

Approximative *zuǒyòu* ‘around, about’ in Chinese^{*}

Marie-Claude Paris Marie-Thérèse Vinet
Université Paris VII-Denis Diderot *Université de Sherbrooke*

This paper offers a semantic and syntactic analysis of approximative *zuǒyòu* in Chinese. *Zuǒyòu* is identified as a grammaticalized item. It is a compound word formed by the coordination of two antonymous nominal localizers, *zuǒ* ‘left’ and *yòu* ‘right’ whose invariant is a locative. *Zuǒyòu* displays different uses and meanings: a connection is established between its inherent locative meaning and its metaphorical reading as an approximative. Approximative *zuǒyòu* has a restricted distribution in the DP and displays several semantic cooccurrence restrictions. Most importantly, it can only involve modification over a cardinal numeral, which it follows. The study illustrates how it differs from other Chinese approximative items, such as *chàbùduō* ‘almost’ or *(dà)yuē* ‘around’, which essentially identify with a predicate. *Zuǒyòu* also raises questions concerning the study of frames of references in a spatial domain. We further analyze the restrictions observed on its combination with classifiers and with (elliptical) nouns, with and without the marker of modification *de*. An analysis adopting Kayne’s (1994) approach to relative clauses, and Simpson’s (2002) analysis of *de* as D, is provided to account for the positioning of *zuǒyòu* within NP in QP modificational structures with *de*.

Key words: *zuǒyòu*, approximative, numeral, locative, classifier, cardinality

1. Introduction

Descriptive or theoretical studies on approximative forms in Chinese, as in almost all languages, are rather scarce. Peyraube (1979), Wang (1990), Shen (1987) on Chinese, and more recently Tang (2009) on Cantonese approximative forms, all offer an analysis

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of certain adverbial approximatives which identify essentially with the predicate. Approximative forms like *chàbuduō*, *chà(yi)diǎnr* and *jīhū* in Chinese, which can all be translated by *almost*, *nearly* or *about* in English, are indeed generally used as adverbs modifying degrees or sets of properties with verbs/adjectives. They do not necessarily modify a quantity with a numeral, where the number refers to the cardinality of a set.¹ The form *zuǒyòu* (left-right/or thereabouts) differs from these last items in the sense that when it marks approximation, there is an obligatory co-occurrence relationship with a numeral. As an approximative, *zuǒyòu* follows a numeral and classifier sequence, as in (1a), and the same distributive properties can be observed with two other similar locative compounds, *shàngxià* (up-down/or thereabouts) in (1b) and *qiánhòu* (front of-behind/or thereabouts) in (1c):

- (1) a. 九 十 萬 桶 左右
 jiǔ shí wàn tǒng zuǒyòu
 nine ten ten thousand Cl/N or thereabouts
 ‘900,000 barrels approximately’
- b. 四十 歲 上下
 sì-shí suì shàngxià
 four-ten year or thereabouts
 ‘about forty years old’

¹ To our knowledge, Shen (1987) is the only one who has noted the different distributions of *chàbuduō* and *chà(yi)diǎnr* with respect to quantitative expressions. *Chàbuduō* is found in cooccurrence with numeral and degree expressions, but *chàdiǎnr* is not.

- (i) a. ...走了 差不多 /*差點兒 五十 里 公路
 ...zǒu-le chàbuduō /*chàdiǎnr wǔ-shí lǐ gōnglù
 walk LE almost / not quite five-ten li road
 ‘...have walked almost fifty li’
- b. ...等了 差不多 /*差點兒 兩 個 小時
 ...děng-le chàbuduō /*chàdiǎnr liǎng ge xiǎoshí
 wait LE almost / not quite two Cl hour
 ‘... has waited almost two hours’
- c. 你 跟 他 差不多 /*差點兒 重
 nǐ gēn tā chàbuduō /*chàdiǎnr zhòng
 2s with 3s almost / not quite heavy
 ‘You are almost as heavy as he is.’

- c. 在 一九四九 年 前後
 zài yī-jiǔ-sì-jiǔ nián qiánhòu
 at one-nine-four-nine CI/N or thereabouts
 ‘around 1949’

Zuǒyòu raises several important questions concerning the study of frames of references in a non-spatial domain, the type of lexical/functional category it corresponds to in the grammar of Chinese, as well as its distribution in the DP area.² Furthermore, Number (Plural) also plays a role in this syntactic context, since approximative *zuǒyòu* is closely related to counting and measuring and, therefore, to a numeral+classifier or [Num+CI] sequence.³

To our knowledge, there have been no thorough studies of the syntactic and

² In this paper, we have also chosen to limit our study of approximators to forms which bear similar syntactic and semantic properties. For instance, *zuǒyòu*, *shàngxià*, and *qiánhòu* all have the same spatial anchoring; they are not directional. They also instantiate similar syntactic distributions in the DP: they either follow a [Num+CI] sequence or a [Num+CL+N] sequence and they form an autonomous constituent. Hence we have excluded approximative forms which precede the Numeral, such as *yuē* ‘about’, *dàyuē* ‘approximately, around’, *dàgài* ‘probably’, etc. and we have discarded directional or comparative terms like *duō* ‘more’, *yǐshàng* ‘more’ or *yǐxià* ‘less’. As illustrated in (ia), *duō* can either follow or precede the classifier and (ib) demonstrates that it forms an autonomous sequence:

- (i) a. 三 塊 多 / 三 百 多 個 人
 sān kuài duō / sān bǎi duō ge rén
 three CI more / three hundred more CI person
 ‘more than three dollars/more than three hundred persons’
 b. 三 百 多
 sān bǎi duō
 three hundred more
 ‘more than three hundred’

We have not chosen *lái* ‘about’ either, as in (iia), because *lái* is compatible with measure words only and the sequence which precedes it is not autonomous: from (iia), (iib) cannot be formed:

- (ii) a. 三 尺 來 布
 sān chǐ lái bù
 three foot about cloth
 ‘around three feet of cloth’
 b. *三 尺 來
 *sān chǐ lái
 three foot about

³ *Num* refers throughout to cardinal numerals, not to Number (Nb). Unless specified otherwise, it does not include ordinal numerals.

semantic properties of this lexically restricted type of approximator within the grammar of Chinese. The aim of this study is therefore to investigate the syntactic and semantic properties of the approximation form *zuǒyòu*. The paper is organized as follows. In the next section, we briefly provide a definition for the study of numeral approximation within the field of linguistics studies. Section 3 then presents various uses and meanings for approximative *zuǒyòu* as well as its morphemic status, the geometric features it corresponds to and the role played by these features in the semantics of *zuǒyòu*. The lexical properties of *zuǒyòu* are compared to other similar locative compounds in Chinese and the possibility of cross-cultural differences is briefly discussed. Section 4 provides an analysis for the syntactic properties and the distribution of this form, with and without the marker *de* within the Chinese DP. Based on work in Hsieh (2008), we also discuss the relation between *zuǒyòu* and the numeral+classifier or QP sequence, since approximative *zuǒyòu* is closely dependent upon its presence in order to be licensed. We further provide derivations within Kayne's (1994) framework and we argue that the modifying structure with *de* has an underlying clausal structure. The categorial properties of this approximator are also discussed. A last section concludes briefly on the identification of approximative *zuǒyòu* in the grammar of Chinese.

2. Studies on numeral approximation within linguistics

Since approximative *zuǒyòu* is obligatorily paired with a numeral in the sentence, it is closely connected to the study of numeral approximation. Research on numeral approximation within the field of linguistics can be considered a quite complex subject because it establishes a connection between the study of numbers and the study of words within languages. It poses several difficulties that can be partly attributed to the mathematical definition of approximation and to the presence of constraints outside the field of linguistics, namely the relevance of round and sharp figures. For instance, sharp figures, like *a thousand and one* in (2), cannot co-occur with words of approximation in probably all languages, leaving us wondering why, from a linguistic point of view, the number *one thousand* should be considered less precise than *one thousand and one* (cf. also Krifka 2002, 2007):

- (2) a. *I've got approximately a thousand and one things to do.
 b. *J'ai mille et une choses à faire environ. (French)
 c. *我 有 一千零一 件 事 左右 要 做
 *wǒ yǒu yì-qīān-líng-yī jiàn shì zuǒyòu yào zuò
 Is have one-thousand-zero-one Cl thing or thereabouts must do
 'I have a thousand and one things to do approximately.'

