

## 1 Introduction

The paper deals with the syntax-semantics interface in the Chinese *ba*-construction. The *ba*-construction is a partially productive clausal pattern that is associated with a number of semantic and syntactic constraints. In this paper, I show how the semantics of the lexical instantiation of the construction can impose additional constraints on its syntactic form. The paper is mainly concerned with two theoretical issues: on the one hand, *ba* is analyzed as a head that selects a verb and may also determine the requirements on dependents of this verb, which requires a nonlocal selection mechanism. On the other hand, the nonlocal selection process has a specific consequence for the complement / adjunct status of these dependents: whereas they are adjuncts at the level of the lexical verb, they are reanalyzed as obligatory complements at the level of the clausal head *ba*. This status switch is modelled with the extended argument structure approach proposed by Bouma et al. (2001).

The paper is structured as follows: first, I describe the basic form and semantics of the *ba*-construction. I concentrate on the verbal domain in the construction and show that the two proposed structural motivations for additional dependents to the verb (Li, 1990; Feng, 2001) do not explain the interaction between the semantics of main verb and the requirement of additional verbal dependents. The following analysis takes *ba* as a head that selects a transitive verbal complement, attracts its NP arguments and, in case of a semantic mismatch, also attracts the other dependents of the verb in order to satisfy the relational constraints associated with *ba*.

## 2 The Chinese *ba*-construction

### 2.1 General description

In its canonical form, the *ba*-construction is formed from an SVO sentence by preposing the object into the preverbal position, where it is marked by *ba*:

- (1) a. SVO word order:  
Tā chī le píngguǒ.  
he eat PRT apple  
'He ate apples.'
- b. *ba*-construction:  
Tā bǎ píngguǒ chī le.  
he BA apple eat PRT  
'He ate the apple(s).'

This move mainly impacts on the referential properties of the NP and the aspectual value of the clause. Thus, whereas the object is underspecified with respect to definiteness or specificity in (1a), in (1b) it obligatorily receives a definite or specific interpretation; this also leads to a telic interpretation

of the event. Furthermore, the preverbal position changes the information status of the object NP to given information.

*Ba* was originally a verb with the meaning "hold, manipulate"; it has then undergone a grammaticalization process. The syntactic category of *ba* in modern Chinese cannot be unequivocally determined and is discussed in the literature between verb (Hashimoto, 1971; Bender, 2000), preposition (Chao, 1968; Travis, 1984; Cheng, 1998; Li, 1990), case marker (Huang, 1982; Koopman, 1984; Goodall, 1986) and functional head (Zou, 1993; Sybesma, 1999).

The *ba*-construction is partially productive: it imposes specific constraints on the semantics of the sentence. Besides the definite and specific interpretation of the *ba*-NP and the related temporal boundedness of the event, the following constraints are frequently stated in the literature:

1. The lexical predicate must express a specific degree of affectedness and transitivity.
2. Verbal complement constraint (VCC): the *ba*-construction cannot be formed with a bare verb; the verb must be complemented by an additional element:

\*[. . .[bǎ NP V]] (Feng, 2001)

The latter constraint has been given syntactic (Li, 1990) and prosodic (Feng, 2001) explanations in the literature. In this paper, I re-examine the VCC and opt for a semantic explanation. By modelling the interaction between 1. and 2., I show how the syntactic requirement in 2. interacts with 1. and is relativized by the semantics of the lexical instantiation.

### 2.2 Variability in the verbal domain

The observation rendered by the VCC, namely that the verb in the *ba*-construction must occur with some additional dependent, has been made by a number of authors (Lü, 1995; Sybesma, 1999; Liu, 1997; Li, 2001). For example, Li gives the following list of possible verbal complements in the *ba*-construction:

1. Resultative complement
2. Adverb: duration, frequency or degree
3. Verb copy: indicates short duration
4. "Retained" object: NP whose referent stands in a part-whole or inalienable possession relation to *ba*-NP
5. Aspect markers: perfective *le*, durative *zhe*

This list contains adjuncts, complements and grammatical markers. Along with other existing descriptions of the VCC, it suffers from an insufficient differentiation of the set of possible types of dependents. In particular, when referring

to “verbal complements”, the literature does not make a principled distinction between grammatical aspect markers and lexical elements, such as adjuncts of degree, result, frequency etc. This distinction is to be made here: as will be shown, verbs that can be used with lexical dependents in the *ba*-construction may become unacceptable once the lexical dependent is replaced with a simple aspect marker. Thus, I consider aspectually marked verbs to be “bare” in the sense that they are only specified for their temporal structure, which is a basic dimension of events. This contrasts with lexical complements or adjuncts that specify an additional dimension.

