

Verb Decomposition: Post-verbal DE in Mandarin Chinese

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Abstract. Kratzer (1996) argues that agents are externally merged and this squib explores the possibility that themes are also introduced by an extra functional head. Specifically, this squib examines the V=*de* construction in Mandarin Chinese, where *de* is a possessive head. The possessive head *de* is a relation between a proposition and an individual (Sæbø 2009) and its function is to integrate the individual argument as a role in the proposition argument, e.g. *Zhangsan de siwang* ‘Zhangsan’s death’. As such, what *de* in V=*de*=*Obj* does is integrate its object argument as a role in its V argument. Consequently, the theme object is introduced not by V, but by the possessive head.

Keywords. possessive head; thematically unspecified; argument structure; pseudo-cleft

1. Introduction. Transitive verbs are previously understood (see Tesnire 1959; Chomsky 1986; Haegeman 1994) to select both the subject and the object as arguments. However, following Kratzer (1996), who compellingly argues that agents are externally merged via a little *v*, only internal arguments are considered genuine arguments of the verb. This squib explores the possibility that the internal argument is not introduced by the verb either, but rather by an additional functional head. The evidence comes from the V=*de* construction (1a-1c) in Mandarin Chinese, where a possessive head *de* is inserted between the transitive verb and the object.

- (1) a. Zhangsan xie de jubao-xin.
Zhangsan write POSS report-letter
‘Zhangsan wrote a report letter.’
b. Zhangsan xi de yifu; Lisi shua de wan.
Zhangsan wash POSS clothes Lisi brush POSS bowl
‘Zhangsan washed the clothes and Lisi washed the dishes.’
c. Zhangsan da de Lisi.
Zhangsan beat POSS Lisi
‘Zhangsan beat Lisi.’

What appears immediately puzzling is that the subject and the object seem to be taken by two transitive heads *xie* ‘write’ and *de* ‘POSS’. Each of these operates as an argument-taking relation in its own right:

- (2) a. Zhangsan xie le jubao-xin.
Zhangsan write PRF report-letter
‘Zhangsan wrote a report letter.’
b. Zhangsan de jubao-xin.
Zhangsan POSS report
‘Zhangsan’s report letter.’

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Data like (2a) & (2b) suggest that *xie* ‘write’ and *de* ‘POSS’ are both transitive predicates. If this is the case, it poses a syntactic challenge as to how two transitive heads can combine while projecting only two arguments (1a-1c).

Available solutions maintain that verbs introduce arguments, with the possessive head serving a different function. Since *de* is typically confined to the nominal domain, e.g. (2b), it may be assumed that the possessive relation arises from the nominal domain (Zhong 2024). However, that entails a possessive relation between the subject and the object, which is, however, missing in the V=de construction. At the extreme end of this endeavor, some scholars dismiss *de* as a coherent possessive relation altogether, proposing instead that it serves as various functional categories such as T (Simpson & Wu 2002) or C (Hole 2011). However, these claims still suffer from various theoretical and empirical issues (see more details in Long 2013). For example, as this squib demonstrates, the V=de construction is an SVO structure where V and *de* form a constituency, thus leaving no structural possibility for *de* to serve as a post-verbal T or C¹. Thus, endeavors to maintain V as argument-taking do not hold.

Alternatively, this squib proposes that the possessive head is a proposition-taking predicate such that the possessive head takes V and the object as arguments. As such, in a strict compositional semantics, the possessive head *de* is of type $\langle st, \langle se, st \rangle \rangle$, and the verb is root-like, typed as $\langle s, t \rangle$.

