The polysemy network of Chinese 'one'-phrases in a diachronic constructional perspective

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This study investigates the development of a polysemy network within a constructional framework. The synchronic variation of Chinese 'one'-phrases is explained by diachronic developments. The results of a quantitative corpus analysis show that each of the senses of the 'one' phrase tends to occur in specific syntactic constructions due to inheritance from extant constructions. The results contribute to explaining the formation of a diachronic polysemy network by investigating the hierarchical structure of its constructions, thus allowing a deeper understanding of how semantic extensions have been formed through gradual constructional association.

Keywords: numeral phrases, polysemy network, information structure, polarity items, constructionalization, Chinese, corpus study

1. Introduction

This study takes a constructional approach in showing how a synchronic polysemy network has been shaped by diachronic realignments of form and meaning. The synchronic and diachronic connection is illustrated by the interpretational variability of Mandarin Chinese numeral phrases composed of a numeral, a unit word (measure word or classifier), and a noun. When the numeral is 'one', the combination is not only used for counting, referencing, and quantifying, but also as an emphatic negative polarity item (NPI) and as an attenuating positive polarity item (PPI).

Data collected from four distinct periods, from 8c. B.C. to 21c. A.D., showed that the quantifying and pragmatic functions of numeral phrases developed in later periods. A quantitative corpus analysis shows that the combination of 'one'-unit

word-noun tends to occur in specific constructions when used for different functions. Specifically, the development of the same numeral phrase toward both the NPI and the opposing PPI functions has been shaped by the information structure of the constructions where that numeral phrase frequently occurred. The corpus results show that the frequency of an NPI sense of the 'one'-phrase within focus constructions, such as the OV construction, has increased from Middle Chinese to Modern Mandarin. This distribution is in line with the synchronic distribution of other NPIs. The PPI sense, in contrast, is not found in focus constructions. Regarding types of inferences, the pragmatic inferences from NPIs are emphatic while those from PPIs are attenuating. This pragmatic motivation leads to a significant distinction in their distribution. Regarding both their nominal and later-developed adverbial functions, the NPI sense tends to be found preverbally under focal prominence for inducing emphatic inferences, whereas the PPI sense remains postverbal, conforming to the syntactic properties of the other extant non-emphatic modifiers. The synchronic variation and diachronic distribution of the various senses will be discussed in sections 2 and 3, respectively.

The functional expansion of the 'one'-phrase is viewed as resulting from constructional changes and constructionalization (Traugott & Trousdale 2013). The sharp contrast in the distribution reflects the inherited properties of the 'one'-phrase from its associated schematic constructions. The constructional analysis will be detailed in section 4.

The study offers a constructional account based on the hierarchical structure of constructions, through a diachronic perspective, for the development of a polysemy network. Not only do the results show that the conceptualization of quantity denoted by Chinese numeral phrases varies with the scales provided by these constructions, but they also provide evidence for the cognitive mechanism of making generalizations which result in semantic extensions.

2. Synchronic polysemy

The polysemy network of a 'one'-phrase can be clearly observed in the combination of the numeral *yì* 'one', the unit word *diǎn* 'dot', and a noun. As a numeral phrase, it is typically used for counting and measuring, as shown in (1).[1] In this example, the unit word describes a dot-shaped object.

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(1) dì   shàng yǒu yì diǎn   xiě jī
     floor on   EXT one UW: dot-shape blood stain[2]
     'There is one dot of blood stain on the floor.'   [Sinica Corpus]

In Modern Mandarin, the types of nouns occurring in this combination are mainly abstract or mass nouns because these do not have individual classifiers due to the lack of concrete visual perception. In addition to the counting function, the combination has two opposing pragmatic functions, emphatic NPIs and attenuative PPIs, depending on where it occurs.

When interpreted as an NPI, the particular meaning involved belongs to the category of minimizers, which are expressions designating a minimal amount or referring to an endpoint of a scale; they are frequently employed for emphatic functions (Fauconnier 1975; Horn 1989). Minimizers are found crosslinguistically, such as English *lift a finger*, *sleep a wink*, *hurt a fly, worth a red cent*, Greek *dhino dhekara* 'give a damn', and Hindi *zaraa-bhii* 'even a little'. They form a distinctive class due to their narrow licensing conditions. They appear in antiveridical or antimorphic contexts, such as negation, as in example (2) below.[3]

(2) a.   He didn't lift a finger to help.
     b. * He lifted a finger to help.

Minimizers are generally labeled as "strong" or "strict" NPIs, as opposed to the class of "weak" or "broad" NPIs (Giannakidou 2011). English *any* is an example of the class of broad NPIs since it is allowed in contexts without negation.

In Modern Mandarin, the minimizer use of 'one'-phrases is productive. However, its distribution is intriguing. As in (3) and (4), the minimizers can appear as the object in VO, the canonical Modern Mandarin word order.

(3) kàn bú[4] dào [yì diǎn xīwàng]
     see NEG ASP one UW hope
     'cannot see any hope'   [Sinica Corpus]

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2. Abbreviations:

AFF	affix	FOC	focus
ASP	aspect	NEG	negation, negative
CLF	classifier	PRF	perfect
DIM	diminutive	PTC	particle
EXT	existential predicate	UW	unit word.

3. The antimorphic function is equivalent to classical negation and is also antiveridical (Giannakidou 2011).

4. The tone of *yī* and *bù* 'NEG' varies with its environment due to tone shandi.

(4) zhǎo bú   dào [yì   diǎn lèsè]
find NEG ASP one UW   trash
'cannot find any trash'   [Sinica Corpus]

Meanwhile, the minimizers can also appear as objects in OV, as shown in (5) and (6). Interestingly, over 60% of the minimizer uses of 'one'-phrases tend to appear in OV contexts according to the corpus data.

(5) [yì   diǎn pòzhàn] yě   qiáo bù   chū lái
one UW   flaw   FOC see NEG out come
'cannot see any flaw'   [Sinica Corpus]

(6) [yì   diǎn lèsè] dōu méi yǒu
one UW   trash FOC NEG have
'There is not even a bit of trash.'   [Sinica Corpus]

The 'one'-phrase is also found to be an indefinite quantity attenuator, similar to English *some* or *a little bit*, as shown in (7) and (8). In this case it is regarded as a PPI and it cannot appear under the scope of negation. It is noteworthy that the PPI function is observed exclusively in postverbal position.

(7) hē   le [yì   diǎn kāfēi]
drink PRF one UW   coffee
'drank some/ a little bit of coffee'   [Sinica Corpus]

(8) néng bù   néng dānwù nǐ [yì   diǎn shíjiān][5]
can NEG can delay you one UW   time   [5]
'(I) wonder if I can have a little bit of your time.'   [Sinica Corpus]

The interpretation of the 'one'-phrase is determined by the constructions where it occurs: the NPI sense arises with negation and preferably in OV, whereas the PPI sense arises in non-negative VO. Thus, the polysemy of these 'one'-phrases cannot be accounted for independently of the constructional context. The difference in the information structure of preverbal and postverbal positions leads to the distribution of these different senses. In addition, the relationship among the three components of the 'one'-phrase combination varies in the different constructions. For example, when in the preverbal negative environment, 'one' cannot be replaced with other numerals. Each function of the combination can be treated as an individual construction since it has its own encoded semantics, syntax, and pragmatics. The synchronic polysemy network of the 'one'-phrase is built upon a series of construction changes. Section 3 examines the formation of the polysemy network and the motivations behind the skewed distribution.

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5. The AUXILIARY-NEG-AUXILIARY pattern is used to form polar questions without imposing negation.

3.   Diachronic construction-based changes

In order to provide a thorough study of both synchronic variation and diachronic development of 'one'-phrases, this study includes data from the Academia Sinica Ancient Chinese Corpus.[6] The corpus contains subcorpora for various periods of Chinese such as the Corpus of Old Chinese, the Corpus of Middle Chinese, and the Corpus of Early Mandarin Chinese. The time periods covered by each of these subcorpora and the numbers of characters contained in each subcorpus are listed in (9).