After making this distinction, the VCC no more applies to all *ba*-sentences. It is undoubtedly a tendency for *ba*-constructions to be formed with “heavy” predicates. However, for certain semantic classes of verbs, sentences with bare, aspectually marked verbs are fully acceptable. Other classes of verbs require true lexical dependents. Thus, the structural motivations given for the VCC in the literature cannot be maintained, as they do not take into account the differences in applicability of VCC to different verb classes.

The problem is illustrated in the following sequence of examples:

- (2) Tā dǎ / kàn gǒu.  
he hit see dog  
‘He hits / sees (the) dog(s).’

The verbs *dǎ* (hit) and *kàn* (see) both occur in aspect-marked SVO sentences without additional complements. By contrast, the *ba*-construction without additional dependents on the verb can only be formed with *dǎ*:

- (3) Tā bǎ gǒu {dǎ / \*kàn} le.  
he BA dog hit see PRT  
‘He hit / \* saw the dog(s).’

The addition of a lexical dependent, e. g. indicating degree or punctuality, restores the grammaticality of *kàn* (see) in the *ba*-construction:

- (4) a. Tā bǎ gǒu kàn de hěn xiángxì.  
he BA dog look DE very careful  
‘He looked very carefully at the dog(s).’  
b. Tā bǎ gǒu kàn le yī yǎn.  
he BA dog look PRT one-eye  
‘He caught a glimpse of the dog.’

Semantically, these dependents specify the temporal or conceptual bounds of the event.

I assume that the variability in additional verbal dependents is conditioned by the semantic restrictions associated with the construction. Thus, additional dependents of the verb are required in case of mismatch between the semantics of *ba* and that of the instantiating lexical verb. The notions of

<sup>1</sup>The first NP on the ARG-ST of the list is parenthesized in order to make the lexical entry compatible with causative *ba*-sentences which are formed with an intransitive lexical predicate; in this case, *ba* selects the subject argument:

- (1) Zhè jiàn shì bǎ tā kūlèi le.  
this cl affair BA he cry.tired-RESULT PRT  
‘This affair made him cry to the extent of becoming tired.’

Here, the verb has only one available NP argument, which is raised to the position of the *ba*-NP.

transitivity, delimitedness and affectedness, which have often been used for characterizing the construction but have not provided an exhaustive account, are taken as criteria for the characterization of the semantics of *ba*.

Two verb classes are relevant with respect to the VCC : on the one hand, certain verbs can be used with *ba* in aspectually marked form; on the other hand, there are verbs that require an additional lexical dependent when used with *ba*. The following questions arise:

- How can the semantics of the two verb classes be characterized?
- What motivates the different requirements on complements when the verbs are used with *ba*?
- How can the interaction between the selectional requirements of *ba* and the verb be modelled?

In the rest of the paper, I will argue for the following:

- The verb classes can be defined in terms of a semantic verb hierarchy based on the complex category of transitivity.
- A structural explanation of the VCC cannot sufficiently differentiate the combinatory requirements for different semantic classes of verbs. I propose a semantic explanation: the requirement of a lexical complement arises in case of a mismatch between the verbal semantics and the selectional semantics of *ba*; the complement adds the required semantic relation.
- *ba* will be analyzed as the head of sentence. Thus, it must get access to the dependents of the selected main verb in order to be able to impose their obligatory realization.

### 3 Analysis

#### 3.1 *Ba* as a semantically vacuous head

In constraint-based analyses, *ba* has been analyzed as marker (Gang, 1997; Gao, 2000) and head verb (Bender, 2000). Bender shows that the argument structure of a *ba*-clause does not necessarily follow the valence requirements of the verb; instead, the use of *ba* may create additional argument positions. The issue considered in this paper, namely that *ba* may require the presence of additional dependents on the verb, provides further support for its head status.

