Three Types of Change-of-State Events in Human Conceptualization: Evidence from the Expansion of Chinese Verbal Compounds[1]

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Abstract

Change-of-state events all involve complex event structures, but still differ in their levels of complexity. In Old Chinese, all types of change-of-state events could be expressed by individual characters, but as Chinese evolved, many change-of-state expressions must resort to verbal compounds. By looking at the change-of-state expressions in different historical periods, this study finds that while the meaning of each character becomes increasingly atomic, the use of verbal compounds has been expanding. The most dramatic expansion is seen in the expression of the gradient change of state, followed by the punctual change of state, but is not observed in the durative change-of-state expressions. Consistent with the principle of iconicity, "the durative change – the punctual change – the gradient change" represents a continuum of complexity in human conceptualization, with incremental mental distance between the action and the result state. This finding is also widely supported by cross-linguistic data.

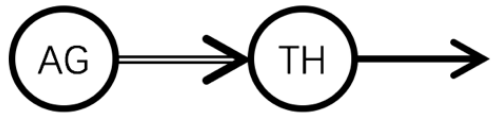
Keywords: change of state, principle of iconicity, historical linguistics, Chinese, causative

1. Introduction

1.1 Change of state

Change of state discussed in this paper particularly refers to an event in which an agent acts on a theme and changes the state of it, which can be represented by Figure 1.

Figure 1. The event structure of a change-of-state event



Under the causal approach to verbal semantics proposed by Croft (1991) and Levin and Rappaport Hovav (2005, pp. 68-75), the event structure of a change of state involves a causal chain, "consisting of a series of segments (or 'atomic events'), each relating two participants in the event", in which "a single participant may be involved in more than one segment" (Levin, 2009). The transitive form of *break* has been used as an example to illustrate the causal chain, as follows:

(1) *Harry broke the vase.* Modelled with a three-segment causal chain:
(i) Harry acts on the vase
(ii) the vase changes state
(iii) the vase is in a result state (i.e., broken)
(Croft, 1994, p. 38, cited by Levin, 2009)

As a formal criterion, verbs that can alternate between transitive use and intransitive use inherently encode change of state in many languages (e.g., Haspelmath, 1987, 1993; Zhang, 2019). In a typological study on transitivity alternation, Haspelmath (1993) noted three large classes of situations excluded from transitivity alternation: (1) a state; (2) an action that does not express a change of state, such as 'help', 'invite', 'criticize' and 'read'; and (3) agentive intransitive verbs such as 'talk', 'dance' and 'work', thus revealing the relationship between change of state and transitivity alternation. For example:

(2) Change of state:
a. Our relationship **ended** in May.
b. We **ended** our relationship in May.
(3) State:
a. *That model **resembles**.
b. This model **resembles** that model.
(4) Action that does not change the state:
a. *The old lady **helped**.

b. He **helped** the old lady.

(5) Agentive intransitive verb:

a. John **works**.

b. *The boss **works** John.

Verbs that can alternate between transitive use and intransitive use are commonly referred to as "unaccusative verbs" or "ergative verbs". In one of the classical works outlining the unaccusative hypothesis, Perlmutter (1978) listed a number of unaccusative verbs in English, mostly denoting change of state, including *begin*, *boil*, *break*, *burn*, *continue*, *crack*, *darken*, *disappear*, *dry*, *end*, *evaporate*, *fall*, *float*, *flow*, *freeze*, *germinate*, *increase*, *melt*, *rot*, *shake*, *sink*, *slide*, *slip*, *solidify*, *split*, *start*, *stop*, *stumble*, *succumb*, *suffocate*, *sway*, *wither*, *wave*, etc. Since then, considerable attention has been attracted to the unaccusative hypothesis, leaving relatively few scholars looking into the change of state per se. Moreover, with the assumption that all change-of-state events involve the complex event structure, no existing research discusses the complexity variation within this group: some change-of-state events may be more complex than others. Targeting this point, the present study investigates the subtypes of change-of-state events in human construal.

1.2 Three types of change-of-state events

By definition, a change-of-state event inherently encodes a result state (the last segment of the complex event structure) of the theme, so based on the nature of the result state, three types of change-of-state events can be identified.

(6) Three types of change-of-state events based on the nature of the result state:

Type 1: The result state is a continuous process of changing (the durative change, e.g., *fly*, *glide*, *move*, *roll*, *shake*, *spin*, *sway*, *swing*, *tremble*, *turn*, *wave*, etc.)

Type 2: The result state is discrete and internally homogeneous (the punctual change, e.g., *break*, *burst*, *close*, *complete*, *crack*, *defeat*, *exit*, *finish*, *get to*, *shatter*, *split*, *wake up*, etc.)

Type 3: The result state is gradient (the gradient change, e.g., *brighten*, *darken*, *dim*, *dry*, *increase, redden*, *whiten*, etc.)

There are some semantic and formal criteria to differentiate three types of change of state. The durative change of state designates a change from stasis to an active state

(typically a motion), and the result state can last for a certain period of time. With no information encoded about boundedness or telicity, the result state can be expressed by the progressive aspect, indicating the process of changing.

(7) The tail is **shaking**.
(8) The ball is **rolling**.

Although the result state, which is a process of changing, has the potential to last, the time of the inception and termination can be pinpointed for the changing process, by using verbs such as *start*, *stop*, etc.

(9) The machine started to **turn** at 8 o'clock.
(10) The building stopped **swaying** at 10pm.

The punctual change of state indicates a discrete transition consonant with a punctual realization—the result state is achieved instantaneously without a durative process—which means we can specify a point in time at which the change occurs, but the progressive aspect is prohibited for this type of result state. Accordingly, since no durative process is profiled—the inception temporally overlaps with the completion—the use of *start* or *stop* is illegal for this type of result state.

(11) a. The movie **finishes** at 8 o'clock.
b. The movie is **finishing** (actually indicating that the movie will finish in the near future).
c. *The movie started to **finish**.
(12) a. The baby **wakes up** at this time every day.
b. The baby is **waking up** (actually indicating that the baby will wake up in the near future).
c. *The baby started to **wake up**.

The gradient change of state is essentially distinguished from the other two types in that the result state is gradient, typically expressed by adjectives that can occur in comparatives and be modified by *very*, *a little*, *a bit*, *a lot*, *to a large degree*, etc.

(13) The light **brightened** a little (the light is a little brighter than before).

(14) The apples **reddened** (the apples are redder than before).

It is noteworthy that these three types need to be understood as prototypes without clear-cut boundaries, instead of closed-class categories. In fact, between type 1 and type 2, there are bounded durative change-of-state events that can last for a period of time, and also imply a definite point of termination in certain contexts, such as *melt*.

