen hua qian
 marry very cost money
 'It costs a lot to get married.'

In (7b), we show that the same semantic selection can be satisfied when an **event classifier** is used. Thus, it supports our position that **event classifiers** selects **event-type** nominals.

- (7)a. dianying hen hua qian
 movie very cost money
 'It is very expensive (to make/finance/watch/...) movies'
 b. zhe-chang dianying bu hua qian
 this-CLS_EV movie Neg cost money
 'It did not cost any money to see this movie.'

In addition, (7a) also shows that the **event** reading can be coerced from a bare NP. However, when a bare NP is coerced, the actual event is underspecified and may have a wide range of interpretations. In (7b), we show that when the **event** meaning is coerced by a classifier, it also determines the event-type. In other words, the semantic coercion fits the classical description of what a classifiers do. The **event** classifiers force the **event** reading by classifying the event into a specific type. In (7b), *chang3* refers to scheduled and regularly occurring events.

To sum up, we have demonstrated with two semantic tests and two syntactic tests that **event classifiers** do coerce the event readings on the nouns that they co-occur with. We will discuss in more detail the semantics of the **event classifiers** in the next section.

3.1. Event Classifiers and Their Semantics

Pustejovsky's (1995) theory of a Generative Lexicon proposes that the semantics of nouns cannot be completely represented without referring to two different event-structures encoded in the qualia structure of each lexical entry. The Agentive role of a noun is defined in terms of an event structure describing how this noun 'originated'. The Telic role is defined in terms of an event structure describing the function of the noun. His point is that polysemy cannot be accounted for if these two aspects of a noun are not considered.

Adopting Pustejovsky's position, the fact that certain classifiers can coerce event readings from nouns that are prototypically interpreted as individuals is not surprising, since their semantic representation already contains event structure information. Since these event structures are idiosyncratically encoded, we also correctly predict that the selection between event classifiers and their head nouns are more restrictive than kind classifiers. We will further classify the event classifiers into the **event-type classifiers**, which individuate different event structures, and the **event-token classifiers**, which individuate each occurrence of an event.

There are 32 event classifiers in Huang and Chen (to appear). Among these event classifiers, the **event-type classifiers** are more specialized since they select a particular event type. For instance, the **event-type classifier** *chul* selects the nouns whose heads are either *ju2* 'drama' or *xi4* 'play'.

- (8)a. *shashibiya daodi gong xie-le ji-chu xi?*
 Shakespeare eventually together write-PREF how_many-CLS_EV play
 'How many plays did Shakespeare write all together?'
- b. *bailaohui jinnian zhi yan-le yi-chu gewuju*
 Broadway this_year only play-PERF one-CLS_EV musical
 'Only one musical (e.g. Cats) was shown at Broadway all year this year.'

The two sentences above have agentive (8a) and telic (8b) readings respectively, suggesting that these event readings are coerced from the

Pustejovskian qualia structure. They also clearly show that *chul* individuates **event-types**. In contrast, when an **event-token classifier** is used, the same noun will refer to the occurrences of the event.

- (9) bailaohui jinnian gong yan-le yibai-chang gewuju
 Broadway this_year together play-PERF 100-CLS_EV musical
 'Broadway had one hundred showings of musicals this year.'

The **event-token classifier** *chang3* selects a scheduled event. Thus (9) claims that musicals were shown 100 times at Broadway without referring to whether the same play were shown, while (8b) claims that only one play was shown without claiming to how many times it was shown.

Even though **event-types** and **event-tokens** are semantically distinct entities and the classification is supported by the two unambiguous cases given above, we do find that in many cases the same classifier will be polysemous with both **event-type** (10a) and **event token** readings (10b).

- (10)a. Changrong you shi ban feiji fei gaoxiung
 EVA has 10 CLS_EV airplane fly Kaohsiung
 'EVA has ten scheduled flights to Kaohsiung.'
 b. Changrong gang fei-zou-le san ban feiji
 EVA just fly-away-PERF 3 CLS_EV airplane
 'Three EVA flights just took off.'

In sum, our semantic account of the event classifiers in this section suggests that event classifiers can adopt the event information encoded in qualia structures to define both Agentive and Telic roles and coerce the semantics into agentive or telic events. We also show that the semantics of **event classifiers** can be further distinguished as referring to either the **event type** or **event tokens**.

4. The Individual Reading

The **individual** reading is the most common aspect of classifier usage. (11) exemplifies two of the over 180 individual classifiers in Chen and Huang (to Appear).

- (11)a. Zhangsan mai-le san-ben-shu
 Zhangsan buy-ASP three-CL_IN-book
 'Zhangsan bought three books.'
 b. Zhangsan mai-le san-bu-shu
 Zhangsan buy-ASP three-CL_IN-book
 'Zhangsan bought three (different) books.'

