

On shape classifiers, their metaphorical extension(s) and wordnet potentials

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Abstract

This paper aims at highlighting the complex lexico-semantic information entailed in Chinese shape classifiers. The study is based on a selection of the same as derived from extensive literature. The goal is to introduce shape information in wordnets in a comprehensive way starting by shape classifiers. The suggestion is to map them not just as information coercers, but also as lexical items (nouns, verbs, adjectives). The paper also explores the metaphorical implications that can be derived from classifiers in this double function.

1 Introduction

Classifiers belong to some of the most complex issues in the grammars of the languages that own them (e. g. Japanese, Chinese, Korean, Thai). The approach to classifiers as not just grammatical, but also lexical items, has already been paved. (Mok, Huini and Bond, 2012; Paik and Bond, 2002) and (Bond and Paik, 2000) have for instance conducted research on classifiers and Wordnet® (WN), mainly focusing on the generation / prediction of classifiers from WN or from a common ontology.

In this paper, some Chinese shape classifiers are taken into account. Upon the claim made in literature that they enhance shape-related properties entailed in the nouns they collocate with (as described in Section 2), three major claims are made. (I) Classifiers (as for this study, shape ones) can trigger shape-related information from the noun they accompany, but (II) they can also pass the shape-related information they already contain to the nouns that follow (which makes this information transfer bi-, and not just mono-directional).

In order to understand point II, it needs to be pointed out that, although classifiers are defined

as morphemes specifying the semantic class of the nouns that follows, they can be nouns, verbs and adjectives at the same time (a fact that remains rather unmentioned in the referred literature). Once this fact is acknowledged, the assumed bi-directionality of lexico-semantic information from classifier to noun sounds feasible.

In the proposed examples, cases are also shown in which the *liason* between classifier and noun may be shallow (meaning that it is unclear how the shape-related classifier can possibly match with a certain noun). For these cases, it is suggested that (III) the bond between shape classifier and noun that follows is justifiable through metaphorical extension.

The author believes that the introduction of classifiers as elements of meaning derivation and meaning extension can be of interest for the wordnet community.

All the points in the research stress the need to consider classifiers and shape-related information in wordnets in greater detail. The research also tries to justify the use of classifiers in common-sense language.

The choice of selecting shape over other kinds of classifiers, as well as the hypothesis of a metaphorical justification in their use in language are inscribed in the bigger frame of current research (Quattri, 2013a; Quattri, 2013b).

2 Shape classifiers as lexico-semantic information carriers

According to (Huang and Ahrens, 2003), classifiers coerce information from the noun they accompany. This kind of retrieved information helps to better specify the noun into kind, event or individual. The authors, together with (Imai, Saalbach and Stern, 2010), categorize classifiers according to the properties that they extract from the noun they collocate with, including ShapeAt-

tributes, such as length, or roundness, or flatness.¹

Although not explicitly stated, it seems that other authors apply the similar value to classifiers, i. e. of being elements that coerce or extract information from the event or object that comes after them. For instance, according to ((Sera, Johnson and Yichun, 2013):5–7), the Chinese classifier 條 *tiáo* reflects the length and flexibility entailed in the objects it carries (e. g. a rope, or a snake). 支 *zhī* stresses length and rigidity, while 個 *ge* is a more universal classifier, thus partly a shape-related one. For (Sera, Johnson and Yichun, 2013), the use of 條, 支 and 個 in Chinese, counts, among other shape classifiers in their research, for 56.5% of general use.

Once the monodirectionality between classifier *y* and noun *x* is implied, some authors either categorically deny, or hardly prove,² the existence of a hierarchical relations among the different morphemes.

In this paper, a new approach to classifiers is proposed, with the following assumptions: (I) Classifiers can trigger information from the noun they accompany but (II) they are not just morphemes, but also proper words (nouns, verbs and / or adjectives) with proper meaning/s. This acknowledged, it is assumed that the meaning that a classifier coerces from a noun may be contained in the classifier itself and transferred to the word it accompanies. (III) When the matching between classifier and noun appears shallow, there might exist a metaphorical motivation that enables to justify the use of that specific morpheme for that specific noun.

