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English and Chinese Attributive Possession: Grammaticalization and Typology

Abstract: This paper investigates the grammaticalization of English and Chinese attributive possession including its path, mechanism, and motivation. The major purposes of this investigation are to explain and analyze the similarities and differences of English and Chinese attributive possession from a typological perspective. At the same time, it also aims to find out the typological features of grammaticalization of English and Chinese attributive possession. According to the correlation between English and Chinese attributive possession and case types, it concludes that Chinese is a typical target language remixed ergative–absolutive and subject–object while English is a typical subject–object language.

Keywords: grammaticalization path; case type; ergative–absolutive language; subject–object language

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1 Introduction

Attributive possession, especially the structures of attributive possession, is a focal point for many linguists. The major Chinese syntactic structure is "N_1 (possessor) + (的) (DE) + N_2 (possessed)", while the main English syntactic structures are "N_1 (possessor) 's N_2 (possessed)" and "N_2 (possessed) of N_1 (possessor)". The endeavor to explore the grammaticalization of English–Chinese attributive possessions and their typological characteristics dates back many decades. There were researches done by Janda (1980), Croft (1990), Hopper and Traugott (1993), Shi Yuzhi and Li Na (1998), Wu Fuxiang (2005), Liu Danqing (2003, 2008), and others. These studies paved the way

for a further understanding of a number of grammatical properties, such as grammatical process (Rosenbath and Letizia 2000; Shi Yuzhi and Li Na 2001) phrasal or clausal structures of attributive possession (Li Shaoqun 2011), conceptualization of possessive relation (Zhang Min 2003; Liu Danqing 2013), but left the attributive markers, their grammaticalization, and the similarities and differences of other languages in the typological perspective unexplored. Therefore, this paper attempts to explore the grammaticalization and typology of English–Chinese attributive possession. And the main purposes are to find out the typological characteristics of English and Chinese attributive possession, which can be used in other languages, from a typological perspective.

2 Grammaticalization of Chinese attributive possession

Chinese attributive possession has two structures: N_1 + 的(DE) + N_2 and N_1 + N_2. In Modern Chinese, "的" (DE) has been a center point in research. The usage of "的" (DE) can be divided into three groups: "的 $_1$" (DE) attaches to adverbials; "的 $_2$" (DE) attaches to adjectives; "的 $_3$" (DE) attaches to nouns (Zhu Dexi 1961). Accordingly, the main grammatical function of "的" (DE) is to connect the modifier and the head word. The head word can be a verb, an adjective or a noun. This paper mainly discusses the noun structure in attributive possession, "N_1 + (的) (DE) + N_2". The crucial issue is the grammaticalization of "的" (DE). According to the evolution tendency of universal grammar, the genitive tag evolves from the demonstrative pronoun (Wu Fuxiang 2005). Thus, the assumption is that "的" (DE) evolves from a demonstrative pronoun.

2.1 Grammaticalization path of "N_1 + 的(DE) + N_2"

"之" (zhī) is used frequently in Ancient Chinese attributive structures. According to the *Ancient Chinese dictionary* (Wang Li 1962: 56), "之" (zhī) has three grammatical functions: verb, pronoun, and adposition. However, in the investigation of *The oracle*, "之" (zhī) was not used as a structural particle, but as a demonstrative pronoun instead. Zhang Min (2003) demonstrated that the attributive tag "之" (zhī) derived from the demonstrative pronoun "之" (zhī).

(1) 之子于归，宜其家室。（*The book of songs*）
zhīzǐ   yúguī,   yí   qí   jiāshì
the lady (the demonstrative pronoun) get married, better this couples.
'The lady will get married, which would be better for the couple.'

(2) 之二虫又何知？（*Chuang Tzu*）
zhīèr   chóng   yòuhé   zhī？
these two little animals how   know
'What do these two little animals know?'

In *The oracle*, the grammatical structure "N$_1$ + (zhī) + N$_2$" did not exist, rather, the previous structure was "之 (zhī) NP". Around the time "NP 之 (zhī) NP" came into effect, and "之 (zhī) NP" began to disappear. However, in the attributive possession structure, the use of "之" (zhī) is more casual. There is no rigid rule; sometimes "之" (zhī) is invisible and overt.

(3) 齐侯之子，卫侯之妻，东宫之妹，邢侯之姨。（*Poetry of Wei*）
qíhóu   <u>zhī</u> zǐ   wèihóu   zhī   qī,
President of Qi   's   daughter, president of Wei 's   wife,
dōnggōng   <u>zhī</u> mèi, xínghóu   <u>zhī</u> yí
Eastern Palace   's   sister, president of Xing 's   aunt
'The daughter of the president of Qi, was the president of Wei's wife, Eastern Palace's sister, and the president of Xing's aunt.'

(4) 仲弓为季氏（之）宰，问政。（*Analects of Confucius*）
zhònggōng   wéi   （<u>zhī</u>）jìshì zǎi,   wèn   zhèng
Zhong Gong   became   Jishi prime minister, ask   how to deal with government affairs
'Zhong Gong became Jishi's prime minister, then asked how to deal with government affairs.'

The function of "之" (zhī) was weakened during the Wei-Jin Southern and Northern Dynasties. Shi Yuzhi and Li Na (2001: 309) pointed out that the usage of "N$_1$ + N$_2$" was twice as much as "N$_1$ + 之 (zhī) + N$_2$" in *Shi Shuo Hsin Yu*. Li Shaoqun (2011: 156) studied "N$_1$ + (之) (zhī) + N$_2$" in *Shi Shuo Hsin Yu*. The results showed that "N$_1$ + N$_2$" was formed to express the kinship between the possessor and the possessed in "N$_1$ (possessor) + (之) (zhī) + N$_2$" (possessed), such in (5)–(6) .