Furthermore, in an interval with two figures, the sequence must be in a rising order (3a), and not in a decreasing order (3b). This phenomenon is observed in Chinese as well (3c):⁴

- (3) a. I have read approximately 10 to 12 books.
 b. *I have read approximately 12 to 10 books.
 c. *我 看了 十二 到 十 本 書
 *wǒ kàn-le shí-èr dào shí běn shū
 1s read LE ten-two to ten CL book

Approximation theory in mathematics is strongly influenced by the need to solve practical problems of computation. In linguistics, approximation words which modify a numeral tend to correspond to terms which evaluate an imprecise measure/quantity, but fairly close to correct. On an abstract linear axis, they illustrate how “close to” a certain fixed target, an element can be. The numbers referred to are most usually integers and can be fractions/percentages, but decimals or sharp figures which point to an extremely precise number are usually ruled out or considered awkward in this reading, as illustrated in (4):⁵

- (4) a. 跑 一 公里 左右 的 路
 pǎo yì gōnglǐ zuǒyòu de lù
 run one km or thereabouts DE road
 ‘run a distance of one km or so’

⁴ Given an appropriate context, a sequence of figures from high to low, is not unlikely:

- (i) 水位 很 快 的 從 二十 公尺 降到了
 shuǐwèi hěn kuài de cóng èr-shí gōngchǐ jiàngdào-le
 water level very fast DE from two-ten meter go down LE
 十二 到 十 公尺 左右
 shí-èr dào shí gōngchǐ zuǒyòu
 ten-two to ten meter or thereabouts
 ‘From twenty meters, the water level went down very fast from twelve to ten meters approximately.’

Thanks to an anonymous reviewer for pointing this fact to us.

⁵ Furthermore, the use of numbers higher than 10 with approximators depends on Weber’s law and scalar variability. Weber’s law states that discriminability of two quantities is a function of their ratio. Since numbers below 10 are easier to discriminate than higher numbers, the use of multiples of ten and higher numbers are generally preferred with numeral approximators (cf. Dehaene 1997 for further discussions on levels of approximation).

- b. *跑 二 點 六四 公里 左右 的 路
 *pǎo èr diǎn liù-sì gōnglǐ zuǒyòu de lù
 run two point six-four km or thereabouts DE road
 ‘#run a distance of 2.64 km or so’⁶

Studies on numeral approximation in linguistics can cover a large variety of facts, from the analysis of numerical bases and number concepts (Dehaene 1997, Hurford 1987, Wiese 2003, 2007, Kayne 2006, Ionin & Matushansky 2004, among many others), to the study of the internal syntax or morphology of numbers (Kayne 2005, Corver & Zwarts 2006), as well as the study of different types of words related to the notion of approximation in languages. If, as claimed by many authors, there is something universal in the syntax of cardinal numbers, how can this situation be extended to the syntax of approximation words closely connected to a numeral, as is the case for Chinese *zuǒyòu* or French *environ* and similar items in other languages? If numerical recursivity follows from the recursivity of language (cf. Hauser, Chomsky & Fitch 2002, Wiese 2003), this shared property then clearly explains the similarity between the two cognitive structures. The current paper is therefore intended as a small contribution to the analysis of numeral approximation in general by focusing on the syntax and semantics of Chinese approximative *zuǒyòu*.

3. Uses and meanings for *zuǒyòu* and other similar locative forms in Chinese

As is well-known, the internal composition of words, their lexical semantics and their morphological weight always play an important role in their identification and syntactic behavior. In this section, in order to offer a clear picture of *zuǒyòu*, we first discuss its polysemic potential, its morphemic status closely connected to spatial and temporal deixis, as well as the lexical properties and restrictions of other similar locative forms in Chinese.

3.1 A polysemic potential for *zuǒyòu*

Zuǒyòu displays a variety of uses and meanings. It is an exocentric compound word formed by the coordination of two localizers which are antonyms, *zuǒ* ‘left’ and *yòu* ‘right’.⁷ Its invariant is a locative (e.g. *zuǒ/yòu* ‘left-right’) which denotes the boundaries

⁶ We use the number sign (#) to refer to the intended meaning of a sentence.

⁷ Coordinate compounds formed of two contrary elements is a very productive device in Chinese

created by *the left* and *the right*, *the two sides* or a totality. It then extends metaphorically from a concrete spatial meaning to the more abstract realm of an “approximative” meaning, delimited by two boundaries on a numeral scale.

If the approximative meaning refers to an abstract linear axis on a numeral scale,⁸ this situation is not regularly observed elsewhere. This compound form can indeed be used as a real locative nominal form (5a) or as an adverbial within the scope of VP, in (5b), where *zuǒyòu* refers to the left or the right of something. In (5c), *zuǒyòu* can be used orally as a sentential adverb. It is then translated by ‘in any case’, with the intended meaning ‘whether to the left or the right’. In (5d), *zuǒyòu* is used as a verb in a passive construction:

- (5) a. 連體字 剖分 取 碼 不 易, 分體字 又
 [liántǐzì pōufēn qǔ mǎ bú yì], fēntǐzì yòu
 simple characters analyse take sign Neg easy, compound characters again
 有 左右, 上下, 內外 等 結 字 型態
 yǒu zuǒyòu, shàngxià, nèiwài děng jié zì xíngtài
 have left-right, up-down, inside-outside etc. construct character form
 ‘[It is difficult to separate the signs in simple characters], compound
 characters have a left and a right, a top and a bottom, an inside and an
 outside, and so forth, in their construction patterns.’ (AS Corpus 107492)
- b. 左右 搖擺
 zuǒyòu yáobǎi
 left-right swing
 ‘swing right or left’

word formation (cf. Paris 1979, Lang 1984). Dimensional terms (size, length, depth, etc.), for instance, are formed by compounding two adjectives which mark both ends of the respective scale. However, *zuǒyòu*, *shàngxià* and *qiánhòu* are the only antonymous compounds, formed of two contrary spatial terms, which refer to approximateness rather than dimension.

⁸ Numeral approximation is a form of abstract movement, without a real movement. It is rather confined to a delimited space along a vertical/lateral axis, the number axis, where numbers are ordered within a progression and one can always tell its successor. In other words, the space referred to is always linear and never bi- or tri-dimensional. *Lǐwài* ‘inside and outside’, a compound form also built on by means of the coordination of two locatives *lǐ* ‘inside’ and *wài* ‘outside’ does not indicate approximation. This might be related to the fact that it refers to a volume, not to a linear dimension.

- c. 我 左右 閒 著 沒 事, 就 陪 你 走 一 趟 吧
 wǒ zuǒyòu xián zhe méi shì, jiù péi nǐ zǒu yí tang ba.
 Is in any case free ZHE Neg thing then accompany 2s go one Cl BA
 ‘Anyway, I am free now. Let me go with you.’ (Wu 1979)
- d. 我 已經 完全 被 一 種 命運 所 左右,
 wǒ yǐjīng wánquán bèi yì zhǒng mìngyùn suǒ zuǒyòu,
 Is already totally BEI one Cl fate SUO control
 而 這 種 命運 並 不 屬 於 我
 ér zhè zhǒng mìngyùn bìng bù shǔ yú wǒ
 and this Cl fate and Neg belong at Is
 ‘I am already totally controlled by fate, and this fate does not at all belong to me.’ (AS Corpus)

When *zuǒyòu* is not an approximation form, as observed in (5), it is generated within the DP domain in (5a) only. Elsewhere, it is labeled as a locative adverb adjoined to some functional category positioned in front of a verb (5b), a non-locative adverb with sentential scope in (5c) and a verbal form in (5d).