Let's propose some examples as evidence.

Take for instance the classifier 張 *zhāng*. When used as a verb, the word means 'to spread up', 'to stretch', 'to expand', while when used as a noun it means 'string'. Not surprisingly, when acting as morpheme, 張 accompanies nouns which define long, flat objects, such as bows, tables, or pieces of paper (II). Yet, 張 also matches to words like

'mouth' (一張嘴 *yī zhāngzuǐ*) or ballot (一張選票 *yī zhāng xuǎnpào*). One feasible justification is that both the body part and the vote are visually synthesized, the first as something flat (sort of string), the second as the real instrument that enables a vote to be casted. Since both objects stand in the mental eye for something else, we call them metaphorical extension of the real meaning, triggered by the classifier 張 (III).

管 (兒) *guǎn(r)* stands in Chinese for 'tube' or 'pipe'. The word also acts as classifier for tube-shaped objects, such as flutes and toothpaste tubes. Literature does not provide a precise specification of the association of 管 to these nouns, so it may be possible to assume that the ShapeAttribute length is triggered either by the noun (I), or by the classifier (II).

Another case of vagueness in the determination of what coerces what is provided by the case of 片 *piàn*. In 一片吐司 *yī piàn tǔsī*, a piece of bread, the ShapeAttribute flatness is entailed in, and can therefore derived from either 片 *piàn* as word (also meaning 'slice'), or from 土司 *tǔsī*, 'sliced bread'. In this uncertainty, one might use this example as evidence for (I). On the contrary, in the case of in 一片地 *yī piàn dì*, a (flat) piece of land, one can state with almost no doubt that the ShapeAttribute flatness derives from 片 and not from 地 (II), since the latter simply means 'land', 'place', 'earth', 'ground'.

團 *tuán* corresponds to the English verb 'to roll', 'to roll into a ball', 'to gather'. As a noun, it translates into 'regiment', 'group', 'society', 'body' (which metaphorically can all stand for conglomeration of substance, or "mass" of people). As adjective, 團 stands for 'circular', 'round', 'collective'. As a classifier, 團 collocates with round objects, such as doughs (一團麵團 *yī tuán miàntuán*).³ Cases like this, where the metaphorical extension is assumed to be found in the classifier as a noun, have been marked separately in fig. 1, and could be considered a further extension of point (III) (IIIa).

In some cases, metaphorical extensions can be more than assumed. Their justification may lie in the lexical derivation that the word / classifier has inherited from another meaning which conceptually stands in a higher position (as in the case of a node-synset relation).

³Notice the presence of 團 as suffix of the Chinese word for 'dough', 麵團.

¹The upper ontology SUMO (www.ontologyportal.com) maps these shape features differently. Length is for instance mapped as LengthMeasure, roundness as ShapeAttribute, flatness as VisualAttribute or SpatialRelation. The author has decided to represent all these shape-related features as subsumed to the self-defined upper concept ShapeAttribute (as in fig. 1).

²For reference: Adams and Conklin (1973), Allan (1977), Croft (1994), Denny (1986), Downing (1996), also cited under ((Imai, Saalbach and Stern, 2010):485ff.)

One example for these cases is the Chinese correspondent for English ‘tree’, 木 mù. The radical can be a semantic or a phonetic component. From 木 derive at least four shape classifiers (which carry 木 in their character): 本 běn, 根 gēn and 株 zhū. When used as proper nouns, all three mean ‘root’. The *part_of* relation between classifier and radical is quite straightforward; the metaphorical extension (III) might lie in the fact that from the physical ‘root’ derives a virtual root, or ‘basis’, ‘foundation’ (both words count among the meanings of the three classifiers as nouns). The metaphorization process does not stop at the level of radical-classifier, but seems to continue in some of the expressions generated by the word (e. g. 我們必須找到問題的根源 wǒmen bìxū zhǎodào wèntí de gēnyuán, literally “we must find the root of the problem”, with 根源 gēnyuán meaning ‘root’ - for ‘cause’ and ‘origin’).