(9)   Old Chinese: Pre-Qin Dynasty through West Han Dynasty,
                                              8c.–1c. B.C.
         Number of characters: 5,657,039
         Middle Chinese: East Han Dynasty through Wei-Jing Dynasty,
                                              1c.–6c. A.D.
         Number of characters: 19,737,152
         Early Mandarin Chinese: Tang Dynasty through Qing Dynasty, 7c.–19c.
                                              A.D.
         Number of characters: 36,159,860

The division of Chinese into three periods is based on their respective syntactic, phonological, and morphological characteristics, making maximal distinction between each time period.[7] For instance, the distinction between Old Chinese and Middle Chinese is defined by the loss of case markers on pronouns, the emergence of compound nouns, and changes in word order in Middle Chinese (Wei 2000, 2003).

Early Mandarin covers the longest period, spanning 13 centuries. To better capture the gradual changes of the 'one'-phrase during this period, I further divide it into two stages, Early Mandarin I, from 7c. A.D. to 12c. A.D., and Early Mandarin II, from 13c. A.D. to 19c. A.D. The split is made at the transition from the Song Dynasty to the Yuan Dynasty, an empire established by the Mongols with a great influence on Chinese culture and language.

Sections 3.1 and 3.2 will detail the distinct functions of the combination of 'one', the unit word *dian* 'dot', and a noun at different periods of Chinese.

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6. I gratefully acknowledge Academia Sinica for granting access to the institute-internal version. The Old Chinese, Middle Chinese, and Early Mandarin examples in this paper are all collected from the Academia Sinica Ancient Chinese Corpus.

7. The periodization of Chinese has been a controversial issue (cf. Norman 1988; Peyraube 1996). The division of subcorpora in Academia Sinica Ancient Chinese Corpus, such as Old Chinese, Middle Chinese and Early Mandarin, follows the classification of Wei (2000, 2003).

3.1 *Dian* 'dot' in Old Chinese and Middle Chinese: counting and measuring

In Old Chinese, *diǎn* 'dot' was not a full-fledged unit word yet. A total of merely 25 tokens of *diǎn* are found in the Corpus of Old Chinese, while there are 549 tokens of *diǎn* in the Corpus of Middle Chinese. These tokens are divided into three categories, the percentages of which are shown in Table 1.

Table 1. Three categories of *diǎn* in Old and Middle Chinese

Category	Noun	Proper noun	Verb
Old Chinese	12%	60%	28%
Middle Chinese	18%	29%	53%

The category of interest in this study is the nominal use. In Old Chinese, *diǎn* referred to a small ink dot as a type of calligraphy stroke, as shown in (10). The properties of smallness and blackness of calligraphy strokes remained prominent in its later use as a unit word.

(10) mǎ   zì   shǎo yì   diǎn
      horse character lack one dot
      'The character of 'horse' is one dot stroke short.'   [前漢:142]

In Middle Chinese, *diǎn* developed several metonymies. The central case of the metonymic network is a dot-shaped stroke in black, as in (11).

(11) yī   zì   sān diǎn
      he/she character three dot
      'three dot-shaped strokes of the character 伊(he/she)'   [全上:202]

With the profiling of the property of blackness, *diǎn* was used to refer to a small black stain. Example (12) is the definition of *diǎn* quoted from an authoritative dictionary in Middle Chinese.

(12) diǎn,   xiǎo hēi   yě
      dot   small black SENTENCE-FINAL PTC
      '*Dian* means a small stain.'   [顏式:286]

In some cases, the black property disappeared and only the dot-shape property remained. This use of *diǎn* extended to refer to a solid round shape as in (13) and (14), where blackness is no longer a necessary property.

(13) ròu   zhōng yǒu zhū diǎn   zhě,   bù kě shí zhī
      meat inside have red UW: dot-shape AFF   NEG can eat it
      'Meat with red spots should not be eaten.'   [金匱:652]

(14) lèi hén diǎn diǎn   jì   xiāngsī
     tear trace dot ᴜᴡ: dot-shape put lovesickness
     'The marks of teardrops testify to lovesickness.'   [唐二:814]

Examples (13) and (14) show that in Middle Chinese, *diǎn* was not mandatorily related to calligraphy. This is an incipient stage of *diǎn* turning into a unit word. Indeed, four tokens of *dian* used in a numeral phrase ɴᴜᴍ-ᴜᴡ-ɴᴏᴜɴ are observed in the Corpus of Middle Chinese. In (15), *diǎn* designates a small unit of colorful spots instead of referring to a dot-shaped stroke.

(15) [qiān   diǎn   lánbān]   pēn yù cōng
      thousand ᴜᴡ: dot-shape colorful appearance spray jade horse
      'thousands of colorful dots sprayed on the horse made of jade'   [樂府:957]

The other three examples all occurred with the numeral 'one', as shown in (16) and (17). The noun in (16) had its own particular classifier, but *diǎn* 'dot' was used instead of it. *Diǎn* here describes the visual perception of a tiny dot due to the great distance of the object in question. Notably, in (17) *diǎn* was allowed to take a mass noun, which lacks a particular individual classifier.

(16) [yì   diǎn   sùyān dǎo]
      one ᴜᴡ: dot-shape foggy island
      'a small foggy island'   [唐四:2827]

(17) [yì   diǎn   nóng lán] zài shēn jǐng
      one ᴜᴡ: dot-shape thick mist at deep well
      'a dot of thick mist in the deep well'   [唐四:2874]

In brief, the 'one'-phrase combination as a counting phrase made its first appearance in Middle Chinese, and *diǎn* as a unit word was tightly associated with the image of a small zero-dimensional object, such as a point-like object. The combination became even more versatile in Early Mandarin, as will be discussed in section 3.2.

3.2 The 'one'-phrase in Early Mandarin

In Early Mandarin, the combination of 'one', *diǎn* 'dot' and a noun extended to cover various quantities, such as English *little*, *a little, a bit* and *some*. Particularly, the combination can be interpreted as an NPI or a PPI, which developed along two opposite paths. The NPI interpretation was employed for an emphatic function, whereas the PPI interpretation was used for attenuation. The discussion of the 'one'-phrases unfolds along two lines: (i) the distribution of the nominal 'one'-phrase in the preverbal and postverbal positions, given SVO as the canonical word

order in Early Mandarin (Wei 2000); (ii) how different interpretations of the 'one'-phrase can be properly distinguished by their associated constructions.

The data of the 'one'-phrase gathered from the Corpus of Early Mandarin Chinese are divided into two sub-periods, Early Mandarin I and II, in order to precisely capture the incremental internal changes. There are 792 tokens of the 'one'-phrase in Early Mandarin I and 1924 tokens in Early Mandarin II. Figure 1 summarizes the proportions of the three senses which are relevant to the discussion in the two sub-periods. The senses of the 'one'-phrases correlate with the constructions where they occur. The minimizer meaning appears with negation and preferably in the preverbal position, while the PPI function occurs postverbally without negation. The counting function generally arose when the noun was perceived as dot-shaped. The functions differ proportionally in the two periods. Notably, both of the polarity senses increased over time, while the counting function decreased. The change in the cross-period distributions reflects the fact that the dominant function of the 'one'-phrase has shifted from its core counting and measuring function to polarity-sensitive uses.
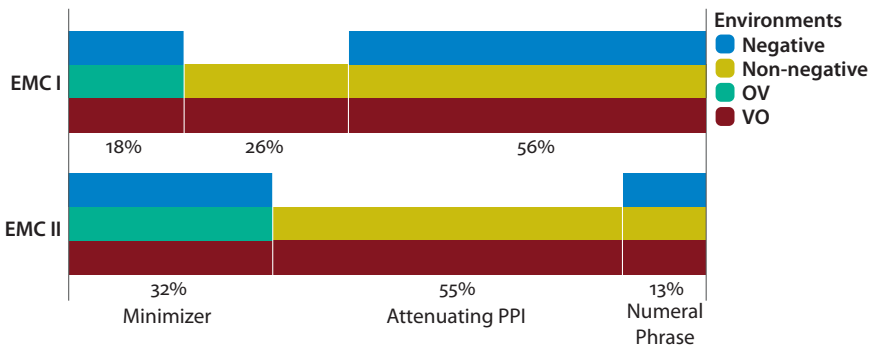

Figure 1. The proportional distribution of the different senses of the 'one'-phrase

Since the NPI and the PPI senses are subject to different constructional constraints, the two paths of development will be discussed separately. Section 3.2.1 focuses on the PPI sense; the NPI sense is examined in section 3.2.2.