(15) a. The ice cream started to **melt**.
b. The ice cream is **melting**.
c. The ice cream **melted**.

(15a) profiles the starting phase of the melting process, and (15b) employs the progressive aspect to show this process is durative. (15c) indicates the completion of the melting process, implying that the ice cream melted completely at a certain point in time. (15a) and (15b) demonstrate features of the durative change, while (15c) clearly characterizes the punctual change of state. In addition to *melt*, similar characteristics are also seen in *change*, *collapse*, *drain*, *sink*, etc.

1.3 Research question

To investigate the complexity of these three types of change-of-state events, the present study traces the historical development of their expressions in Chinese, specifically focusing on the expanding use of verbal compounds therein. It needs to be noted that all examples in Section 1.2 are agentless intransitive structures to crystalize the differences between three types: the complex event structure is not expressed completely by these examples. The rest of this paper will mainly look at the transitive structure "V + theme" in which both the agent and the theme are depicted.

The rest of this paper is organized as follows: Section 2 introduces the typological features of Chinese and its historical development, serving as the background knowledge. Diachronic corpus data are quantified and analyzed in Section 3 for different types of change-of-state events, with a pattern of expansion presented. The finding is probed from the principle of iconicity in Section 4, and a complexity continuum of different types of change-of-state events for human conceptualization is thereby proposed, supported by a cross-linguistic comparison of change-of-state expressions. Section 5 concludes this study and points out future directions.

2. Verbal Compounds in Chinese

Chinese is known as an isolated language impoverished in morphology, entailing that no grammatical markers exist in Chinese specifically for causative or resultative. On the other hand, verbal compounds composed of two verbal characters, with the latter semantically indicating the result of the former, are commonly seen in Modern Mandarin. In fact, an impression lingers among linguists that Modern Mandarin must resort to verbal compounds to express any change-of-state event. In a discussion of Vendler's four categories (1967) in Chinese, Tai (1984) points out that accomplishments are expressed in the form of verbal compounds in Chinese, for example:

(16) a. 张　三　**杀**了 李四 两 次，李四 都 没 死。
Zhāngsān **shā**-le Lǐsì liǎng-cì, Lǐsì dōu méi sǐ.
Zhangsan kill-LE Lisi two-time Lisi all not die
'Zhangsan killed Lisi twice, but Lisi did not die.'
b. 张　三　**杀 死** 了 李四。
Zhāngsān **shā-sǐ**-le Lǐsì.
Zhangsan kill-die-LE Lisi
'Zhangsan killed Lisi, and Lisi died.'

(Tai, 1984)

In Talmy's two-way typology of verb-framed languages versus satellite-framed languages, Chinese is claimed to be a thoroughgoing satellite-framed language, in which the framing event of a macro-event is virtually always mapped onto the satellite (the second morpheme of a verbal compound, commonly referred to as the verb complement), for example:

(17) a. 我　**踢**了他，但是 没　踢 着。
Wǒ **tī**-le tā, dànshì méi tī-zháo.
1 kick-LE 3 but not kick-contact
'I kicked him, but did not reach him.'
b. 我 **踢 着** 了他。
Wǒ **tī - zháo** - le tā.
1 kick-contact-LE 3

'I kicked him.'

(Talmy, 2000, p. 272)

Nevertheless, it is admitted that verbal compounds were barely seen in Old Chinese (Wang, 1958/2004, p. 403): their history is relatively short. In Old Chinese, any verbal characters and even some adjectival characters (the distinction between verbs and adjectives was not clear in Old Chinese) could all take direct objects to express a causative change-of-state sense:

(18) 儒 者 在 本 朝 则 **美** 政，在 下 位 则 **美** 俗。
Rúzhě zài běncháo zé **měi** zhèng, zài xiàwèi zé **měi** sú.
scholar in court then beautify policy at folk society then beautify custom
'Scholars beautify policies in the court, and beautify custom in the folk society.'
(Pre-Qin, *Xunzi*)

(19) 我 **落** 其 实 而 取 其 材。
Wǒ **luò** qí shí ér qǔ qí cái.
1 fall 3 fruit then take 3 wood
'Our (wind) made their fruits fall and we took their wood.'
(Pre-Qin, *Zuozhuan*)

(20) 吾 见 申 叔，夫子 所 谓 **生** 死 而 **肉** 骨 也。
Wú jiàn Shēnshū, Fūzǐ suǒ wèi **shēng** sǐ ér **ròu** gǔ yě.
1 meet Shenshu 2 SUO say live die then meat bone SFP
'I met Shenshu, the person said to bring the dead back to life and bring flesh back to bones.'
(Pre-Qin, *Zuozhuan*)

From nonexistence to ubiquity, the emergence and expansion of verbal compounds were never discussed in terms of verbal semantics, despite the large bulk of literature pinpointing the exact time when verbal compounds appeared (e.g., Jiang, 1999; Li, 1987; Liu, 2004; Mei, 1991; Xu, 2001; Yu, 1957). This study hereby focuses on the expansion of verbal compounds in the expressions of three types of change-of-state events through quantitative analysis of diachronic data, and further sheds light on the complexity of three types of change-of-state events for human conceptualization.

Both terms "verb compound" and "compound verb" appeared frequently in previous literature. In a literal sense, a "verb compound" contains more than one

word while a "compound verb" is one word. However, the problem here resides in the definition of a "word" in Chinese. From its earliest form to Modern Mandarin, Chinese is documented in characters and word segmentation has always been a convoluted problem. To avoid unnecessary controversy, this paper takes a character-based approach by using the term "verbal character" and "verbal compound". Each character is meaningful in its own right, and pronounced as one syllable.

In this paper, a verbal compound is defined to exist as long as two or more verbal characters (characters that denote events) occur adjacent to each other in the predicate position of a sentence. Since statives (adjectives) could also express change-of-state events in Old Chinese, this paper includes stative characters in the analysis. The Chinese language has been undergoing a massive process of disyllabification (Arcodia, 2007). In Old Chinese, about 80% of words are monosyllabic (Baxter & Sagart, 1998); most characters could stand alone like words. As Chinese evolved, some characters could no longer be used this way. When it comes to Modern Mandarin, the proportion of disyllabic words is reported to be 62.79% and 75.18% in *Modern Chinese Dictionary* (《现代汉语词典》) and *Chinese New Word Dictionary* (《汉语新词词典》) respectively (Xu, 1997), which means that characters frequently compound with each other, forming disyllabic words to be sentence constituents. As for the driving force underlying disyllabification and the development of verbal compounds, scholars (e.g., Mei, 1991; Shi, 2015, pp. 158-159) believe that the emergence of verbal compounds correlated with the drop of the phonetic inflection in Old Chinese. Although Chinese characters do not record specific pronunciations, classical philologists of different dynasties oftentimes made their conjectures in their annotations of classics. There is spotty evidence showing that one character might be pronounced differently contingent upon the context, which could be tonal contrast, voiced-voiceless contrast, long-short contrast, etc., to express grammatical meanings. However, due to the lack of consistent evidence concerning pronunciations, the present study looks only at characters. The pronunciations of characters are all annotated in Pinyin based on their pronunciations in Modern Mandarin.