(5) *我是李府君亲。（Shi Shuo Hsin Yu--Palore）*

    wǒ shì lǐfǔ   jūn   qīn

    1SG am the owner of Lee House 3SG   relative

    'I am the owner of Lee House's relative.'

(6) *未闻孔雀是夫子家禽。（Shi Shuo Hsin Yu--Palore）*

    wèi   wén kǒngquè shì fūzǐ   jiāqín

    NEG hear peacock is   your   poultry

    'I did not hear the peacock was your poultry.'

In Wei-Jin Northern and Southern Dynasties, possession structure was always considered as "N_1 + (之) (zhī) + N_2". However, in the Tang Dynasty, "N_1 + 底 (dǐ) + N_2" emerged. The structural particle "底" (dǐ) first appeared in *Dunhuang Bianwen* in the 9th century, and was commonly employed in the Song Dynasty to express the possessive relationship in the 12th century.

(7) *烧却前头草，后底火来，他自定。（Dunhuang Bianwen-LiLing Bianwen）*

    Shāo què qiántóu cǎo, hòu dǐ huǒ lái, tā zì dìng

    fire PFV head grass, behind DE fire come, he REF calm

    'Burning the grass ahead, the fire behind him, he was very calm.'

(8) *僧便问："作摩生是在顶上底眼？"（Ancestral Hall Sets）*

    sēng biàn wèn:" zuòmó shēng shì zài dǐng shàng dǐ yǎn?"

    monk then asks:" how   MP   is on the top   DE eye?"

    'The monk then asks: "how is the top of your eyes"?'

Shi Yuzhi and Li Na (2001: 315) considered that the development and maturity of the structural particle "底" (dǐ) were synchronous with the development of the quantitative structure "数 + 量 + 名" (Number + Quantity + Noun). "底" (dǐ), as a structural particle evolving from a demonstrative pronoun, contributed to the development of the quantitative structure. In the 12th century, "底" (dǐ) was widely used, but the usage of "之" (zhī) was still more frequent than "底" (dǐ). In possessive relations, "之" (zhī) in "N_1 + (之) (zhī) + N_2" could be covert. Sometimes it needed a marker due to the quantitative structure, thus "底" (dǐ) gradually replaced the function of "之" (zhī) and filled the zero marker at the same time. "底" (dǐ) as a possessive marker still exists in Modern Chinese. Li Shaoqun (2011: 185) researched volume 1 and volume 2 of *Quotations of Zhu-zi's Remarks* and found that "底"

(dǐ) in "N₁ + (marker) + N₂" appeared only four times. In contrast, great changes took place in the 15th century, with "之" (zhī) appearing several times in *Lao Qi Da*, while the frequent formation and the usage of "的" (DE) were equivalent to that in Modern Chinese. In the 16th century, "的" (DE) as the attributive possession marker largely replaced "之" (zhī). The usage of "的" (DE) appeared in the Song Dynasty, and is widely used in Modern Chinese.

(9) *老相公的交椅，侄儿如何敢坐？（Guan Hanqing's Jade Mirror）*
   lǎoxiānggōng de jiāoyǐ, zhíér rúhé gǎn zuò
   old xianggong DE chair, nephew how dare sit
   'The nephew does not dare to sit on your chair.'

(10) *我的芭蕉扇（Pilgrimage to the West）*
   wǒ de bājiāo shàn
   1SG DE palm-leaf fan
   'My palm-leaf fan'

In Modern Chinese, "的" (DE) appears frequently. After the May Fourth movement and language was influenced by Western culture, "的" (DE) was adopted as a descriptive marker, while "底" (dǐ) was regarded as an attributive marker (Li Shaoqun 2011: 189). As a result, "底" (dǐ) was replaced by "的" (DE), then "的" (DE) became a main marker of attributive possession.

2.2 Mechanisms and motivations of "N₁ + 的 (DE) + N₂"

Reanalysis and analogy are the most common mechanisms of grammaticalization of "N₁ + 的 (DE) + N₂", and the motivation is the categorization. It is generally acknowledged that reanalysis is a new structure that gradually replaces old structures. Through a detailed reanalysis, "的" (DE), a content word, falsifies into a composition. Then "的" (DE), a cohesive attributive, falsifies into a clitic.

The mechanism creates new grammatical markers or formats.

Step 1: the use of the demonstrative pronoun: [modifier + (demonstrative pronoun + head-word)]

Step 2: analysis for structural particle: [modifier + particle + head-word]

Step 3: rebuilding of boundary: [(modifier + particle) + head-word]

The analogy method is deeply rooted in human cognition. It is also a significant mechanism of grammaticalization. Its effect is mainly manifested in

two aspects: one induces a reanalysis process; another extends a new syntax format to the whole language. From Ancient Chinese to Modern Chinese, attributive possession modifiers precede the head word. One of the biggest changes of language structure is the emergence of the quantifier category. In the Tang and Song dynasties, "数 + 量 + 名" (Number + Quantity + Noun) was widely used, and "modifier + grammatical markers + head-word" was its abstract format. In the Yuan and Ming dynasties, this format became a legitimate expression. It also played an important role in language structures, thus, the expression format formed a kind of optimization. Analogy demanded modifications in the language structure with grammatical markers (Shi Yuzhi and Li Na 1998), thus "之" (zhī), "底" (dǐ) and "的" (DE) became the main grammatical markers.

