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Editors

Space and Quantification in Languages of China

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Finally, we would like to express our deep gratitude to Craig Baker, our trilingual proofreader, for his patience, competence, and devotion in helping us with English correction and proofreading. We are equally grateful for Murielle Fabre's skillful help for the typesetting of the entire manuscript.

Paris, France   Dan Xu
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Contents

1. In phonology, phonesthemes and onomatopoeia remain iconic, while underspecified feature values and duality of patterning are symbolic;
2. In syntax, the distribution of old/new and definite/indefinite information remains iconic, while time/space displacement and the representation that underlies our knowledge of syntactic structure are symbolic.

An *aha!* flash of insight may have occurred when our ancestors 'realized' (it could also have been a process rather than a punctual moment) that the expression of <x, y and z> in language could work as a symbolic rather than iconic means of expression, i.e., that the order (volume, position, etc.) of {x y z} linguistic elements was irrelevant, making it symbolic rather than iconic. Old always comes first, while new always comes last and is always more recent. As humans, that is the only way we are wired to interpret the flow of time, that is, via the order of unfolding of events, including the inescapable fact that the new always follows the old.

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Prosodically Constrained Localizers in Classical and Modern Chinese

Shengli Feng

Abstract This paper discusses the Chinese localizers in terms of prosody. It argues that the development of localizers in Classical Chinese was a typological change from a synthetic to an analytic language type (Huang, Syntactic analyticity: the other end of the parameters. LSA Summer Institute Lecture Notes. MIT/Harvard, 2005, Xu, Typological change in Chinese syntax. Oxford Press, Oxford/New York, 2006) conditioned on the "multi-syllabic constraint" (Sun, Two conditions and grammaticalization of the Chinese locative. In Xu D (ed) Space in languages of China: cross-linguistic, synchronic and diachronic perspectives. Springer Science, Heidelberg, pp 199–288, 2008) which is a sub-case of the prosodic effects determined by the Nuclear Stress Rule and the newly developed disyllabic foot structure (Feng, Linguistics 6:1085–1122, 2003). Historical evidence is provided to demonstrate the grammaticalization process of localizers with the parallel development of light verbs and light nouns in the history of Chinese.

Keywords Localizer • Prosodic constraints • Light verbs • Light nouns • Typological change • Syntheticity and analyticity

1 Introduction

Locational phrases such as 'on NP', 'at NP' and 'in NP' need a localizer in Chinese for non-local nouns, for example:

(1) a. *Shū   zài   zhuōzi   shang*
       book   exist   table   on
       'The books are on the table.

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b. *Tā   cóng   chōutì   lǐ   ná   chū   yī   ben   shū*
he   from   drawer   insider   take   out   one   CL   book
'He took out a book from a drawer.'

c. *Tā   cóng   Běijīng   lái*
he   from   Beijing   come
'He comes from Beijing.'

In Archaic Chinese, however, no localizers were required as exemplified in (2a–b).

(2) a. 八佾舞於庭,是可忍也,孰不可忍也。(論語·八佾 *Analects of Confucius*)
   Bāyì   wǔ   yú   tíng,   shì   kě   rěn   yě, shú bùkě   rěn   yě.
   8x8   dance at   court, this   can   tolerate Prt. what not can tolerate Prt
   '(Confucius said of Jishi) Eight rows of eight dancers in the house courtyard—if this can be
   tolerated, what cannot be tolerated?'

b. 樹吾墓檟, 檟可材也。(左傳·魯哀公 11 年 *Zuo Zhuan*)
   Shù   wú   mù   jiǎ,   jiǎ   kě   cái   yě.
   Plant   my   tomb catalpa, catalpa can   good-quality prt
   'Plant a catalpa tree on my tomb; it can be used as timber.'

c. *Lìushí sì ge   rén   zai tái   *(shang) tiàowǔ.*
   sixty four CL   people at stage top   dance
   'Sixty-four people are dancing on the stage.'

Neither *tíng* 'court' nor *tái* 'stage' are inherently locative nouns and (2c) is
ungrammatical without a localizer (shàng) in Modern Chinese but there are no
localizers attested in Archaic Chinese in general (Chao 1968; Wang 1958; Chou
1961; Wei 2003; Feng 2014). Actually, from an etymological point of view, the
localizers which developed in Medieval Chinese and are used in Modern Chinese,
namely, *qián* 'ahead, before', *hòu* 'back, behind', *shàng* 'above', *xià* 'below' and *lǐ*
'in', were presumably all nouns in Archaic Chinese. Paleographic evidence and
cognate relationships show that localizers in Medieval Chinese all originated as
concrete objects in Archaic or pre-Archaic Chinese. For example, *qián* had an old
meaning, "the front part of a boat (or a toe)"; *hòu* very likely referred to 'buttocks',
and *lǐ* 裏 was certainly a noun meaning 'inside' in Old Chinese. Based on the con-
crete object origin and the general principle that words for abstract notions are
derived from lexical content items with concrete meanings, the terms *shàng* 'top' 上
and *xià* 'bottom' 下 may be derived cognitively from *tang* 堂 'high land, court' and
yu 宎 'marsh land, lowerlands'.[1] (see Zhang Taiyan's *Wen Shi*).