3.2 Lexical distinctions between similar approximative locative forms

If the three forms illustrated in (1) above all share the possibility of referring to an approximation and if they all function in a similar fashion, i.e. in the same syntactic contexts, certain semantic restrictions apply to *shàngxià* and *qiánhòu* in terms of the types of measure units they can combine with (cf. Lü 1981). For instance, *qiánhòu* can refer to an approximation concerning dates or a moment in time (6a), but it is lexically constrained and cannot refer to duration (6b) or distance (6d). *Zuǒyòu* and *shàngxià* can appear with age or distance (6c-d), and *shàngxià* is excluded with duration, as observed in (6b) below:⁹

⁹ Note that contradictory comments can be found in manuals and dictionaries on the use of *shàngxià*. For instance, the *Dictionnaire chinois-français du chinois parlé* (2001:970) points out that *shàngxià* “ne s’emploie que pour l’approximation d’un âge le plus souvent”...“jamais (avec) une distance, une durée, un moment ponctuel du temps” ([*shàngxià*] is only used with approximation concerning age...never (with) distance, duration, a punctual moment in time). However, in the Academia Sinica Corpus, one can find examples of *shàngxià* referring to a distance, as in (i):

- (i) 集 水 區 海拔 已 在 三千 公尺 上下
 jí shuǐ qū hǎibá yǐ zài sān-qiān gōngchǐ shàngxià
 accumulate water region altitude already be at three-thousand meter or thereabouts
 ‘The depth of the reservoirs is already around 3,000 meters.’ (AS Corpus 109047)

- (6) a. 在 一九四九 年 前後/左右/*上下
 zài yī-jiǔ-sì-jiǔ nián qiánhòu/zuǒyòu/*shàngxià
 at one-nine-four-nine Cl/N or thereabouts
 ‘around 1949’
- b. 三十 天 左右/*上下/*前後
 sān-shí tiān zuǒyòu/*shàngxià/*qiánhòu
 three-ten Cl/N or thereabouts
 ‘thirty days approximately’
- c. 四十 歲 左右/上下/前後
 sì-shí suì zuǒyòu/shàngxià/qiánhòu
 four-ten year or thereabouts
 ‘about forty years’
- d. 三千 公尺 左右/上下/*前後
 sān-qiān gōngchǐ zuǒyòu/shàngxià/*qiánhòu
 three-thousand meter or thereabouts
 ‘3,000 meters approximately’

Qiánhòu can also be preceded by an expression which does not have to be a date, but has to stand for a period of time, as in *kàng Rì zhànzhēng* ‘the resistance against Japan’, in (7):

- (7) 但 抗 日 戰爭 前後 給 毛澤東
 dàn kàng Rì zhànzhēng qiánhòu gěi Máo Zédōng
 however resist Japan war or thereabouts for Mao Zedong
 做過 秘書 的 周小舟
 zuò-guo mīshū de Zhōu Xiǎozhōu...
 do-Sfx secretary DE Zhou Xiaozhou...
 ‘However, Zhou Xiaozhou, who was Mao Zedong’s secretary during the period of the war against Japan (i.e. the Second Sino-Japanese War) ...’

Therefore, if *shàngxià* is limited to approximation concerning age, height, and weight, *zuǒyòu* can refer to all types of measures, with round figures as well. Most importantly, only *zuǒyòu* can refer to plural individualities, as illustrated in (8), contrasted with (9). Sharp figures can be found in disjunctions (8a) or in asyndetic juxtapositions

We have not found any examples of *shàngxià* preceding a duration in the AS corpus, nor do our informants from Mainland China accept this sequence, but one anonymous reviewer accepts *sān tiān shàngxià* (three days approximately).

of two numerals (8b), illustrating another common way of expressing approximation by referring to any two continuous figures on a numeral scale:

- (8) a. 五 個 還 是 六 個 人
 wǔ ge hái shì liù ge rén
 five CL or six CL person
 ‘five or six persons’
- b. 十 七 八 個 孩 子 左 右
 shí-qī bā ge hái zi zuǒ yòu
 ten-seven eight CL child or thereabouts
 ‘17 to 18 children approximately’

This limitation in the semantic field of *shàngxià* and *qiánhòu*, as discussed above, explains the ungrammaticality in (9):

- (9) *十 七 八 個 孩 子 上 下 / 前 後
 *shí-qī bā ge hái zi shàngxià/qiánhòu
 ten-seven eight CL child or thereabouts
 ‘17 to 18 children approximately’

Since among approximatives of this class *zuǒyòu* is considered the most widely used form, it was deliberately chosen to be the focus of this study.

3.3 The morphemic status of *zuǒyòu*

In the approximative meaning, the two compound parts of *zuǒyòu* can be related to the meaning of the whole in the sense that this word is building on the notion of a position on an abstract scale, the number scale. The abstract representation of the scale is linear and the internal meaning of the word can correspond to a dimension other than verticality, namely laterality. The nominal forms which compose the Chinese counterparts of *on/above*, *under*, *behind*, *in front*—i.e. *shàng*, *xià*, *qián*, *hòu*—are locative and not directional. They denote sets of locations or places, not paths. *Left* and *right* also exhibit a locative reading in its approximative reading, since *zuǒ* and *yòu* ‘left/right’ can be considered the abstract approximative endpoints delimiting the targeted spatial area on the numeral scale.

Lexically, the approximative form *shàngxià* refers to verticality, *zuǒyòu* to laterality and *qiánhòu* to transversality. Up/down, left/right, or front of/behind can therefore be considered the abstract approximative endpoints delimiting the targeted spatial area on the numeral scale.

3.4 Spatial and temporal deixis and cross-cultural differences

The precise history of these approximative forms is not well-documented in the linguistic literature, but Peyraube (2003), in his study of the history of place words and localizers in Chinese, mentions that in early Mediaeval Chinese the meaning of certain localizers was used to express an undifferentiated localization, a very vague position instead of a precise position. He notes: “The grammatical function of the localizer then completely overrides its original semantic value”. (Peyraube 2003:192)

Could this situation also be extended to the locative forms *zuǒyòu* and *shàngxià*? In other words, can one trace an historical evolution of the type *precise position* moving into the direction of a *vague position* for the meaning of approximative *zuǒyòu*? This could be a possible explanation, but we leave the question open pending further research on the history of such approximative forms in the grammar of Chinese.

Nevertheless, the connection with location in the internal structure of *zuǒyòu* raises questions. How does *zuǒyòu* connect its internal locative meaning with the approximative meaning and the organization of space?

We have argued that *zuǒyòu* expresses an abstract location on a linear axis, with left-right indicators. The origin of the laterality dimension is unclear. Jackendoff (1996:22) has noted that in English, when a non-spatial axis is invoked, the up-down axis is usually the norm. He cites the following examples: *higher number, lower rank, of higher beauty, lower temperature*, etc.,¹⁰ but mentions that a non-vertical axis system in a non-spatial domain can be found with the political spectrum, which ranges from right to left.

It is well-known that spatial and temporal deixis can take various forms across languages and that these differences always appear within certain limits which can be explained through cultural features (cf. Talmy 2000:230-233, Hill 1982). Demiéville (1973), for instance, shows that in the Chinese imperial ranking of dignitaries, the most important ones were sitting at the left of the emperor, not at his right.¹¹ Furthermore, the temporal domain in French, for example, can refer to a transversal axis *front of-behind* (*l'année d'avant* and *l'année d'après*), but Chinese uses either a vertical (*shàngxià*) or a transversal (*qiánhòu*) axis for the representation of time. This situation, as exemplified

¹⁰ Cf. also the directional form *upward* in *They deploy upward of a hundred tables*, which further illustrates the reference to an up-down axis with the approximative meaning ‘more than’.

¹¹ Thus, contrary to what is the case in the West, the left is therefore considered honorable. However, as explained in Demiéville (1973:194), such pre-eminence of the left over the right was not constant through the centuries in China, the opposite situation often prevailed (cf. also Granet 1934:361-388).

in (10), is not considered a frequent phenomenon among languages of the world (see also Xu 2008 and Yau 1987 for an interpretation of time in terms of space in Chinese):

- | | |
|---|--|
| <p>(10) a. 上 個 月
shàng ge yuè
above Cl month
'last month'</p> | <p>c. 前年
qián-nián
front year
'year before last'</p> |
| <p>b. 下 個 月
xià ge yuè
under Cl month
'next month'</p> | <p>d. 後年
hòu-nián
back year
'year after next'</p> |

Zuǒyòu, just like *shàngxià* and *qiánhòu*, organizes space in a particular fashion, in the sense that the measured area surrounds the number which is targeted. This is contrary to what is observed with directional adpositions like *towards* or *up to*, for instance, which rather tend towards the direction of the targeted number instead of surrounding it, above and below. While *zuǒyòu* in (11) represents an abstract area on a scale delimited by two boundaries, the sequence *chàbuduō yì bǎi* 'almost a hundred' in the same sentence identifies only one upward boundary on the abstract number scale. The two approximative forms are not redundant in the sentence, rather they carry different lexical information.