Based on the semantic relation between their constituents, verbal compounds can be classified into two types: resultative compounds and parallel compounds (Li & Thompson, 1981, pp. 54-72). A resultative compound is always composed of two elements, although each element may itself be a compound. A two-element verbal compound is considered resultative if the second element signals some kind of result of the action or process conveyed by the first element—this is the reason why the

second element is normally referred to as “the resultative complement”. In a parallel verb compound, on the other hand, the two elements are either synonymous or signal the same type of predicative notions. For example, ‘celebrate’ was expressed by the character 庆*qìng* in Old Chinese, but in Modern Mandrin it is expressed by the parallel compound 庆祝*qìng-zhù* ‘celebrate-bless = celebrate’. The two elements of parallel compounds are virtually always of the same syntactic category: i.e., both adjectival verbs, both action verbs, both verbs of perception, and so forth.

The form “V + O + R” was also seen in the history of Chinese, in which two verbal characters were separated by the object, and the second verbal character exactly denotes the result of the action expressed by the first verbal character. This form does not fit our definition of verbal compounds, but given its well-recognized parental relationship with the resultative compound (Yu, 1984; Shi, 2015, pp. 165-167), it will be called “loose verbal compound” and also included in analysis.

3. The Expansion of Chinese Verbal Compounds

Based on the commonly accepted system (Wang, 1958/2004, p. 35), the history of the Chinese language can be analyzed in four periods:

(21) Historical periods of the Chinese language:
I. Old Chinese (上古汉语): before the 3rd century
The pre-Qin period, the Qin dynasty, and the Han dynasty
(The 3rd century and the 4th centuries constitute the transition period.)
II. Middle Chinese (中古汉语): from the 4th century to the 12th century
The Northern and Southern dynasties, the Sui dynasty, the Tang dynasty, the Five Dynasties period, and the Song dynasty
(The 12rd century and the 13th centuries constitute the transition period.)
III. Early Mandarin (近代汉语): from the 13th century to the 19th century
The Ming dynasty and the Qing dynasty
(The transition period lasts from 1840 to 1919.)
IV. (Modern) Mandarin Chinese (现代汉语): after the 1919 May Fourth Movement
(adapted from Wang 1958/2004, p. 35)

To analyze the expressions of three types of change-of-state events in different historical periods, the present study picks three verbal characters from each type

that are relatively stable, consistent, and simple (with no homonym and not too polysemous) in meaning as target characters, specifically 沉*chén* 'sink', 摇*yáo* 'shake', and 升*shēng* 'rise/raise' for the durative change of state; 成*chéng* 'complete', 开*kāi* 'open', and 破*pò* 'break' for the punctual change of state, and 大*dà* 'large', 高*gāo* 'high', and 强*qiáng* 'strong' for the gradient change of state. Each target character was searched in the corpora of the pre-Qin period (Old Chinese), the Tang dynasty (Middle Chinese), the Ming dynasty (Early Mandarin), and Modern Mandarin. The corpus that we are using is Cncorpus, conducted by the State Language Work Committee of P. R. China. Data of all historical periods are available in this corpus.

Tokens of each target character in each historical period were coded to identify the structure ("V + theme", "theme + V", etc.), and the role of the target character therein (independently as the predicative verb, as the resultative complement in a verbal compound, or as something else). If more than 500 tokens were collected for one target character from a single historical period, 500 tokens were randomly selected for coding. For tokens taking the transitive structure of "V + theme (VT, henceforth)", the percentage of the tokens in which the target character occurs in verbal compounds were calculated and compared to other historical periods. A diachronic picture can therefore be sketched for each type of change-of-state events.

3.1 Evolution of the durative change-of-state expression

The expression of the durative change of state has been fairly consistent. From Old Chinese to Modern Mandarin, 沉*chén* 'sink', 摇*yáo* 'shake', and 升*shēng* 'rise/raise' are virtually always used alone to express the continuous process of changing, as shown in the following examples:

(22) 施 氏 逆 诸 河， **沉** 其 二 子。
Shī Shì nì zhū hé , **chén** qí èr zǐ.
Shi surname meet 3 Yellow River sink 3 two son.
'Shi met her by the Yellow River and sank her two sons.'
(Pre-Qin, *Zuozhuan*)

(23) 宿 雨 润 芝 田，鲜 风 **摇** 桂 树。
Sù yǔ rùn zhī tián, xiān fēng **yáo** guì shù.
last night rain moisten grass field fresh wind shake osmanthus tree
'The rain of last night moistened the grassy field. The fresh wind is shaking the osmanthus tree.'
(Tang, Quan Deyu's poem)

(24) 柏 爷 听了， 忙 传 令 **升** 炮 开 门。
Bǎi yé tīng le, máng chuán lìng **shēng** pào kāi mén.
Bai Mr. hear LE immediately pass order raise firecracker open door
'As soon as Mr. Bai heard it, he immediately ordered to set the firecrackers and open the door.'

(Ming, *Fen Zhuang Lou*)

(25) 何 守 本…… **摇** 着 脑袋，向 前 方 走 远 了。
Hé Shǒuběn ……**yáo** zhe nǎodài, xiàng qiánfāng zǒu-yuǎn-le.
He Shouben shake ZHE head toward front walk-far-LE
'Shaking his head, He Shouben walked towards the front.'

(Modern Mandarin)

Data are quantified in Table 1:

Table 1. Evolution of the durative change-of-state expression

		Number of VT tokens	Independently as the predicate	As the resultative complement	As other roles
Pre-Qin	沉*chén* 'sink'	13	13 (100%)	0 (0%)	0 (0%)
	摇*yáo* 'shake'	23	19 (82.61%)	0 (0%)	4 (17.39%)
	升*shēng* 'rise/raise'	22	22 (100%)	0 (0%)	0 (0%)
	Average percentage		94.20%	0%	5.80%
Tang	沉*chén* 'sink'	97	96 (98.97%)	0 (0%)	1 (1.03%)
	摇*yáo* 'shake'	205	174 (84.88%)	2 (0.98%)	29 (14.15%)
	升*shēng* 'rise/raise'	17	16 (94.12%)	0 (0%)	1 (5.88%)
	Average percentage		92.66%	0.33%	7.02%
Ming	沉*chén* 'sink'	36	35 (97.22%)	0 (0%)	1 (2.78%)
	摇*yáo* 'shake'	299	263 (87.96%)	0 (0%)	36 (12.04%)
	升*shēng* 'rise/raise'	17	16 (94.12%)	0 (0%)	1 (5.88%)
	Average percentage		93.10%	0%	6.90%
Modern	沉*chén* 'sink'	21	14 (66.67%)	1 (4.76%)	6 (28.57%)
	摇*yáo* 'shake'	253	208 (82.21%)	0 (0%)	45 (17.79%)
	升*shēng* 'rise/raise'	42	22 (52.38%)	0 (0%)	20 (47.62%)
	Average percentage		67.09%	1.59%	31.33%

It can clearly be seen that these three target characters barely occur as resultative complements. In the overwhelming majority of tokens, they take objects directly. Although a mild decrease is observed in the percentage used independently as the predicates (from 94.20% to 67.09%), the percentage of them occurring as resultative complements remains fairly low in Modern Mandarin (1.59%).