The noun-like usages of pre-localizers such as *shàng*, *xià*, etc. can be seen in the
following examples.

_____
[1] See the following quote from *Mengzi* "今惡侮而居不仁, 是猶惡濕而居下也" (下 = 窪) (孟子 公
孫丑上 *Mengzi*), where 下 *xià* is equal to 窪 *wa*.

(3) a. 至于靡笄之下 (左傳·成公 2 年 *Zuo Zhuan*)
   Zhì   yú   Mǐjī   zhī   xià
   Reach   to   Miji   's   bottom
   'To arrive at the bottom of Miji Mountain.'

b. 舍于昌衍之上 (左傳·僖公 29 年 *Zuo Zhuan*)
   Shě   yú   Chāngyǎn   zhī   shàng
   Reside   at   Changyuan   's   top
   '(Gelu) resides at the top of Changyan.'

The pre-localizers in (3) are used with a genitive marker *zhī* indicating that they
are independent nouns.

With respect to the noun origins of the words under discussion, the question is
what motivated them to become localizers in Medieval Chinese. In what follows, I
will first discuss the syntax of localizers and then examine the distribution of some
spatial nominals (locative nouns) and their grammaticalized usages as localizers in
Late Archaic and Medieval Chinese. This paper is organized as follows: Sect. 2
discusses the syntax of localizers. Section 3 argues that the emergence of localizers
is prosodically motivated. Section 4 compares parallel developments of prosodi-
cally motivated light-verb and light-noun constructions, respectively, in Classical
Chinese (Feng 2012). Section 5 is a summary of this paper, synthesizing prosodi-
cally motivated syntax in terms of nouns, verbs, light verbs, light nouns and local-
izers as well.

2 The Syntax of Localizers and the Questions Involved

Huang (2009) proposed a structure for locative PPs in Archaic Chinese, assuming
that there is a covert localizer (represented by a capital 'L') cross-linguistically.

(4)
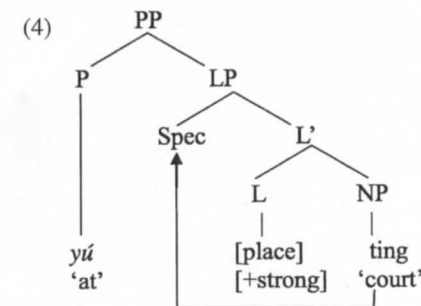
The surface structure of (4) is syntactically derived (i.e., [PP P [LP NPi [L' L ti]]) through a head movement caused by the [+strong] feature under L (the LOCAL feature in Huang's system). This structure, as Huang argues, will generate all Archaic forms exemplified in (2). The locative words like *xià* mentioned above, however, were grammatically required later on in environments like the following (taken from Peyraube 1994; see also Cao 1999).

(5) 孔子去曹適宋,與弟子習禮大樹*(下)。(史記·孔子世家 *Shiji*)

Kongzi   qù   Cáo   shì   Sòng,   yǔ   dìzǐ   xí   lǐ   dà   shù   xià
Confucius leave Cao   go   Song,   with disciple practice rite big tree under
'Confucius left Cao and went to Song to practice the rites with his students **under** a big tree.'

As pointed out by Peyraube (2003), prepositions were required to be overt in the Pre-Medieval Chinese period for non-locative nouns, and so it may seem that the non-existence of (5) is due to the missing preposition. However, PPs are perfectively grammatical with a missing P in Archaic Chinese, as seen in (6).

(6) 子產使校人畜之池。孟子·萬章上

Zichan   shǐ   Xiàorén   xù   zhī   chí
Zichan   order Xiaoren   put   it   pool
'Zichan orders Xiaoren to put it in the pool.'

The question then is why an overt localizer (cf. *xià*) in (5) is necessary while it is not so in (6) with respect to the null P structure. In fact there is no example in which a locative phrase is formed with a non-locative noun where both the localizer and the preposition are overtly missing. This situation has motivated Huang (2009) to come up with a new analysis within the following tree structure.

(7)
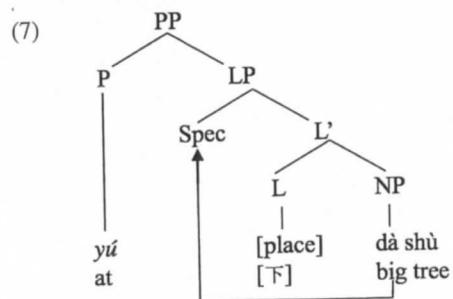
According to Huang (2009), when the [+strong] feature of a null L is lost in Medieval Chinese, the 'L' must be filled with a lexical head (the localizer *xià*, *shàng*, *lǐ*, etc.), as in (7). When the object NP 'big tree' moves up to the Spec of LP (for

reasons of Case), the surface structure *dà shù xià* 'under a big tree' is derived. The difference between Archaic and Medieval (including Modern) Chinese is therefore formally characterized as a loss of the null localizer (i.e., the strong functional feature) which is replaced by phonetically realized localizers.

The structure of locative PPs provided by Huang in (7) is extremely important for formal analyses of Classical Chinese and it motivates a number of questions as well.

First, a natural question raised by Huang's analysis is the cause of the loss of [+strong]. What happened to the [+strong] feature and how did it come to disappear around the Han dynasties?