- (3) a. $\llbracket de \rrbracket = \lambda e_{\langle s, t \rangle} \lambda x_{\langle s, e \rangle} \lambda s. R(e)(s) \ \& \ R(x, e)(s)$
 b. $\llbracket xie \rrbracket = \lambda s \exists e. \text{Writing}(e)(s)$

The possessive head serves as a relation between a proposition and an individual property, what it does is bridge the two arguments and integrate the second argument as a role in the propositional argument. A well-understood example is *Zhangsan de siwang* ‘Zhangsan’s death’ – while *Zhangsan* is introduced by the possessive head, it is understood as the theme of *siwang* ‘death’. The same possessive semantics also accounts for possessive clauses like *She had [sc her hair braided]* (Sæbø 2009). With this coherent understanding of the possessive head, the possessive head takes the verb *xie* ‘write’ and *jubao-xin* ‘report letter’ as arguments, and yields the following structure:

- (4) $[_{VP} \text{Zhangsan } v [_{VP} [\text{write POSS}] \text{report-letter}]]$

In this structure, the verb serves merely as a root and does not take arguments. The entire V=de unit functions as what is traditionally understood as a verb. Parallel to the case of *Zhangsan de siwang* ‘Zhangsan’s death’, *jubao-xin* ‘report letter’ is an argument of the possessive head but is understood as the theme of *xie* ‘write’. As a result, while the object is understood as the theme of the verb, it is introduced by the possessive head.

The squib is organized as follows. Section 1 gives an introduction. Section 2 tries to clarify some potential misunderstandings and give a proper syntactic structure. Section 3 examines the behavior of the possessive head, showing that it takes a proposition as an argument. Section 4 gives a proposal about how the verb and the possessive head are properly combined. Section 5 draws the conclusion.

¹ Mandarin Chinese does not have V-to-T movement (Hu & Pan 2008; Tang 2001).

2. SVO structure. I demonstrate that the V=de construction is an SVO structure. I first clarify why alternative structures are inappropriate; then, I present properties that support the SVO analysis.

2.1. AS CLAUSAL, NOT NOMINAL. To begin with, the V = de construction in (1a) constitutes a full clause rather than a noun phrase. Notably, the same surface string can be used either as a noun phrase modified by a relative clause or as a standalone full clause, depending on syntactic and contextual factors.

- (5) a. [Zhangsan xie de jubao-xin] hen youxiao.
Zhangsan write POSS report-letter very effective
'The report letter that Zhangsan wrote is very effective.'
b. [Zhangsan xie de jubao-xin].
Zhangsan write POSS report-letter
'Zhangsan wrote the report letter.'

In (5a) *Zhangsan xie de jubao-xin* 'The report letter that Zhangsan wrote' is used as the clause subject and thus a nominal phrase, whereas the same word sequence used in (5b) is a full clause which can be true or false on its own. The bracketed word sequences in (5a) and (5b) are identical, but they clearly function as different syntactic objects. The full-clause status of the V=de construction (5b) can be verified by a clause-taking verb like *tingshuo* 'hear'. *Tingshuo* 'hear' is a verb that takes only a full sentence rather than any sentence fragments:

- (6) Wo tingshuo Zhangsan *(si le).
I hear Zhangsan die PRF
'I heard that Zhangsan died.'

As shown in (6), *tingshuo* 'hear' can take a clausal complement such as *Zhangsan si le* 'Zhangsan died', but not a nominal complement like *Zhangsan*. As (7) shows, V=de constructions can serve as the complement of *tingshuo* 'hear':

- (7) Wo tingshuo [Zhangsan xie de jubao-xin].
I hear Zhangsan write POSS report-letter
'I heard that Zhangsan wrote the report letter.'

This is possible only if the V=de construction constitutes a complete clause.

2.2. NOT PSEUDO-CLEFTS. V=de constructions are analyzed as involving focus clefts following the analyses of *shi...de* constructions (Long 2013). A cleft sentence is a complex sentence that is used to put emphasis on a particular part of the sentence. It is constructed by splitting the original simple sentence into two clauses. For example, (8b) is a cleft variant of (8a):

- (8) a. John wrote a report letter.
b. It is John who wrote a report letter.

In Mandarin Chinese, when *shi* 'be' and *de* 'POSS' are used together, similar focus effect arises:

- (9) Shi Zhangsan xie de jubao-xin.
 be Zhangsan write POSS report-letter
 ‘It is Zhangsan who wrote the report letter.’

Because of this, various studies have argued that *be...de* form a pseudo-cleft construction that yields a focus emphasis (Paul & Whitman 2008; Long 2013; Simpson & Wu 2002; Hole 2011). In this background, V=de constructions are naturally assumed as a sort of the *shi...de* construction whose *shi* is omitted (Long 2013).

