Construction as a Theoretical Entity:
An Argument Based on MandarinExistential Sentences

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Abstract

The role that constructions play in a linguistic theory has changed throughout the evolution of generative theories. Construction specific rules are common when transformations are envisioned as tree to tree operations in classical TG. On the other extreme, constructions, as well as all structural properties, are regarded as derived linguistic properties predictable from various principles in recent GB theories. Since whether a construction is an autonomous linguistic entity or not has great implications for either a formal or a computational linguistic theory, we will examine the status of Mandarin existential construction based on the theory of Construction Grammar [1,2]. We will show that the Mandarin existential construction represents an unique structure-meaning pair that cannot be captured in a grammar unless the pairing is regarded as a theoretical entity in linguistics ([3]). Since constructions are shown to exist in Mandarin Chinese, we support the theoretical claims of Construction Grammar as well as the position that constructions must be taken into account in NLP.

I. Existential constructions and its two sub-constructions

The existential sentences in Mandarin Chinese, such as (1) and (2), have been traditionally considered to involve movement or lexical rule in a verb-centered paradigm.

(1) Zhuo-shang fang LE yi ben shu.
    table on put ASP a CL book
    'There is a book on the table'

(2) Chuang-shang tang ZHE yi ge ren.
    bed   on   lie ASP a CL person
    'There is a person lying on the bed'

The surface structure of these existential sentences can be schematized as follows:
(3) [Locative V Theme]

The apparent structural uniformity represented by (3) gives the verb-centered accounts their strongest motivation. This is because a verb-centered account can easily predict the structure by the cross-the-board nature of the movement rule or the lexical projection rule. However, there are two facts involving the existential sentences that would prove difficult for verb-centered accounts but could be easily predicted by a constructional account.

First, the existential meaning is manifested only when the structure schema of (3) is employed. In other words, if the existential sense is attributed to the verbs, the grammar will be overloaded with unnecessary ambiguities in structures other than (3). The verb-centered

account would also fail to capture the intuition that the schema (3) is a schema representing existential meaning. An theoretical alternative is to argue that the construction itself contributes to the sense, which is proposed as one of the principle tenets in Construction Grammar [1,2]. Thus the existential construction would obtain the status of a grammatical entity, a special kind of lexical item with its own abstract meaning as suggested in Construction Grammar. This theoretical entity is defined by Goldberg ([1]) as follows:

(4) C is a CONSTRUCTION iff $_{def}$ C is a form-meaning pair $<F_i, S_i>$ such that some aspect of F_i or some aspect of S_i is not strictly predictable from C's component parts or from other previously established constructions. (p.4)

Second, the existential sentences are observed to have interesting interactions with the aspect markers ZHE (durative) and LE (perfective). The use of ZHE or LE is traditionally regarded as optional since it does seem that the choice between the two markers hardly affect the meaning of the sentence. However, upon closer inspection of the existential sentences with ZHE and LE, we find some semantic nuance that distinguishes them. As examples in (5) show, in a context in which a newly occurred event (appearance of the new buildings) is involved, only LE is allowed as the required aspect marker. It holds true for (6), in which the event involved is the disappearance (of the citizens). On the other hand, examples like (7) show that in a context where eternal or lasting property is insinuated, ZHE is the only marker allowed.

(5) Jie-shang jinlai gai LE/*ZHE xuduo xin dalou.
    street on lately build ASP many new building
    'There are many new buildings built on the street.'

(6) Sailayiefo si-LE/-*ZHE henduo wugu DE baixin.
    Sarajevo die ASP   many   innocent DE citizen
    'Many innocent people died in Sarajevo.'

(7) Niluo hegu   DE shamo-shang tang ZHE yi zuo renmien-shishen-xiang.
    Nile valley DE desert on lie ASP a CL Sphinx
    'There is a statue of Sphinx lying on the Nile valley.'

(5)-(7) suggest that the lexical semantics of the aspect markers ZHE and LE are projected into the structure, where ZHE marks a continuous state and LE marks a change-of-state. It is very important to note that this lexico- semantic selection is not determined by the lexical semantics of the verbs per se.

(8)a. Chuag-sang tang LE san   ge ren.
      bed   on lie ASP three CL person
      'There are three people lying on the bed.'

    b. Ta tang LE san   ge zhong-tou.
      he lie ASP three CL hour
      'He has been lying for three hours.'