Second, there are cases where both the localizer and the preposition are overtly missing, during and after the Pre-Medieval period. For example (see Li Guo (2013) for more examples of this type).

(8) a. 遭之塗. (史記·管晏列傳 *Shiji*, ca. 100 BC)
       Zāo   zhī   tú
       Meet   him   road
       'meet him on the street.'

    b. *Fēijī   yào   luò   zài   jiē   *(shang)   (Modern Chinese)
       aircraft wants land   at   street
       'The aircraft would like to land on the street.'

    c. 請著之竹帛. (史記·孝文本紀 *Shiji*, ca. 100 BC)
       Qǐng   zhù   zhī   zhú   bó
       Please   write it   bamboo silk
       'Please write it on bamboo and silk.'

    d. *Qǐng   bǎ   tā   xiě   zài   zhúzi   *(shang).   (Modern Chinese)
       please   ba   it   write at   bamboo
       'Please write it on the bamboo.'

The type of counterexamples given in (8) occurred not only in Medieval Chinese, they can also be found in Modern Chinese. For example (see Chu 2004):

(9) a. 你在黑板寫, 我在書上寫.
       Nǐ   zài   hēibǎn   xiě,   wǒ   zài   shū   shàng   xiě
       You   at   blackboard write, I   at   book   up   write
       'You write on the blackboard, and I write on the book.'

    b. 你在黑板上寫, 我在書上寫
       Nǐ   zài   hēibǎn   shàng   xiě,   wǒ   zài   shū   shàng   xiě
       You   at   blackboard up   write, I   at   book   up   write
       'You write on the blackboard, and I write on the book.'

The locative phrase *zài hēibǎn* 'on the blackboard' in (9) is perfectively grammatical without a localizer. As a result, it is not always the case that the 'L' must be filled with a lexical head by phonetically realized localizers like *xià*, *shàng*, etc. Why is this so? It is a mystery not only in modern Chinese but is also directly related to historical syntax of Chinese. This is because, first, it is unclear

why the 'L' feature in Medieval Chinese (7) can be realized by a **monosyllabic** lexical-head (cf. *shàng, xià, lǐ, wài,* etc.) when the locative phrase is an adjunct (10a), but the 'L' must be **disyllabic** when the locative phrase is a predicate, as observed in Sun (2008). For example:

(10) a. 終日在裏(面)默坐 (朱子語類：卷一百一十三 *Zhuzi Yulei*)

    Zhōng-rì   *zài*   *lǐ*   *mò*   *zuò*
    all-day   at   inside   quiet   sit
    'Sit quietly inside all day long.'

   b. 有幾個秀才在里*(面) (警世通言 *Jingshi Tongyan*)

    Yǒu   *jǐ-ge*   *xiùcái*   *zài*   *lǐ*   ***(mian)***
    Have   several-CL   scholar   at   in   *(−side)
    'There are several scholars inside.'

As Sun pointed out (2008), there is a complementary distribution between monosyllabic localizers and disyllabic localizers in terms of adjunct versus predicate. However, it is unknown why *lǐ-mian* 'in-side' must be used when it serves as a main predicate with *zài* (10b) while a monosyllabic localizer *lǐ* 'inside' is enough to realize the L-feature in (7) if it is used in an non-predicate (adjunct) position (10a). In other words, why should the L-feature be sensitive to predicate/adjunct and mono-/di-syllabic distinctions, respectively?

Still another mystery remains involving localizers in Modern Chinese as discussed in Feng (2003). There is a grammatical contrast between monosyllabic and disyllabic localizers in nominal structures as in the following:

(11) a. 書在桌子上(頭)

    Shū   *zài*   *zhuōzi*   *shàng*   *(tou)*
    Book   at   table   top   (side)
    'The book is on the table.'

   b. 書在桌子的上*(頭)

    Shū   *zài*   *zhuōzi*   *de*   *shàng*   *(tou)*
    Book   at   table   de   top   (side)
    'The book is on top of the table.'

The question is: what is the syntactic status of monosyllabic localizers and their corresponding disyllabic localizers?[2]

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[2]One reviewer points out that "in (11b) *de* requires a noun as the constituent following it (as its complement) and *shàngmian* itself can clearly serve as a noun while *shàng* cannot." I agree with the reviewer that *de* requires a noun as its complement and *shàngmian* serves as a noun (the same is observed in Classical Chinese as seen in (3) above). The question involved here, however, is why only disyllabic localizers can serve as nouns but not monosyllabic ones. This categorical distinction can best (if not only) be characterized in terms of prosody, namely, disyllabicity as a necessary (if not sufficient) condition for L to function as an N, which has been considered the grammatical function of morphological prosody (see Feng 2009; Wang 2009).

All of the questions above call for further explanation and analysis of the mysteries regarding the bizarre behavior of localizers in Chinese historical syntax. In what follows I will propose a prosodic analysis to account for the questions raised above.

3 Prosodically Motivated Localizers

Although the structure of localizers is syntactically generated and universally formed (Huang 2009), the original emergence and further development of such structures would not have taken place without a proper motivation (assuming that prosody is a parametric factor for activating UG operations). What then motivates the change in the first place and what constraints their development later on? To date, there are no adequate explanations for these questions. What I would like to suggest in this paper is the following: It is prosody that gave rise not only to the new grammar of localizers but also to the new light-verb and light-noun syntax, emerging around the same time in Chinese history. Evidence and analyses for the prosodic hypothesis of the development of localizers are given below.