The analysis of *shi...de* combination as a pseudo-cleft is mainly due to the focus emphasis which resembles that of the English cleft sentences. However, the focus emphasis is introduced by *shi* ‘be’ itself, even without *de*:

- (10) Shi Zhangsan xie le jubao-xin, youbushi wo.
 be Zhangsan write PRF report-letter not I
 ‘It is Zhangsan who wrote the report letter, not me.’

In (10), only *shi* ‘be’ is inserted, while *de* ‘POSS’ is absent, yet the same focus effect is maintained. Meanwhile, removing *shi* also removes focus emphasis:

- (11) Zhangsan xie de jubao-xin.
 Zhangsan write POSS report-letter
 ‘Zhangsan wrote a report letter.’

Unless uttered with emphatic prosody, (11) won’t yield any emphatic connotations. Consequently, *shi* ‘be’ is the necessary and sufficient focus introducer; *de* has nothing to do with focus. Although *de* may occur in a focused clause, it is inappropriate to analyze the V=de construction as part of focus clefting.

Another reason that V=de constructions have no relation to clefts or pseudo-clefts is that they do not align with cleft sentences in terms of the types of base forms that are clefted. For example, clefting does not apply to questions:

- (12) a. Who wrote a report letter by pen?
 b. *It is who who wrote a report letter by pen.
 c. *It a report letter that who wrote by pen.
 d. *It by pen that who wrote a report letter.

As a question, (12a) cannot be clefted in any way (12b-12d). On the one hand, clefts are used to assert, not to inquire; on the other hand, questions encode focus themselves – the WH-word itself is a focal element. If the V=de construction were truly related to clefting, it would be expected to exhibit similar incompatibility with questions. However, V=de construction allows WH-words:

- (13) a. Shui xie de jubao-xin?
 who writ POSS report-letter
 ‘Who wrote the report letter?’
 b. Zhangsan xie de shenme?
 Zhangsan writ POSS what
 ‘What did Zhangsan write?’

All these suggest that V=de constructions are not cleft sentences.

2.3. NOT EQUATIVES. Another possibility involves that V=de constructions are equatives. Equatives are constructions that express equality or equivalence between two elements in a sentence. The copula *BE* is the most commonly used verb to form an equative. For example,

- (14) Oswald is the murderer of JFK.

Verb *BE* can be omitted in Mandarin Chinese (Harris & Campbell 1995):

- (15) a. Zheli shi wo jia.
 here be 1.SG home
 ‘Here is my home.’
 b. Zheli wo jia.
 here 1.SG home
 ‘Here is my home.’

Consequently, a possible hypothesis is that there is a hidden BE in V=de constructions, thus constituting an equative:

- (16) a. Zhangsan xie de jubao-xin.
 Zhangsan xie POSS report-letter
 ‘Zhangsan wrote a report letter.’
 b. Zhangsan xie de shi jubao-xin.
 Zhangsan xie POSS be report-letter
 ‘What Zhangsan wrote is a report letter.’

In this hypothesis, *Zhangsan xie de* is assumed to function as a nominal subject. This could entail an omitted noun after *de*, transforming *Zhangsan xie de N* into a nominal phrase modified by a relative clause. Alternatively, *Zhangsan xie de* could serve the subject as a nominal clause, akin to *What Zhangsan writes* in the English sentence *What Zhangsan writes is a report letter*. Either way, *Zhangsan xie de* constitutes a nominal subject, with *shi* ‘be’ serving as the main predicate:

- (17) [_{NP} Zhangsan xie de] shi [_{NP} jubao-xin]

However, *Zhangsan xie de* functions as a nominal phrase only when *shi* ‘be’ is present. I test this with a nominal quantifier *youxie* ‘some’. Since *Zhangsan* is incompatible with *youxie*

'some', *youxie* 'some' is only possible if *Zhangsan xie de* is a nominal phrase. Indeed, when *shi* 'be' is present, *youxie* 'some' is possible (18a); conversely, when *shi* 'be' is absent, *youxie* 'some' becomes impossible:

- (18) a. Youxie Zhangsan xie de shi jubao-xin.
 some Zhangsan xie POSS be report-letter
 'Some of what Zhangsan wrote are report letters.'
 b. *Youxie Zhangsan xie de jubao-xin.
 some Zhangsan xie POSS report-letter

This contrast suggests that analyzing V=de constructions as equatives with an omitted *shi* 'be' is not feasible.