I analyze *ba* as a head. It selects for a lexical verb or verbal complex and attracts the first two arguments on its ARG-ST<sup>1</sup>:

$$\left[ \begin{array}{l} \text{PHON } \langle ba \rangle \\ \text{SUBCAT } \langle \boxed{1} \text{ NP}, \boxed{2} \rangle \oplus \text{list} \oplus \left\langle \text{V} \left[ \begin{array}{l} \text{LEX} + \\ \text{ARG-ST } \langle \langle \boxed{1} \rangle, \boxed{2} \text{ NP} \rangle \right] \right\rangle \end{array} \right]$$

In the considered argument structure configuration ([Agent *ba* Theme V]), I take *ba* to be semantically empty. Semantically empty words are words that inherit their content value from the content of a dependent (Pollard and Yoo, 1998; Przepiorkowski, 2001).

For the representation of the semantics, I posit a cross-classifying relational supertype *ba-reln*. This is the relation that constrains the semantics of possible lexical instantiations of the construction: by constraining the semantics of *ba* to be a subtype of *ba-reln* and requiring that its semantics be identified with the semantics of a selected argument, the lexical instantiation is constrained to match the semantics required by the construction:

$$\left[ \begin{array}{l} \text{PHON} \langle ba \rangle \\ \text{ARG-ST} \langle \dots [\text{CONT} \boxed{2}] \dots \rangle \\ \text{CONT} \boxed{2} ba\text{-rel} \end{array} \right]$$

### 3.2 Constraints on the semantics of the *ba*-construction

Numerous authors have attempted to formulate exhaustive constraints on the lexical instantiation of the *ba*-construction. Generally, the construction is associated with affectedness, transitivity, disposal and delimitedness. These semantic categories are non-discrete, complex and cross-linguistically variable, which makes them less operative in a formal analysis. In the present paper, I take transitivity, affectedness and delimitedness as working notions for the semantic description of *ba*, keeping in sight that they can further be decomposed into more primitive meaning components. The analysis is driven by empirical observations about the semantics of verbs acceptable in bare form and complements that license the use of otherwise unacceptable verbs. Two studies of transitivity and affectedness are used, namely the decompositional approach to transitivity by Hopper and Thompson (1980) and the hierarchy of transitive verb classes by Tsunoda (1985).

I propose the following hierarchy of relations that are licensed in the *ba*-construction:

*ba-reln*

<i>affectedness</i>	<i>delimitedness</i>
<i>real potential</i>	<i>temporal degree</i>
<i>frequency punctuality</i>	

Thus, *ba-reln* is a semantic meta-type that embraces more primitive semantic categories. The set of relations appears ad hoc at first sight. However, their classification under one linguistic category can be motivated by the adherence to the complex semantic category of transitivity. Hopper and Thompson (1980) propose a decompositional approach to transitivity and recognize that it embraces the following sub-components:

1. Agent-oriented components: volition, agency (, action)

2. Patient-oriented components: affectedness, strong individuation
3. Event-oriented components: telicity, punctuality (, more than one participant)
4. Context/discourse-related components: realis mode, affirmation

Of these, the properties in 1.–3. play a role in licensing lexical instantiations of the *ba*-construction. Thus, a verb that would otherwise be ungrammatical with *ba* may be used if it is combined with a complement that contributes one of these properties.

One of the formalization issues is that syntactically transitive verbs differ with respect to their degree of semantic transitivity. For example, Tsunoda (1985) proposes the following hierarchy of verb classes to explain the occurrence of verbs in transitive case patterns:

1. Direct effect on patient:
  - Resultative, e. g. kill, break
  - Non-resultative, e. g. hit, shoot
2. Perception:
  - with attained patient, e. g. see, hear
  - with non-attained patient, e. g. look, listen
3. Pursuit, e. g. search, wait
4. Cognition, e. g. think, understand
5. Emotion, e. g. want, need
6. Relationship, e. g. possess, resemble
7. Ability, e. g. capable, proficient