3.2.1   *The development of the PPI sense of 'one'-phrases in Early Mandarin Chinese*

In the period of Early Mandarin I, the majority of the tokens of the combination were still used to describe the perception of a solid dot, as shown in (18). *Kē*, a classifier which is specifically for a pellet-shaped object, has been in use since Middle Chinese for stars, but the use of *diǎn* 'dot' here instead of the default classifier emphasizes the tininess of the object due to the great distance.

(18) yáo   wàng   chuán chuāng [yì   diǎn   xīng]
      distant look to boat   window one ᴜw: dot-shape star
      'look through a porthole at a small distant star'   [唐四:1489]

The unit word *diǎn* further extended to describe an object without an inherently round shape. For example, a seagull in (19) is not a round object, but the use of *diǎn* as a unit word indicates that the seagull is distant and looks like a small dot. The counting function can be verified by the replacement of the numerals. As in (20), the numeral slot was open to different numerals as long as the combination was used for counting.

(19) [yì   diǎn   bái   ōu]   héchù qù
       one ᴜw: dot-shape white seagull where go
      'Where is the white seagull in the distance going?'   [宋五:1162]

(20) [sān   liǎng diǎn   ōu]   shā wài   yuè
       three two   ᴜw: dot-shape seagull sand outside moon
      'two or three seagulls above the shoal, with the moon in the sky' [宋五:1162]

Ambiguity between a dot-shape and a small quantity may arise when the noun of the 'one'-phrase is a mass noun. As shown in (21), it can be interpreted in two ways. One is the dot-shaped snow spot, and the other is a little bit of snow. The property of a round shape remains in the former reading, while the latter emphasizes the small quantity. This ambiguity disappears if the numeral is larger than the numeral one, as in (22); in that case, the numeral phrase can only be interpreted as a counting phrase. The contrast between the two examples reveals the divergence of functions of the unit word *diǎn*.

(21) rú   hóng lú   shàng [yì   diǎn xuě]
      like red   wok on   one ᴜw snow
      'like a bit of snow on the red hot wok'   [朱子:1042]

(22) lín   fēng [qiān   diǎn   xuě]
      face wind thousand ᴜw: dot-shape snow
      'braving the wind and a thousand flakes of snow'   [詩補:648]

This function of expressing approximation can be clearly observed when the noun is not concrete. In (23) and (24), use of the mass nouns 'breeze', 'warmth', and 'freshness' indicates that the unit word *diǎn* was no longer confined to describing the dot-shape image. Instead, the 'one'-phrase served as an attenuator by referring to an indefinite small quantity. Notably, the numeral 'one' could not be replaced by other numerals. This restriction further supports the fact that the combination was not used for counting/measuring. Along with the fact that *diǎn* did not select the semantic class of the head noun, the changes indicate that the numeral

'one' and *diǎn* began to form a unit as a new syntactic development. This *yì diǎn* 'one-ᴜᴡ' combination behaved as a modifier specifying the small quantity of the modified noun, thus showing that the 'one'-phrase gradually developed its own constructional meaning.

(23)   [yì   diǎn chūn   fēng   héqì]
     one ᴜᴡ   spring wind warmth
     'a little bit of vernal breeze and warmth'   [宋四:690]

(24)   [yì   diǎn qīngliáng] chú   rènǎo
     one ᴜᴡ   freshness   rid of discomfort caused by heat
     'a little bit of freshness can beat the heat'   [普覺]

The two functions in Early Mandarin I, counting and modifying, continued in Early Mandarin II, but with different relative proportions. As shown in Figure 2, the 'one'-phrase occurred more frequently as a counting numeral phrase than as a quantifier in Early Mandarin I; however, the relation was reversed in Early Mandarin II. The sharp contrast shows that the later developed quantifier became the more dominant function.
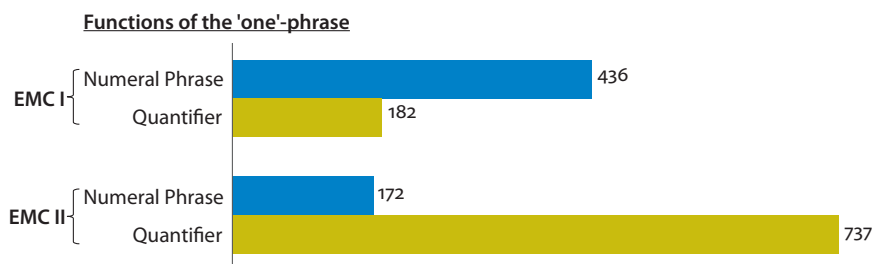

Figure 2. Tokens of numeral phrase and quantifier uses in Early Mandarin

The attenuator function has its own semantics and pragmatics, which deviate from those of the prototypical counting function. Specifically, the function of a quantifier in Early Mandarin II can be further divided into two types of quantity without a fixed upper bound: a neutral quantity, like English *some*, and a small quantity like English *a little*. The use as a quantifier includes the properties of both the paucal quantifier and the approximative plural, as defined in Corbett (2000). The paucal quantifier refers to a small number of distinct real world entities such as English *a few*. This sense of the 'one'-phrase can express the plural concept of objects due to the fact that there is no morphological distinction between singular and plural in Mandarin. For instance, the noun 'shrimp' had its own individual classifier, but in use with the 'one'-phrase it meant a small indefinite number of individual shrimps, as in (25).

(25) zuò le yì wǎn huǒròu báicài tang, jiā le [yì diǎn-ér
      make PRF one bowl ham   cabbage soup   add PRF one UW-DIM
      xiāmǐ-r]
      little shrimp-DIM
      'made a bowl of ham and cabbage soup and added a few shrimps to it'

[紅樓:1371]

The approximative plural is vaguer in quantity and thus is claimed to be more polite (Corbett 2000). As in (26) and (27), the 'one'-phrase expresses approximation and serves as an attenuating downtoner to convey politeness. The speakers do not mean a small amount literally, but they scale down the effect of the modified noun in a polite request.

(26) nǐ xiān hē   [yì diǎn chá], zài hé nǐ jiǎng
      you first drink one UW tea   then with you talk
      'Please drink a little tea first. Then I'll talk to you.'   [孽海:25]

(27) shǎng wǒ [yì   diǎn kōng-r]
      grant me one UW slot-DIM
      'Grant me a little time.'   [紅樓:689]

The attenuation of quantity can be explicitly conveyed by the diminutive marking on the 'one'-phrase, such as the diminutive reduplication of *diǎn* in (28) and *zi* 'diminutive marker' in (29). The reduplication of *diǎn* particularly emphasizes the smallness in quantity. Similarly, the bound root *zi* indicates the tininess of the referred object (Chao 1968; Packard 2000). The diminutive constructions must occur with the numeral 'one' and they only apply to unit words which inherently refer to a small quantity. Their occurrence further shows that the 'one'-phrase is not used as a counting phrase. For example, the individual classifier of 'crab' is not used in (29); instead *diǎn* and the bound root *zi* indicate that the 'one'-phrase expresses an approximation of a small amount.

(28) [yì   diǎn **diǎn** xiǎo jiāoyì]
       one UW UW   small transaction
      'just a little bit of transaction'   [海上:470]

(29) wǒ chī le [yì diǎn **zi** pángxiè]
      I   eat PRF one UW DIM crab
      'I ate a little bit of crab.'   [紅樓:583]

The co-occurrence with the diminutive constructions effectively distinguishes the attenuating function from the counting function. The emergence of the morphological combination in Early Mandarin II shows how two types of quantifiers, one

emphasizing indefiniteness and the other stressing tininess, were shaped by the contextual environments.

In addition to the morphological difference, the attenuators in the two sub-periods had a phonological difference. The tokens from Early Mandarin II show that *diǎn* often occurred with an *-r* sound (transcribed in IPA as [ɹ]), which also had a diminutive function, as in (30). When occurring with the diminutive marker, the 'one'-phrase emphasized approximation.

(30) piàn   shēn wéiwéide chū   le [yì diǎn-**r** hàn]
      all over body slightly   emerge PRF one UW-DIM sweat
      'sweated a bit all over the body'   [紅樓:1306]

Diǎnr is a variant of *diǎn*, which continued to Modern Mandarin (Lü 1985). This phonological process of adding *r*-coloring as a diminutive suffix to a noun is common in spoken northern Mandarin (Chao 1968). The PPI sense of the 'one'-phrase from the extant diminutive constructions provides evidence that the attenuating sense was included in the polysemous network in Early Mandarin.