2.4. SVO STRUCTURE. I demonstrate that V=de constructions involve an SVO structure. In the present work, the term "V=de construction" refers to a truth-functional clause consisting of a transitive verb, two arguments, and the possessive marker *de*:

- (19) α V_t de β .

As demonstrated in (19), V_t represents a transitive verb; α and β are the two arguments and *de* is the possessive marker. Semantically, (19) is a clause because it can have truth values. Structurally, V_t=de= β form a VP, which can be elided in the way of VP ellipsis.

- (20) a. Zhangsan [lai le]. Lisi ye shi.
 Zhangsan come PRF Lisi too be
 'Zhangsan came. Lisi came too.'
 b. Zhangsan [xie de jubao-xin]. Lisi ye shi.
 Zhangsan write POSS report-letter Lisi too be
 'Zhangsan wrote a report letter. Lisi also wrote a report letter.'

In addition, V=de= β can also be fronted in the same way as VP fronting, suggesting the same constituency.

- (21) a. Lai le, Zhangsan.
 Come PRF Zhangsan
 'Zhangsan came.'
 b. Xie de jubao-xin, Zhangsan.
 write POSS report-letter Zhangsan
 'Zhangsan wrote a report letter.'

These behaviors indicate that the V=de= β forms a constituent.

- (22) [_S α [_{VP} V_t de β]]

The internal structure of VP is difficult to see. Internally, it seems that *de* is closer to V than to the object. For example, V=de can be conjoined (23a) but de=N cannot be conjoined (23b).

- (23) a. Zhangsan [[xie de] erfei [dayin de]] jubao-xin.
 Zhangsan write POSS not print POSS report-letter
 ‘Zhangsan wrote but not printed the report letter.’
 b. *Zhangsan xie [de jubao-xin] erfei [de qing-shu].
 Zhangsan write POSS report-letter not POSS love-letter
 ‘Zhangsan wrote the report letter but not the love letter.’

This suggests that V=de forms a constituency but de=N does not. Consequently, V=de constructions feature a conventional transitive clause with the following constituency:

- (24) [_S α [_{VP} [V_t de] β]]

Conventionally, verbs take arguments by themselves, but how does the possessive head appear in combination with the verb and how does their combination take arguments?

3. More Properties of V=de Structures.

3.1. TENSE. The structure typically denotes a past event but it cannot be modified by tense markers.

- (25) Zhangsan xie (*guo/*le) de jubaoxin.
 Zhangsan write PST/PFV POSS report-letter

3.2. ADVERBS. Adverbs like *zheci* ‘this-time’ and *zuotian* ‘yesterday’ can be used before the verb, not after:

- (26) (*zhe-ci*) Zhangsan (*zheci*) xie (**zheci*) de (**zheci*) jubaoxin.
 this-time Zhangsan this-time write this-time POSS this-time report-letter

Verbal quantifiers cannot be used, without you ‘have’.

- (27) a. (**liang-ci*) Zhangsan (**liangci*) xie (**liangci*) de (**liangci*) jubaoxin.
 this-time Zhangsan this-time write this-time POSS this-time report-letter
 b. (**you liang-ci*) Zhangsan (**you liangci*) xie (**liangci*) de (**liangci*)
 have this-time Zhangsan have this-time write this-time POSS this-time
jubaoxin.
 report-letter

3.3. NEGATION. V=de structures can be negated by *bushi* ‘not’, at the beginning or after the verb:

- (28) a. (*bushi*) *Zhangsan xie de jubaoxin.*
 not Zhangsan write POSS report-letter
 ‘Zhangsan did not write a report letter.’
- b. *Zhangsan xie de (bushi) jubaoxin.*
 Zhangsan write POSS not report-letter
 ‘Zhangsan writes not a report letter.’