In addition to the VT structure presented above, target characters are also seen in the disposal 把*bǎ*/将*jiāng* construction, for example:

(26) 农 夫 心 内 如 汤 煮，楼 上 王 孙 把 扇 **摇**。
Nóngfū xīn-nèi rú tang zhǔ, lóu-shàng wáng sūn bǎ shàn **yáo**.
husbandman heart-in like hot water boil building-on royal offspring BA fan shake
'Husbandmen are like boiling hot water in their hearts, while the royal offspring upstairs are shaking their fans.'
(Ming, *Water margin*)

Although 沉*chén* 'sink', 摇*yáo* 'shake', and 升*shēng* 'rise/raise' seldom occur as resultative complements themselves, they take resultative complements in a considerable number of tokens, e.g., 摇醒*yáo-xǐng* 'shake-awake', 升高*shēng-gāo* 'raise-high', coded as "other" in the analysis. Other cases also include tokens in which the target characters combine with another character similar in meaning to form parallel compounds.

3.2 Evolution of the punctual change-of-state expression

For the punctual change of state, quantitative data of three target characters, i.e., 成*chéng* 'complete', 开*kāi* 'open', and 破*pò* 'break', display a stable expanding trend of compound use, as shown in Table 2.

Table 2. Evolution of the punctual change-of-state expression

		Number of VT tokens	Independently as the predicate	As the resultative complement	As other roles
Pre-Qin	成*chéng* 'complete'	112	108 (96.43%)	4 (3.57%)	0 (0%)
	开*kāi* 'open'	131	119 (90.84%)	0 (0%)	12 (9.16%)
	破*pò* 'break'	52	52 (100%)	0 (0%)	0 (0%)
	Average percentage		95.76%	1.19%	3.05%

Tang	成*chéng* ‘complete’	343	311 (90.67%)	32 (9.33%)	0 (0%)
	开*kāi* ‘open’	167	155 (92.81%)	2 (1.20%)	10 (5.99%)
	破*pò* ‘break’	307	245 (79.80%)	61 (19.87%)	1 (0.33%)
	Average percentage		87.76%	10.13%	2.11%
Ming	成*chéng* ‘complete’	297	187 (62.96%)	100 (33.67%)	10 (3.37%)
	开*kāi* ‘open’	267	201 (75.28%)	61 (22.85%)	5 (1.87%)
	破*pò* ‘break’	284	230 (80.99%)	48 (16.90%)	6 (2.11%)
	Average percentage		73.08%	24.47%	2.45%
Modern	成*chéng* ‘complete’	221	58 (26.24%)	89 (40.27%)	74 (33.48%)
	开*kāi* ‘open’	297	116 (39.06%)	80 (26.94%)	101 (34.01%)
	破*pò* ‘break’	260	72 (27.69%)	75 (28.85%)	113 (43.46%)
	Average percentage		31.00%	32.02%	36.98%

In Old Chinese, the punctual change-of-state events were preponderantly expressed by target characters used alone. Over time, this percentage kept shrinking with the steady rise of verbal compounds. In the meantime, target characters also compound with synonymous characters, forming parallel compounds, to express the punctual change of state. This situation is particularly prominent in Modern Mandarin, which favors disyllabic (two-character) words in general. Below are examples of target characters playing different roles:

(27) Independently as the predicate:

a. 秦 与 荆 人 战，大 **破** 荆。
Qín yǔ jīng rén zhàn, dà **pò** jīng.
Qin and Chu people fight big break Chu
‘The state of Qin fought with the state of Chu, and defeated it.’

(Pre-Qin, *Han Feizi*)

b. 兼 国 十二，**开** 地 千 里。
Jiān guó shíèr, **kāi** dì qiān - lǐ.
merge state twelve open land thousand-li
‘(King Mu of Qin) merged twelve states, and cultivated thousands of lis of land.’

(Pre-Qin, *Han Feizi*)

(28) As the resultative complement in verbal compounds:

a. 回 首 不 见 家，风 **吹 破** 衣服。

Huí shǒu bú jiàn jiā, fēng **chuī-pò** yīfu.
return head not see home wind blow-break clothes
'When I turned around, I could not see my home. The wind blew on my clothes and broke them.'

(Tang, Wang Jian's poem)

b. 大胆地 **掀 开** 窗 帷，面 著 阳 光 吧！
Dàdǎn de **xiān-kāi** chuāng wéi, miàn-zhe yángguāng ba!
boldly DE lift-open window drape face-ZHE sunshine SFP
'Open the window drape boldly, and face the sunshine!'

(Modern Mandarin)

(29) As other roles (mainly compounding with a synonymous character)

a. 由 于 土地 利用 不 当， **破 坏** 了 原 始 植被。
Yóuyú tǔdì lìyòng bú dàng, **pò - huài** - le yuánshǐ zhíbèi.
because earth use not properly break-break-LE original vegetation
'Because the earth is not used properly, the original vegetation is damaged.'

(Modern Mandarin)

b. 人 类 在 无 限 制 地 **开 发** 自然 资 源。
Rénlèi zài wúxiànzhì de **kāi - fā** zìrán zīyuán.
human beings PROG limitlessly DE open-unearth natural resources
'Human beings are limitlessly exploiting natural resources.'

(Modern Mandarin)

It is noteworthy that in data of the Tang dynasty and the Ming dynasty, to express the result state of a punctual change-of-state event, the target character 成*chéng* 'complete' did not always occur right after the verb. The loose compound "V + theme + 成*chéng*" is also seen in 14 tokens, exemplified below, to express the completion of the object.

(30) 力士 便 差 人 **堀 地道 成**。
Lìshì biàn chāi rén **kū dìdào chéng**.
Lishi then assign person dig tunnel complete
'Lishi then assigned somebody to complete the tunnel (by digging).'

