Non-Referential Verb Use in Chinese:
A Unified Verb Copying Analysis

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This paper examines issues related to transitivity in Chinese, looking in particular at verb use in non-referential contexts. Four variants of non-referential verb use involving generic bare nouns and postverbal manner adverbs are analyzed. It is suggested that in these cases of non-referential verb use, the verb is first merged with an adverbial complement, and then copied to yield the verb copying construction. Following verb copying, conditions on linearization are proposed to determine the spellout of verb copies at the PF interface, resulting in the four variants. Cheng's (2007) analysis of the verb copying construction is adopted in proposing a unified analysis for the four variants of non-referential verb use.

0. Introduction

A great deal of the literature on Mandarin Chinese has been devoted to the study of transitivity in the language, much of it focused on the fact that Chinese is a topic-drop language with referential null objects. Though there has not been any uniformly agreed upon consensus as to the exact properties of the referential null object, it is generally agreed that a referential reading in Chinese is achieved when the referential object is topicalized or dropped. The transitive verb is interpreted as taking a referential object, and the gap is interpreted as having referential properties.

In contrast, much less attention has been paid to the non-referential complements of Chinese. Non-referential, indefinite interpretations are typically achieved through the use of an overt generic bare noun in Chinese, as in (1).

(1)   Lisi zai   chang ge
        Lisi PROG sing   song
        'Lisi is singing'

The verbs that appear with generic bare nouns are generally the Chinese equivalents of optionally transitive verbs in English. Further examples can be seen in Table 1, taken from Cheng and Sybesma (1998).

Table 1 (Cheng & Sybesma 1998): Dummy objects

English	Mandarin
eat	chi-fan 'eat-rice=eat'
read	kan-shu 'read-book=read'
sing	chang-ge 'sing-song=sing'
speak	shuo-hua 'speak-speech=speak'
write	xie-zi 'write-character=write'
drive	kai-che 'drive-car=drive'
run	pao-bu 'run-step=run'
walk	zou-lu 'walk-road=walk'

According to Cheng and Sybesma's (1998) account of the generic bare noun, any empty category in Chinese is interpreted as referential, obligatorily referring to something specific or definite that has either a linguistic antecedent or a referent that can be identified in the discourse context. Based on this assumption, the only way to achieve a non-referential reading in Chinese is to insert the overt bare noun, so as to block *pro*. In other words, the bare noun behaves as a syntactic dummy; its insertion is for purely structural reasons and has no semantic effect on the sentence.

But the situation is not quite so simple, as becomes apparent when we look at cases where speakers pronounce another postverbal constituent in addition to the object, such as a postverbal manner adverbial phrase. In such cases, speakers often drop the generic bare noun, as seen in the contrast between (2) and (3).

(2)   ta zai   pao bu
        he PROG run step
        'He is running'

(3)   ta pao (*bu) de hen kuai
        he run   step DE very fast
        'He runs very fast'

This suggests that speakers can indeed achieve a non-referential reading through the use of a null object, as is the case in English. Therefore, both English and Chinese can express non-referentiality through the use of a null object, but only Chinese has an overt instantiation of this non-referential object.

1. Background
1.1 Phrase Structure Constraint
        The contrast between (2) and (3) reveals an interesting constraint on phrase structure in Mandarin Chinese that has been observed by many Chinese linguists, and one

that is not restricted to non-referential bare noun contexts. Many have observed that Chinese generally allows only one constituent to be pronounced following the verb. Huang (1982) formalizes this as the Phrase Structure Constraint.

(4)   Phrase Structure Constraint (PSC) (Huang 1982)
        Within a given sentence in Chinese, the head (the verb or VP) may branch to the left only once, and only on the lowest level of expansion.

Further developing the account for the distribution of postverbal elements, Huang (1994) incorporates aspects of X'-theory, argument structure, and the thematic hierarchy to propose the following:

(5)(i) Thematic Hierarchy (Huang 1991, 1994, cited by Paul 2000)
        Agent > Experiencer > Ref. theme > Goal, Ind. Object > Obliques:
                                                Non-ref. theme,
                                                Direction/goal,
                                                Duration/frequency,
                                                Manner, etc.