Another important aspect regarding classifiers that has been noticed from thorough investigations of several shape ones, is the fact that classifiers (when acting either as coercer or borrower of shape information) select specific information within the wide range of possible ShapeAttribute(s). For instance, although 本 běn, 根 gēn and 株 zhū are all used as classifiers for plants and trees, each of them highlight a particular shape, position, or size of the plants and trees they collocate with.

The same observation on selective information can be drawn from the use, in commonsense language, of the word / classifier 顆 kē (e. g. 一顆西瓜 yī kē xīguā, one melon), when for instance compared to 粒 lì (e. g. 一粒子彈 yī lì zǐdàn one bullet). Although both classifiers are used to enhance the shape attribute of roundness, they collocate with different sized objects. 顆 classifies “solid round objects” (such as small spheres, pearls, corn grains, teeth, hearts and satellites), 粒 on the contrary classifies “small round things” (such as peas, bullets, peanuts, pills, grains).⁴

Eventually, what needs to be reminded with regards to classifiers (that should be further stressed in the case shape classifiers are introduced in wordnets) is their “conceptual polysemy”. An example can be 條 tiáo. 條 classifies long, flexible, bendable objects, both animate and inanimate.

⁴Information partially retrieved from CEDICT, Chinese-English dictionary, <http://cdict.net/>

When combined to nouns, this cluster of shape attributes is not evoked by 條 all at once. For instance, when combined with ‘shorts’ (一條短褲 yī tiáo duǎnkù), only the length of the shorts is highlighted, not their flexibility or viscosity. The selected information retrieved by 條 appears even clearer when compared to 個 ge, most probably the most generic Chinese classifier, usable to classify people and objects in general.

This process of selective information retrieval shows that classifiers act upon the noun they carry with a sort of “selective inference” (Hobbs, 1983a; Hobbs, 1983b). Hobbs associates this to the thinking process and in particular to metaphors, claiming that the meaning of metaphors is only fully understandable if retrieved within their context of use.

A disclaimer needs to be made on the selected examples. The Chinese language is an upper concept itself, and stands for a conundrum of different languages and dialects which constitute the World Chinese. It derives that what sounds as a natural linguistic combination for some might sound exotic for others. The classifiers presented in this study have been extracted from a long list of academic articles and books on the matter, hereby only partially cited (selected reference). The shape classifiers that have been selected represent the ones that are mostly cited in examples and that have been consensually defined as shape ones by the majority of the consulted authors. There still remains some disagreement among mother tongue speakers. For instance, according to some of them, the Chinese classifier 枝 zhī, presented by some authors as shape classifier for non-living objects and therefore also reported in fig. 1, is used in commonsense language in rare or specific cases. Other colleagues have claimed that the use of 顆 kē as classifier for ‘melon’ sounds unnatural, since the shape classifier seems to match with round yet small objects (e. g. 一顆蘋果 yī kē píngguǒ one apple).

Eventually, given the short nature of this paper, implications about the distinction between classifiers, measure words and quantifiers⁵, or shape-based and shape-related classifiers⁶ could not be

⁵For measure words, classifiers, quantifiers, also see: (Her and Hsieh, 2010)(Shi, 1996)(Zhang and Schmitt, 1998)(Aikhenvald, 2000), Li (1924), Wang (1937), Lü (1953) (in (Song, 2009), ((Chao, 1968):584–620) and Tao (1990:312, in (Huang and Ahrens, 2003)).

⁶Among the authors consulted for the definition of shape-

further deepened.

3 Future work

Current wordnets do not encode shape information, and lack a comprehensive mapping of classifiers.

This svelte research aims to show how much lexico-semantic knowledge can be retrieved from these small units of language and their possible metaphorical implications. Its inclusion in wordnets (also married with an ontological analysis, as fig. 1 tries to show) can be beneficiary for both language users and language learners.