First, as seen in (3), locative words like *shàng* 'top' and *xià* 'bottom' could occur in [N 之下] ('the bottom of N') in Archaic Chinese functioning as an independent noun. This situation, however, changed in Medieval Chinese. That is, more and more locative words were adjacent to monosyllabic nouns forming a disyllabic unit ([N *xià/shàng*]), as shown in (12).

(12) a. 葬之鄶城之下 (左傳·僖公 33 年 *Zuo Zhuan*)

    Zàng   *zhī*   *Kuài*   *chéng*   *zhī*   *xià*
    Bury   it   Kuai   City   's   bottom
    'Bury him at the bottom of Kuai City.'

   b. 齊梁之兵連于城下 (史記·張儀列傳 *Shiji*)

    Qí   *Liáng*   *zhī*   *bīng*   *lián*   *yú*   *chéng*   *xià*
    Qi   Liang   's   army   join   at   City   bottom
    'Qi and Lian's army joined at the bottom of the city.'

The tendency to change from [N 's *xià*] ('N's bottom') to [N *xià*] ('N bottom') was prosodically motivated (forming a Disyllabic Unit) and modified the syntax (locative words became localizers). This, I argue, is the origin of localizers that changed from locative nouns to a functional category of localizers by gradual loss of their noun properties (Roberts 2007; Roberts and Roussou 2003). Both situations, being a syntactic head of non-locative noun and binding prosodically with a non-locative noun, caused the head (i.e., the locative word *xià, shàng,* etc.) to be reanalyzed as occupying the L position (13), and finally gave rise to a new category of localizers in the history of Chinese, as seen (14).
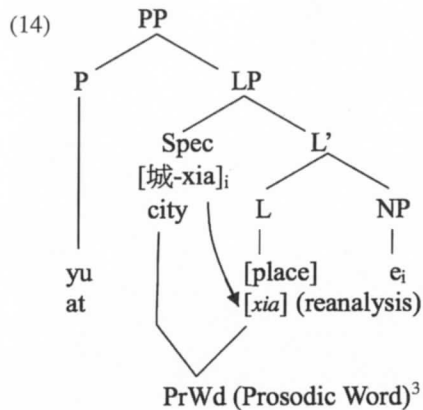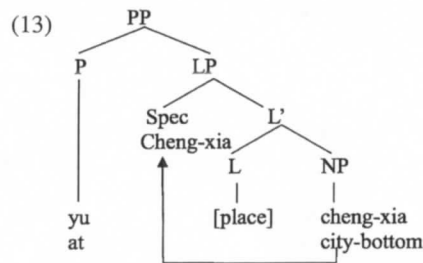
(13)

(14)

PrWd (Prosodic Word)[3]

Table 1 Old Chinese place names in the region from 34° to 36° north and 111° to 116° east (Tan 1982; Sun 2008)

Time	Monosyllabic	Multi-syllabic
Shang dynasty (1100 BCE)	40	9
Autumn and Spring (777–476 BCE)	42	61
Qin dynasty (221–207 BCE)	4	78
Western Han (206 BCE-24 CE)	1	138

The prosodic effect on grammaticalization of localizers can be seen from the fact that, first, more and more monosyllabic names became disyllabic as seen in Table 1 (taken from Sun 2008), and second, more and more locative words (*shàng, xià,* etc.) merged with non-locative nouns as seen in (16). Both were in fact required and reinforced by the newly established disyllabic foot structure (Feng 1997) during the Han dynasty.

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[3] See Feng 1997 for the notion of prosodic word in Chinese.

Note that in Modern Chinese, monosyllabic place names are ungrammatical when they are used alone. For example:

(15) a. (孔子)已而去魯。(史記·孔子世家 *Shiji - Kongzi Shijia,* ca. 100 BC)

(Kǒngzi)yǐ'er   qù   Lǔ
Confucius   shortly   departure   Lu
'Confucius left Lu State shortly after.'

b. *Míngtiān   wǒ   xiǎng   qù   *Tōng*[4]
tomorrow   I   want   go   Tong
'I want to go to Tong County tomorrow.'

c. *Míngtiān   wǒ   xiǎng   qù   Tōng   Xiàn*
tomorrow   I   want   go   Tong   county
'I want to go to Tong County tomorrow.'

d. *Míngtiān   wǒ   xiǎng   qù   Dàxīng*
tomorrow   I   want   go   Daxing
'I want to go to Taxing County tomorrow.'

The prosodically determined grammaticality with respect to the monosyllabic place names in Modern Chinese (15b) is a result of a typological change from moraic foot structure (Archaic) to syllabic foot structure (Medieval), starting as early as the third century BC and accelerating during the Han Dynasty (100 BC; see Feng 1997). As a consequence of the typological change, a clear contrast between a monosyllabic noun with a localizer (*xià, shàng, lǐ,* etc., i.e. $[V + [P [[\sigma]_{PN} + xia 下]]]$) and a disyllabic noun without one (i.e., $[V + P [[\sigma \sigma]_{PN} + NULL]]]$) is seen in the following examples.