Observing the characteristics of grammaticalization, "的" (DE) evolved from a clitic to an inflectional affix, and experienced categorization. Categorization is one of the basic features of human language; classification of the mental process is usually regarded as a kind of "category." It is also an important process of language evolution and innovation. Through semantic generalization, "的" (DE) falsifies into the composition from a content word. In other words, the grammaticalization process of "的" (DE), including the semantic abstraction and generalization, loses the original morphological characteristics or functions and falsifies into a composition for categorization.

3 Grammaticalization of English attributive possession

English attributive possession has two structures: N_1's N_2 and N_2 + of + N_1. In fact, people often make a choice between N_1's N_2 and N_2 + of + N_1 after considering pragmatic factors.

3.1 Grammaticalization of "N_1's N_2"

There is still a lot of debate around the grammaticalization path of "N_1's N_2". The grammaticalization path of "N_1's N_2" has two types. The former is identified by Janda (1980: 301–303), and the latter by Allen (1997: 116–119) .

John (e/i/y) s [inflectional] book→ John his book→ John's [clitic] book

John his book→ John (e/i/y) s [inflectional] book→ John's [clitic] book

In Old English, people used different demonstrative pronouns as attributive possession markers, such as "his, her, and their" in accord with different genders, numbers, and nouns.

1) His: after the singular, masculine or neutral possessor
   Be King his cnihtes (1250)   'the king's knights'
   Mr. Careless his letter (1693)   'Mr. Careless's letter'

2) Her: after the singular, feminine possessor
   Mrs. Francis her marriage (1693) 'Mrs. Francis's marriage'

3) Their: after plural possessor
   Canterbury and Chillingworth their books (1645) 'Canterbury and Chillingworth's books'

In Middle English, "his" evolved into "- (e/i/y) s" as an attributive possession marker. In the 16th century, "'s" appeared as a main marker; however, it only appeared in the case of the singular possessor, and then later in the case of the plural possessor due to non-standard English in the 19th century. In Modern English, "'s" became the only genitive tag. The demonstrative pronoun "his" turned into "-(e/i/y) s" inflectional affixes, and eventually became a clitic, such as: "David's book" and "Lucy's mouth".

Reanalysis, analogy, and phonetic change are mechanisms of grammaticalization of "N_1's N_2". Reanalysis essentially involves linear and syntagmatic reorganization and rule changes. During the Middle Ages, Old English "his" shrank into "-(e/i/y) s" because of inflection detachment and the Principle of Economy. Moreover, people confused "es" and "his" because they were homophones. The structural stress was also an influential factor for the usage "-(e/i/y) s". The genitive mark was only attached to the subject, and in Middle English, the phrase genitive had to insert a genitive suffix, such as "King Priam of Troye's son" (King of Troy, Ann's son). It could be expressed as "the kyng Priamus son of Troye" because of those genitive factors in Middle English.

Analogy essentially involves paradigmatic organization, changes in patterns of the constituent structure, as well as unobservable changes of reanalysis. There is a rather narrow and local interpretation of analogy, which is defined as a process in which irregularities in grammar, particularly at the morphological level, are regularized. Thus, given the singular-plural

alternation cat–cats, one can conceive of analogizing child–children as child–childs (Hopper & Traugott 1993: 56) :

cat: cats = child: X

X = childs

In Old English, the inflectional ending had to be clear in order to distinguish between different inflectional endings that conveyed different grammatical meanings. Approximately between 1000 and 1400 (particularly 1100 to 1300), English inflectional endings experienced a process of shrinking. The shrinking of the inflectional ending was mainly influenced by two factors: phonetic change and analogy. At the end of the 11th century, the inflectional ending gradually began to disappear. As a result, inflectional endings with distinctive characteristics, like "-(e/i/y) s", evolved into a single "-e" with their grammatical meaning being lost. In the 12th century, phonetic change was quite common. Because of the phonetic change, analogy further simplified the inflectional ending. As a result of evolution, the grammatical characteristics of the noun disappeared completely; there were no form changes while genitive morphology changes tended to be more consistent to plurality, and then became "-es". On the other hand, "'s" grammaticalized from the demonstrative noun "his", then "-(e/i/y) s". Finally, they were simplified to "es", because the pronunciations of "-(e/i/y) s" were similar to that of "es". In late Middle English, "-es" was even shortened for "-e" becoming the apostrophe "'". That was the gramaticalization of "'s".

3.2 Grammaticalization of "N_2 + of + N_1"

In Old English, the marker "of" in "NP_2 + of + NP_1" mainly had two forms: "af" in the stressed syllables and "of" in the unstressed syllable. "Of" continued to be adapted in the unstressed syllables; "af" turned into "off" and was used in double syllables. However, "off" was employed in attributive possession and took on the meaning of "separation" in the 16th century. Thus, "of", taking two kinds of grammatical functions, absorbed the usage in both the stressed and unstressed syllables. Gradually it evolved into "of" in Modern English.

There are three motivations of language evolution in world languages: second language acquisition, language contact, and pragmatic inference. Language contact contributes to the evolution of "N_2 + of + N_1". In Old English,

the usage of "of" was only a marginal construction, which only constituted 1% of all attributive constructions in the late 10th century. Its function was mainly to express the source or partite relations. It seemed to evolve from the original local meaning "out of". After the Norman Conquest, it was affected by the French "de", and "of" gradually began to express a possessive relationship. "Grammatical Replication" has been an important historical linguistic factor in recent years. "Restructuring" and "structural replication" were the two mechanisms of syntax structure. There were two typical modes, "the possessor + the possessed" and "the possessed + the possessor". The French attributive possession structure was "N_2 + de + N_1". After the Norman Conquest, "N_2 + of + N_1" was affected by the French "de" and solidified itself. In Old English, SOV word order was grammaticalized into SVO order. In the 15th century, the SVO order became stable, which prompted the stability of "N_2 + of + N_1".