The project can be framed within a bigger effort to collect comprehensive information on classifiers (not just shape ones), provided general consensus on their use and meanings. For instance, Hantology (Chou and Huang, 2010)⁷ could be further tailored by inserting classifiers. Because the database currently mainly focuses on radicals and characters, classifiers (e. g. 團), are mapped as characters. Since characters are then linked to all the words they respectively generate, it results that one character is often mapped to several upper concepts. The author is aware that the metaphorical extensions of meaning hereby presented are subject to personal interpretation, but this should be nevertheless valued as a primary attempt to try to justify the collocational structure that exists between Chinese classifiers and nouns. Also, given the apparent discrepancy between the use of classifiers in commonsense language and in written language, as mentioned above, it might also be interesting to draw a comparison between real-word and formal use of classifiers in Chinese (starting by 普通話 pǔtōnghuà or Mandarin).

Another already initiated extension of the study can include the cross-linguistic comparison of classifiers, in the search for common patterns, starting by ground literature such as (Matsumoto, 1993; Matsumoto, 1986; Paik and Bond, 2002).

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based and *shape-related* classifiers are: (Shi, 1996), Tai and Chao (1995, in (Shi, 1996)), (Yichun, Wu and Chung, 2011) and (Sera, Johnson and Yichun, 2013).

⁷See <http://hantology.sinica.edu.tw/>

Further notes on fig. 1

For 條, 間, 座: ((Song, 2009):27), citing Li (1924/1925). For 條 and 枝、支 also (Sera, Johnson and Yichun, 2013). For 條 also (Imai, Saalbach and Stern, 2010)

For 筐 and 抽屜: ((Song, 2009):17), citing (Chao, 1968). Also ((Song, 2009): 103): "As a classifier, it is used in front of the nouns denoting objects or things in the shape of a long and hollow cylinder, such as writing brush, a gun, a flute, or a tube of toothpaste".

For 張: ((Song, 2009): 18), citing (Chao, 1968). Chao defines classifiers like 張 "temporary" measures, because the classifier can be used as both word (with the classifier 個) and classifier. For 張 also (Liang, 2008), ((Srinivasan, 2010): 179) and (Imai, Saalbach and Stern, 2010). Notice that although 張, 抽屜, 筐 are defined by Chao as "measure word", they all pass the 的 test^a, and are therefore hereby considered classifiers.

For 條: ((Song, 2009):100): "[...] long objects, such as long benches, long sofas, sausages, boats; long shapes in landscapes and mountain ranges; rivers, watercourses, and pipelines; roads, paths and ways; items and articles in written documents; certain body parts of humans, such as arms, legs, tails, tongues, intestines and people's lives; and certain animals, such as snakes, fish, dogs and cows." For 條 also ((Srinivasan, 2010): 179) and ((Gao and Malt, 2009): 1125).

For 枝: ((Song, 2009):91): "As a classifier, it is used for classifying sticks and long shaped objects such as writing brushes, pens, pencils, candles, rifles; military troops; songs and music; measurement of light and electronic power [...]".

For 股: ((Song, 2009):88).

For 顆 kē, 糰 tuán, 粒 lì, 塊 kuài, 片 piàn and 張 zhāng (exception cases) : (Liang, 2008).

For 根 gēn : ((Srinivasan, 2010): 179).

^aMore on 的 as distinguisher between classifier and measure word: (Her and Hsieh, 2010)