When *bushi* ‘not’ is low, Quantifiers can be added before the subject: V=de structures can be negated by *bushi* ‘not’, at the beginning or after the verb:

- (29) a. (*bushi*) (**suoyou*) *Zhangsan xie de jubaoxin.*
 not all Zhangsan write POSS report-letter
 ‘Zhangsan did not (all) write a report letter.’
- b. *Suoyou Zhangsan xie de dou (bushi) jubaoxin.*
 all Zhangsan write POSS DOU not report-letter
 ‘All what Zhangsan writes are not report letters.’

Therefore, the post-de negation comes from a different structure – equatives. These negations are interpreted with only a narrow scope, impossible for a long scope interpretation:

- (30) a. *Bushi Zhangsan xie de jubaoxin. #Zhangsan xie de qingshu*
 not Zhangsan write POSS report-letter Zhangsan write POSS love-letter
 ‘Zhangsan did not write a report letter. He wrote a love letter.’
- b. *Zhangsan xie de (bushi) jubaoxin. Lisi xie*
 Zhangsan write POSS not report-letter
 ‘Zhangsan writes not a report letter.’

3.4. QUESTIONS. *Shibushi* ‘yes or no’ can be added at the beginning to generate a yes/no question; WH-words

- (31) a. *Shibushi Zhangsan xie de jubaoxin?*
 be-not Zhangsan write POSS report-letter
 ‘Did Zhangsan write a report letter?’
- b. *Zhangsan xie de shibushi jubaoxin?*
 Zhangsan write POSS be-not report-letter
 ‘Did Zhangsan writes a report letter?’

4. Possessive Relation. One key challenge in understanding V=de constructions lies in explaining why a possessive relation is necessary in the verbal domain. We propose that this relation enables the abstraction of an internal argument from the verb, thereby allowing the surface object to saturate the verbs argument structure.

4.1. THEMATICALLY ABSTRACTED. Possessive relations are notorious for being ambiguous (Williams 1985; Burton 1995), and are not supposed to be treated in the same way as concrete predicates. To begin with, possessive relations are sometimes intuitively understood to denote possession. When a possessive relation exists between x and y , it could be intuitively understood to be that x possesses y , or simply, x has y . At its core, a possessive relation is no different from other predicates such as *see*, *touch*, *dead*, and *happy*, as a thematic predicate denoting an event or state. A natural way to represent a possessive relation is as *POSS*, as shown below:

$$(32) \quad \llbracket \textit{John has a house.} \rrbracket = \exists x \exists e. \text{POSS}(e) \ \& \ \text{POSS}(\text{John}, x, e)$$

This representation, notably *POSS*(e), suggests that the possessive relation denotes an event/state of *in possession of*, just as concrete as other predicates like *see* or *happy*. However, *POSS*(e) is not a fully specified predicate.

In truth-conditional semantics, an unambiguous expression has one and only one truth condition. For example, when *John saw Mary* is true, there is accordingly an event of seeing in which *John* and *Mary* serve as agent and theme respectively.

$$(33) \quad \textit{John saw Mary} \text{ is True if and only if there is an event } e \text{ of seeing, and John is an agent of } e \text{ and Mary is a theme of } e.$$

These unambiguous expressions feature a one-to-one relationship between an expression and its truth condition. By contrast, possessive relations feature a one-to-many relationship – one possessive relation has multiple truth conditions. For instance, for an expression like *John has a apple* to be true, it could be that John bought an apple, that John was sent an apple as a gift or that John stole an apple. Generally, while *John saw Mary* has a specific truth condition, *John has a house* encompasses a set of truth conditions. The contrast is summarized in Table (1):

Expression	Truth Condition
John saw Mary.	IFF John saw May.
John has an apple.	IF John bought an apple.
	IF John stole an apple.
	IF John was sent an apple as gift.
	...

Table 1. One-to-many truth condition in possessive relations

To understand the implications of the one-to-many relationship, we can draw parallels with a comparable situationcompare (34a) and (34b), where a similar one-on-many relationship is also evident.

- (34) a. John saw Mary at 5pm.
b. John saw Mary.