(Tang, *Bianwen*)

(31) 只 要 **炼 得 丹 成**……
Zhǐyào **liàn dé dān chéng** ……

as long as concoct get pill of immortality complete

'As long as the pills of immortality can be concocted…'

(Ming, *Amazing tales-first series*)

Another notable phenomenon pertains to the disposal 把*bǎ*/将*jiāng* construction. In the disposal construction, target characters are invariably used as resultative complements in verbal compounds to express the punctual change-of-state events, never used alone, as shown in the following examples.

(32) 将 沉 香 **雕 成** 小 像。

Jiāng chénxiāng **diāo-chéng** xiǎo xiàng.

JIANG gharu-wood carve-become small statue.

'Carve the gharu-wood into a small statue.'

(Ming, *Illustrious words to instruct the world*)

(33) 你 推 拾 布 裙，把 我 袜子 **割 破**。

Nǐ tuī shí bù qún, bǎ wǒ wàzi **gē-pò**.

2 make excuse pick up cloth dress BA 1 sock cut-break

'You used picking up the dress as an excuse to cut my sock.'

(Ming, *Marriage destinies to awaken the world*)

3.3 Evolution of the gradient change-of-state expression

For the expression of the gradient change-of-state events, the shift is the most dramatic from no verbal compounds to mostly verbal compounds, as shown in Table 3.

Table 3. Evolution of the gradient change-of-state expression

		Number of VT tokens	Independently as the predicate	As the resultative complement	As other roles
Pre-Qin	大*dà* 'large'	3	3 (100%)	0 (0%)	0 (0%)
	高*gāo* 'high'	16	13 (81.25%)	0 (0%)	3 (18.75%)
	强*qiáng* 'strong'	49	48 (97.96%)	0 (0%)	1 (2.04%)
	Average percentage		93.07%	0%	6.93%
Tang	大*dà* 'large'	0	0	0	0
	高*gāo* 'high'	2	2 (100%)	0 (0%)	0 (0%)
	强*qiáng* 'strong'	16	15 (93.75%)	1 (6.25%)	0 (0%)
	Average percentage		96.88%	3.12%	0%

Ming	大*dà* 'large'	1	0 (0%)	1 (100%)	0 (0%)
	高*gāo* 'high'	1	0 (0%)	1 (100%)	0 (0%)
	强*qiáng* 'strong'	0	0	0	0
	Average percentage		0%	100%	0%
Modern	大*dà* 'large'	16	0 (0%)	15 (93.75%)	1 (6.25%)
	高*gāo* 'high'	34	0 (0%)	34 (100%)	0 (0%)
	强*qiáng* 'strong'	88	4 (4.55%)	84 (95.45%)	0 (0%)
	Average percentage		1.52%	96.40%	2.08%

Note. In a few VT tokens (2.05% in total) of 强*qiáng*, it means "to force (somebody to do something)" instead of the state of being strong. Such tokens were excluded from analysis.

Admittedly, VT tokens are rather limited in number, especially for the Ming dynasty, but some patterns can still be clearly observed. It is evident that by the Ming dynasty, 大*dà* 'large', 高*gāo* 'high' and 强*qiáng* 'strong' can no longer be used alone as the predicate to express the change-of-state event, which was a common situation in the Pre-Qin period, exemplified as follows:

(34) 士　议　之 不可　辱　者，**大**　之 也。
Shì　yì　zhī bù kě　rǔ　zhě, **dà**　zhī yě.
scholar reputation ZHI not can humiliate one take as big 3 SFP
'The reputations of scholars cannot be humiliated. They value their reputations.'
(Pre-Qin, *Master Lü's spring and autumn annals*)

(35) 深　沟　**高**　垒 以自 守 者　下　也。
Shēn gōu **gāo** lěi yǐ zì shǒu zhě　xià　yě.
deep ditch high rampart to self guard one disfavored SFP
'It is disfavored to dig the ditch deep and build the rampart high.'
(Pre-Qin, *The art of war*)

Verbal compounds took hold to express the gradient change-of-state events in Early Mandarin and Modern Mandarin, exemplified below:

(36) 控　制 人口　增　长　数 量，**提 高**　人 口　素质。
Kòngzhì rénkǒu zēngzhǎng shùliàng, **tí-gāo** rénkǒu　sùzhì.
control population growth amount lift-high population quality

'Control the growth of population, while improve the quality of population.'

(Modern Mandarin)

(37) 全　国　物　价　委　员　会 **加　强** 了　物　价　管理。

Quán guó wù jià wěiyuánhuì **jiā-qiáng**-le wù jià guǎnlǐ.

whole country commodity price committee add-strong-LE commodity price manage

'The National Pricing Committee reinforced the management of commodity prices.'

(Modern Mandarin)

It is particularly worth mentioning that in the early stage of this transition, target characters typically occurred after the theme object, forming loose compounds, in Middle Chinese and Early Mandarin to express the result state, rather than immediately following the verb.

(38) 真　气 **薰　蒸　肢体　强**。

Zhēn qì **xūn zhēng zhītǐ qiáng**.

genuine qi burn steam body strong

'The genuine qi steams body and makes body strong.'

(Tang, L***ü*** Yan's peom)

(39) 富翁　见他 银子 来 得 容易，**放　胆　大**了。

Fùwēng jiàn tā yínzi lái de róngyì, **fàng dǎn dà** le.

millionaire see 3 money come DE easy set gut big LE

'The millionaire saw his money come so easy, and then became more daring.'

(Ming, *Amazing tales-first series*)

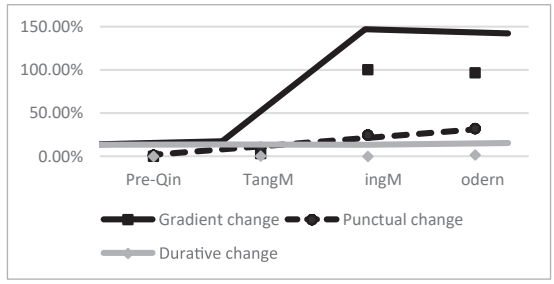
When it comes to Modern Mandarin, this form is no longer seen; resultative complements precede the theme object without exception.

The disposal 把*bǎ*/将*jiāng* construction is seen in three tokens in total, and consistent with the observation of the punctual change of state, target characters function as verbal complements in all three tokens.

3.4 Summary

Putting together the percentages of compound usage in the expressions of three types across different historical periods, we can get Figure 2.

Figure 2. Diachronic usage of verbal compounds for three types of change of state



An obvious discrepancy among the three types can be observed. Verbal compounds completely took over the expression of the gradient change by the Ming dynasty, and have been steadily expanding in the expression of the punctual change. However, the durative change stays immune to the expansion.