- (11) ...應該 都 是 一 百 左右, 差不多 一 百
 ...yīnggāi dōu shì yì bǎi zuǒyòu, chàbuduō¹² yì bǎi
 must all be one hundred or thereabouts almost one hundred
 '...altogether it must be around 100, almost 100.' (AS Corpus)

This leads us to the conclusion that the morphemic status of *zuǒyòu* is well connected to its locative meaning as an approximator which delimits two boundaries on an abstract linear number scale. We now turn to the study of its syntactic features.

¹² A reviewer has called to our attention the fact that *chàbuduō* and *zuǒyòu* co-occur within the same phrase, as in (i):

- (i) 差不多 一 百 左右
 chàbuduō yì bǎi zuǒyòu
 approximately one hundred or thereabouts
 'approximately around one hundred' (Google Taiwan)

4. The syntax of *zuǒyòu*

In this section, we examine the distribution and the syntactic context where *zuǒyòu* appears, namely the syntactic dependency on the numeral in the nominal domain and the restrictions observed on its combination with classifiers and with (elliptical) nouns. We also discuss the syntactic category of this approximation form which belongs to the grammatical category of closed class items. As mentioned above, *zuǒyòu* is formed by two monosyllabic localizers. These forms are somewhat related to localizers which are viewed by most authors as nominal or quasi-nominal items in the grammar of Chinese (cf. Huang 2009, Peyraube 2003 and references cited there), but their distributions are not identical.

4.1 *Zuǒyòu* and the numeral

In Chinese, approximative *zuǒyòu* obligatorily appears with a numeral usually followed by a classifier, as in the sequence [Num Cl *zuǒyòu*]. Chinese nouns, whether the counterparts of English or French count or mass Ns, need a Cl or a measure phrase to be counted (cf. Paris 1981, Croft 1994, Cheng & Sybesma 1999, Fassi Fehri & Vinet 2007, among many others).¹³ The distribution of *zuǒyòu* is limited to the numeral domain: it cannot modify a predicate or sets of properties with verbs/adjectives.¹⁴

¹³ In some cases, a numeral seems to surface without a Cl with *zuǒyòu*, as in (11) above and also when the numeral is a percentage, as in (ia)-(ib), or a fraction, as in (ic). But these measure items simply act as substitutes for Num+Cl:

- (i) a. 約 提高 百 分 之 十 左右
 yuē tígāo bǎi fēn zhī shí zuǒyòu
 probably raise hundred portion of ten or thereabouts
 ‘It raised more or less around 10%.’ (AS Corpus 19920508.0287)
- b. 八 成 左右
 bā chéng zuǒyòu
 eight ten% or thereabouts
 ‘around eighty percent’
- c. 一半 左右
 yībàn zuǒyòu
 one-half or thereabouts
 ‘approximately one half’

¹⁴ This form shares certain syntactic and semantic properties with French approximative *environ* ‘approximately, in the neighborhood of’, in the sense that both forms exclusively modify a numeral quantity. Among French approximation forms, *environ* seems to be the only one which must exclusively appear with a numeral (ia). French *environ* cannot modify a predicate, as illustrated in (ib), it must always be closely connected to a cardinality:

Zuǒyòu cannot co-occur with certain determiners, namely demonstratives (12a) or quantifiers,¹⁵ such as indefinite quantifiers *yìxiē* (some) (12b), *jǐ* ‘a few’ (12c) or the distributive universal *měi* (each) (12d):

- (12) a. *這 三十 本 左右 的 書
 *zhè sān-shí běn zuǒyòu de shū¹⁶
 Dem three-ten Cl or thereabouts DE book
 ‘#these thirty books approximately’
- b. *遇到 一些 左右 的 困難
 *yùdào yìxiē zuǒyòu de kùnnán
 come across one-XIE or thereabouts DE difficulty
 ‘#come across a few difficulties or so’
- c. *幾 部 左右 的 車
 *jǐ bù zuǒyòu de chē¹⁷
 a few Cl or thereabouts DE car
 ‘#some cars or so’
- d. *這個 城市 每 天 左右 有 一 個 夜市
 *zhè-ge chéngshì měi tiān zuǒyòu yǒu yí ge yè-shì
 Dem-Cl town each day or thereabouts have one Cl night-market
 ‘#A night market is held approximately every day in this town.’

Approximative *zuǒyòu* is projected in a specifier position, in the area of the numeral domain, and it always modifies a numeral. This numeral may precede a Cl such as *běn* (13a), a nominal/measure Cl such as *tǒng* (13b), or a nominal Cl such as *yuán* (13c).

-
- (i) a. Il a rencontré trois cents personnes environ
 3s has met three hundred persons roughly
 ‘He has met around three hundred persons.’
- b. *Les chiffres étaient environ corrects.
 ‘#The figures were approximately correct.’

¹⁵ See Barbiers (2007) for the distinction between definite numerals—as being definite in opposition to quantifiers like *many*, *few*, *a lot*, etc.—and definite DPs.

¹⁶ This example is acceptable with the approximative form *duō*, as in *zhè sān shí duō běn* ‘these thirty books approximately’. Our informants from Mainland China do not accept the presence of the demonstrative marker *zhè* ‘this’, as exemplified in (12a), but this sequence is acceptable in Taiwan Mandarin, according to a reviewer.

¹⁷ The indefinite marker *jǐ* is not acceptable in (12c) above, but it is acceptable in an expression like *chàbuduō zài guò jǐ tiān zuǒyòu* ‘to spend again a few days or so’.

- (13) a. 他 買了 二十 本 左右
 tā mǎi-le èr-shí běn zuǒyòu
 3s buy LE two-ten CI or thereabouts
 ‘He bought twenty [books] approximately.’
- b. 生產量 已 達 九 十 萬 桶
 shēngchǎnliàng yǐ dá jiǔ shí wàn tǒng
 production already reach nine ten ten thousand CI/N
 左右
 zuǒyòu
 or thereabouts
 ‘The production has already reached 900,000 barrels approximately.’
 (AS Corpus 19920509.0288)
- c. 價值 十 元 左右
 jiàzhí shí yuán zuǒyòu
 value ten CI/N or thereabouts
 ‘It costs ten dollars or so.’

The numeral can also be preceded by existential quantifiers, such as *jǐ* (few), or the distributive *měi* (each), as observed in (14), only if a numeral is present. Compare (12c) to (14a) and (12d) to (14b).

- (14) a. 幾 千 部 左右 的 車
 jǐ qiān bù zuǒyòu de chē
 a few thousand CI or thereabouts DE car
 ‘some thousand cars or so’
- b. 這個 城市 每 三 天 左右 有
 zhè-ge chéngshì měi sān tiān zuǒyòu yǒu
 Dem-CI town each three day or thereabouts have
 一 個 夜市
 yí ge yè-shì
 one CI night-market
 ‘A night market is held every three days approximately in this town.’

Because *zuǒyòu* is obligatorily dependent upon the presence of cardinal numerals, it therefore cannot co-occur with the interrogative marker *duōshǎo* ‘how much?/how many?’. As can be observed from the translation, the equivalent forms with *how much/how many?* are acceptable in English:

- (15) *這 本 書 賣 多少 左右 的 錢
 *zhè běn shū mài duōshǎo zuǒyòu de qián
 Dem Cl book sell how much or thereabouts DE money
 ‘#How much do you sell this book for approximately?’

In (16), other lexical adverbs are used instead, namely *dàyuē/dàgài* ‘approximately’ which bear the same approximative meaning, without being sensitive, like *zuǒyòu*, to the obligatory presence of a numeral. Moreover, the position of approximative *dàyuē/dàgài* is different from that of *zuǒyòu*: they must always appear preverbally.

- (16) 這 本 書 大約/大概 賣 多少 錢
 zhè běn shū dàyuē/dàgài mài duōshǎo qián
 Dem Cl book approximately sell how much money
 ‘How much do you sell this book for approximately?’

Zuǒyòu cannot appear with ordinal numerals, which identify a numerical rank or the position of an element in a sequence, cf. (17). This is reflected in the contrast in (18) where *dàyuē* is selected with ordinals:¹⁸

- (17) *第 十 個 左右 的 比賽
 *dì shí ge zuǒyòu de bǐsài
 -th ten Cl or thereabouts DE competition
 ‘#the tenth competition or so’
- (18) a. *你 在 第十五 左右 的 課 找得到
 *nǐ zài dìshíwǔ zuǒyòu de kè zhǎo-de-dào
 2s at fifteenth or thereabouts DE lesson search-DE-find
 ‘#You will find it towards the fifteenth lesson.’
- b. 你 大約 在 第十五 課 找得到
 nǐ dàyuē zài dìshíwǔ kè zhǎo-de-dào
 2s approximately at fifteenth lesson search-DE-find
 ‘You will find it towards the fifteenth lesson.’