    (ii) If a verb α determines Θ-roles Θ_1, Θ_2,…, Θ_n, then the lowest role on the Thematic Hierarchy is assigned to the lowest argument in constituent structure, the next lowest role to the next lowest argument, and so on.

Crucially, non-referential, indefinite object noun phrases and oblique adverbials such as duration/frequency and manner phrases theoretically occupy the same position – that of the innermost complement of the verb.

The crucial implication of (4) and (5) for bare noun use is that Chinese speakers do not pronounce the bare noun in addition to a postverbal constituent. As the next section details, speakers of Mandarin Chinese can resort to at least three constructions that avoid the violation of (4) and (5).

1.2 Four variants of non-referential verb use in Chinese
There are at least four constructions that represent non-referential verb use in Chinese, three of which are grammatical and do not violate Huang's Phrase Structure Constraint and thematic hierarchy. The first is the verb copying construction in which both copies of the verb are pronounced, as in (6).

(6)   ta pao bu pao de hen kuai
        he run step run DE very fast
        'He runs very fast'

The verb copying construction in (6) expresses the generic action of running, as well the manner in which the agent typically does the action of running. The *de* particle is treated as a secondary predicator that introduces the manner adverbial phrase as an inner adverbial complement of the verb (Huang 1988, Cheng 2007).

Another way to express the verb non-referentially is through the use of a null object, which yields the same interpretation as that in (6).

(7) ta pao de hen kuai
   he run DE very fast
   'He runs very fast'

The construction in (7) is analyzed as containing a non-referential null object, as in the English counterpart of the same sentence. As will be detailed in subsequent sections, the verb is analyzed as merging with the adverbial complement, copying via sideward movement, and then merging with the null object in order to satisfy the verb's theta-feature. A constraint on linearization at the PF interface then ensures that only copy of the verb is pronounced, yielding (7).

The third variant of non-referential verb use that will be analyzed is a case of object fronting, and appears to work better with some verbs than with others. The sentence in (8) is deemed to be questionable by native speakers (some find it acceptable, others find it ungrammatical); (9) is judged to be perfectly acceptable by the same native speakers.

(8) ?ta bu pao de hen kuai
    he step run DE very fast
   'He runs very fast'

(9) ta ge   chang de hen hao
   he song sing   DE very good
   'He sings very well'

Finally, the variant in (10) is judged to be unacceptable by most native speakers of Mandarin Chinese; the sentence contains two postverbal constituents and violates the Phrase Structure Constraint in (4) and the thematic hierarchy in (5).

(10) *ta pao bu de hen kuai
    he run step DE very fast
    'He runs very fast'

This ungrammaticality does not exhibit lexical variation; any verb followed immediately by both its generic bare noun and an adverbial phrase yields an unacceptable sentence.

Before moving on to the analysis, the next section briefly details the theoretical assumptions behind the analysis.

1.3 Theoretical assumptions

Before detailing the analysis of the four variants introduced above, I briefly discuss the theoretical assumptions that underlie the present analysis.

First, I assume the Phrase Structure Constraint in (4) and the Thematic Hierarchy in (5). Only the lowest branching node in the VP is right-branching; that is, only one complement may be pronounced following the verb. The result is that in cases where speakers must use a postverbal adverbial phrase that falls under Huang's obliques, either the verb will be copied, the bare noun will be fronted, or the non-referential null object will be selected instead of the overt bare noun.

The second assumption is that the manner adverbs studied in this paper are merged as the innermost complements of the verb[1].

Third, I assume Roberge's (2002) Transitivity Requirement which (much like the EPP forces the projection of a subject at the clausal level) forces an obligatory object projection. Roberge argues that effects similar to those of the EPP force an obligatory VP-internal object position, as phrased in his Transitivity Requirement:

(11) Transitivity Requirement (Roberge 2002)
      An Object position is always included in VP, independently of lexical choice of V.