3.3 The choice between "N_1's N_2" and "N_2 + of + N_1"

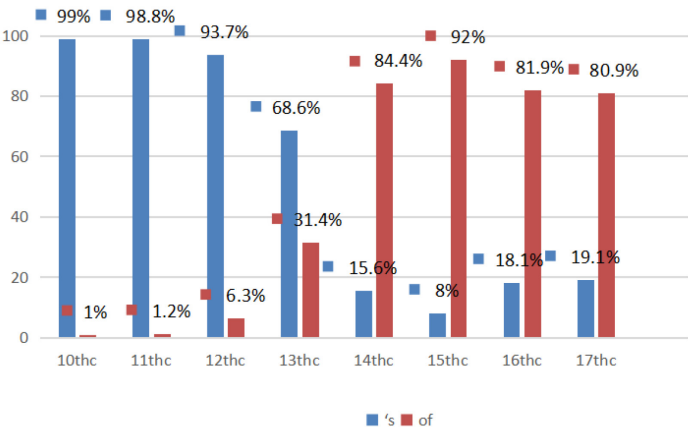People may choose between "N_1's N_2" and "N_2 + of + N_1" due to pragmatic factors.

Figure 1: Choice between "N_1's N_2" and "N_2 + of + N_1"

The data before the 14th century comes from Thomas (1931), and the data after the 14th century comes from Rosenbath and Vezzosi (2000). Before the 10th century, "'s" used as an attributive possession marker accounted for 99%, while "of" accounted for only 1%. Between the 10th and 12th centuries,

the frequency of "of" began to rise. From the 12th to the 14th centuries, "'s" was replaced by "of", with "'s" falling from 93.7% in the 12th century to 15.6% in the 14th century. In the 15th century, "'s" accounted for only 8%. Meanwhile, the frequency of "of" reached its peak at 92%. In the 16th and 17th centuries, the usages of "s" and "of" were roughly consistent with that of Modern English. When the possessor is connected with person's names, animate animals, or personalized ones, speakers will choose "'s". "Of" is generally used for inanimate possessors. However, in the 15th century, the frequency in use of of-genitive was more than the s-genitive.

Several factors may influence the choice. Old English was an SOV language. However, English became a typical SVO language as its grammatical markers changed in the 15th century. The evolution of "'s" as an SOV language grammatical marker was more complicated than that in SVO languages, which tended to adopt various tags to represent various grammatical functions. Many SVO languages with grammatical markers were unable to identify the basic semantic role. Thus the emergence of new grammatical markers was necessary to replace the old tags. The grammatical marker of "'s" shrank, giving rise to the emergence of "of". According to the data, in the 15th century the choices of of-genitive frequency reached its peak, thereby giving rise to the SVO language.

The Norman Conquest in 1066 had a great effect on English. English belongs to the Germanic languages, while French derives from Latin. As a result of the Norman Conquest, English pronunciation, vocabulary and grammar were significantly affected by French. Then English was influenced by both Britain and France. In French, "de", an inheritor of the Latin genitive, undertakes many semantic features; "de" is described as a "universal attributive possession". Between the 10th and 12th centuries, the usage of French "de + NP" and that of "of + NP" were similar, such as "Le fils de Pierre" (The sons of Pierre), "chapitres du (de + le) livre " (chapters of the book) and so on.

"Pedantic" and "phrase" are essential syntactic forms in English. Periphrastic construction is "the central mechanism for achieving perceptual optimality in syntax " (Langacker 1977). The same category can be expressed at different places in the clines. And the clines changed from free to more bonded. Thus, some English phrases can be expressed as (Hopper and Traugott 1993: 33):

a. have washed (perfect tense)

b. the house of Steve (possessive)

c. more beautiful (comparative degree)

In Old English, the speaker would choose different inflectional endings in accordance with gender, number, and case. When one grammar weakened and disappeared, another kind of grammar would become strong enough to replace the older one. Accordingly, in the 11th century, the sounds of the inflectional ending disappeared, while the "'s" inflectional ending was constructed. At the same time, "of" was influenced by the French "de", and the stability of SVO word order and grammar function continue to be strengthened. Therefore, between the 12th and 15th centuries "'s" was gradually replaced by "of". The lack of case and periphrastic construction also influenced the process.

In Early Modern English, "'s" appeared frequently, such as in the scope of time (a day's journey) and geography (the sea's entrance). This may account for the rise in "'s". Factors of the contradiction between "s-genitive" and "of-genitive" can be summarized according to the Principle of Iconicity: (a) High Degree Principle: speakers want to express the most important content first and will choose "'s" or "of" according to their intention; (b) Close Principle: semantic structures need close contact, so speakers are more likely to choose "'s"; (c) Animate Principle: if the possessor is connected with animate and personalized ones, speakers will choose "'s" while "of" is generally employed in inanimate possessed; (d) Weighting Restriction Principle: if the components of the possessor are lighter while that of the possessed are heavier, then speakers will choose "'s", and vice versa choose "of".