This hierarchy can be aligned with the behavior of lexical verbs in *ba*-clauses:

1. Verbs which can appear **in bare form** (incl. with aspect marker) (Tsunoda: 1st class):
  - (5) Zhāngsān bǎ gǒu dǎ le.  
John BA dog hit PRT  
'John hit the dog.'
2. Verbs which **require additional lexical dependents** (Tsunoda: 2nd-4th classes):
  - (6) Zhāngsān bǎ zhè jiàn shì xiǎng \*(de tài  
John BA this CL affair think DE too  
jiǎndān).  
plain  
'John thinks too plainly about this problem.'
3. Verbs which **never** occur with *ba* (stative verbs, Tsunoda: 5th-7th classes):
  - (7) \* Zhāngsān bǎ zhè liàng chē yǒngyǒu le  
John BA this CL car possess PRT  
liǎng cì.  
two time  
'?John owned this car twice.'

### 3.3 Representation of the semantic constraints

As has been said in section 3.1, the content of *ba* is constrained to the type *ba-reln* and inherited from one of its complements. A straightforward solution would be to code the *ba-reln* requirement universally on the verbal complement of *ba*:

$$\left[ \begin{array}{l} \text{PHON } \langle ba \rangle \\ \text{SUBCAT } \langle \dots V [\text{CONT } \boxed{1}] \rangle \\ \text{CONT } \boxed{1} \text{ } ba\text{-reln} \end{array} \right]$$

Under this approach, no verbal complex would be formed; thus, the verbal complement selected by *ba* is not necessarily lexical and may contain an adjunct contributing a *ba-reln*. Assuming the semantics in Pollard and Sag (1994), the semantics of this adjunct is inherited onto the higher V-node.

However, this selectional requirement undergenerates; it rules out those grammatical cases in which the verb contributes a *ba-reln* but is modified by a non-*ba-reln*-adjunct, e. g.:

- (8) Tā bǎ gǒu dǎ le shí fēnzhōng.  
 he BA dog hit PRT ten minute  
 ‘He beat the dog for ten minutes.’

In this case, the adjunct does not contribute a *ba*-relation. Its content is still projected onto the content of the verbal complement, which makes it incompatible with the above SUBCAT list.

The alternative proposed here refers to Bouma et al. (2001), who propose a modification to the standardly assumed distinction between two levels of combinatorial properties, namely VAL for the step-by-step cancellation of valents through saturation and ARG-ST as a static concatenation of valence features of a lexical item.

Bouma et al. assume three levels of representation. The more differentiated architecture allows to distinguish between gaps and non-gaps; on the other hand, it formalizes the distinction between two kinds of relationships between head and dependent:

- Selection: the head combines with a dependent in order to achieve well-formedness.
- Dependency: the head does not select for the element. It is optional and may be attached to the head in a given projection.

The following three levels of combinatorial representation are stated:

- DEPS: all dependents incl. gaps
- VAL: all locally realized dependents (excl. gaps)
- ARG-ST: only selected (required) elements

Two rules ensure the correct instantiation and expandability for the three features:

<sup>2</sup>The notion of potential affectedness is adopted from Beavers (2010); it is mainly associated with physical impingement which creates the conditions for change of state to occur.

### Argument Structure Extension

$$verb \rightarrow \left[ \begin{array}{l} \text{ARG-ST } \boxed{1} \\ \text{DEPS } \boxed{1} \oplus list(\text{adjuncts}) \end{array} \right]$$

### Argument Realization

$$word \rightarrow \left[ \begin{array}{l} \text{SUBJ } \boxed{1} \\ \text{COMPS } \boxed{2} \ominus list(\text{gap-ss}) \\ \text{DEPS } \boxed{1} \oplus \boxed{2} \end{array} \right]$$