Compared to (34b), (34a) is further specified by an additional dimension: time. Therefore, while (34a) is true under a single truth condition that is specific to time, (34b) can be true under a set of truth conditions because it is unspecified in time:

Expression	Truth Condition
John saw Mary at 5pm.	IFF John saw Mary at 5 pm.
John saw Mary.	IF John saw Mary at 1pm. IF John saw Mary at 2 pm. IF John saw Mary at 3 pm. ...

Table 2. One-on-many truth condition in terms of time specification

What (34a) and (34b) suggest is that the one-on-many relationship arises from underspecification. Compared with (34a), (34b) can be understood as also involving a time phrase which is however unspecified:

- (35) John saw Mary at a certain time X.

In quite similar ways, possessive relations contrasts with typical predicates like *see* in that possessive relations are unspecific in terms of thematic content.

- (36) a. John saw Mary. = John and Mary enter a relation by way of seeing.
b. John has a house. = John and a house enter a relation by an unknown way X.

In general, compared with typical predicates like *see*, the one-on-many relationship in the possessive relation strongly implies that its thematic content is abstracted away.

This also applies to possessive relations in nominal phrases (Zhong 2024). Similar one-to-many relationships are observed in expressions like *John's apple*, which could denote the apple that John bought, the apple that John stole or the apple that John was sent to as a gift. The possessive relation connects *John* and *apple* but remains silent about how they are connected. What makes the nominal possession interesting is that there is an unambiguous alternative, e.g. *John's wife*. The interpretation of *John's wife* is much more straightforward – the woman who John is married to. According to Barker (1991), what differs *apple* from *wife* is that the former is sortal in the sense that they group a set of entities of the same sort, whereas the latter is relational in that they bear an inherent relation (Barker 1991):

- (37) a. wife Marry(x, y)
b. teacher Teach(x, y)
c. arm Body-part(x, y)

Now, compare *John's apple* with *John's wife*.

- (38) a. John's wife = the woman with whom John is in a relation by way of marrying
 b. John's apple = the apple with which John is in a relation by way of an unknown event X

When a thematic relation is introduced, the possessive relation is no longer ambiguous; conversely, the thematic content of the possessive relation is abstracted away (see Williams (1985); Higginbotham (1983); Burton (1995)).

4.2. S-SELECTION OF THE POSSESSIVE RELATION. Because a possessive relation is a relation whose thematic content is abstracted away, the possessive relation may S-select a proposition for a specified interpretation (Sæbø 2009). With the thematic content being abstracted away, a possessive relation behaves like a variable over thematic relations (Burton 1995), represented as R below. While *bought* in (39a) denotes a relation whose thematic content is specified as a purchase event, *has* in (39b) denotes a relation R whose thematic nature is unknown yet.

- (39) a. $\llbracket \text{John bought Fido.} \rrbracket = \exists e. \text{Buy}(e) \ \& \ \text{Buy}(\text{John}, \text{Fido}, e)$
 b. $\llbracket \text{John has a house} \rrbracket = \exists x \exists e. R(e) \ \& \ \text{House}(x) \ \& \ R(\text{John}, x, e)$

As such, a possessive head behaves like a normal predicate whose thematic content is abstracted away. This way, if we assume (40a) as the denotation for *buy*, (40b) could be a potential denotation for the possessive relation:

- (40) a. $\llbracket \text{buy} \rrbracket = \lambda x \lambda y \exists e. \text{Buy}(e) \ \& \ \text{Buy}(y, x, e)$
 b. $\llbracket \text{POSS} \rrbracket = \lambda e \lambda x \lambda y. R(e) \ \& \ R(y, x, e)$

One obvious issue is that the possessive relation is treated as ditransitive but a possessive relation typically takes only two arguments. For example, there are only two arguments *John* and *house* in *John's house* and *John has a house*. This could be resolved by appealing to Kratzer (1996) who argues that external arguments are externally merged. Then, the denotation for the verb *buy* is (41a) and the denotation for the possessive relation becomes (41b)².

- (41) a. $\llbracket \text{buy} \rrbracket = \lambda x \exists e. \text{Buy}(e) \ \& \ \text{Buy}(x, e)$
 b. $\llbracket \text{POSS} \rrbracket = \lambda e \lambda x. R(e) \ \& \ R(x, e)$

If this is the right denotation for the possessive head, an immediate question is how its complement could be a proposition?