4 Typological features of grammaticalization of English–Chinese attributive possession

4.1 Cline of grammaticality

Most linguists would agree that there is a cline of grammaticality of the following type (Hopper & Traugott 1993: 8):

Content item > grammatical word > clitic > inflectional affix

The Chinese attributive possession marker "的" (DE) proves the cline of grammaticality. "的" (DE) evolves from the Ancient Chinese "之" (zhī). It demonstrates that "之" (zhī) was a demonstrative pronoun, namely, a content word. With linguistic development, "之" (zhī) falsified into a structural particle, and became an attributive possession marker. It was attached to the head word as a clitic. But Chinese, being an isolated language, has no change in forms, thus its makers may not evolve into inflectional affixes. It affirms that "的" (DE) may not evolve into an inflectional affix. Thus, the cline of grammaticality of Chinese attributive possession is:

Content item > grammatical word > clitic > inflectional affix (*)

English attributive possession markers, "'s" and "of" also give universal proof. It is demonstrated that "'s" evolves from the demonstrative pronoun "his". In late Middle English, as a relator between possessor and possessed, "'s" became an inflectional affix. Because of the gender, number, and case, forms and cases would reshape and gradually shrink. So "'s" eventually falsified into a clitic. The cline of grammaticality of the English attributive possession marker can be concluded as following:

Content item > inflectional affixes > clitic

4.2 Mode of grammaticalization

In Greenberg's (1966) typological theory of word order, more than 30 languages can be roughly divided into VSO, SVO, and SOV. Greenberg's word order typology also puts forward several other parameters and scales ("N" refers to "possessed", "G" refers to "possessor") (Liu Danqing 2013).

VSO------NG   Predicate · Subject · Object-------Possessed · Possessor

SVO------NG   Subject · Predicate · Object-------Possessed · Possessor

SOV------GN   Subject · Object · Predicate-------Possessor · Possessed

When the verb precedes the object, the noun also precedes the genitive noun. When the verb follows the object, the noun also follows the genitive noun. The harmonious order and disharmonic order in world languages are

not absolute or have no exceptions, but are typical. It lists the word order of attributive possession about SVO and SOV languages as follows:

Table 1: SVO word order and SOV word order.

SVO word order		SOV word order	
NG (harmonious)	GN (disharmonic)	NG (disharmonic)	GN (harmonious)
French	Chinese	Hungarian	Turkish
Russian	German		Mongol
English	English		Japanese
Thai			Korean
German			Hungarian

"Dominant word order" and "harmonious relation" are two terms put forward by Greenberg (1966: 76) in order to explain the characteristics of word order. In SVO languages, the head noun precedes the genitive noun (NG). Thus, the word order of a head noun following a genitive noun is recessive and disharmonic. "Dominant word order" and "recessive order" are relative. NG is dominant over GN in SVO languages, while GN is dominant over NG in SOV languages.

4.3 Hypothesis of unidirectionality

The path of grammaticalization is not consistent all the time. In fact, it is not direct from lexical item to morphology. Rather, lexical items or phrases began to be used in certain constrained contexts and reanalyzed as having syntactic and morphological functions. Schematically, it can be characterized as:

Lexical item used in specific linguistic contexts > syntax > morphology (Hopper & Traugott 1993: 94)

The basic assumption is that there is a relationship between two stages, A and B, with A occurring before B, but vice versa not being allowed. This is the principle of unidirectionality. When a form undergoes grammaticalization from a lexical to a grammatical form, it tends to lose morphological and syntactic properties. Accordingly, a full member of a major category such as nouns or verbs grammaticalizes as a minor category like an attributive possession, conjunction, auxiliary verb, pronoun, or demonstrative pronoun. "的" (DE) and "'s", as content items, evolve into inflectional affixes or clitics.

From the typological perspective, this kind of evolution is widely distributed, and few counterexamples exist.

5 Typological characteristics of English and Chinese attributive possession from a synchronic perspective

5.1 Similarities in English and Chinese attributive possession

These genitive markers "的" (DE), "'s" and "of" in "N_1 + 的 (DE) + N_2", "N_1's N_2" and "N_2 + of + N_1" all prove the Relator Principle and the Iconicity Principle.

5.1.1 The Relator Principle

Dik (1983: 274) points out that conjunctions, attributive possessions, case tags, various subordinators, and attributive tags (including adjective markers, such as "al" in the word of "traditional"; adverbs markers, such as "ly" in the word "slowly"; attributive possession markers, such as "'s" in "John's room") are all members of the relator system. They combine two components into a larger unit, and indicate the relationship between the two components. Dik specifically proposes that the Relator Principle:

A. Always constitutes one unit with two components directly.

B. Always lies between two contact elements.

In "N_1 + 的 (DE) + N_2", the main function of "的" (DE) expresses a possessive relationship between the possessor and the possessed. On the other hand, "的" (DE), as a relator, connects genitive nouns and head nouns. In "N_1's N_2" and "N_2 + of + N_1", "'s" and "of" act as relators, connecting the possessor and the possessed.

5.1.2 The Iconicity Principle

In English, "the leg of the desk" is acceptable, whereas "the eyes of the desk" is not acceptable. This phenomenon also happens in Chinese. "桌子的腿" (the leg of the desk) is acceptable, while "桌子的眼睛" (the eyes of the desk) is not acceptable. Why? According to human cognition, the desk has legs but not eyes. Therefore, "the leg of the desk", "桌子的腿" and "NP + marker + NP" all are acceptable; "the eyes of the desk", "桌子的眼睛" and "NP + marker + NP" are not acceptable.