This attenuating function is parallel to that of English *some*, which is claimed to have attenuation as its essential feature (Israel 2011). *Some* has long been identified as a PPI (Jespersen 1909[1949]; Baker 1970) because of its semantic and syntactic constraints. Semantically, *some*-type PPIs generally do not occur within the immediate scope of a clause-mate antiadditive operator (Szabolcsi 2004).[8] It is claimed that the indefinite *some* PPI needs to be situated in a veridical context because its referentiality cannot be satisfied in nonveridical contexts and negation (Giannakidou 2011).[9] Syntactically, PPIs are licensed in a non-negative polarity phrase which is located above the negative polarity phrase in a clausal structure (Progovac 2005). In the past studies, both the syntactic and semantic constraints show that *some* as a PPI is not compatible with the scope of negation. In a similar vein, the PPI sense of Mandarin attenuating 'one'-phrases was not found in negative environments, as supported by the corpus data. Regarding the syntactic distribution of the PPI 'one'-phrase as an object, all the tokens from Early Mandarin appeared in VO without exception, as shown in Figure 1.

In sum, the attenuating PPI sense of 'one'-phrases, which arose only in non-negative environments, developed in Early Mandarin.

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8. According to Szabolcsi (2004: 414), anti-additivity is defined as follows: A function f is anti-additive iff f(a∨b)=fa∧fb. For example, 'no one walks or talks'='no one walks and no one talks'.

9. Giannakidou (2011: 1674) defines veridicality as a property of sentence embedded functions: a function *f* is veridical if *fp* entails or presupposes the truth of *p*. If inference to the truth of *p* under *f* is not possible, *f* is nonveridical. Particularly, nonveridical expressions express lack of commitment.

3.2.2 *The development of the NPI sense of 'one'-phrases in Early Mandarin Chinese*

As discussed in Section 3.2.1, the PPI function of the 'one'-phrase is in line with English *some*. The PPI *some* has been treated as the attenuating counterpart to the emphatic *any* (Israel 2011). They both invite scalar inferences but they are sensitive to opposite polarities. The emphatic counterpart of the PPI sense of the 'one'-phrase is realized as the same combination, *yì* 'one'-*diǎn* 'UW'-NOUN. However, when in negative environments, this same combination gives rise to an NPI sense, demonstrating that the 'one'-phrase can be interpreted as an NPI or a PPI depending on the larger constructions where it occurs.

The combination used as a numeral phrase began to appear in Middle Chinese, but it was not interpreted as a minimizer NPI. The minimizer function emerged in Early Mandarin according to the corpus data. The NPI sense can be observed in postverbal position as in (31) and (32), where the bracketed 'one'-phrases follow the main predicates, and in preverbal position as in (33) and (34), where the 'one'-phrases precede the main predicates.

(31) bù liú [yì diǎn huīchén]
      NEG keep one UW dust
      'not leave any dust'   [松齡:1241]

(32) méi   [yì diǎn lǎnduò]
      NEG.EXT one UW laziness
      'There is not a bit of laziness.'   [松齡:1315]

(33) [yì diǎn yǔ] yě bú xià
       one UW rain FOC NEG fall
      'It did not rain even a drop.'   [醒姻:402]

(34) wàirén jìng   [yì diǎn xiāoxí]   bù dé zhīdào
      outsider it is surprising one UW information NEG can know
      'It is surprising that outsiders do not even know a thing.'   [兒女:127]

In order to examine the distribution of the NPI sense in the two positions, the tokens of the combination, *yì-diǎn*-NOUN, are exhaustively extracted from the Corpus of Early Mandarin Chinese. The results show that there are 803 tokens of the minimizer sense in a total of 2,795 tokens of the combination. The bars in Figure 3 indicate that their number in preverbal position slightly exceeds that in postverbal position in Early Mandarin.
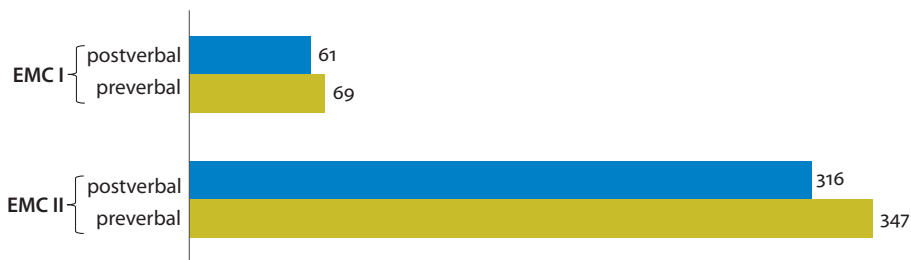
'One'-phrases as minimizers in preverbal and postverbal positions

Figure 3. Distribution of the minimizer sense in Early Mandarin

The distribution differs greatly from the distribution of the PPI sense, which appeared only postverbally. In contrast, the NPI sense of the 'one'-phrase tended to occur in the preverbal object position. The reasons behind this distribution will be discussed in sections 3.2.2.1 and 3.2.2.2.

3.2.2.1 *The minimizer sense in preverbal position.*   The preverbal position served to unambiguously distinguish the NPI sense from the other senses of the 'one'-phrase because the 'one'-phrase had to be interpreted as a minimizer when it appeared as a grammatical object in OV. Mandarin preverbal object position has been claimed to be associated with focus (Huang et. al 2009; Tsai 2004; Zhang 2000), which was employed for emphasis. The sites associated with focus carry focal prominence as indicated by an emphatic stress. This can be seen in the contrast between (31) above and its paraphrase in (35) below. The OV construction in (35) is considered to contain stronger emphatic effects. In an informal register, OV is preferred for an NPI sense because of its emphatic stress and inferences.[10]

(35) [yì   diǎn huīchén] yě/dōu bù   liú
    one UW   dust   FOC/FOC NEG keep
   'not leave even a bit of dust'

As noted in Israel (2011), minimizers tend to attract focal prominence such as saliency in prosody. Similarly, Mandarin 'one'-phrases, when used in the NPI sense, occur in focus constructions which carry focal prominence (Zhang 2000). The scalar focus of the preverbal position biases an expressed proposition toward an emphatic rhetorical force, and therefore it is consistent with the properties of minimizers. The preverbal object can host three kinds of focus, namely contrastive, restrictive, and additive (Zhang 2000). The type of focus that minimizers associate

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10. The genres from the corpus are restricted to press releases in written Chinese, which is stylistically formal. VO is normally preferred in a formal register. Given this bias, the data still show the OV is the preferred construction for an NPI sense.

with is the additive type, as indicated by the co-occurrence of two types of particles, *yě* and *dōu*. The involvement of these focus-sensitive scalar particles in OV began in Early Mandarin. The particles appeared between the preverbal object and the VP, as shown in (36) and (37).

(36) [yì   diǎn guāng] **yě** bù   néng tòu   rù
      one uw light   foc neg can   penetrate enter
      'Not even a bit of light can get through.'   [西洋:562]

(37) [yì   diǎn yǐngxiǎng] **dōu** tàn   bù   chū
      one uw influence   foc detect neg out
      'cannot detect even a bit of influence'   [孽海:341]

In the literature, the two particles are treated as covering different ranges of functions. *Yě* functions as a focus-sensitive additive particle (cf. English *too, also*) or as a focus-sensitive scalar particle (cf. *even*) (Szabolcsi et. al 2014). The particle *dōu* serves as a focus-sensitive scalar particle, a universal quantifier, and a distributive operator in modern Mandarin (Szabolcsi et. al 2014; Xiang 2008). However, when *dōu* and *yě* are combined with NPIs, they are interchangeable. Their semantics do not contrast when occurring in a scalar construction. In Modern Mandarin, the scalar particles are obligatory when the minimizers occur preverbally. This association has already started in Early Mandarin. As shown in Figure 4, the scalar particles for the preverbal minimizers were not mandatory in Early Mandarin; however, the frequency slightly increased across the two sub-periods, showing that the association with the scalar particles is a later development. The diachronic difference shows that their scalar function was shaped by the scalar environment.
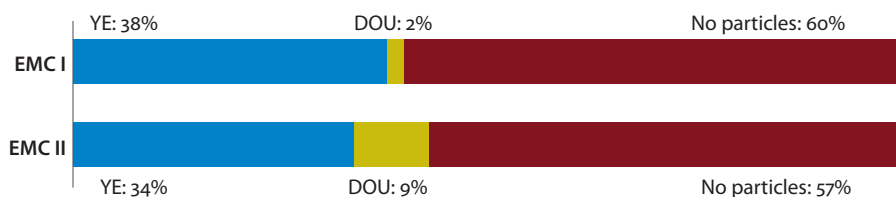

Figure 4. The 'one'-phrase in preverbal position with and without scalar particles in Early Mandarin

According to the corpus data, the PPI sense in Early Mandarin never occurred under negation, never occurred in preverbal object position and never occurred with the two particles. This is also observed in English attenuating PPIs, such as *somewhat* and *much*, which are not found in negative environments (Israel 2011).