Cases like (42a-42c) are naturally treated as propositions as the object can be assumed as a small clause:

- (42) a. The beetle had [_{sc} the engine in the rear]. (Sæbø 2009)
 b. She has [_{sc} all four grandparents alive]. (Sæbø 2009)
 c. John had [_{sc} his son die on him].

Relational nouns are also known to involve thematic contents (Barker 1991):

² Later discussion involves the world variable s , and in that case, $\llbracket \text{POSS} \rrbracket = \lambda e \lambda x \lambda s. R(e)(s) \ \& \ R(x, e)(s)$.

- (43) a. John has a wife_{Marry(x,y)}.
 b. John has a teacher_{Teach(x,y)}.

In these cases, the possessum arguments of the possessive head consistently bear thematic content despite their varying syntactic forms³.

What presents a problem is cases where the possessum argument is non-relational, like *My mom has a boat*. Sæbø (2009) treats the object as involving an implicit predicate *belonging to her* as in Figure (1):

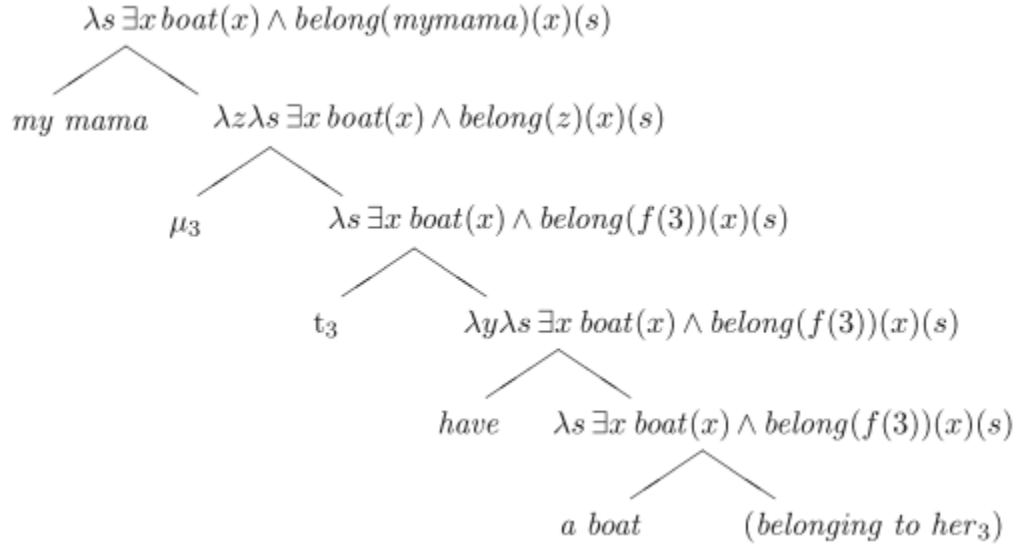


Figure 1. My mom has a boat. From Sæbø (2009)

Sæbø (2009)’s treatment is non-standard and can be circumvented by appealing to the qualia structure (Le Bruyn et al. 2016). According to Pustejovsky (1995), qualia structure is a set of information structured in lexical items:

Qualia structure is a system of relations that characterizes the semantics of a lexical item, very much like the argument structure of a verb. In effect, the qualia structure of a noun determines its meaning in much the same way as the typing of arguments to a verb determines its meaning. The elements that make up a qualia structure include familiar notions such as container, space, surface, figure, or artifact (Pustejovsky 1995).

By appealing to the qualia structure, sortal nouns are transitivized into a relational noun through “a type-shifting operation that adds an argument to a sortal noun” (Burton 1995; Barker 1991; Le Bruyn et al. 2016).

- (44) $\lambda x \lambda s. P(x)(s) = \lambda x \lambda s \exists y. P(x)(s) \ \& \ R(x, y)(s)$, where R is a pragmatically defined relation.

³ Limited by space, I will not show the details of derivation and please refer to Burton (1995) and Sæbø (2009) if interested.