If the analysis proposed in Cinque (2005:328) is correct, ordinal numerals are generated in a position higher than cardinal numerals in the structure. This therefore implies that *zuǒyòu* can never be associated with this higher position in the DP. It is semantically limited to an association with a cardinality feature.

¹⁸ The combination of *zuǒyòu* with the ordinal marker *dì* is acceptable in Taiwan Mandarin, according to a reviewer. According to our informants, it is not accepted in Mainland China.

4.2 Sensitivity to plurality and divisibility of a measure

Furthermore, *zuǒyòu* is sensitive to plurality and to the divisibility of a measure, depending on the type of referential N that it counts or measures in an imprecise fashion. *Zuǒyòu* can combine with plural individualities, plural measure units of mass nouns or a singular divisible N. It can combine with an imprecise measure in association with a mass noun, as in *yì tǒng shuǐ*, the Chinese counterpart of *a bucketful of water* in (19b). Single units are possible with what can be viewed as a precise measure Cl (19a) of a divisible mass noun or a non-standard measure, such as *tǒng*. Single units are not available with count nouns or individual CIs (19c) in this context. For pragmatic reasons, with count nouns, the numeral must always be greater than one, or even two (cf. Weber’s law mentioned above). When counting individualities, the sequence with *zuǒyòu* is acceptable with round figures, i.e. ten or multiples of ten, as in (19d).

- (19) a. 一 升 左右 的 水
 yì shēng zuǒyòu de shuǐ
 one Cl or thereabouts DE water
 ‘a liter of water or so’
- b. ?我 打翻了 一 桶 左右 的 水
 ?wǒ dǎfān-le yì tǒng zuǒyòu de shuǐ
 1s spill LE one Cl or thereabouts DE water
 ‘#I spilled a bucketful of water approximately.’
- c. *一/兩 朵 左右 的 玫瑰花
 *yì/liǎng duǒ zuǒyòu de méiguīhuā
 one/two Cl or thereabouts DE rose
 ‘#one/two rose(s) approximately’
- d. 四十 朵 左右 的 玫瑰花
 sì-shí duǒ zuǒyòu de méiguīhuā¹⁹
 four-ten Cl or thereabouts DE rose
 ‘forty roses approximately’

¹⁹ Hsieh (2008:35) has noticed that the ‘non-fixed’ reading of NPs—i.e. when the number selected conveys an approximative numeral quantity or it is a higher number—may entail the presence of the modifier marker *de*. In (ia), we find an approximate numeral quantity (*hǎo jǐ bǎi* ‘many hundreds’) and in (ib), a precise numeral quantity, but with a high number and a round figure (*yì bǎi* ‘one hundred’). Her examples are drawn from the Academia Sinica Corpus.

(i) a. 好 幾 百 條 的 海蛇
 hǎo jǐ bǎi tiáo de hǎishé
 quite several-hundred Cl DE sea:snake
 ‘many hundreds of sea snakes’

There is also a form of dependency between the type of classifier N and the numeral. When the numeral is *yī* ‘one’, certain measure CIs are ruled out when they co-occur with approximative *zuǒyòu*, namely *guàn* ‘jar’ and *bǎ* ‘handful’, indicating a possible dependency between the measure CI and *zuǒyòu*. The English counterpart seems more acceptable with a *-ful* suffix: *He ate approximately a jarful of honey*. The Chinese ill-formed sentence with *zuǒyòu* in (20a) is possible only with the approximative form *chàbuduō* ‘almost’ in (20c), which translates a different way of organizing space. Recall that this last form is not dependent on the presence of the numeral.

- (20) a. *他 吃了 一 整 罐 左右 的 蜜糖
 *tā chī-le yì zhěng guàn zuǒyòu de mītáng²⁰
 3s eat LE one full CI/N or thereabouts DE honey-sugar
 ‘#She ate a jarful of honey approximately.’
- b. *一 把 左右 的 沙子
 *yì bǎ zuǒyòu de shāzi²¹
 one CI or thereabouts DE sand
 ‘a handful of sand or so’
- c. 他 吃了 差不多 一 整 罐 蜜糖
 tā chī-le chàbuduō yì zhěng guàn mītáng
 3s eat LE almost one full CI/N honey-sugar
 ‘She almost ate a jarful of honey.’

-
- b. 學校 初步 規劃 一百 條 的 電話 線數
 xuéxiào chūbù guīhuà yì-bǎi tiáo de diànhuà xiànshù
 school first plan one-hundred CL DE telephone line:number
 ‘There was an estimate for one hundred telephone lines in the original plan by the school.’

She further notes that the sequence is not felicitous with a smaller number : ??sān ge *de* rén (three CI DE person), Hsieh (2008:41).

Hence, the distribution of *zuǒyòu* and that of *de* in the above examples are parallel. With small units and sharp numbers, both *zuǒyòu* and *de* are not accepted, but with approximate or round numbers, both *zuǒyòu* and *de* are accepted.

²⁰ The presence of *zhěng* ‘total/complete’ in (20a) renders the example ungrammatical, because *zhěng* sets up an upward limit, but not an interval between two points. As shown above (§3.4), both *zuǒyòu* and *chàbuduō* set limits but they do so in different ways. *Zuǒyòu* does not set just one limit.

²¹ The example in (20b) is in fact ambiguous between two readings. It either indicates the number of handfuls of sand (quantity reading) or the contents of sand a hand can hold (container reading). For similar readings with *a glass of wine* in English, see discussion in Alexiadou, Haegeman & Stavrou (2007:410).

We now turn to the distribution of *zuǒyòu* inside DP.

4.3 The position of *zuǒyòu* in DP

Approximative *zuǒyòu* often surfaces phrase-finally in the DP area. It either follows a Classifier, as exemplified in (21a), or a measure Noun, as in (21b), or a Numeral + *ge* + Noun:²²

- (21) a. 他 買了 十 本 左右
 tā mǎi-le shí běn zuǒyòu
 3s buy LE ten Cl or thereabouts
 ‘He bought ten books approximately.’
- b. 一 公里 左右
 yì gōnglǐ zuǒyòu
 one km or thereabouts
 ‘one kilometer or so’
- c. 八十 個 孩子 左右
 bā-shí ge háizi zuǒyòu
 eight-ten Cl child or thereabouts
 ‘eighty children approximately’

At first sight, *zuǒyòu* seems to appear in the same position as localizers, such as *lǐ* ‘inside’ in (22), i.e. in a postposed position in a locative phrase:

- (22) 他 到 車 裡 去了
 tā dào chē lǐ qù-le
 3s to car inside go LE
 ‘He went into the car.’

²² Note that Ernst (1988:238, note 4) identifies *zuǒyòu*, in the sequence in (i) with *ge* N, as a degree adverb and an exception to what he terms the “‘almost’ rigidly head-final” position of Chinese NPs:

(i) 三十 個 人 左右
 sān-shí ge rén zuǒyòu
 three-ten Cl person about
 ‘about thirty persons’

Locatives and approximation forms like *zuǒyòu* do have in common the fact that they are the only expressions in Chinese to be considered as postpositions.²³ A different syntactic pattern emerges, however, when the relator *de* occurs with *zuǒyòu* in DP. In such cases, *zuǒyòu* is always positioned in front of *de* (23) as in the sequence [Num Cl *zuǒyòu de* N]:

- (23) a. 幾 千 部 左右 的 車
 jǐ qiān bù zuǒyòu de chē
 a few thousand Cl or thereabouts DE car
 ‘a few thousand cars or so’
- b. 三 萬 台 左右 的 電腦
 sān wàn tái zuǒyòu de diànnǎo
 three ten thousand Cl or thereabouts DE computer
 ‘approximately thirty thousand computers’
- c. 三 千 名 左右 的 美國人
 sān qiān míng zuǒyòu de Měiguórén
 three thousand Cl or thereabouts DE American
 ‘approximately three thousand Americans’

Zuǒyòu never surfaces DP-finally when *de* is present, as illustrated in (24).