In (8), we show that the verb tang3 'lie' does allow a perfective reading. Thus the ungrammaticality of LE in (7) can only be attributed to its incompatibility to the constructional (event-type) meaning, not to the selection of the verbal semantics. This fact is predicted in a constructional theory but would be a counterexample to a verb-based account. Based on the above two arguments, we propose that Mandarin existential sentences form a construction, i.e. an unique meaning-structure pair. The Construction of Existence is represented by (9).

(9) Construction of Existence
   [Locative V-ASP Theme]

In addition, this construction is consisted of two different sub-construction, for they possess different constructional meanings when the aspect is lexically filled. In the two sub-constructions, the aspect marker ZHE and LE are the differentiating constructional elements: the construction with ZHE representing the meaning of Existential State and the construction with LE representing the meaning of (Dis-)Appearance. The two constructions are schematized in (10.a) and (10.b).

   (10.a) Construction of Existential State
          [Locative V-ZHE Theme]
   (10.b) Construction of Appearance / Disappearance
          [Locative V-LE Theme]

The Construction of Existential State and the Construction of (Dis-)Appearance are sub-constructions of the Construction of Existence because the aspect markers are lexically specified and contribute meaning. As an aspect marker, LE indicates a complex event, a transition from one state to another and implies a resultative new state, while the viewpoint focus of ZHE is on a homogeneous state without referring to any previous state transition. The above property difference between LE and ZHE gives a clear motivation for why they are chosen for the two sub-constructions respectively. ZHE is chosen to focus on the existential state while LE is chosen since appearance can be regarded as a transition from the state of nonexistence to the state of existence. On the other hand, since appearance entails the resultative state of existence, the viewpoint focus can be shifted from the change to the result state when the transitivity of the predicate is low. This explains why LE has been regarded as an alternative to ZHE in some existential sentences such as (1) and (8a).

II. Predictions of the constructional account
   With the above two schemas, we account for the different meaning- construction pairings as well as the generalization regarding the selection of different verb classes by the two constructions. In addition to selecting their subtypes (e.g. the Existential State Construction selecting stative existential verbs), the Existential Construction selects [+Posture] verbs (e.g. zuo4 'to sit' and pao3 'to run'), while the (Dis-)Appearance Construction selects [+Affect]/[+Effect] verbs (such as gai4 'to build' and si3 'to die'). The selectional relation can be exemplified by the grammaticality contrast in (11) and the coerced sense disambiguation in (12).

   (11) Sailayiefo si-LE/-*ZHE henduo wugu DE baixin.
        Sarajevo die ASP   many DE innocent citizen
        'Many innocent people died in Sarajevo.'

   (12)a. Jie-shang pao-ZHE geshigeyang DE paoche.
          street-on run-ASP all-kinds DE sports-car
          'All kinds of sportscars are running in the city.'

      b. Lao-li   pao-LE shi-er ge qiufan.
         prison in run ASP twelve CL prisoner
         'Twelve prisoners ran away/escaped from the prison.'

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In (11), since si3 ('to die') is an achievement verb, it satisfies the [+Effect] selection of the Construction of (Dis-)Appearance. However, it fails to satisfy the [+State] selection of the Construction of Existential State, thus the verb occurs with the (Dis-)Appearance Construction, but not the Existential State Construction. In (12), the verb pao3 is ambiguous between an achievement verb 'to (successfully) escape' and an activity verb reading 'to run'. The former is compatible with the Construction of (Dis-) Appearance, while the latter is compatible with the Construction of Existential State. Our constructional accounts correctly predicts that the semantic content of constructions will coerce the verbal semantics that is compatible with it. Thus the two sentences are disambiguated, (12a) with the activity reading while (12b) with achievement reading.

In addition to predicting the above selectional facts, the constructional approach has the extra bonus of offering an explicit account of the semantic contribution of the verbs to the construction. Adopting the theory of prototypical relations of [1], we argue that the lexical meaning of a verb represent the manner of the Construction of Existential State. This is because manner (but not others) is a possible modification of the homogeneous state of existence. Thus the selection of both stative and active posture verbs are justified since they provide the manner (of the existential state), as in (12a). On the other hand, the construction of (Dis-)Appearance involves a complex event containing changes to a new state, thus a logical extension is to allow preconditions of the change to be specified by the verb. In other words, the (Dis-) Appearance Construction selects verbs that can provide the information about the precondition or cause of the (dis)appearance, as in (12b). The advantage of this semantic account can be illustrated by the following contrasts.