Situations about loose compounds are not displayed in Figure 2. Historically, target characters were not always adjacent to other verbal characters to express change-of-state events. Instead, they could also be put after the theme object. This used to be the prevalent form for the gradient change in Middle Chinese and Early Mandarin.

While a character loses its ability to stand alone, its meaning and function become more atomic in the meantime. Taking 高*gāo* as an example, in Old Chinese it could express the property of being tall, as in (40a); the action to build something high or to promote, as in (40b-c); the attitude of looking down upon or thinking highly of, as in (40d-f), etc., depending on the context. In contrast, when it comes to Modern Mandarin, only the use of (40a) is preserved; (40b) needs to be expressed by compounds such as 建高*jiàn-gāo* 'build-high'. The expressions of (40c-f) must resort to other compounds and/or structures.

(40) a. 城　非 不 **高** 也，池 非 不　深　也……
Chéng fēi bù **gāo** yě, chí fēi bù shēn yě……
wall not not high SFP moat not not deep SFP
'It is not that the wall is not high or the moat is not deep.'
(Pre-Qin, *Mencius*)

b. 深　沟　**高** 垒 以 自　守　者　下　也。
Shēn gōu **gāo** lěi yǐ zì shǒu zhě xià yě.
deep ditch high rampart to self guard one disfavored SFP
'It is disfavored to dig the ditch deep and build the rampart high.'
(Pre-Qin, *The art of war*)

c. **高** 之不 骄，下 之不 惧。
Gāo zhī bù jiāo, xià zhī bú jù.
high 3 not arrogant degrade 3 not timid
'(They) will not be arrogant even if promoted, and will not be timid even if degraded.'
(Pre-Qin, *Discourses of the states*)

d. 不 以 人之 卑 自**高** 也。
Bú yǐ rén zhī bēi zì **gāo** yě.
not because other of lowliness self high SFP
'Don't think highly of yourself because of others' lowliness.'
(Pre-Qin, *Zhuangzi*)

e. 好 临 人 以 色， **高** 人 以 气……
Hào lín rén yǐ sè, **gāo** rén yǐ qì ……
like confront people use frown look down upon others use imposing manner
'(They) like to confront people with a frown, and look down people with an imposing manner.'
(Pre-Qin, *Yi zhou shu*)

f. 世 之 所 **高**，莫 若 黄 帝。
Shì zhī suǒ **gāo**, mò ruò Huáng Dì.
world ZHI SUO respect not like Yellow Emperor
'Nobody is being respected as the Yellow Emperor in the world.'
(Pre-Qin, *Zhuangzi*)

Appearing around the 7th and 8th centuries (Wang, 1958/2004, p. 411), the disposal 把*bǎ*/将*jiāng* construction is a relatively recent phenomenon in Chinese with the semantic prototype "change of absolute location/orientation in space/state" (Jing-Schmidt et al., 2015). When used to express change-of-state events discussed in this paper, we also see a variation among three types: the target characters of the durative change can be used alone without other elements, whereas the target characters of the punctual change and the gradient change can only be used as resultative complements following other verbal characters.

4. The Complexity Continuum of Change-of-State Events

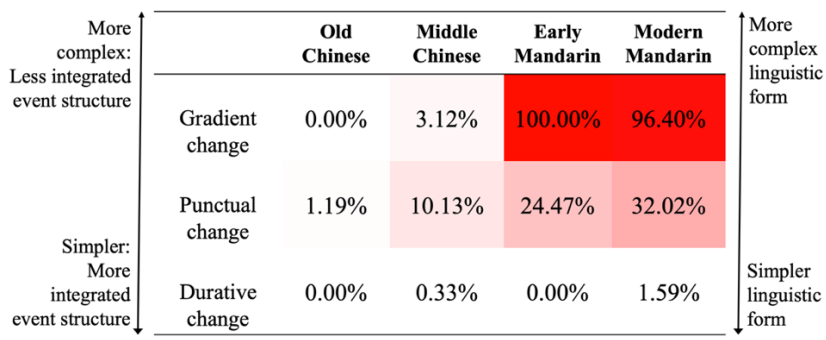
Assuming the embodied nature of language, the principle of iconicity claims that

"a larger chunk of information will be given a larger chunk of code (the quantity principle)", and that "entities that are closer together functionally/conceptually/cognitively will be placed closer together at the code level, i.e. temporally or spatially (the proximity principle)" (Givón, 1991). Taking this perspective to scrutinize the different paces of compounds' expansion in the expressions of three types of change-of-state events, a continuum of difficulty in human conceptualization can be outlined.

Immune to the expansion of verbal compounds in Chinese, the expression of the durative change of state has been the simplest, virtually always sufficient with one character from Old Chinese to Modern Mandarin. At the other extreme, verbal compounds had completely taken over the expression of the gradient change of state by the Ming dynasty, suggesting a high level of complexity for conceptualization beyond the expressive capacity of one single character. The punctual change of state stands in the middle of this continuum. As mentioned in Section 2.3, Old Chinese is believed to have morphology not recorded by characters; each character might correspond to various pronunciations (e.g., Branner, 2002; Downer, 1959; Mei, 1970; Pulleyblank, 2000; Sagart, 1999; Sun, 2000). With the disappearance of such morphology, the pronunciation of each character became fixed, thus limiting the amount of information that each character could possibly carry. The meaning of each character thereby became increasingly atomic. As a remedy, characters compound with other characters to redeem information capacity. This process surely did not happen overnight; the more complex the information is, the earlier it surpassed the information capacity of one character.

The relationship between the expansion of compound use and the complexity of the three types of change-of-state events is illustrated in Figure 3.

Figure 3. The relationship between the expansion of verbal compounds and the complexity of three types for human conceptualization



Note. The percentages represent the statistics of nine target characters presented in Section 3, and the transparency of the red shades is set by the percentages. Therefore, the darkening of the red shades illustrates the expansion of verbal compounds.

It is worth reiterating that the above statistics do not take loose verbal compounds into consideration. Historically the prevalent form for the gradient change used to be "V + T + R", in which two verbal elements were not adjacent to each other. This form was also seen in the punctual change-of-state expressions but not as common. Based on the proximity principle, the distance between V and R suggests a mental distance between the agent's action and the result state of the theme.

This continuum of complexity can be explained by the respective event structure encoded in each type. In this paper, a change-of-state event is defined to involve a three-segment causal chain (see Section 1), repeated below:

(41) The three-segment causal chain of a change-of-state event:
The first segment: The agent acts on the theme.
The second segment: The theme changes state.
The third segment: The theme in a result state.