- (24) a. 幾 千 部 (*的 車 左右)
 jǐ qiān bù (*de chē zuǒyòu)
 a few thousand Cl DE car or thereabouts
- b. 三 萬 台 (*的 電腦 左右)
 sān wàn tái (*de diànnǎo zuǒyòu)
 three ten thousand Cl DE computer or thereabouts

²³ Localizers differ, however, in that they are “post-phrasal” heads used with temporal and locative phrases to mark directional information, whereas approximative *zuǒyòu* is a post-phrasal maximal projection in the sense that it modifies the numeral-classifier sequence [numeral -ge Cl (N)] sequence. As Huang (2009) has proposed, the structure of the PP *dào chē lǐ* ‘inside the car’ in (22) would therefore be represented as follows in (i) where *chē* is moved to the Specifier position of Locative Phrase (Spec,LP) in order to become a host for the cliticization of the localizer *lǐ*:

(i) PP [P dào LP_{[SpecLP [DP chē]_i L_i [lǐ]] DP[e_i]] (Huang 2009)}

Moreover, *lǐ* and *zuǒyòu* have quite different distributional and selectional properties. *Lǐ* is dependent upon a locative marker, whereas *zuǒyòu* is dependent upon a [Num (Cl)] sequence.

How can this situation be compatible with *zuǒyòu* surfacing “phrase-finally” in the DP area? The form *de* has always been a puzzling item in the syntax of Chinese and it still remains difficult to identify its status precisely as well as the exact functional category it belongs to. *De* is an enclitic which acts as a relator.²⁴ In this case, it appears before the noun and follows the modifier of this noun. In (23b), for instance, *de* precedes the N *diànnǎo* ‘computer’ and it follows the sequence [Numeral + Cl + *zuǒyòu*], which serves to establish “a predication relation of some sort”, as Simpson (2001) put it. If *de* attaches to a phrase, as proposed by Simpson, then it can be hypothesized that the sequence [[QP] [*zuǒyòu*]] is a sort of larger complex cardinal phrase which can form a predication and provide phonological support for *de*. As will be discussed in the next section, *de* can also mark the relation between the head Noun and the numeral modifier, a phrase which is identified as bearing an interpretation with a vague number (cf. Hsieh 2008). We now turn to the study of the derivation of *zuǒyòu*.

4.4 The derivation of *zuǒyòu*

In Mandarin Chinese, *zuǒyòu* can occupy three different slots in the numeral domain. *Zuǒyòu* follows:

- (i) a sequence Num + Cl, as in (25a-b), if the Noun is absent on surface or
- (ii) a sequence Num + Cl/N, if the Cl/N is a measure, as in (26) or
- (iii) a sequence Num + Cl *ge* + Noun, as in (27).

The ellipsis of N in the presence of *zuǒyòu* is possible in certain anaphoric contexts. The agreement Cl *běn* in (25a) identifies a (class of) elided N in Chinese. The underlying reading for (25a) could be represented as follows, in (25b), with the noun *shū* ‘books’ either present in topic position or discourse related.

- (25) a. 三十 本 左右
 sān-shí běn zuǒyòu
 three-ten Cl or thereabouts
 ‘thirty books approximately’
- b. (書) 三十 本 左右
 (shū) ... sān-shí běn zuǒyòu
 book ... three-ten Cl or thereabouts
 ‘books, ...thirty of them approximately’

²⁴ C.-R. Huang (1989:24) is the first to have offered a coherent and unique label for *de* in Mandarin Chinese, namely that of a clitic.

- (26) a. 九 十 萬 桶 左右
jiǔ shí wàn tǒng zuǒyòu
nine ten ten thousand CI/N or thereabouts
‘900,000 barrels approximately’
- b. 四十 年 左右
sì-shí nián zuǒyòu²⁵
four-ten CI/N or thereabouts
‘forty years approximately’
- (27) a. 十 個 孩子 左右
shí ge háizi zuǒyòu
ten CI child or thereabouts
‘ten children approximately’
- b. 三 個 月 左右
sān ge yuè zuǒyòu
three CI month or thereabouts
‘three months approximately’

In general, QP modifiers with numerals can appear both in *de* or *de*-less modification structures. However, as observed in (28a) below, the presence of *de* is excluded with standard measure N like *yuè* (month). It is obligatory with a non-standard measure CI like *bēi* (28b) and it is optional with individual classifiers like *míng* in (28d-e):

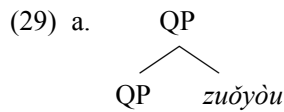
- (28) a. *三 個 左右 的 月 (standard measure N)
*sān ge zuǒyòu de yuè
three CI or thereabouts DE month
- b. 三十 杯 左右 的 咖啡 (non-standard measure CI)
sān-shí bēi zuǒyòu de kāfēi
three-ten CI or thereabouts DE coffee
‘thirty cups of coffee approximately’

²⁵ According to us, *nián* ‘year’ is a Noun, whose classifier is phonetically null, cf. Paris (1981:24). But it is treated as a CI by other authors, cf. Tang (2005:457). If *nián* ‘year’ is treated as a CI, it appears under QP. We assume that the numeral and the CI form a constituent. See Paris (1981:24) for constituency tests. The QP or [Num + CI] sequence can be the head of a relative clause, can appear in a *lián...yě/dōu* construction, it licenses ellipsis, it substitutes for *duōshǎo* ‘how much/many’, etc. See also Hsieh (2008:184).

- c. *三十 杯 咖啡 左右
 *sān-shí bēi kāfēi zuǒyòu
 three-ten Cl coffee or thereabouts
- d. 三十 本 左右 的 書 (individual/sortal Cl)
 sān-shí běn zuǒyòu de shū
 three-ten Cl or thereabouts DE book
 ‘thirty books approximately’
- e. 三千 名 左右 的 美國人
 sān-qīān míng zuǒyòu de Měiguórén
 three-thousand Cl or thereabouts DE American
 ‘three thousand Americans approximately’

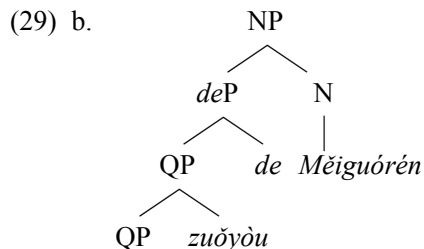
Hsieh (2008) notes that what is at stake with the use of *de* in sequences like (28d) does not seem to be only the massifier/classifier opposition, but the “numeral+Cl sequence”. In our terms, this sequence could be called the *approximative reading* of the QP phrase.²⁶ Hsieh (2008:42-45) has observed that the Numeral+Cl sequence which felicitously occurs with *de* within the nominal domain is connected to particular semantic environments, namely (a) when a massifier is used, (b) when ‘the quantity is non-fixed’ or (c) when the whole QP is emphasized or contrastively focused. As she clearly mentions, these semantic environments are considered sufficient conditions for the use of *de*, but “this does not mean that it has to occur” (Hsieh 2008:42, note 11).

In order to account for the distribution of *zuǒyòu*, as well as *shàngxià* and *qiánhòu* as modifiers of the numeral, one could propose a structure where the approximator is adjoined to the functional category QP or the sequence [Num Cl (N)], as in (29a):



Within this type of approach, the proposed structure with the relator *de* in (28e) could then be schematized as in (29b):

²⁶ We have observed that in Hsieh’s analysis of prenominal modifiers with *de* (2008:37), she introduces examples with a few approximators in her discussion, namely *yuē* ‘about’, *jìn* ‘close to’, *jǐ* ‘several’ or *duō* ‘more’. These last forms all bear different distributions, since they can appear before the predicate (*yuē*), before the numeral (*yuē*, *jìn*, *jǐ*) and even inside the numeral (*duō*). *Zuǒyòu*, *shàngxià* or *qiánhòu* are not mentioned, but it could be hypothesized that some of these approximators may bear a similar role in presence of *de*.



However, these types of representations would pose problems to explain the link between the different positions for *zuǒyòu* in such NP structures as illustrated in (25) through (28) above. Another solution, and a different one also in terms of the theoretical approach used, would be to analyze these prenominal constructions with *de* as underlying a relative clause, as in Kayne (1994) and also Simpson (2002). As is well-known, Kayne's approach to relative clauses has been extended to other restrictive modifiers, namely possessives, reduced relatives and adjectives. The Numeral phrase or QP does not exhibit a possessor relation with HAVE, as in *my book* (= *the book that I have*). However, an underlying reading with HAVE is observed with measures or quantity expressions.²⁷ Moreover, QPs and relative clauses both share the property of not being theta-marked to a lexical head.