Human beings have accumulated rich cognitive experiences over time. Thus, one often expresses one's thoughts by using metaphors. These metaphorical concepts are represented in the English and Chinese attributive possession "NP + marker + NP", which have more iconicity. Language with different cultural backgrounds are similar in using metaphorical concepts. For example:

(11) *The root of the problem 问题的根源*
(12) *The fruit of success 成功的果实*
(13) *The tempest of the war 战争的风暴*
(14) *The eyes of the needle 针眼儿*

According to the degree of the animacy of pronouns and nouns, we obtain their animacy hierarchy as follows (Croft 1990: 143):

Animacy: first- and second-person pronouns < third-person pronouns < proper names < human common nouns < non-human animate common nouns < inanimate common nouns

The animacy hierarchy also reflects NP's nature, significance, and degree of agency, etc. When "NP$_1$" is the personal pronoun, the marker "的" (DE) can be coverted in two cases. Firstly, the bilateral relationship between "NP$_1$" is a kind of close relationship, which reflects a closer connection between two entities, such as (15); secondly, "N$_1$" as an indicator identifies the definition, which can act as a unit, such as (16).

(15) *a.我的脚/书包/自行车 (my foot/bag/bike)*
     b.我 (的) 哥哥/我(的)老板/我 (的) 老师 (my brother/my boss/my teacher)
(16) *a.我 (的) 妹妹都很聪明 (my sisters are all smart)*

b. ? 我妹妹都很聪明 (my sisters are all smart)
c.我的妹妹都很聪明 (my sisters are all smart)

In (16), "我 (的)妹妹/我的妹妹" is a reference, and it does not need additional confirmation. Thus, "我 (的)妹妹/我的妹妹" is the prototype. In the expression of these two kinds of relationship, if the structure is closer to the prototype, the probabilities of coverting "的" (DE) are greater. The conversion of "的" (DE) is the result of distance reflecting the speaker's motivation.

There are two kinds of English attributive possession: preposed genitive nouns and postponed genitive nouns. From the aspect of distance, preposed genitive nouns are more formal than postponed genitive nouns, because the distance of the preposed genitive noun is less than other NPs. According to the animacy hierarchy, the more NP in the top line, the more acceptable the preposed genitive noun is. The principle of distance in English and Chinese attributive possession is a reflection of the structure..

5.2 Differences in English and Chinese attributive possession

There are four differences in English and Chinese attributive possession.

1) In English attributive possession, NP takes up the position of qualifier. Thus, indicators and articles cannot appear in the same structure. English articles with indicators are not acceptable, as in (17); articles with attributive possession mark "'s" are not acceptable, as in (18); but the articles can co-occur with the other attributive possession marker "of", as in (19). Lyons (1999: 97) regarded English as an extension genitive language.

(17) *a. * his a car*   *b. * a his car*

(18) *a. * the Tom's coat*   *b. * Tom's the coat*

(19) *a. a classmate of mine*   *b. the door of my car*

In languages such as Italian and Greek, attributive possession nouns take up the position of the attributive adjective. Lyons (1999: 78) called these languages connotation genitive languages. Chinese is a typical connotation

genitive language with referential noun (我那辆车子坏: my car is broken), non-referential noun (我的一辆车子坏了: one of my cars is broken), and classified noun (我的车子坏了: my car is broken) .

2) "的" (DE) is the only Chinese attributive tag. This genitive is preposed (Liu Danqing 2003: 109), and used in different attributive structures, such as attributive possession, attributes, adjectives, verbs, and relative clauses used as attributives, etc. However, different forms have different attributive tags in English, such as the attributive possession tags: "'s" and "of"; the adjective suffix "-al", "-able", etc.; participle form "-ing" and "-ed"; and relative pronouns "that", "who", etc.

3) According to syntax analysis, the Chinese connotation attributive can take "的" (DE) while the extension attributive cannot, for example: 我的五把的椅子 (five of my chairs), 我的那个的学校 (my school). For Chinese attributive possession, "的" is not mandatory. Owing to certain conditions, syntax, pragmatics, and rhythm, etc., "的" (DE) can be omitted, as in: 我(的) 妈妈 (my mother), 我(的) 老板 (my boss), and so on. Meanwhile "'s" and "of" cannot be omitted in English attributive possession.

4) Chinese multiple attributive phrases reject several appearances of "的" (DE). It is easy to omit "的" (DE) in an attributive possession NP, and "的" (DE) closer to the head word cannot be omitted in NP (Liu Danqing 2008), such as:

(20) *a.办公室 (的) 刘主任 (的)好朋友 (的)老婆的同学 (the classmates of the wife of the good friend of Director Liu in the office)*
b.办公室刘主任的朋友 (the friend of Director Liu in the office)
c.好朋友的老婆 (a good friend's wife)

In the cases illustrated in (20), "的" (DE) after "办公室"(the office) is omitted for pragmatic factors. The final "的" (DE) that is close to the head word "老婆" (wife), cannot be omitted. It is important to note that attributive possession phrases can omit "的" (DE). If a single head noun occurs directly, it must take "的" (DE), otherwise it is unacceptable, as in (20b–c). However, English attributive possession tags "'s" and "of" cannot be omitted under any condition. For example:

(21) *He is the godfather of the only child of my wife's first husband. [他是我妻子(的) 第一任丈夫 (的)唯一 (的)孩子的教父。]*

(22) *the toys of the youngest kid of my best friend's brother [我最好 (的) 朋友 (的) 最小 (的) 孩子的玩具]*

5.3 Correlation between attributive possession types and case types

(23)   *a. Ŋuma banaganyu .*
          ŋuma-ø banaganyu
          (father 一absolutive-no marker come)
          'Father comes.'
     b. Yabu numaŋgu buran
          yabu-ø ŋuma-ŋgu buran
          (mother 一absolutive-no marker; father-ergative see)
          'Father saw mother.'
     c. Ŋŋma yabuŋgu buran
          ŋuma-ø yabu-ŋgu buran
          (father 一absolutive-no marker; mother-ergative see)
          'Mother saw father.'