Since the result state in the durative change is a continuous process of changing—the result state is the change itself—the second segment temporally overlaps with the third segment. The punctual change of state features a discrete result state, consonant with a punctual realization achieved without a durative process, which means the result state is static and internally homogenous. Distinct from the punctual change, for the gradient change of state, the second segment can last for a certain period of time with a changing degree of the result state, thus making it more complex than the punctual change. Essentially, the complexity difference among three types of change-of-state events resides in varying levels of event integration: regarding the complexity continuum, i.e., "the durative change of state – the punctual change of state – the gradient change of state", their event structures contain an incremental mental distance between the agent's action and the result state of the theme.

Data of other languages can also lend support to this continuum of complexity: cross-linguistically, the expression of the durative change of state tends to be the simplest in form; whereas the expression of the gradient change of state tends to be the most complex with more elements (predicted by the quantity principle) and longer

distance between elements (predicted by the proximity principle).

The durative change of state can be expressed by one verb with no extra element in many languages:

(42) English:

a. The plane is **flying**.

b. The pilot is **flying** the plane.

(43) Spanish:

a. El avión está **volando**.
the plane is flying
'The plane is flying.'

b. El piloto está **volando** el avión.
the pilot is flying the plane
'The pilot is flying the plane.'

(44) German:

a. Das Flugzeug **fliegt**.
the plane fly
'The plane is flying.'

b. Der Pilot **fliegt** das Flugzeug.
the pilot fly the plane
'The pilot is flying the plane.'

In contrast, the gradient change of state is typically expressed by verbs derived from adjectives, oftentimes with specific morphemes affixed.

(45) German:

anders 'different':	*verändern*	'change'
voll 'full':	*füllen*	'fill'
stark 'strong':	*verstärken*	'reinforce'

(46) Russian:

*luč*šij 'better':	*ulu*čšit'	'improve (tr.)'
vysokij 'high':	*povysit'*	'raise'
širokij 'wide':	*rasširit'*	'widen (tr.)'

(German and Russian data from Haspelmath, 1993)

Overall, it is rare that the element denoting the gradient result state can also take direct objects to express change of state itself without any additional element. Moreover, besides derivational verbs, other words are still called for to specifically characterize the action segment (encoding information regarding method, tool, and other agent-oriented perspectives) of the event structure—the three segments of the complex event structure can hardly be conflated, as shown in the following examples of different languages:

(47) English:

a. The pillow is **wet**.

b. He **cried** the pillow **wet.**

c. He **wet** the pillow **by crying**.

(48) German:

a. Das Kissen ist **nass**.
the pillow is wet
'The pillow is wet.'

b. Er **weinte** das Kissen **nass**.
he cry-PST the pillow wet
'He cried the pillow wet.'

(49) Spanish:

a. La almohada está **mojada**.
the pillow is wet
'The pillow is wet.'

b. Él **mojó** la almohada **llorando**.
he wet the pillow crying
'He cried the pillow wet.'

(50) Japanese:

a. 枕 が **濡れ ている**
Makura-ga **nure- te- iru**.
pillow-NOM wet-GER-PRS
'The pillow is wet.'

b. 太 郎は **泣いて** 枕 を **濡らした**。
Taroo-wa **nai-te** makura-o **nurashi-ta.**
Taro-TOP cry-GER pillow-ACC wet-PST
'Taro cried the pillow wet.'

Moreover, in all examples, elements denoting the action are not adjacent to elements denoting the result state, just like the prevalent form of this type in Middle Chinese and Early Mandarin.

In the middle between the durative change and the gradient change, the punctual change of state can be expressed by a simple verb, a derived verb or a complex construction. The following are some examples in English:

(51) a. The door is **shut**.
b. I **shut** the door (with a **kick)**.
c. I **kicked** the door **shut**.
(52) a. The baby is **awake**.
b. I **awoke** the baby (with a **shake**).
c. I **shook** the baby **awake**.
(53) a. The window is **broken**.
b. I **broke** the window (with a **kick**).
c. *I **kicked** the window **broken**.
(54) a. The paper is **complete**.
b. I **completed** the paper (*by **writing** it).
c. I **wrote** the paper **to completion**.

5. Conclusions

Change-of-state events all involve complex event structures, but still differ in their levels of complexity. This study traced the expansion of Chinese verbal compounds in the expressions of three types of change-of-state events, and found that the expansion is the most dramatic in the gradient change-of-state expression, followed by the steady increase in the punctual change of state, while the durative change of state avoids verbal compounds. Overall, "the durative change of state – the punctual change of state – the gradient change of state" represents a continuum with an increasing chance to involve verbal compounds in the expressions, corresponding to the incremental complexity of the event structures in human conceptualization: the agent's action and the result state of the theme are the most integrated in the durative change of state, making it the simplest, as opposed to the gradient change-of-state events, in which there is a significant mental distance between the action and the result state.

As predicted by the principle of iconicity, this cognitive continuum of complexity

is widely supported by cross-linguistic data. Cross-linguistically, the expression of the durative change of state tends to be the simplest in form, typically sufficient with one verb with no extra elements; whereas the expression of the gradient change of state tends to be the most complex with more elements and longer distance between elements.

This finding also puts some relevant issues in the spotlight that still need to be addressed. First of all, it is mentioned that the three types need to be understood as radial categories without clear-cut borders (see Section 1.2), and data also show that each type, especially the punctual change of state, is not internally homogenous, either. Therefore, it is of immediate interest to look within each type and at the transition between types, thus to refine the granularity of the complexity continuum. Second, data from other languages are quite limited in this paper. More data of typologically remote languages are called for to further test the current conclusion. Third, the change-of-state event in this paper is defined to involve a three-segment causal chain and can normally be expressed by both transitive structures and intransitive structures, but this paper primarily focuses on transitive structures. Further effort is needed to study the transitivity alternation of three types of change-of-state events in world languages. When it comes to Chinese, it is mentioned that morphology is believed to exist in Old Chinese for individual characters; more evidence will be helpful here. Finally, since the present study proposes a complexity continuum of change-of-state events in human conceptualization, direct support is necessary from psycholinguistic experiments testing speakers' online processing of these sentences to confirm if "the durative change of state – the punctual change of state – the gradient change of state" really differ in the mental distance between the action and the result state. These are all questions requiring further treatment.

List of abbreviations

1	first person
2	second person
3	third person
ACC	accusative case
BA	marker of the 把*bǎ* disposal construction
DE	pre-nominal modification marker 的*de*, pre-verbal modification marker 地*de*, or postverbal resultative marker 得*de*
GER	gerund

JIANG	marker of the 将*jiāng* disposal construction
LE	perfective marker or sentence-final particle
NOM	nominative case
PRS	present
PROG	progressive
PST	past tense
SFP	sentence final particle
SUO	pronominal element 所*suǒ* marking object relativation or passivization
TOP	topic
ZHE	durative aspect marker 着*zhe*
ZHI	the conjunction 之*zhī* that makes a sentence a clausal phrase

Note

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References

Arcodia, G. F. (2007). Chinese: A language of compound words? In F. Montermini, G. Boyé, & N. Hathout (Eds.), *Selected proceedings of the 5th Décembrettes: Morphology in Toulouse* (pp. 79-90). Somerville, MA: Cascadilla Proceedings Project.