In brief, the focal prominence of the OV construction was ideal for the minimizer sense. Yet, there was still a fair proportion of the minimizers in postverbal position. The motivations will be discussed in section 3.2.2.2.

3.2.2.2 *The minimizer sense in the postverbal position.*   Based on the Corpus of Early Mandarin Chinese, it was not uncommon for the 'one'-phrase with a minimizer sense to appear in postverbal position. The phenomenon seems to be tightly associated with information structure, as will be discussed in this section.

The tokens in the postverbal position can be further divided into two categories based on the two major types of negation in Mandarin: the general negator *bù* and the existential negators, *wú*/*méi*, as in (38)–(40).[11] It is generally agreed that *bù* is used to negate habitual or volitional/future situations, whereas *méi* is used to negate the verb *yǒu* in existential sentences. In the negative form of the existential predicate *méiyǒu, yǒu* is optional. *Wú* is the ex-period equivalent of Modern Mandarin *méiyǒu*.

(38) dōu bú jiàn [yì diǎn chén-āi]
      all NEG see   one UW dust
      'cannot see a bit of dust at all'   [宋一:205]

(39) wú   [yī diǎn yún   yì]
      NEG.EXT one UW   cloud haziness
      'There is not a bit of cloud.'   [密菴]

(40) méi   [yì diǎn hòuhuǐ]
      NEG.EXT one UW   regret
      'There is not a bit of regret.'   [綠野:242]

Yet, the proportions of the minimizers with existential and non-existential negation differ greatly in the postverbal position. Figure 5 shows that the majority of instances of the minimizer sense in the postverbal position occurred with existential negation in Early Mandarin.

The distribution is also constrained by focal prominence, which determines the meaning of the 'one'-phrase. The general form of Mandarin existential sentences proposed by Huang (1987) is shown in (41). Position II is reserved for existential predicates. The grammatical subject generally appears in Position I. Position III is for the NP whose existence is being asserted. Position IV is filled by an expression of predication, which is a descriptive clause or phrase.

(41) …   (NP)… EXT.V… NP…   (XP)…
      Position   I   II   III   IV

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11. The other function of the negator *méi(yǒu)* is to negate the completion of an event (Li & Thompson 1981). The function of the negator *méi* relevant to the current discussion is the existential one.
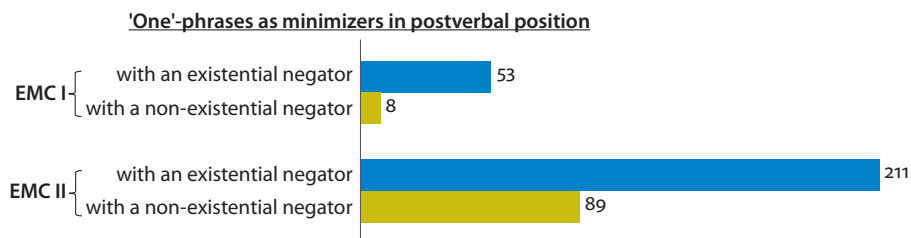
'One'-phrases as minimizers in postverbal position

Figure 5. The distribution of the postverbal minimizer sense in Early Mandarin

Regarding the information structure, the NP in Position III carries focal salience since it is the main concern of the construction, as reflected in tonal stress. This is therefore a template that favors the rise of the information values associated with the minimizers.

The feature of minimizers being associated with focal salience still held in the existential construction in Early Mandarin, as reflected in the co-occurrence with a wide variety of degree adverbs. As in (42)–(44), the bolded degree modifiers occurred in a pre-negator position only when the NP in Position III was a minimizer. For example, *quán* 'all' in (42) has an exhaustive reading including all the alternatives of different levels of moisture. *Bìng* 'entirely' in (43) and *háo* 'completely' in (44) also entail exhaustivity of all possibilities or degrees of the nominal denoted by the NP. The latter two adverbials are even considered NPIs in Modern Mandarin since they must occur with negation for an emphatic rhetorical force (Hsiao 2002).

(42) **quán** méi   yǒu [yì diǎn shuǐqì]
      all   NEG.EXT EXT one UW moisture
      'There is not even a bit of moisture.'   [續金:549]

(43) jiàn sì   miàn **bìng**   wú   [yì   diǎn fèngxì]
      see four side entirely NEG.EXT one UW crack
      'saw there was not even a crack around'   [綠野:639]

(44) **háo**   wú   [yì   diǎn huāngluàn]
      completely NEG.EXT one UW flurry
      'There was not a bit of flurry.'   [復夢:783]

What the adverbials have in common is that they are compatible with minimizers because they create a scale for the 'one'-phrase to be a reference point; therefore, the scalar inferences are reinforced. The mutual reinforcement of the rhetorical force of minimizers and degree modifiers favors their co-occurrence. According to the Corpus of Early Mandarin Chinese, the increasing majority of the minimizers with the existential negation were combined with a degree adverb, as shown in Figure 6.

EMC I	58%	42%

with modification | without modification

EMC II	79%	21%

Figure 6. The minimizers under existential negation with and without degree modifiers

With its attenuating nature, the PPI 'one'-phrase conflicts with the constructions which are inherently emphatic. Thus, the modification of degree adverbials was a unique property for the NPI construction in Early Mandarin.

Given the fact that the 'one'-phrase in the postverbal object position was open to multiple interpretations, the various senses were still distinguished by the constructions in which they frequently occur, such as degree modification.

3.2.3   *Category expansion: Adverbials*

So far, the results show that the PPI and NPI senses each occurred in preferred word orders due to the compatibility of their pragmatic function with the particular information structure associated with the respective order. In Early Mandarin II, *yìdiǎn* 'the slightest/a little', without a noun, is used as an adverb either in a PPI or an NPI sense. The word order preference still held for this later adverbial development.

The NPI adverbial function made its first appearance in Early Mandarin I, as shown in (45) and (46).

(45) [yìdiǎn-r]   bú fèi   shì[12]
   the slightest NEG waste thing
   'not troublesome at all'   [紅樓:917]

(46) (subject) [yìdiǎn]   bù kěn   piàn rén
   SBJ   the slightest NEG be willing to cheat people
   '(Subject) is not willing to cheat people at all'   [官場:196]

In Mandarin Chinese, preverbal adverbs which can appear only after the topic or subject (and cannot appear at the beginning of a sentence) are generally manner adverbs or adverbs modifying an event (Li & Thompson 1981; Paul 2015). The Mandarin minimizer adverb falls into this category. Since the minimizer adverb is sensitive to negative polarity, its relative position with respect to the negator is crucial. Mandarin preverbal adverbs may appear before or after a negator. The two orders have to do with the scope of the adverb and the negator (Li & Thompson 1981). When an adverb occurs after a negator, it indicates that an event occurs,

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12. This sentence is a short answer to a question with its subject omitted.

but not in the way designated by the adverb. However, if the adverb provides a frame within which a certain event is or is not true, the negator or the affirmative predicate must follow the adverb so as to be within its scope. Since the minimizer adverbs do not refer to a specific manner of the predicate, they do not fit in the post-negator position. Instead, they have to appear in the pre-negator position.

This syntactic distribution is parallel to that of other adverb NPIs in Mandarin. Specifically, Mandarin adverb NPIs are strictly restricted to the pre-negator positon (Hsiao 2002). For example, the adverbial NPI *sīháo* 'the slightest' is only allowed to appear before the negator, as shown in (47).