(13)a. laoli guang ZHE/LE shi-ge fan-ren.
   jail-in lock-up ASP ten CL prisoner
   'There are ten prisoners in the jail.'

b. zhege bingruo DE quti-li guang ZHE/*LE yi ke nianqing DE xin.
   this sick-weak body-in lock-up ASP one CL young DE heart
   'There is a young heart (being confined) in this sick and weak body.'

With the unnacusative verb guang1 'to lock up/to be in a locked-up state', we show that the verb can serve as either the precondition (guang-LE) or the manner (guang-ZHE) of the event of prisons being in a jail. Since the semantic implications are the same, most speakers do not distinguish the two variants in (13a). In (13b), however, when referring to a young heart (i.e. spirit) being confined in an invalid body, guang1 cannot refer to the precondition; and thus the (Dis-)Appearance sub-construction is ruled out on semantic basis.

III. Implications for idiosyncratic sentence types
   In this section, we show that some seemingly idiosyncratic sentence types can be accounted for without further stipulation by the above constructional analysis.

First, the verb-construction relation of precondition accounts for the existential sentences like (14), which does not involve any existential verbs nor any locative phrase. In both (14a) and (14b), the verbs 'bump' and 'cut' appear in the Construction of (Dis-)Appearance in these particular situations because they serve the prototypical relation of the precondition of the event.

(14)a. Zhangsan DE tou-shang zhuang-LE yi ge bau.
   Zhangsan DE head on bump ASP a CL bump
   'A bump appeared on Zangsan's head (as a result of bumping).'

b. Lisi DE kuzi   jien-LE yi ge dong.
   Lisi DE   trousers cut ASP a CL hole
   'Lisi's trousers have a hole (as a result of (being) cut).'

Second, the famous pseudotransitive sentence, such as (15) can be easily accounted for within our theory with metaphorical extension. We observe that these sentences denote an end of a relationship via the loss of its innate function (i.e. a dead person can no longer function as father, while an eye without vision loses its primary function.) When this loss of function is taken as metaphorical extension of Disappearance, then the use of the construction as well as the selection of the verb by the construction as a cause of the loss is self-evident.

(15)a. Zhangsan shi-LE fu-qin.
       Zhangsan die ASP father
       'Zhangsan loses his father.'

   b. Lisi xia -LE yi zi yan-jing.
      Lisi blind ASP a CL eye
      'Lisi is blind in one eye.'

Last, a plausible explanation can also be provided within our theory for the origin of certain V-SUBJ compound verbs exemplified in (16). These verbs pose some problems since the canonical word order in Mandarin is SVO. We suggest that these compound verbs can be accounted for as the outcome of lexicalization of V-theme in existential constructions.

(16) pa-mayi / chu-taiyan   / liou-xie   / po-dong
     crawl ant / come-out sun / flow blood / break hole
  'to attract ants'/ 'be sunny'   / 'to bleed'   / 'be broken (with a hole)'

IV Conclusion
   The unified account of the seemingly idiosyncratic behaviors of both the syntax and semantics of the Chinese existential sentences given in this paper shows that there is a lot to be gained by treating construction as a theoretical entity. We also show that the Construction of Existence can be lexically filled to form two sub-constructions of Existential State and (Dis-)appearance. We show that many syntactic and semantic predictions follow from our constructional account, but not from a verb-centered account. Our account provides an additional evidence for the existence of constructions in Chinese (see [4]). It also add to the argument that constructions must be theoretical entities in any formal or computational linguistic theory (see [5]).

Bibliography
[1]   Goldberg, Adele E.   1995.   Constructions: A Construction Grammar Approach to Argument Structure. Chicago: University of Chicago Press.
[2]   Fillmore, Charles. 1988. The Mechanisms of 'Construction Grammar'.   Proceedings of BLS 14. Pp. 35-55. Berkeley: Berkeley Linguistics Society.
[3]   Chen, Chao-ran. 1995. A Construction-centered Approach to Existential Sentences in Mandarin Chinese. Unpublished Tsing Hua University M. A. Thesis.
[4]   Ahrens, Kathleen A. 1995. The Meaning of the Double Object Construction in Chinese. Proceedings of NACCL 6. Jose Camacho and Lina Choueiri. Eds. GSIL Publications. University of Southern California.
[5]   Sag, Ivan A. 1995. English Relative Clause Constructions. ms. Stanford University.