When (44) is existentially closed, it becomes a proposition:

- (45) $\lambda s \exists x. P(x)(s) = \lambda s \exists x \exists y. P(x)(s) \ \& \ R(x, y)(s)$, where R is a pragmatically defined relation.

For example, a sortal noun *boat* can be converted to a relational noun *boat belonging to someone*.

- (46) $\lambda x \lambda s. \text{Boat}(x)(s) = \lambda x \lambda s \exists y. \text{Boat}(x)(s) \ \& \ \text{Belong\_to}(x, y)(s)$, where *Belong_to* has been chosen as a pragmatically defined value for R .

When existentially closed, (46) becomes a proposition:

- (47) $\lambda s \exists x. \text{Boat}(x)(s) = \lambda s \exists x \exists y. \text{Boat}(x)(s) \ \& \ \text{Belong\_to}(x, y)(s)$, where *Belong_to* has been chosen as a pragmatically defined value for R .

This way, the object *a boat* in Figure (1) can be type-shifted to involve a proposition, without assuming a hidden predicate *belonging to her*. As a result, even if the possessum argument is non-relational, it doesn't present any problem for the idea of possessive head being proposition-taking.

This idea has been effectively applied to address a wide range of possessive relations (Sæbø 2009; Le Bruyn et al. 2016; Zhong 2024). In this squib, I continue to apply this idea to address the V=de constructions in Mandarin Chinese. As I show, this idea naturally explains what function the possessive head serves in V=de constructions.

5. Proposal. In this squib, I propose that a verb root combines with a possessive head to function as what we understand to be a verb. Specifically, *xie* in *Zhangsan xie de jubao-xin* 'Zhangsan wrote a report letter.' is a verb root and *de* is a possessive head; their combination serves as a verb in the conventional sense.

The syntactic derivation starts by *de* merging with *xie*:

- (48) a. $[_{R'} \text{ xie de}]$

Next, *xie=de* merges with *jubao-xin* 'report letter':

- (49) a. $[_{RP} [_{R'} \text{ xie de}] \text{ jubao-xin}]$

The vP is formed by merging *v* with RP and introducing the external argument:

- (50) a. $[_{vP} \text{ Zhangsan } [_{v'} v [_{RP} [_{R'} \text{ xie de}] \text{ jubao-xin}]]]$

Finally, T is merged and Zhangsan moves to the subject position:

- (51) a. $[_{TP} \text{ Zhangsan } [_{T'} T [_{vP} \text{ Zhangsan } [_{v'} v [_{RP} [_{R'} \text{ xie de}] \text{ jubao-xin}]]]]]$

Syntactically, *xie* 'write' serves as a verb root and is taken as an argument by the possessive head. Semantically, *xie* is of type $\langle s, t \rangle$ and is listed with a full thematic content about writing:

- (52) a. $\llbracket xie \rrbracket = \lambda s \exists e_{st}. \text{Writing}(e)(s)$
 b. $\llbracket de \rrbracket = \lambda e_{st} \lambda x \lambda s. R(e)(s) \ \& \ R(x, e)(s)$

As argued earlier, *de* functions as a predicate that takes propositions as arguments. When *de* combines with *xie*, it takes over the thematic content from *xie*.

- (53) $\llbracket [de](xie) \rrbracket = \lambda x \lambda s \exists e_{st}. \text{Writing}(e)(s) \ \& \ \text{Write}(x, e)(s)$

Essentially, this analysis offers a new perspective towards conventional verbs. I show that conventional verbs may be built up by saturating a possessive relation with a thematic verb root. In this proposal, the verb only bears thematic content but does not introduce any argument. Even though the internal argument, e.g. *jubao-xin* ‘report letter’ is understood in the thematic content of the verb root, it serves as an argument to the possessive head.

6. Concluding remarks. This squib discusses the syntax and the semantics of post-verb *de* in Mandarin Chinese. I show that V=*de* constructions are in an SVO structure where *V* and *de* merge, forming a complex that have been traditionally called a verb. In other words, V=*de* construction suggests that verbs might be decomposed into a verb root and an argument introducer. This case study lends support to the surmise that not only external argument (Kratzer 1996) but also internal argument may be introduced by an extra functional head.

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