Baxter, W. H., & Sagart, L. (1998). Word formation in Old Chinese. In J. L. Packard (Eds.), *New approaches to Chinese word formation* (pp. 35-75). Berlin/New York: Mouton de Gruyter.

Branner, D. P. (2002). Common Chinese and early Chinese morphology. *Journal of the American Oriental Society, 122*(4), 706-721.

Croft, W. (1991). *Syntactic categories and grammatical relations*. Chicago: University of Chicago Press.

Croft, W. (1994). The semantics of subjecthood. In M. Yaguello (Ed.), *Subjecthood and subjectivity* (pp. 29-75). Paris: Ophrys.

Downer, G. B. (1959). Derivation by tone-change in Classical Chinese. *Bulletin of the School of Oriental and African Studies, 22*, 258-90.

Givón, T. (1991). Isomorphism in the grammatical code: Cognitive and biological considerations. *Studies in Language, 15*(1), 85-114.

Haspelmath, M. (1987). *Transitivity alternations of the anticausative type. Arbeitspapier 5 (Neue Folge)*. Köln: Institut für Sprachwissenschaft.

Haspelmath, M. (1993). More on the typology of inchoative/causative verb alternations. In B.

Comrie & M. Polinsky (Eds.), *Causatives and transitivity* (pp. 87-120). Amsterdam: John Benjamins.

Jiang, S. (1999). 汉语动结式产生的时代 [The emergence time of resultative verb compounds in Chinese]. In X. Yuan (Ed.),《国学研究》（第6卷）[*Studies in sinology* (Vol. 6)] (pp. 327-347). Beijing: Peking University Press.

Jing-Schmidt, Z., Peng, X., & Chen, J. (2015). From corpus analysis to grammar instruction: Toward a usage-based constructionist approach to constructional stratification. *Journal of the Chinese Language Teachers Association, 50*(2), 109-138.

Levin, B. (2009). Lexical semantics of verbs III: Causal approaches to lexical semantic representation. Course LSA 116, UC Berkeley. Retrieved from http://web.stanford.edu/~bclevin/lsa09causapp.pdf

Levin, B., & Rappaport Hovav, M. (2005). *Argument realization*. Cambridge: Cambridge University Press.

Li, C., & Thompson, S. (1981). *Mandarin Chinese: A functional reference grammar*. Berkeley: University of California Press.

Li, P. (1987).《世说新语》和《百喻经》中的动补结构 [Verb complement constructions in *Shishuo xinyu* and *Baiyu jing*]. In Center for Chinese Linguistics PKU (Eds.),《语言学论丛》（第14辑）[*Essays on linguistics* (Vol. 14)] (pp. 129-157). Beijing: Commercial Press.

Liu, Z. (2004). 汉语动结式述补结构的历史发展 [The historical development of resultative verb compounds in Chinese]. In Center for Chinese Linguistics PKU (Eds.),《语言学论丛》（第30辑）[*Essays on linguistics* (Vol. 30)] (pp. 188-324). Beijing: Commercial Press.

Mei, T.-L. (1970). Tones and prosody in Middle Chinese and the origin of the rising tone. *Harvard Journals of Asiastic Studies, 30*, 86-110.

Mei, T.-L. (1991). 从汉代的“动杀”“动死”来看动补结构的发展 [On the development of resulative verb compounds from the “V + sha” and “V + si” structures in the Han dynasty]. In Center for Chinese Linguistics PKU (Eds.),《语言学论丛》（第16辑）[*Essays on linguistics* (Vol. 16)] (pp. 112-136). Beijing: Commercial Press.

Perlmutter, D. (1978). Impersonal passives and the unaccusative hypothesis. In J. Jaeger (Ed.), *Proceedings of the 4th Annual Meeting of the Berkeley Linguistics Society* (pp. 157-189). Berkeley: Berkeley Linguistics Society.

Pulleyblank, E. G. (2000). Morphology in Old Chinese. *Journal of Chinese Linguistics, 28*, 26-51.

Sagart, L. (1999). *The roots of Old Chinese*. Amsterdam: John Benjamins Publishing

Company.

Shi, Y. (2015).《汉语语法演化史》[*The evolution of the Chinese grammar*]. Nanchang: Jiangxi Education Publishing House.

Sun, Y. (2000).《汉语变调构词研究》[*Studies on tonal morphology in Old Chinese*]. Beijing: Commercial Press.

Tai, J. H.-Y. (1984). Verbs and times in Chinese: Vendler's four categories. In D. Testen, V. Mishra, & J. Drogo (Eds.), *Papers from the parasession on lexical semantics, Chicago Linguistic Society 20* (pp. 289-296). Chicago: Chicago Linguistic Society.

Talmy, L. (2000). *Toward a cognitive semantics. Volume II: Typology and process in concept structuring*. Cambridge, MA: MIT Press.

Vendler, Z. (1967). *Linguistics in philosophy*. Ithaca: Cornell University Press.

Wang, L. (1958/2004).《汉语史稿（修订本）》[*Lectures on the history of Chinese (revised edition)*]. Beijing: Zhonghua Book Company.

Xu, D. (2001). 从动补结构的形成看语义对句法结构的影响——兼谈汉语动词语义及功能的分化 [On the influence of semantics on syntactic structure from the formation of resultative verb compounds: Also on the divergence of verbal semantics and function in Chinese].《语文研究》[*Linguistic Research*]*, 2*, 5-12.

Xu, H. (1997). 三音节语词单位说略——兼论现代汉语词汇中的音节走势和"三音化"倾向 [A brief introduction to three-syllable word: Also on the development of Chinese words toward three syllables].《山东理工大学学报》[*Journal of Shandong University of Technology*], (3), 70-74.

Yu, J. (1957). 使成式的起源和发展 [On the origin and development of resultative complements]. In Editorial Office of *Zhongguo Yuwen* (Eds.),《语法论集》（第二集）[*Collected essays on Grammar* (Vol. 2)] (pp. 114-126). Beijing: Zhonghua Book Company.

Yu, Z. (1984). 论古汉语补语的移位 [On the displacement of verb complements in Classical Chinese].《语言研究》[*Studies in Language and Linguistics*], *6*(1), 104-113.

Zhang, L. (2019). A study into the prototypicality of Chinese labile verbs. *Cognitive Semantics, 5*, 1-31.

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