(47) **sīháo**   **méi**   yǒu shēngyīn
      the slightest NEG.EXT EXT sound
      'There is not even a slightest sound.'   [Sinica Corpus]

Regarding the PPI function, its first appearance can be traced back to Early Mandarin II. The distribution of the PPI adverb is complementary to that of the NPI adverb. The PPI adverb only appeared after a predicate to refer to an approximative small degree, similar to English *a little*, as shown in (48) and (49). It retained therefore the approximation and the attenuation of its nominal use.

(48) háishì   děng nǐ hǎo [yìdiǎn]
      had better wait you good a little
      'had better wait till you feel a little better'   [孽海:170]

(49) tāde fènqì yòu píng   le   [yìdiǎn]
      his anger again subside PRF a little
      'His anger further subsided a little.'   [孽海:323]

In general, the function of Mandarin postverbal adverbs is to signal frequency or duration (Huang et al. 2009; Li & Thompson 1981). This kind of adverb consists of a numeral and a unit word, as shown in (50).

(50) tā jīntiān shuì le [yí cì]
      he today sleep PRF one time
      'He slept once today.'   [Sinica Corpus]

The postverbal adverbs are used to provide new information about the eventuality expressed by a verb or adjective in two respects (Huang et al. 2009): one is the degree or extent, the other concerns evaluative information about the event in terms of quantity. These two features also explain why Mandarin postverbal adverbs often appear in the form of numerical quantity.

When *yìdiǎn* 'a little' works as a PPI adverb, its function is similar to the other postverbal adverbs in general since it offers information about degree in terms of quantity. However, although *yìdiǎn* looks parallel to the other postverbal

quantifier phrases, they still have two major differences. One is that the PPI adverb is an approximator since it does not provide a precise quantity as other postverbal quantifier phrases do. The other is that *yìdiǎn* as an adverb is not a canonical numeral phrase. Its numeral must be 'one' and it allows no substitution, whereas other postverbal quantifier phrases can accommodate different numerals. This contrast indicates the change of relationship between the numeral and the unit word. Importantly, it shows how the later development followed the extant pattern. Despite the differences, the PPI adverb *yìdiǎn* still has the same syntactic distribution as other postverbal adverbs since they serve the same function of providing quantified information.

In sum, the complementary distribution of the PPI sense and the NPI sense resulted from the constructions in which the adverb *yìdiǎn* occurs. The NPI sense is in parallel with other NPI adverbs regarding syntactic distribution, whereas the PPI one patterns similarly to the class of quantified postverbal adverbs. The clear division shows how the later developments were in line with the existing constructions.

4.   Expansion of the polysemous network across periods

The historical development of Chinese classifiers has received a great deal of attention. Many studies about the development of various classifiers detail their lexical semantics and functions in different periods of Chinese (Liu 1965; Lü 1985, among others). However, the development of Mandarin numeral-classifier phrases has not yet received due attention. Focusing on the semantic changes of classifiers alone may fail to fully capture the association of seemingly different but actually related functions. For example, it is not convincing to claim that the unit word *diǎn* 'dot' has individually developed as both a positive and negative polarity sensitive item without any discussion of the other components in the same phrase. Indeed, the environments where 'one'-phrases occurred were the motivation for the changes undergone by the numeral construction. This section discusses the associations of the later added senses of the 'one'-phrase in the expansion of the polysemy network with extant constructions, by providing a constructional account.

4.1 A constructional perspective on diachronic changes

The hypothesis of grammaticalization chains proposed in Heine (1997) conceptualizes diachronic changes as a series of local steps. These small steps along a continuum are formed by reanalysis and analogy. Reanalysis involves change in constituency, hierarchical structure, grammatical relations or category (Harris

& Campbell 1995). From a constructional perspective, reanalysis creates a new structural configuration from existing constructions. Regarding analogy, the process can be viewed as the attraction of extant constructions to existing structures, resulting in generalization. Specifically, grammaticalization has been treated as the output of processes of language use, which leads to systematic changes in morphosyntactic form and meaning; such processes may result in the reorganization of central aspects of language (Hopper & Traugott 2003 [1993]). The process of grammaticalization can thus be considered in terms of dynamic pairings of form and meaning.

The multidimensional organization of constructions can keep track of the internal properties of a larger pattern (Fried 2008). In this study, the analysis of the development of a polysemy network relies on the symbolic structure of a construction (see Croft & Cruse 2004), as shown in Figure 7.
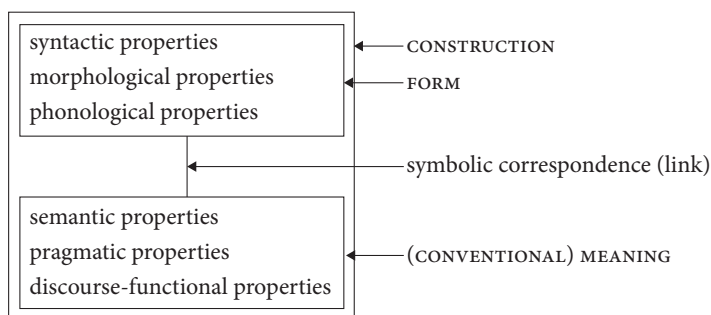

Figure 7. Symbolic structure of a construction (adapted from Croft & Cruse 2004: 258)

The analysis in Section 4.2 will draw on the hierarchical relations of the symbolic structures to show how new senses are added to the network through constructionalization and how new constructions enter the extant syntactic and semantic system through constructional association.

4.2 Diachronic association of the 'one'-phrase with extant constructions

The binomial construction of the 'one'-phrase, namely NUM NP1NP2, allows for reinterpreting the relationship among the three components. When the 'one'-phrase is used for a counting purpose, the relationship among the three components is the same as that of a canonical numeral phrase. For example, the unit word *diǎn* 'dot' only selects the nouns which have the gestalt perception of a small, solid, dot-shaped object, while the numeral slot is open to different numerals. In the PPI or NPI sense, however, the selectional restrictions on NP2 are lifted, and the numeral slot is restricted instead. These changes indicate the emergence of new constructions. It is noteworthy that these constructs are compatible with the existing

constructions regarding syntax, semantics, and pragmatics. The development of a polysemous structure is thus regarded as a process of associating constructions with similarities in form and coherence in meaning, as shown in the case of the 'one'-phrase.

In Middle Chinese, the combination of 'one', *diǎn* 'dot', and a noun occurred in the Chinese numeral construction [NUM UW NOUN], already established in Old Chinese. Mandarin Chinese is claimed to be a head-final language, where the modifier precedes the modified (Chao 1968). The quantifier and the noun are in a modifier–modified relation. The combination 'one'-UW-NOUN later developed a close relationship with two constructions, the QUANTIFIER construction and the MODIFICATION construction. The Mandarin QUANTIFIER construction appears in the form of [QUANTIFIER NOUN], which inherits the MODIFICATION construction [MODIFIER NOUN]. Mandarin has several quantifying elements, such as *dàbùfèn* 'most', *quánbù* 'all', *suǒyǒu* 'all', *jǐ*-CLF 'a few, several', and *xǔduō* 'a lot'. The major difference between a numeral phrase and a quantifier phrase is that a numeral phrase designates an absolute quantity whereas a quantifier phrase refers to a non-precise quantity (Gebhardt 2009). This difference is reflected in whether such phrases can be modified by *zǒnggòng* 'in total' or *zhěngzhěng* 'exactly' (Zhang 2013), as shown in the contrast between (51) and (52). Since the quantifiers lack an absolute quantity, they cannot be modified by counting-related modifiers.