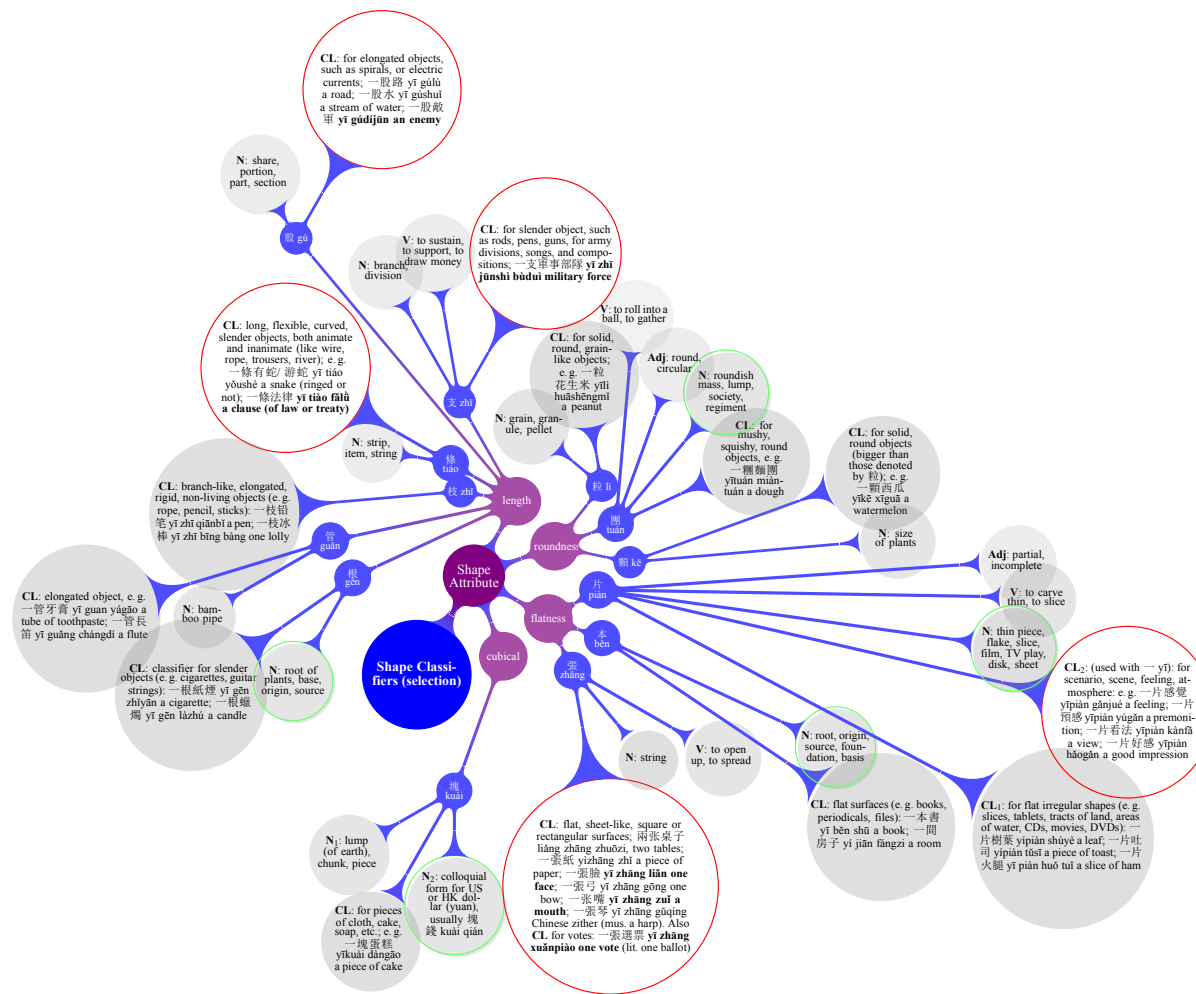
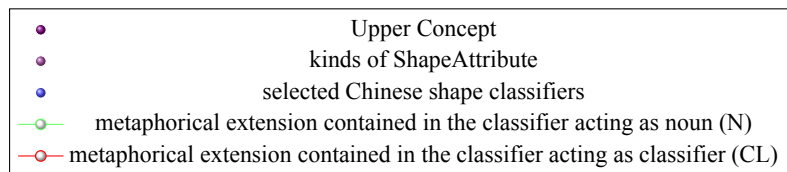


Figure 1: Extract of a possible representation of shape classifiers^a



^aMindmap modified upon the original of Andrei Sobolevski, <http://www.texample.net/tikz/examples/scientific-interactions/>

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⁸Further reference under:

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