We therefore propose to use this line of reasoning to analyze the internal structure of modifiers involving a numeral quantifier. Generalizing from N-final relative structures with no overt D and a different type of Complementizer form,²⁸ we conjecture, as in Kayne (1994:93) that Chinese N-final relatives involve the same [D CP] structure that N-initial relatives have. In other words, the D/QP structure becomes a kind of nominal variant of the D/CP structure. It is claimed that the QP modifier with *de*, in (28e), will therefore have the following representation, (30a), where $[_{IP/QP} e_j]$ is the trace of $[_{IP/QP} s\bar{a}n\ qi\bar{a}n\ m\acute{i}ng\ t_i\ zu\check{o}y\grave{o}u]_j$:

²⁷ The following example from Paris (1979:57) illustrates our point:

- (i) 那 條 路 只 有 十 尺 寬
 nèi tiáo lù zhǐ yǒu shí chǐ kuān
 Dem Cl road only have ten foot wide
 'That road is only ten feet wide.'

It is *yǒu* that licenses the QP, not the adjective, since (ii) is ruled out when the numeral is absent.

- (ii)*那 條 河 (只) 有 寬
 *nèi tiáo hé (zhǐ) yǒu kuān
 Dem Cl river (only) have wide

²⁸ Kayne (1994:93) has indicated that "N-final relatives lack relative pronouns" and that "they never display a complementizer that is identical to the normal complementizer of sentential complementation". Many studies on the identification of the puzzling Chinese *de* have been proposed in the literature, but we do not intend to discuss them in this study.

- (30) a. Spec,DP [IP/QP *sān qiān míng* t_i *zuǒyòu*]_j [_D *de* [[Spec,CP *Měiguórén*]_i] [C [IP/QP e_j]]]
 three thousand CL or so Americans

Following Kayne (1994), the NP *Měiguórén* is first moved from the IP/QP phrase to Spec,CP. The IP complement selected by D is then moved to Spec,DP, stranding the null C head and the NP *Měiguórén* in Spec,CP. Note that the moved IP clause contains the trace of *Měiguórén*, establishing a connection with the Cl as well as with the approximative modifier *zuǒyòu*. As claimed by Simpson (2002), *de* is always cliticized to the preceding phrase level projection modifier phrase. *De* can therefore be roughly identified as a clitic head and a Determiner in the grammar of Chinese. (cf. Simpson 2001, 2002 for more details).

The derivation for a structure like (27a), repeated below for ease of exposition, would be formed in the same fashion, but with less movement involved.

- (27) a. 十個孩子左右
shí ge háizi zuǒyòu
ten Cl child or thereabouts
'ten children approximately'

In this case, the movement of the NP *háizi* out of IP is not necessary since there is no modification with *de* and therefore no underlying relative clause involved. The structure in (27) is then analyzed as in (30b), with a remnant movement to the left of the [QP+N] sequence [_{NP} [_{QP} *shí ge*] [_N *háizi*]], in order to account for word order. Recall that in Kayne's linearization process, adjunction is always left-adjunction, in all languages.

- (30) b. [D [NP [OP *shí ge*] *háizi*]_i [FP *zuǒyòu*] [e_i]]

FP in (30b) could be identified as Approx(imative)P. We are aware that if the proposed structures in (30a-b) can account for the facts with approximative *zuǒyòu*, many remaining problems need to be further developed, namely the question of whether prenominal constructions with *de* should *uniformly* involve an underlying relative clause.²⁹ We now turn to the discussion of the categorial properties of approximative *zuǒyòu* in the grammar of Chinese.

²⁹ Some adjectives in Chinese pose problems for a uniform analysis of (all) modifying structures as derived from a relative clause, cf. Paris (1979), Paul (2005)—and Larson (2009) for a different point of view. See also Tang (2007) for a different analysis of modifier constructions within Chinese NPs and a critical view on Chinese *de* as a functional D or F head.

4.5 The syntactic category of *zuǒyòu*

As is well-known, Chinese does not identify lexical categories as clearly as in languages with morphological suffixes. Differences between lexical categories for the same item in the grammar of Chinese are therefore harder to detect and must be defined differently. Chinese word-classes are established through distributional criteria (cf. Paris 1984).

In §3 above, *zuǒyòu* has been identified, as a polycategorial form. It can indeed exhibit the properties of a noun, a verb, of an adverbial/locative modifier in the predicate or of an approximative form modifying a numeral in the nominal domain, cf. (5a-d). Even though its morphological form is identical in all cases, *zuǒyòu* exhibits a semantic shift from a left-right spatial reading to an approximative reading on an abstract number scale. In other words, *zuǒyòu* names a location on a scale and, with this meaning, its properties could be considered, in a certain way, close to those of a preposition or a postposition. Prepositions are relators between two items or concepts and *zuǒyòu* does establish an abstract locative relation between the two boundaries surrounding the target on a linear numeral scale. But contrary to prepositions or postpositions, which select a nominal complement, *zuǒyòu* does not select a complement, it rather displays the properties of an approximative form which modifies a numeral on its left, with an “inverse” scope in the numeral domain.

The categorial status of approximative *zuǒyòu* is not obvious. Certain facts argue for some sort of nominal properties. First of all, as an approximative form, *zuǒyòu* (contrary to *chàbuduō*, *(dà)yuē* and *dàgài*), never appears before the predicate, as is usually observed for adverbs in Chinese. Secondly, the fact that it obligatorily appears after a Num-CI (N) sequence offers further indication of its status as a modifier of nominal elements. Classifiers are functional items in the grammar of Chinese, and as is well-known, they were originally nominal forms, cf. Peyraube & Wiebusch (1993). Huang (2009) identifies them as light nouns. Many authors have also argued for the nominal status of numerals, across languages.

Moreover, approximative *zuǒyòu* can combine with a verbal CI in a [Numeral + verbal CI] phrase, as illustrated in (31). Verbal classifiers share with nominal classifiers the property of being associated with a numeral. However, as demonstrated in Paris (1981), nominal and verbal classifiers correspond to distinct constituents. A verbal classifier never forms a constituent with the following N and cannot be preceded by a demonstrative, for instance.³⁰ Furthermore, if nominal classifiers are related to numerals in DP, verbal

³⁰ In general, verbal classifiers cannot be preceded by a demonstrative. Thus from (i), one cannot form (ii):

classifiers rather relate to an aspectual or temporal measure in the predicate. In other words, nominal classifiers count individualities, whereas, verbal classifiers count individual eventualities (frequencies) or a bounded duration.³¹ When *zuǒyòu* combines with a verbal CI (abbreviated Cl_v), it can only co-occur with a CI bearing a frequency interpretation. The numeral which *zuǒyòu* modifies must also be the number ten or a multiple of ten (for most speakers). In (31a-b), the verbal classifier can only be interpreted as such and the noun *Běijīng* appears in topic position. In (31c-d) the sentences are ruled out. The position of *zuǒyòu* which cannot follow the noun (31c) or precede the *de* sequence (31d) with verbal classifiers is directly responsible for the ill-formedness:

- (31) a. 北京, 我 去 過 三十 次
 Běijīng, wǒ qù guò sān-shí cì
 Beijing 1s go PAST three-ten Cl_v
 ‘I have already been to Beijing thirty times.’
 b. 北京, 我 去 過 三十 次 左右
 Běijīng, wǒ qù guò sān-shí cì *zuǒyòu*
 Beijing 1s go PAST three-ten Cl_v or thereabouts
 ‘I have already been to Beijing approximately thirty times.’

-
- (i) a. 你 等 一下
 nǐ děng yí xià
 2s wait a little
 ‘Wait a little!’
 b. 他 哭了 一陣
 tā kū-le yí zhèn
 3s cry LE a while
 ‘He cried a while.’
 (ii) a. *你 等 這 一下
 *nǐ děng zhè yí xià
 2s wait Dem a little
 b. *他 哭了 這 一陣
 *tā kū-le zhè yí zhèn
 3s cry LE Dem a while

But, as noted by a reviewer, sometimes *zhè* is allowed, as in (iii). The presence of the demonstrative here might be triggered by the restrictive adverb *zhǐ* (only):

- (iii) 我 只 打 了 弟弟 這 一 次
 wǒ zhǐ dǎ-le Didi zhè yí cì
 1s only beat LE younger brother Dem a Cl_v
 ‘I beat my younger brother only this time.’