In Dyirbal language, the subject and the object appear without tags, and these two elements are regarded as *ergatives*; this language is known as an *ergative* language. When the subject has tags, the subject is regarded as an absolutive, and this language is known as an *absolutive* language. As opposed to an ergative–absolutive language, it is a subject–object language. In subject–object languages, the subjects of intransitive verbs and transitive verbs are nominatives; the objects of transitive verb are accusatives (Jin and Wang 2014).

Under the analysis of ergative structure and absolutive structure in ergative–absolutive languages, Chinese verbs can be classified into absolutive verbs, ergative verbs, transitive verbs, and intransitive verbs according to their syntactic distributions. The arguments of verbs are accordingly categorized into four types: absolutives, ergatives, subjects, and objects. From the perspective of the attributive possession types, attributive possession can be classified into: absolutives, ergatives, subjects, and objects.

In Chinese, when the absolutive disappears, the ergative can precede the verb, such as in (a) and (b); when the absolutive exists, the absolutive and the ergative, which precede and postpone the absolutive verb respectively, cannot be exchanged. If the ergative phrase has a possessive relationship or whole–part relationship, the ergative phrase can split. In other words, the possessor or the whole can precede the verb, such as:

(24)   *a. 张三剥了香蕉皮。*
        zhāng sān bō   le xiāngjiāo pí
        Zhang San peel (v.) CS banana   peel (n.)
        'Zhang San peels the banana.'
      b. *张三香蕉剥了皮。*
        zhāng sān xiāngjiāo bō   le pí
        Zhang San banana   peel(v.) CS peel(n.)
        'Zhang San's banana is peeled.'
      c. *香蕉皮剥了。*
        xiāngjiāo pí   bō   le
        xiangjiao peel(n.) peel(v.) CS
        'The banana is peeled'.

(25)   *a.她红了脸。*
        tā hóng le liǎn
        3SG red CS face
        'Her face goes red.'
      b. *她的脸红了。*
        tā de liǎn hóng le
        3SG DE face red CS
        'Her face goes red.'
      c. *红了她的脸。*
        hóng le tā de liǎn
        red CS 3SG DE face
        'Her face goes red.'

In (24a), "橘子皮" (banana's peel) is the object; in (24c), "橘子皮" (banana's peel) as subject is the possessed belonging to "张三" (Zhang San). In the ergative phrase, if the phrase has the possessive relationship or whole–part relationship, the ergative phrase can be divided, thus the possessive element or the possessor can precede the verbs. And when the ergative is absent, the absolutive can act as the subject. In (b), the agent "张三" (Zhang

San) is absent, and the absolute "橘子皮" (banana's peel) acts as the subject. The sentence (a) has the possessive relationship, the ergative phrase can be divided, and accordingly the possessor "张三" (Zhang San) can precede the verbs "剥" (peel). "橘子皮" (banana's peel) becomes the ergative.

In (25a), the subjects are all ergatives, and the objects are all absolutives. On the condition that the noun phrases preceding and postponing the verbs have a possessive relationship or a whole–part relationship, the sentences in (b) become "ergative + absolutive + absolutive verb". In (c), when the absolutive disappears, the absolutive can precede the verb. At the same time, in these sentences, nouns preceding verbs are all subjects, whereas postponing verbs are all objects. However, their roles as ergatives and absolutives cannot exchange. Thus, it proves that Chinese is a typical mixed ergative–absolutive and subject–object language, and that Chinese has a typical mixed OV–VO word order (Jin and Yu 2012) in view of the correlation between Chinese attributive possession and word order. In contrast, English is an SVO word order language, so the word order of absolutive, ergative, and absolutive verb cannot be listed as "ergative + absolutive + absolutive verb". English may be a kind of subject–object language, as shown in:

(26)   *I this problem cannot solve.

(27)   a. 我解决不了这个问题。
          wǒ jiějué bù liao zhè gè wèntí
          1SG solve NEG CS   this CL question
          'I cannot solve this question.'
      b. 我的这个问题解决不了。
          wǒ de zhè gè wèntí jiějué bù liao
          1SG DE this CL question solve NEG CS
          'I cannot solve this question.'

In (27), "我(I)" is the ergative and "这个问题" (this problem) is the absolutive. When the phrase expresses possessive relationship, the ergative can be split. The possessor precedes the verb, such as (27b). But the case in (26) is not acceptable. In English, the case must be assigned to the corresponding structural position. "This problem" is in the subject position, so it can be called a nominative. However, "I" is in the nominative form, which is not acceptable. Accordingly, only "this problem" can act as the object.

At the same time, the "'s" genitive also stands for the subject, but "of" stands for the object in English attributive possession. For example, "the

family's support" can be translated as "the family supports…", whereas "the examination of the fire department" can be translated as "…examined the fire department". "Of" and "off" are homologous, and they evolve from "af" in Germanic language, namely "ab-" in Modern English, whose basic semantic is "separation". It shows that "N_2" isolates from "N_1" in "N_2 + of + N_1". Therefore, "of" can be considered as a partitive case. It may also form "N_2 + of + N_1" and "the possessed + marker + the possessor". According to characteristics of grammaticalization, "'s" can be considered as a clitic and a genitive. The clitic should attach to a particular subject. Thus, in the attributive possession, "'s", as an affix, attaches to the subject possessor. The possessor and the possessed in "N_1's N_2" form "the possessor + marker + the possessed", thereby proves that English is a typical subject–object language.