It has been noted above that the usage of **kind** and **event** classifiers coerce a semantic type shifting, from the usual **individual** reading to a **kind** or **event** reading. What is also important to note is that the **individual** reading also allows for a semantic type shifting. That is, the selection of a classifier can emphasize different semantic properties of the noun. For example, in (11) the use of the classifier *ben* is the usual specific classifier used for books. There is a contrast however in meaning between (11a) and (11b). *Ben* refers to individual books, while *bu* refers to both individual books as well as to the content of the individual books. Thus, in the case of (11a) the three books may (or may not) be three copies of 'War and Peace'. However, in the case of (11b) it is certainly the case that the three books are all different in terms of their content. Another interesting example of individual classifiers creating a semantic type shifting is given in (12).

- (12)a. bangongshi-li you san-ju dianhua
 office-IN has 3-CLS_IN telephone
 'There are three telephone sets in the office. [i.e. three pieces of machinery]'
- b. bangongshi-li you san-xian dianhua
 office-IN has 3-CLS_IN telephone
 'There are three telephone lines in the office. [i.e. three telephone numbers]'

Both *ju4* and *xian4* are individual classifiers. However, *ju* selects machinery while *xian4* selects a line-like object, including the more abstract meaning of lines of communication. Thus we can see that with the same noun *dianhua*, (12a) has the Formal role of telephone as an object while (12b) represents the Telic role of telephone as a tool to connect to telephone lines. Thus, we show both that individual classifiers, like the other more abstract classifiers, can coerce nominal semantic types, and that the semantic coercion can be predicted through a well encoded qualia structure.

5. Conclusion

We have demonstrated above that it is inadequate to limit the classifier system to refer only to individuals. An important motivation in studying classifiers from the point of view suggested above is the realization that even seemingly straightforward referential nominals have complex semantic contents, as suggested by the above data and recent studies on nominal lexical semantics (Pustejovsky 1993, 1995). In fact, the semantics of nouns are more complicated than one might suspect. As we have shown above, Mandarin Chinese offers one of the most dramatic illustrations since its nouns can have very different meanings without any additional morphological markings. Our main generalization is summarized below. Three of the possible meanings of the noun *dianhua4* 'telephone' can be brought out by the use of different classifiers, as given in Table 1 below.

Table 1: Classifier and Nominal Semantic Type Correlation

Semantic/Classifier Type	Example	Reference
Individual	<i>yi-ju dian-hua</i> one-CLS_IN telephone 'a telephone'	telephone machinery
Kind	<i>yi-zhong dian-hua</i> one-CLS_KD telephone 'a kind of telephone'	a particular kind of phone, e.g. cordless
Event	<i>yi-tong dian-hua</i> one-CLS_EV telephone 'a phone call'	the completed event of calling

The implications for this new tripartite classification of classifiers are three-fold: first, it explains why the **kind** reading in Mandarin Chinese, while it can be understood as a generic reading typical of bare nominals, also occurs with a subset of classifiers, and is a semantic type in and of itself. Second, the previously abstract semantic distinctions between **kinds**, **individuals** and **events** are now found to be instantiated in one particular aspect of a natural language grammar, thus, suggesting that these semantic types are useful categorizing tools for humans (and not just semanticists), and that these concepts are encoded on a cognitive level. Finally, this classification allows us to take a fresh look at the complex semantic contents of nouns, and at the interaction and coercion that takes place between classifiers and nouns.

In future studies, we hope our findings will help us to better understand the interaction of semantic meanings among **kinds**, **individuals**, and **generics** (Carlson and Pelletier 1995, Chierchia 1996). In particular, based on the readily availability of **kind** reading, either with bare plurals in all languages or with **kind** classifiers in Chinese, we suspect that **kind** role should be part of the nominal qualia structure in the theory of a Generative Lexicon. With regard to the **event** readings of nominals, even though the present theory of qualia structure does offer an possible account of how these readings can be obtained from the lexical semantics of the nominals, more thorough studies will shed light on whether the Agentive and Telic events are the only events that are necessary to be encoded in nominal semantics as well as on how these event readings are selected.

Endnotes:

¹Research on this paper is based on the corpus-based analysis and compilation of the new classifier and noun-classifier collocation dictionary (Huang and Chen to appear, Chang et al. 1996). We would like to thank our colleagues at CKIP, especially Keh-jiann Chen and Lili Chang, for their stimulating ideas and discussion. This research could not have been done without the thorough and in-depth analysis provided by the dictionary. Any possible errors, however, are our responsibilities.

² Thus this fact casts doubt on a structural account where classifiers are assigned to the Spec position, since whether the Spec position is lexically filled or not can no longer be a test of the specificity/definiteness of the NP.

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