³¹ Compared to the numerous amount of studies on nominal classifiers, studies on verbal classifiers in Chinese are less frequent in the literature (cf. Paris 1981, Shao 1996, Zhang 2002, Chen 1999, Fassi Fehri & Vinet 2008).

- c. *我 去 過 三十 次 北京 左右
 *wǒ qù guò sān-shí cì Běijīng zuǒyòu
 1s go PAST three-ten Cl_v Beijing or thereabouts
- d. *我 去 過 三十 次 左右 的 北京
 *wǒ qù guò sān-shí cì zuǒyòu de Běijīng
 1s go PAST three-ten Cl_v or thereabouts DE Beijing

The representation of the derivation with verbal classifiers can therefore be illustrated as in (32):

- (32) VP... QP [QP [*sān shí cì*]]_i FP [_F *zuǒyòu*] [_{e_j}]

The structure in (32) is valid for classifiers that are either interpreted as verbal or nominal, as is the case for *chǎng* ‘time/show’ which then receives two different interpretations, as exemplified in (33):

- (33) 我 看了 三十 場 左右 的 京劇
 wǒ kàn-le sān-shí chǎng zuǒyòu de Jīngjù
 1s see LE three-ten Cl or thereabouts DE Beijing opera
 (a) ‘I saw the Beijing opera thirty times or so.’
 (b) ‘I saw about thirty shows of the Beijing opera.’

Note that the grammaticality of the (a) reading in (33), compared to that of (31d) above is predicted both in syntax and in semantics. The structure of the NP [*sān shí chǎng zuǒyòu de Jīngjù*] in (33) is similar to that of (14a) [*jǐ qiān bù zuǒyòu de chē*] ‘some thousand cars or so’, i.e. a pattern found with count nouns. Being a proper noun, *Běijīng* in (31d) is not a count noun.

Furthermore, if *zuǒyòu* appears in the nominal domain, it does not modify the noun. It rather modifies the complex QP or Numeral + Cl sequence, as discussed above (§4.4). The role of nominal or verbal classifiers is to count individual nouns or eventualities and also to help identify nouns or the type of eventuality.³² As previously mentioned,

³² In the Academia Sinica Corpus, the following occurrences of verbal Cls (*xià* and *cì*) have been found with *zuǒyòu*:

- (i) a. 讓 心跳 達到 每 分鐘 一百二十 下 左右
 ràng xīntiào dá dào měi fēnzhōng yì-bǎi-èr-shí xià zuǒyòu
 let pulse reach each minute 120 Cl_v or thereabouts
 ‘Let the pulse reach one hundred and twenty beats per minute or so.’ (AS 152)

both nominal and verbal classifiers can be considered as extensions of N. Numerals in various languages have also been identified as lexical categories clearly related to nouns (cf. Kayne 2006, Corver & Zwarts 2006). If, as mentioned by Corver & van Riemsdijk (2001:4), citing earlier work by Ross (1972), there is a quasi-continuum between the different syntactic categories instead of a fixed, discrete inventory and if, also, all categories are either (lexical or classes of functional) Ns or Vs, as proposed by Kayne (2005), then numerals are nominal, to a certain degree.

However, more arguments seem to point to semantic and syntactic properties which rather identify approximative *zuǒyòu* as a closed class item. First, *zuǒyòu* never names an object, like nouns do. Secondly, it is not lexically productive in the grammar of Chinese and very few other members exist, perhaps only two more with the same distribution, *shàngxià* and *qiánhòu*, already identified above. Thirdly, *zuǒyòu* never assigns a thematic argument role to some element in its vicinity. In other words, it does not assign a thematic role to the numeral, it rather modifies it.

To sum up, the facts presented above concerning the categorial status of approximative *zuǒyòu* tend to show that there is a functional aspect to its behavior. *Zuǒyòu* is therefore exclusively licensed by a cardinal phrase. It is not licensed by a noun. It can never be positioned before the predicate, like the approximatives *chàbuduō*, *(dà)yuē*, or *dàgài*. *Dàgài* ‘probably’ can appear as a sentential adverb, but with the meaning of a supposition. This situation could well explain why *zuǒyòu* can combine with *chàbuduō*, *(dà)yuē* or *dàgài* in the same sentence. They do not display exactly the same syntactic and semantic properties in the grammar of Chinese:

- (34) a. 比賽 大約 在 十二 點 左右 結束
 bǐsài dàyuē zài shí-èr diǎn zuǒyòu jiéshù
 match around be at ten-two hour or thereabouts finish
 ‘The match ends around twelve o’clock.’
 b. 差不多 是 六 億 美 元 左右
 chàbuduō shì liù yì měi yuán zuǒyòu
 almost be six 100,000,000 US dollar or thereabouts
 ‘almost six hundred million U.S. dollars’

Approximative *zuǒyòu* is therefore viewed as a grammaticalized item in the grammar of Chinese.

-
- b. 動作 都 重複 十五 次 左右
 dòngzuò dōu chóngfù shí-wǔ cì zuǒyòu
 movement all repeat ten-five Cl_v or thereabouts
 ‘All the movements are repeated fifteen times or so.’ (AS 6108)

5. Concluding remarks

To conclude this study of approximative *zuǒyòu*, we recapitulate the main observations put forward in this exploratory research. We have proposed a diagnosis for approximative *zuǒyòu* that captures its syntactic dependency on cardinality features and we have presented its lexical properties. It was hypothesized that there is a connection between the inherent locative meaning of *zuǒyòu* and its metaphorical reading as an approximative. *Zuǒyòu* organizes space in a particular fashion: the measured area always surrounds the number, more precisely the round figure which is targeted. It is never directional with only one boundary, like *chàbuduō* ‘almost’ which translates an upward boundary on an abstract numerical scale.

We have also proposed a unifying analysis to account for word order facts with or without *de* in the environment of *zuǒyòu*. We have used Kayne’s (1994) approach for the study of relative clause structures, where the QP modifier is here analysed as a [D CP] or a [D QP] structure, with the relative clause as the complement of a determiner. We have also used Simpson’s (2001, 2002) analyses of *de* as a determiner and an enclitic which always attracts a phrasal level projection in prenominal modifying phrases.

Zuǒyòu was therefore identified as a grammaticalized item. It modifies exclusively the category of the numeral, a characteristic that distinguishes this form very clearly, both syntactically and semantically, from many other approximators with similar meanings in the grammar of Chinese.

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Marie-Claude Paris
UFR-LCAO Langues et Civilisations d'Asie Orientale
16, rue Marguerite Duras
75205 Paris Cedex 13
France
mcparis@linguist.jussieu.fr

Marie-Thérèse Vinet
Département des lettres et communications
Faculté des lettres et sciences humaines
Université de Sherbrooke
Sherbrooke, Quebec
Canada J1K 2R1
marie-therese.vinet@USherbrooke.ca

再論漢語「左右」

白梅麗

巴黎第七大學

蔚美婷

雪布魯克大學

作為中文裡的語法詞，「左右」為一複合詞，是由兩個反義的方位名詞「左」（左邊）和「右」（右邊）所組成。本文從語意和句法的角度對近似語「左右」進行分析。「左右」具有不同的使用層面和意義：我們建立了「左右」當方位詞的原始意義及其延伸的隱喻用法之間的關連性。「左右」一詞在定語詞組的分布是有限的，同時也顯現出若干語意的限制。最重要的是，它只能修飾前面的基數詞。本文說明了「左右」和其他近似語如「差不多」、「大約」是如何的不同：「差不多」、「大約」實質上都是修飾謂語。「左右」一詞亦引發我們對於空間領域裡有關指稱架構的研究提出了一些問題。我們更進一步分析在「左右」一詞所觀察到的限制，諸如它跟量詞及省略名詞的組合、以及有無修飾標記「的」的差別。我們的分析採用了 Kayne (1994) 對關係子句的研究方法及 Simpson (2002) 把「的」定位成 D 的分析，試著解釋「左右」在含有「的」的數量片語中之分布。

關鍵詞：左右，近似語，數詞，方位標記，量詞，基數詞