In the *ba*-construction, inherently optional dependents of the verb may become obligatory once the verb is used with *ba*: if the *ba*-construction is instantiated with low-transitivity verbs, additional adjuncts are required in order to match the semantics of *ba* with the verbal complement. These adjuncts are dependent on, but not selected by the verb. Thus, a straightforward solution would be to code them on the DEPS value of the verb, thereby keeping their status as lexically optional dependents. The DEPS value of the verb is then inherited onto the ARG-ST value of *ba*, thereby rendering them necessary for the well-formedness of the sentence:

$$\left[ \begin{array}{l} \text{PHON } \langle ba \rangle \\ \text{ARG-ST } \boxed{1} \oplus \left\langle V \left[ \begin{array}{l} \text{LEX } + \\ \text{DEPS } \boxed{1} \end{array} \right] \right\rangle \end{array} \right]$$

### 3.4 Locus of the *ba-reln*

The *ba*-relation is an event structure component that can be contributed in two ways: the lexical verb may specify a *ba*-relation between two participants, or an adjunct may be used to modify the event and present it in a *ba*-compatible perspective. These two locations are illustrated in the following:

- Main verb:

- (9) Tā bǎ gǒu dǎ le.  
 he BA dog hit PRT  
 ‘He hit the dog(s).’

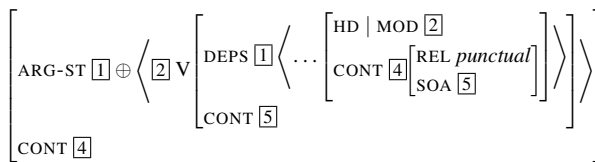
The verb expresses potential affectedness<sup>2</sup>, which is a subtype of *ba*-relation. The content value of the verb is identified with the content of *ba*:

$$\left[ \begin{array}{l} \text{PHON } \langle ba \rangle \\ \text{ARG-ST } \left\langle \dots V [\text{CONT } \boxed{2}] \right\rangle \\ \text{CONT } \boxed{2} \mid \text{REL } \textit{potential-affectedness} \end{array} \right]$$

- Lexical dependent of the verb:

- (10) Tā bǎ gǒu kàn le yī yǎn.  
 he BA dog look PRT one eye  
 ‘He caught a glimpse of the dog.’

The following structure describes the semantic and combinatorial properties of *ba* in this sentence:



The content of the verb kàn (look) is not of type *ba-reln*. Thus, some other element on ARG-ST of *ba* must contribute the *ba-reln*. The DEPS list of the verb contains its obligatory valents (2 NPs) and additionally specifies the adjuncts that are compatible with the verb. This list is also attracted by *ba* so that it can find an element with a *ba*-relation. In (10), the idiomatic adjunct ‘a glimpse’ contributes a *punctual* relation.

The additional dependents appear to have a dual status: on the level of combination with the lexical verb, they are traditionally adjuncts, as they contribute an additional semantic dimension. However, on the level of the *ba*-clause, they contribute a meaning component of the predicate that is required for well-formedness and thus should be treated as complements. This transition from optional to obligatory realization is modelled by a switch of the optional status of the dependents at the lexical level to an obligatory complement status at the level of selection by *ba*.

## 4 Conclusion

The paper has focussed on lexically determined constraints on the surface form of the Chinese *ba*-construction. *Ba* has been analyzed as a semantically vacuous head; it identifies its content with the content of a dependent that contributes a relation of the type *ba-reln*. In turn, *ba-reln* is a relational category that subsumes affectedness and other components of transitivity. It can be contributed either by the lexical verb or by a further dependent to the verb.

The analysis is based on a specific kind of nonlocal selection: *ba* is a head that combines with a verbal complement. In case of a semantic mismatch, it requires this verbal complement to take otherwise optional dependents. Thus, dependents that are obligatory on one head become obligatory through its selection by another head and are reanalyzed as complements of this higher head.

The following directions for further research are raised by the issue: on the one hand, the adjunct / complement distinction in Chinese has been understudied; the criteria for adjuncthood are different from those assumed for languages with rich morphological marking systems. A further investigation would shed light on the cross-linguistic applicability of the adjuncts-as-complements approach. On the other hand, the proposed analysis could be reformulated in terms of two levels of syntax-semantics mapping: an idiosyncratic lexical level and a higher, “constructional” level which requires a flattening of the lexical semantic contributions. This interaction of top-down and bottom-up mapping can be an interesting issue for analysis in HPSG dialects that adopt ideas

from Construction Grammar.

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