(51) zǒnggòng zhao dao [sān   dian xieji]
      total   find ASP three UW blood
      'found total three dots of blood'   [Sinica Corpus]

(52) zǒnggòng xia le [yì   diǎn yu]
      total   rain ASP one UW   rain
      *'It rained a little bit.'   [Sinica Corpus]

In the case of 'one'-UW-NOUN, the numeral and NP1 gradually formed a unit when used as a quantifier. The combination was then reanalyzed as [['ONE' NP1] NP2] around Early Mandarin I. As in the examples discussed earlier, such as (27) and (34) in sections 3.2.1 and 3.2.2, *diǎn* did not select for the semantic class of the head noun as a normal unit word would have, and also the numeral 'one' allowed no replacement with any other numerals. The form resembles the QUANTIFIER construction [QUANTIFIER NOUN], which already existed in Old Chinese. The ['ONE' NP1] component behaved as a quantifier, describing the quantity-related property of NP2. In addition, the quantity-modifying function of the numeral construction was coherent with the function of the QUANTIFIER construction. Due to the similarity and coherence of the two constructions, the later developed [['ONE' NP1] NP2] associated with the extant QUANTIFIER construction and also with the

MODIFICATION construction due to the inheritance relationship. The hierarchical relationship characterizing the inheritance relations is shown in (53). The constructional hierarchy explains why the 'one'-UW-NOUN combination has properties from the two extant constructions.

(53)   [MODIFIER NOUN]
                |
         [QUANTIFIER NOUN]
                |
         [['ONE' NP1] NP2]
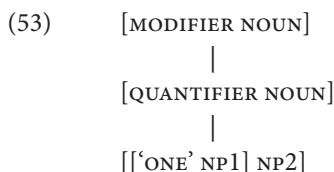
Specifically, the reanalysis of ['ONE' [NP1 NP2]] > [['ONE' NP1] NP2] is viewed in terms of constructional association. The combination 'one'-UW-NOUN became associated with the existing, more schematic constructions on the basis of similarities in form and meaning. The realignment of the components resulted in new pragmatic and discourse-level properties in the process of constructionalization (Traugott & Trousdale 2013). In particular, these properties have been shaped by the environments where the 'one'-phrases occurred: the NPI sense emerged in the negative and focus constructions, whereas the PPI sense did not. The constructional associations were established at different periods, which gradually expanded the polysemy network. The schema of the combination 'one'-UW-NOUN associating with different existing constructions at each Chinese period is provided in Figure 8.

Each construct in Figure 8 represents the instantiation of the 'one'-phrase in a specific type of construction. From Middle Chinese to Early Mandarin II, the 'one'-phrase was gradually associated with a higher-level construction. The core meaning of the 'one'-phrase as a counting phrase for dot-shaped objects gradually bleached in the course of grammaticalization. Then, the interpretation of the 'one'-phrase was based on the higher-level construction. The different senses, such as the NPI and PPI, were shaped by the neighboring constructions, such as negation and focus. These diachronic links to a variety of extant constructions eventually resulted in the polysemy network of the 'one'-phrase.

The different functions which emerged at different periods all persist in Modern Mandarin. These later functions all adhere to the concept of an indefinite quantity, which relates the functions together. The later developments reflect the fact that an indefinite small amount can be perceived differently based on the scale set up by the construction. A canonical scale is construed to be processed from the bottom, whereas a reversed scale is processed from the top (Israel 2011). The prototypical function of the 'one'-phrase is to count. The quantity must be precisely one unit because it is embedded in an ordinal scale and profiles a single well-defined measuring unit. Regarding the NPI function, the small quantity designates
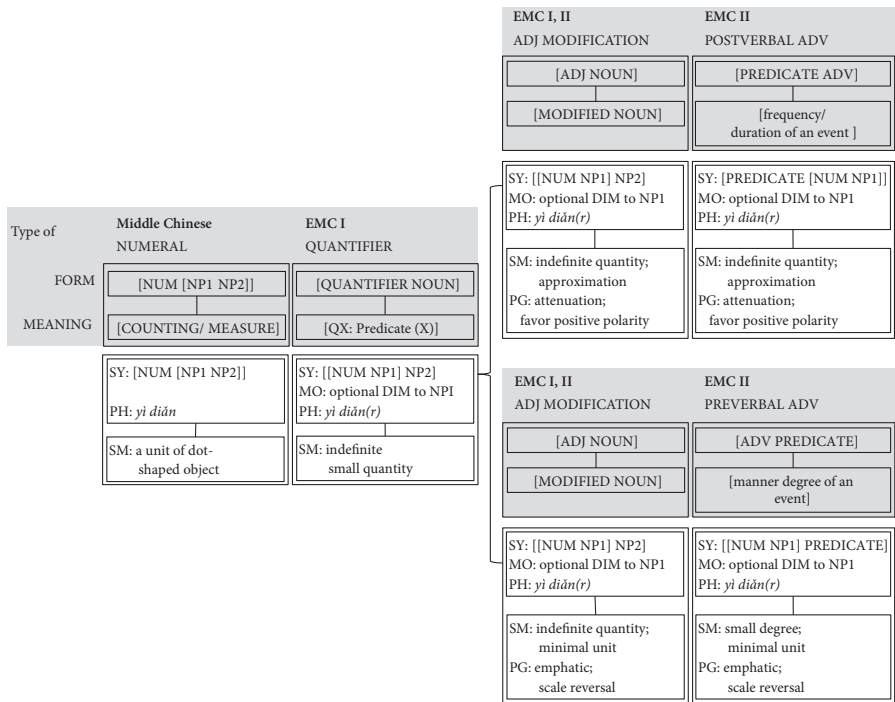
EMC I, II
ADJ MODIFICATION
[ADJ NOUN]
[MODIFIED NOUN]

EMC II
POSTVERBAL ADV
[PREDICATE ADV]
[frequency/ duration of an event]

SY: [[NUM NP1] NP2]
MO: optional DIM to NP1
PH: *yì diǎn(r)*
SM: indefinite quantity; approximation
PG: attenuation; favor positive polarity

SY: [PREDICATE [NUM NP1]]
MO: optional DIM to NP1
PH: *yì diǎn(r)*
SM: indefinite quantity; approximation
PG: attenuation; favor positive polarity

Type of	**Middle Chinese** NUMERAL	**EMC I** QUANTIFIER
FORM	[NUM [NP1 NP2]]	[QUANTIFIER NOUN]
MEANING	[COUNTING/ MEASURE]	[QX: Predicate (X)]

SY: [NUM [NP1 NP2]]
PH: *yì diǎn*
SM: a unit of dot-shaped object

SY: [[NUM NP1] NP2]
MO: optional DIM to NP1
PH: *yì diǎn(r)*
SM: indefinite small quantity

EMC I, II
ADJ MODIFICATION
[ADJ NOUN]
[MODIFIED NOUN]

EMC II
PREVERBAL ADV
[ADV PREDICATE]
[manner degree of an event]

SY: [[NUM NP1] NP2]
MO: optional DIM to NP1
PH: *yì diǎn(r)*
SM: indefinite quantity; minimal unit
PG: emphatic; scale reversal

SY: [[NUM NP1] PREDICATE]
MO: optional DIM to NP1
PH: *yì diǎn(r)*
SM: small degree; minimal unit
PG: emphatic; scale reversal

Figure 8. The functions added to the polysemy network at each period[13]

a minimal unit. Since the scale must be processed reversely due to negation, the scalar inferences imply that all the quantities higher than the minimal unit are negated. In contrast, the small quantity in the PPI function profiles a unit of a scale with a loosely defined upper bound. The concept of 'one' can be resized by scales for different linguistic effects, such as emphatic and attenuative rhetorical force, cross-linguistically. The constructions with these scale settings are the crucial environments for each of the functions to develop.

The different scales provided by a variety of constructions result in complementary distribution of the NPI and PPI functions. In the polysemy network, the similarity in meaning and form is still a possible source of ambiguity. In the layering of extant and newly developed functions, increasing maximal distinctions between each of them gradually emerged. Each of the developed constructs is prone to occur with later emerged constructions which are multiply compatible, making the characteristics of the function in question more prominent. For instance, the

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13. The presentation of the pairing of form and meaning is built upon the symbolic structure proposed in Croft & Cruse (2004: 258). The notation used in this figure: ADJ: adjective, ADV: adverb, DIM: diminutive, MO: morphology, NUM: numeral, PG: pragmatics, PH: phonology, SM: semantics, SY: syntax.

differences regarding quantity are reflected in the occurrence of the diminutive constructions. With the diminutive constructions, the 'one'-phrase emphasizes smallness instead of indefiniteness. In addition to the primary distinction between negation and non-negation, the focal prominence of different word order patterns contributes to the rising of the PPI and the NPI senses. The emphatic NPI sense tends to occur preverbally since the OV construction carries focal prominence, while the attenuating PPI sense is never found in the OV construction. Even in the postverbal position, the NPI sense of the 'one'-phrase is frequently found to be combined with the degree modification construction, which is a unique feature for NPIs. This tendency of constructional collocation shows that different senses of the polysemy network have been coerced by constructions. The influence of constructions is not only observed in the nominal 'one'-phrases, but also in their adverbial counterparts. The PPI adverb sense contains the same properties as those of other postverbal adverbs, whereas the NPI adverb sense behaves the same with preverbal adverbs. The two adverb senses of 'one'-phrases have been therefore shaped by the extant adverb constructions. Adhering to the extant constructions, the postverbal adverbs serve to evaluate the quantity of an event; in contrast, the preverbal adverbs provide a scope relation between the modifier and the modified. Table 2 summarizes the later developed associations with particular constructions for semantic enhancement.