---

[4] Thanks to a reviewer for pointing out the following 'counterexample':

Wǒ   zuórì   lí   Jīng
I   yesterday   depart   Beijing
'I left Beijing yesterday.'

Unlike (15b), a monosyllabic place name *Jing* is allowed to be used alone in above sentence, contrary to the statement that monosyllabic place names are not free forms in Modern Chinese. However, as pointed out by Huang and Feng (2009), place names like *Jing* can only co-occur with a monosyllabic word within a disyllabic template (i.e., *li jing* 'depart Jing'), which is called *Qian-ou Ci* 嵌偶詞 'monosyllabic word used in disyllabic template', thus, the following sentence where *Jing* is used outside a disyllabic template is ungrammatical:

Wǒ   zuórì   líkāi   *Jīng
I   yesterday   depart   Beijing
'I left Beijing yesterday.'

As a result, *Qian-ou Ci* like *Jing* is not a counterexample to the generalization given in this paper.

(16)
a. 至 [[σ]ₚₙ+下]   至 [[σ σ]ₚₙ+null]
   吳為鄒伐魯, 至城下。(史記·魯國公世家, *Shiji*)   信遂追, 北至城阳。(史記·淮陰侯列傳 *ibid*)
   Wú   wèi   Zōu   fá   Lǔ, zhì   Chéng xià   *Xìn suí   zhuī, běi zhì Chéngyáng*
   Wu   for   Zou   attack Lu, **reach City bottom** Xin then chase, north **reach Chengyang**
   'Wu attacked Lu for Zou, and arrived at the city wall.' 'Xin then went after (Xiang Yu), and arrived
                                                            at Chengyang in the North.'

b. 至城下, 圍其西北。(漢書, *Hanshu*)   至城门, 遂複言。(漢書, *Hanshu*)
   Zhì   Chéng xià,   wéi   qí   xīběi   *zhì   Chéng Mén,   suí   fù   yán*
   arrive city bottom, surround its northwest   arrive City Gate, then again talk
   'To arrive at the city wall…'   'To arrive at the city gate…'

c. 到城下 (後漢書, *Houhanshu*)   至城郭。(後漢書, *Houhanshu*)
   Dào   Chéng xià   *Zhì   chéng-guō*
   Arrive City bottom   arrive City-wall
   'To arrive at the city wall.'   '(They) arrived at the city wall.'

In each of the historical records (*Shiji, Hanshu* and *Post-Hanshu*), there is a *xià* 'bottom' used with monosyllabic *cheng*, forming a disyllabic locative-denoting noun *chéng-xià* 'City wall'. However, when the name of the city is disyllabic (i.e., *Chéngyáng*), *xià* 'bottom' is not needed and hence is not used. Thus, it is plausible that a reanalysis of the locative words (*xià, shàng, lǐ*, etc.) as localizers took place in the very environment where the spatial nominals were monosyllabic. The following example confirms this analysis:

(17) a. 臣始至于境 (孟子·梁惠王下 *Mengzi*, c.a. 300 BC)
        Chén   shǐ   zhì   yú   jìng.
        I   just   arrive at   **frontier**
        'I just arrived at the frontier.'

    a'. 臣嘗从大王與燕王會境上 (史記·廉頗藺相如列傳 *Shiji*, c.a. 100 BC)
        Chén   cháng   cóng Dà   Wáng   yǔ Yān Wáng huì jìng   shàng
        I   ever   follow Great King at Yan King meet **frontier top**
        'I have ever followed the Great King to meet the Yan King at the Frontier.'

    b. 是聖人僕也。是自埋于民,自藏于畔。(莊子·則陽 *Zhuangzi*, c.a. 300 BC)
        Shì   shèngrén zhī   pú   yě,   shì zì   mái yú   mín,   zì   cáng yú pàn
        This   Sages   's   servant Prt. this self burry **in   people**, self hide in field
        'This is a servant of sages. It is the case that one hid himself among the people and in the fields.'

    b'. 分散在民間 (論衡 *Lunheng*, 100 AD)
        Fēnsàn   zài   mín   jiān
        Scattered in   people among
        '(Jupiter) scattered among people.'

Regardless of whether or not the locative expressions *shàng* 'top' and *jiān* 'among' used here are analyzed as nouns or localizers, the fact is that they were not required before the Han Dynasty (221 BC), as seen in (17a–b), but were prosodically necessary in the language used in the *Shiji* (100 BC) and *Lunheng* (100 AD). As a result, the necessity of using locative words in the Han languages was originally and primarily a prosodic constraint, and only through further development was a syntactic categorical grammar reanalyzed as localizers in later stages.

The argument for prosodically motivated localizers is further supported by the fact that only in the Nuclear Stress (NS for short) position, as seen in (19), are disyllabic localizers necessary and hence developed. For example:

(18) a. *Qīutiān   dàyàn   dōu   wǎng   nán   (biān)   qiānyí*
        autumn   wild-goose all   to   south   (side)   migrate
        'All wild geese migrate south in Autumn.'

    b. *Qīutiān   dàyàn   dōu   qiānyí   dào   nán   *(biān)   le.*
        autumn   wild-goose all   migrate   to   south   side   Asp.
        'All wild geese migrate south in Autumn.'