6 Conclusion

This paper has explained English and Chinese attributive possession mainly from a typological perspective, and summed up grammatical similarities and differences, as well as typological characteristics. The path or mode of linguistic grammaticalization in world languages has many similarities, such as: demonstrative pronoun > genitive marker. According to the grammaticalization of English and Chinese attributive possession, "的" (DE) and "'s", the two attributive possession markers, grammaticalize from the demonstrative pronoun "之" (zhī) and "his". Reanalysis and analogy are the two most common mechanisms in the grammaticalization of English and Chinese attributive possession. The motivation for Chinese attributive possession is categorization, and that of English attributive possession is language contact and grammatical replication. It also identified the typological features of grammaticalization of English and Chinese attributive possession, such as the cline of grammaticality, mode of grammaticalization, and hypothesis of unidirectionality. Comparing English attributive possession with Chinese attributive possession, there are similarities taking the Relator Principle and the Iconicity Principle into consideration. It turns out that English and Chinese attributive possession forms are extension attributes and connotation attributes respectively. It also demonstrated that the syntactic structure of extension attributes is more stable than that of connotation attributes. "的" (DE) is the only Chinese attributive tag; however, different forms have different attributive tags in English, such as the attributive

possession tags "'s" and "of"; the adjective suffix "-al", "-able", etc.; the participle forms "-ing" and "-ed"; and relative pronouns "that", "who", etc. Owing to certain conditions, syntax, pragmatics, and rhythm, etc., "的" (DE) in Chinese can be omitted. Meanwhile, English attributive possessions "'s" and "of" cannot be omitted. Finally, in view of the correlation between English–Chinese attributive possession and case types, it concludes that Chinese is a typical ergative–absolutive and subject–object mixed language, while English is a typical subject–object language.

Abbreviations

CL	Classifier
CS	Change of state
DE	Chinese *de*, nominal modifier and nominalizer
MP	Modal particle
N	Noun
N$_1$	Noun class 1
N$_2$	Noun class 2
NEG	Negative
NP	Noun phrase
PFV	Perfective
REF	Reflexive
SG	Singular

References

Allen, Cynthia. 1997. The origins of the 'group genitive' in English. *Transactions of the Philological Society* 9(5). 111–131.

Croft, William. 1990. *Typology and universals*. Cambridge: Cambridge University Press.

Dik, Simon C. (ed.). 1983. *Advances in functional grammar* (Publications in Language Sciences, II). Dordrecht: Foris Publications.

Greenberg, Joseph H. 1966. *Universals of language*. Cambridge: Mass. MIT Press.

Hopper, Paul J. & Elizabeth Closs Traugott. 1993. *Grammaticalization*. Cambridge: Cambridge University Press.

Janda, Richard D. 1980. On the decline of declensional systems: The overall loss of OE nominal case inflections and the ME reanalysis of -es as his. *International Conference on Historical Linguistics* 12(4). 301–303.

Jin, Lixin & Wang Hongwei . 2014. Ergative case, absolutive case and the classification of verbs. *Foreign Language Teaching and Research* 46(1). 45–57.

Jin, Lixin & Yu Xiujin . 2012. Word order type of Mandarin Chinese revisited on pairs of grammatical elements correlated and uncorrelated with OV-VO. *Journal of Foreign Languages* 35(3). 22–29.

Langacker, Ronald. 1977. Syntactic reanalysis. In Charles N. Li (ed.) Mechanics of syntactic change, 59–139. Austin: University of Texas Press.

Li, Shaoqun. 2011. *Modern Chinese "N1 + (的) + N2" attributive structure research.* Xiamen: Xiamen University Press.

Liu, Danqing. 2003. *Word order typology and theories of adpositions*. Beijing: Commercial Press.

Liu, Danqing. 2008. Typological features of nominal phrases in Chinese. *Chinese Language* 1. 3–20.

Liu, Danqing. 2013. Linguistic inventory of possession in Chinese dialect. *Journal of Linguistic Inquiry* 10. 142–161.

Lyons, John. 1999. *Definiteness*. Cambridge: Cambridge University Press.

Rosenbach, Anette & Letizia Vezzosi. 2000. On the history of the s-genitive. *Generative Theory and Corpus Study* 1(10). 183–210.

Shi, Yuzhi & Li Na . 1998. Structure particles replacement in Chinese language history – Grammaticalization Process of "DE". *Chinese Academy of Social Sciences* 6. 165–179.

Shi, Yuzhi & Li Na . 2001. *A history of grammaticalization in Chinese – Motivations and mechanisms of evolution of Chinese morpho-syntax*. Beijing: Peking University Press.

Thomas, Russell. 1931. *Syntactical processes involved in the development of the adnominal periphrastic genitive in the English language*. Ann Arbor: University of Michigan.

Wang, Li. 1962. *Ancient Chinese Dictionary*. Beijing: Commercial Press.

Wu, Fuxiang. 2005. Some typology features in the grammaticalization changes of Chinese. *Chinese Language* 6. 483–494.

Zhang, Min. 2003. Grammaticalization of Ancient Chinese attributive marker "zhi" from a typology perspective. In Wu, Fuxiang & Hong Bo (eds.), *Language Teaching and Research I*, 239–294. Beijing: Commercial Press.

Zhu, Dexi. 1961. About "DE". *Chinese Language* 12. 1–15.

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