Table 2. Diachronic constructional associations

Dimension	Strategy	Distinctive features
Quantity	diminutive markers	NEUTRAL QUANTITY: no marker SMALLER/ MINIMAL QUANTITY: diminutive markers attached to the unit word
Nominal PPI/ NPI	word order; degree modifiers	PPI: all in VO NPI: under non-existential negation preferably in OV; under existential negation preferably in VO, with degree modification
Adverb PPI/NPI	adverb-predicate order	ADVERB NPI: preverbal ADVERB PPI: postverbal

This section has sketched a model for the development of a polysemy network. A function which emerges later can be viewed as an added constructional association with an already extant construction. The diachronic changes have been analyzed in terms of the construction in question further linking to a higher-level, more schematic construction. Similarities of form and meaning crucially determine the generalization from extant to other constructions. Apart from similarities, differences among constructions are another force shaping the polysemy network. The

distinction between the different senses of a polysemous construction tends to increase over time through association with constructions coherent in semantics and pragmatics. Similarities and differences work together in shaping a polysemy network diachronically. In Modern Mandarin, all the links between the 'one'-phrase and various constructions during the long time span have remained, resulting in interpretational variability.

4.3 Directionality in productivity, schematicity, and compositionality

The directionality of changes has been an important issue in diachronic studies. The constructional approach can characterize the change in productivity, schematicity, and compositionality in the development of the 'one'-phrase network. Recent work on productivity has associated it with frequency (Bybee 2007, 2010). The increase of token frequency is equated with the increase of construct frequency (Traugott & Trousdale 2013). As shown in Figure 1, the tokens and the proportions of the 'one'-phrases interpreted as an NPI and a PPI increased between Early Mandarin I and Early Mandarin II. The increase reflects the productivity of the later developed constructions. Type frequency, on the other hand, is reflected in the morphology of the 'one'-phrase, which allows a wider variety of nouns without the restriction of dot-shape, such as Modern Mandarin *kōngtiáo* 'air conditioning' and *xiǎoquèxìng* 'a little happiness', which are contemporary phrases. The increase of the collocational patterns identified in the corpus shows the expansion of types in terms of constructs to the inventory construction. Specifically, *yì-diǎn* 'one-uw' further established a link with the MODIFICATION construction and thus inherited more prototypical features of a modifier. *Yì-diǎn* 'one-uw' became schematic as a quantifier and extended to a degree modifier, which can be used to modify verbs and adjectives. Compared to *yì-diǎn*, other expressions that were recruited as quantifiers, such as *yì sī* 'a shred' and *yì háo* 'a cent', are not as entrenched.

Schematicity is a property which characterizes abstraction in constructional approaches. Constructions at different hierarchical levels have different degrees of schematicity (Goldberg 2006), as exemplified by the differences in (53). The concept of schematicity is coherent with the property of abstraction in grammaticalization. As in Langacker (2011), schematicity is identified with loss of contentful meaning. For example, schematicity can be observed in the case of the development of the 'one'-phrase from a numeral phrase to a modifier. The unit word is decategorized because it is no longer a free noun with its original contentful meaning of a small, solid, black dot. In addition, it became more dependent on the numeral 'one'. After the 'one'-phrase established an association with the QUANTIFIER construction in Mandarin Chinese, a small number of 'one'-phrases also followed this route. For instance, *yìsī* 'one shred'-NOUN and *yìháo* 'one cent'-NOUN, which

designate a tiny quantity, are also interpreted as minimizers in negative environments in Modern Mandarin, as shown in (54) and (55). Compared to the stricter restriction they impose as a counting phrase, their NPI sense has a relatively loose selectional restriction on their following noun.

(54)   bú bào [yì sī   qíwàng]
       NEG hug one shred expectation
       'did not have any expectation'   [Sinica Corpus]

(55)   [yì háo fúlì]   yě   méi xiǎngshòu dào
        one cent benefit FOC NEG enjoy   ASP
       'did not enjoy even a bit of benefit'   [Sinica Corpus]

These occurrences show that tiny-quantity expressions are classified under the category of the QUANTIFIER construction, which means that the expressions have a similar diachronic path. In contrast, the PPI function of the 'one'-phrase does not recruit new members from other 'one'-phrases signifying inherently small quantity. The asymmetry has to do with the tendency of conceptualizing a small quantity by associating it with the bottom end of a scale as a minimal unit.

Compositionality concerns the transparency of the link between form and meaning (Francis & Michaelis 2003; Goldberg 2006). A decrease in compositionality means a decrease in transparency in the alignment of the meaning component and the syntactic component. Notably, a decrease in compositionality is one of the characteristics of constructionalization (Traugott & Trousdale 2013). When the 'one'-phrase is used as a numeral phrase, *diǎn* 'dot' is a classifier imposing a selectional restriction on the noun and the numeral is the cardinal 'one' for counting. When the 'one'-phrase is interpreted as a PPI or an NPI, the numeral and the unit word become a constituent. *Yì-diǎn* 'one-UW' is both compositional and non-compositional in this case. It is compositional because the inherently indefinite *yī* 'one' still contributes its indefiniteness to the respective constructions and *diǎn* 'dot' passes up the property of smallness. Meanwhile, it is also non-compositional because 'one' is not a canonical numeral on a counting scale and *diǎn* 'dot' loses its properties as a classifier since it does not characterize how the following noun is perceived. Particularly, the *yì-diǎn* part of the 'one'-phrase could be even treated as a cluster, which works as an existential quantifier (Zhang 2013). When the 'one'-phrase is entrenched as a degree modifier, its components are realigned to the form of the MODIFICATION construction, [MODIFIER NOUN]. From this perspective, the newly developed construction is actually compositional. In the case of the development of the 'one'-phrase, the reanalysis has realigned different components with different meanings. The phenomenon reflects the fact that

speakers tend to associate a new construction with extant constructions through the cognitive ability of making generalizations.

5.   Conclusion

The 'one'-phrase in Mandarin Chinese covers a wide range of functions. This synchronic polysemy is in fact rooted in its diachronic development. Due to the binomial structure, the 'one'-phrase underwent reanalysis since the juxtaposed NPs provided possibilities for reinterpretation. The emergence of different functions is analyzed as the association of the combination NUM-NP1-NP2 with already established constructions, forming a constructional hierarchy. The associations have been shaped by the environments where the 'one'-phrases frequently occur. The combination inherits syntactic, semantic, and pragmatic properties from the higher-level constructions, leading to new constructs. These well-constrained associations provide motivation for different extensions of the combination and account for the syntactic distribution of different senses in the polysemy network. The later developed senses of 'one'-phrases inherit core features from their larger associated constructions, while also keeping properties from their own components. After the entrenchment, each of the functions exhibits an increasing frequency of occurrence in constructions that are coherent syntactically, semantically, and pragmatically. This results in the maximizing of differences. Assimilation and dissimilation are the two forces driving this diachronic development.

The development of the 'one'-phrase is consistent with the cross-linguistic tendency to the effect that expressions denoting a small quantity are the major source of emphatic minimizers and attenuative downtoners. The results show that the conceptualization of quantity denoted by *one* varies with the scales provided by the relevant constructions, which in turn explains the versatility of *one* across languages. This study offers a diachronic account for synchronic polysemy networks, based on the hierarchical structure of related constructions. The study supports that the cognitive ability of making generalizations based on constructions is vital to the development of semantic extensions.

Acknowledgements

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