As Sun (2008) has pointed out, there is a syllabic contrast in terms of the grammaticality of [direction+localizers] in different syntactic positions. Although the observation is correct, a question remains: What is the determining factor involved here? Actually the complementary distribution of the localizers used between pre-verbal and post-verbal positions is, I would like to propose, a natural consequence of applications of the Government-based Nuclear Stress Rule (NSR) stated as follows.

(19) The Government-based Nuclear Stress Rule
     Given two sister notes C1 and C2, if C1 and C2 are selectionally ordered
     (see Zubizarreta 1998), the one lower in selectional ordering and
     containing an element governed by the selector is more prominent.

Following Liberman (1975), Feng (1995) and Zubizarreta (1998), Feng (2003) proposed that the Nuclear Stress of a sentence is, informally speaking, assigned by the verb to its mutually c-commanded (i.e., directly governed) complement, termed the *Government-based Nuclear Stress Rule* (G-NSR, for short). Since there is only one primary stress per sentence, only the directly governed complement gets the nuclear stress; the second constituent after the verb (or the complex verb [V+C], etc.) is not allowed due to the lack of a proper stress in the sentence.

According to the G-NSR, the monosyllabic directional noun in (18b) will be analyzed as not being heavy enough to realize the Nuclear Stress (NS) assigned by the verb at the end of the sentence, thus a localizer is naturally used to fulfill the disyllabicity requirement, otherwise, the sentence would be prosodically ungrammatical (or ineffable).

Under this analysis, we can now explain why there is a complementary distribution between monosyllabic localizers and disyllabic localizers in terms of predicate and non-predicate positions, as seen in (10), repeated here as (20).

(20) a. 終日在裏(面)默坐 (朱子語類 : 卷一百一十三 *Zhuzi Yulei*)

    Zhōng-rì *zài*   **lǐ**   *mò*   *zuò*

    all-day at   inside quiet sit

    'Sit quietly inside all day long.'

b. 有幾個秀才在里*(面) (警世通言 *Jingshi Tongyan*)

    Yǒu   *jǐ-ge*   *xiùcái* *zài*   **lǐ**   ***(mian)**

    Have   several-CL scholar at   in   *(–side)

    'There are several scholars inside.'

Obviously, *lǐ-mian* 'in-side' must be used when it appears in the NS position (10b) while a monosyllabic localizer *lǐ* 'in' is sufficient to realize the L-feature (7) because it occupies an adjunct (or non-predicate) position where no NS is required as in (10a). Similarly, the grammatical contrast between monosyllabic non-locative nouns (with a localizer) and disyllabic non-locative nouns (without locaizer) as seen in (9) can also be explained. Compare:

(21) a. 你在黑板寫,我在書上寫

    nǐ *zài* *hēibǎn*   *xiě,*   *wǒ* *zài*   *shū* *shàng* *xiě*

    2nd at blackboard write, I at   book up   write

    'You write on the blackboard, and I'll write in the book."

b. 你在黑板寫, *我在書寫

    nǐ *zài* *hēibǎn*   *xiě,*   *wǒ* *zài*   *shū* *xiě*

    2nd at blackboard write, I at   book write

c. *你把字寫在黑板*(上)

    nǐ *ba* *zi*   *xiě* *zài* *hēibǎn*   *shang*

    You ba character write at blackboard up

    'You write on the blackboard, and I'll write in the book.'

d. 你在本上寫吧

    nǐ *zài* *běnr*   *shang* *xiě* *ba*

    You at notebook CK   write Prt

    'Would you write on a notebook?'

e. *你在本兒寫吧

    nǐ *zài* *běnr*   *xiě*   *ba*

    You at notebook write Prt

    'Would you write on a notebook?'

f. 你在筆記本寫吧

    nǐ *zài* *bǐjìběnr* *xiě*   *ba*

    You at notebook write Prt

   'Would you write on a notebook?'

It is obvious that the missing localizer can only be permitted either preverbally or within parallel sentences. This is so because contrastive stress or parallel prosody

overrides the Nuclear Stress assigned only to the complement of the verb postverbally (in a rhetorically stress-neutral situation), and thus, only G-Based NS positions (postverb) are prosodically heavy.[5]

Not only can the grammatical contrast between monosyllabic localizers and disyllabic localizers in Modern and Medieval Chinese be explained naturally based on the theory presented here, but also the monosyllabic non-locative nouns can be explained systematically as well. As seen before, unlike Archaic Chinese, Medieval and Modern Chinese grammar do not allow monosyllabic nouns to be used for location-denoting purposes even if they appear in preverbal position. For example (taken from Sun 2008):

(22) a. *Tā* *xǐhuān* *zài* *shān*   ***(shang)** *kàn* *rì* *chū*

    he like   at   mountain top   see   sun out.

    'He likes to watch sunrise on a mountain.'

b. *Tā* *xǐhuān* *zài* *gāo*   *shān*   (*shang*) *kàn* *rì* *chū*

    he like   at   high   mountain top   see sun out

    'He likes to watch sunrise on a high mountain.'

How can we rule out sentences like (22a)? Based on Huang's theory, we suggest the following three different operations.
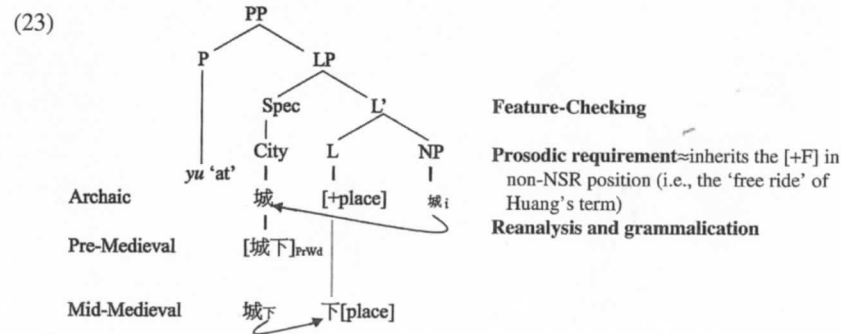
(23)

*Nǐ *zài* *běnr*   *xiě,*   *wo* *zài*   *shū*   *shang* *xiě*

you on notebook write, I   on   book   LC   write

'You write on a notebook, I write on book.'

This shows that place nouns must at least be disyllabic when the CL is missing, a prosodic constraint of disyllabicity.

As Huang pointed out, in Medieval Chinese, the Archaic covert null L feature was lost; however, as seen above, the medieval overt-L (the localizers) was most likely grammaticalized under a prosodic motivation. In the current analysis, it is highly plausible that prosody forced monosyllabic non-locative nouns to be combined with a monosyllabic locative word (*shàng, xià*, etc.) to fulfill the NSR (19) and/or Disyllabicity. Thus, only through such operations can the locative words be reanalyzed as occupying the L position, giving rise to a new functional category for the localizer.

4   Prosodically Motivated Light Verbs and Light Nouns in Medieval Chinese

The development of localizers is not a sporadic case of prosodically motivated syntax in Classical Chinese. As observed by Feng (2005), the null light verbs in Archaic Chinese were also phonetically realized under prosodic pressure in Medieval Chinese. For example (taken from Feng 2005):

(24) a. (顥)夜夢之曰…('余, 而所嫁婦人之父也;') (左傳·宣公 15 年 *Zuo Zhuan*)
        (Kē)   yè   mèng   zhī   yuē…
        Ke   night   dream   it   say
        'Ke dreamed of it in the night and said…'

   b. (相如)與卓氏婚, 饒於財。(史記·司馬相如列傳 *Shiji*)
        (Xiang Ru)   yǔ   Zhuó   Shì   hūn   ráo   yú   cái
        (Xiang Ru)   and   Zhuo   Miss   marry, rich   at   future
        '(Xiang Ru) and Miss Zhuo got married and are extremely rich.'

   c. 無友不如己者。(論語·學而 *Lunyu*)
        Wú   yǒu   bù   rú   jǐ   zhě
        No   friend no   like   self   nom
        'Do not make friends with those who are not as good as yourself.'

The words *mèng* 'dream', *hūn* 'marriage', and *yǒu* 'friend' are generally used as nouns while they also functioned as verbs taking an object in Archaic Chinese (Takashima 2005). It is assumed that there was a covert light verb DO used in Archaic Chinese (Feng 2005) and only around the time of the Eastern Han (200 AD) did phonetically realized light verbs such as *zuò* 作 'do', *qǐ* 起 'up', *xing* 興 'appear' start to appear. For example:

(25) a. 其夜作夢, 見有人來。(法苑珠林卷 76 *Fayuan Zhuzilin zhuan*)
        Qí   yè   zuò   mèng, jiàn   yǒu rén   lái
        that   night   do   dream, see   have people come.
        '(He) he had a dream that night where he saw someone coming.'

   b. 仁者何用工巧之人共作婚為? (佛本行集經·卷 13 *Fo Benhang Jijing*)
        Rén zhě   hé   yòng   gōngqiǎo zhī rén   gòng   zuò hūn   wéi?
        nice person why   use   exquisite 's   person together DO marriage Q
        Why a nice person would take an exquisite person to marry with?'

   c. 我不用汝與我作友 (佛本行集經·卷 25 *Fo Benhang Jijing*)
        Wǒ bú   yòng rú   yǔ   wǒ zuò   yǒu.
        I   not   use you   with   I   do   friend
        'I don't need you to be friends with me.'

Why did overt light verbs suddenly appear in the language after the Han? The emergence of overt light verbs in the history of Chinese syntax is a mystery not solved until Xu (2006) Hu (2005) and Feng (2005). However, disyllabic verbal expressions are expected to be favored under the NSR (19), which can be satisfied by any syntactic means. Thus, all overt light-verb expressions, as seen in (25), are located within the NS domain. In fact, making the archaic covert light verbs overt was merely one of many syntactic strategies activated under the prosodic grammar during the Late Medieval Chinese (see Feng 2011 for more prosodic effects on syntax). The historical change of light verbs (from covert to overt) can be seen even more clearly in the examples given in (26).

(26) a. 不鼓自鳴⁶ (佛本行集經·卷 2 *Fo Benhang Jijing*)
        Bù   gǔ   ér   míng
        Not   drum   and   sound
        'No (one) drummed (beat) the drum but it sounds.

   b.

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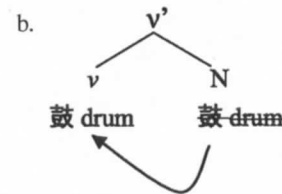
⁶Note that *gu* 'drum' does not stand as an disyllabic foot by itself in (26a), but it is combined with the negator *bu* to form a foot, where it undergone a syntactic denominalization warranted by prosody.
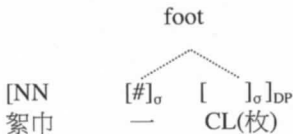
c. 時彼大眾…或複騰鈴,或複打鼓。(佛本行集經·卷 8 *Fo Benhang Jijing*)
Bǐ   shí   dàzhòng…   huò   fù   téng   líng, huò fù   dǎ   gǔ
That time people…   or   again ring   bell, or again hit drum
'At that time people… either rang bells again or beat drums again.'

d. 不久打鼓,明星欲出。(佛本行集經·卷 36 *Fo Benhang Jijing*)
Bù   jiǔ   dǎ   gǔ,   míng xīng yù   chū
Not long hit   drum, bright star will out
'Not long afterwards, (they) beat the drum when the
bright stars came out.'

It is well known that nouns like *gǔ* 'drum' could easily be verbalized as seen in (26a–b). However, by the time of Late Medieval Chinese (i.e., after the Han, ca. 200 AD), the denominalization operation (such as *gǔ* 'drum' used as a verb) was gradually replaced by a process of adding a semantically empty verb like *zuò* 'do' (in the present case) before the noun (i.e., *gǔ*), making a VO phrase out of a monosyllabic verb (or a noun). What is most important to note here is the fact that all of the sentences above will become prosodically odd without overt light verbs, for example:

(27) 時彼大眾…或複騰鈴,或複*鼓。(佛本行集經·卷 8 *Fo Benhang Jijing*)
Bǐ   shí   dàzhòng…   huò   fù   téng   líng, huò fù   *gǔ.
That time people…   or   again ring   bell, or again   ***drum**.
'At that time people… either rang a bell again or beat a drum again.'

This is why there are no examples like (27) in historical documents. Why must there be an overt light verb (or a verb) in each of the sentences in (26b–d)? As suggested above, the light verb construction was a parallel development to the prosodically motivated syntactic changes in Archaic Chinese in an across-the-board fashion.

Parallel development of prosodically motivated light noun (i.e., classifier) constructions (Feng 2012) also exhibits a prosodic motivation: a classifier emerges when the number is monosyllabic (such as *qí* 'seven'), while the classifier can be omitted from the [N Num CL] structure if the number is disyllabic (such as *shí-bā* 'eighteen'), as seen in (28).

(28) a.   foot

[NN   [#]σ   [   ]σ]DP
絮巾   一   CL(枚)   (居延新簡 *Juyan Xinjian*)

b. 七枚熱鐵丸…十八鐵丸。(法苑珠林 *Fa yuan zhu lin*)
qī   méi rè   tiě   wán…   shí-bā   tiě   wán….
seven CL   hot iron   ball…   ten-eight iron ball…
'(there are) seven hot iron balls… (and) 18 iron balls…'

Examples given in (28) once again show that if the numeric element is monosyllabic, a light noun is favored, indicating that prosody may also have affected the development of classifiers in Classical Chinese (Feng 2011), which parallels the development of light verbs and localizers not only in terms of movement lost (Huang 2009, 2013), but also in terms of chronological parallelism (Pan 1982; Shimura 1995; Wu 2003; Feng et al. 2008).

5 Conclusion and Final Remarks

In this paper, I have adopted Huang's (2009) syntactic and Sun's (2008) prosodic analyses for Chinese localizers in classical and modern Chinese. I have attempted to show that the typological change of Classical Chinese from synthetic to analytic can be characterized in terms of syntax (i.e., losing movement) motivated by prosody (the Nuclear Stress Rule and the disyllabic requirements).

Under the system of prosodic grammar proposed here, the scenario of localizer development is different from previous studies. First, under the current theory, prior to the [+strong] feature of the null L being lost in Archaic Chinese, pre-localizer *xià, shàng, lǐ*, etc., were used to fulfill the disyllabic requirement for monosyllabic nouns (whether intransically locational or not) through disyllabicity or in the Nuclear-Stress positions. When more and more *shàng, xià* elements were used as prosodic place-holders for location-denoting nouns in Medieval Chinese, the pre-localizers (*xià, shàng, lǐ*, etc.) were reanalyzed as lexical heads in the 'L' position of (7). Only then were true localizers born, giving rise to the surface structure of *dà shù xià* 'under a big tree' (5). The difference between Archaic and Medieval (including Modern) Chinese is therefore not simply a loss of the null localizer (i.e., the strong functional feature), but instead the [+L] feature was inherited by (1) a disyllabic place name in non-NS positions and (2) is replaced by a new category of localizer especially in NS positions.

In fact, the prosodic hypothesis given here is not limited to localizer development (Behr 2010; Redouane 2007). The prosodic phenomena among the three functional categories, namely light verbs, classifiers and localizers discussed in this and other papers (Feng 2005, 2012) were all newly created syntactic structures during the typological change from Old Chinese to Medieval Chinese, and each of them requires a systematic and unique analysis in terms of prosodic syntax that activates relevant parametric factors and motivates grammaticalization in the history of Chinese, a fascinating new area for linguistic studies.

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