(12)   V
         ⟋   ⟍
        V   Object
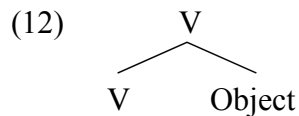
Another crucial assumption is that the sentences in (6) through (10) have the same underlying syntactic structure – that of the verb copying construction. The syntactic structure of the four variants is essentially the same, and it is constraints that apply at the syntax-phonology interface that interact to yield the observed spellout patterns.

Finally, I appeal to Nunes' (2004) copy+merge theory of movement in accounting for the spellout of verb copies at the PF interface. Under Nunes' copy+merge theory of movement, there are generally two mechanisms that interact to yield the observed patterns of spellout. In the copy theory of movement, one copy is generally privileged over the other at the PF interface, preventing linearization contradictions at the point of spellout that would otherwise require that the moved element simultaneously precede and

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[1] According to Kim (2004), the adverbs tested in this study are selected by the verb and must appear in complement position. I leave aside the discussion of why these adverbs in particular occur only postverbally. Readers interested in adverbial licensing are directed to Kim (2004).

follow some intervening element. To prevent linearization problems, Nunes (2004) proposes that chain reduction must occur as follows:

(13) Chain Reduction (Nunes 2004)
      Delete the minimal number of constituents of a nontrivial chain CH that suffices for CH to be mapped into a linear order in accordance with the LCA.

The second mechanism is the elimination of formal features in the phonological component. Since formal features are not legible at PF, there must be some operation of the phonological component that applies after Morphology to eliminate formal features that are visible at PF (Nunes 2004, citing Chomsky 1995). Nunes refers to this operation as formal feature elimination, formalized as follows:

(14) Formal Feature Elimination (FF-Elimination) (Nunes 2004)
      Given the sequence of pairs $\sigma = <(F,P)_1,(F,P)_2,\ldots,(F,P)_n>$ such that σ is the output of Linearize, F is a set of formal features, and P is a set of phonological features, delete the minimal number of features of each set of formal features in order for σ to satisfy Full Interpretation at PF.

The mechanism in (14) formalizes the difference between the phonetic realization of the head of a chain and the phonetic realization of its traces in terms of number of checking relations (Nunes 2004). In the general case, it is the highest copy or chain link that is pronounced, since it is engaged in more checking relations and therefore requires fewer applications of FF-Elimination than lower chain links (Nunes 2004).

In summary, the instances of verb copying that we will look at in the following section are analyzed as undergoing the processes of chain reduction and formal feature elimination. Chain reduction must occur in order to avoid violations of the LCA, and is mediated by formal feature elimination, which applies the minimal number of times to result in the phonetic realization of the copy that participates in the greatest number of checking relations. The next section appeals to these two mechanisms to propose a unified analysis for the four variants of non-referential verb use.

2. Analysis
      This section adopts Cheng's (2007) analysis of the verb copying construction to propose a unified analysis for the four previously introduced variants of non-referential verb use.

2.1 The verb copying construction
      The first variant of non-referential verb use is the verb copying construction, in which both copies of the verb are pronounced.

(15) ta pao bu pao de hen kuai
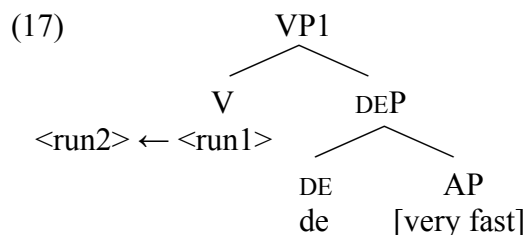   he run step run DE very fast
      'He runs very fast'

Cheng (2007) uses Nunes' (2004) Copy+Merge theory of movement and sideward movement to analyze Chinese verb copying constructions involving *de*-resultatives. Cheng's analysis can be applied to sentences like (15), which involve a postverbal manner adverbial phrase rather than a resultative phrase.

    Assuming that the adverbial phrase introduced by the secondary predicator *de* is treated as the innermost complement of the verb, the verb *pao* 'run' has two complements with which to merge: *bu* 'step' and *hen kuai* 'very fast', introduced by the *de* particle. The verb is first merged with the *de* phrase containing the adverb, as in (16).

(16)
```
              VP1
             /    \
            V      DEP
           run    /    \
                DE      AP
                de   [very fast]
```
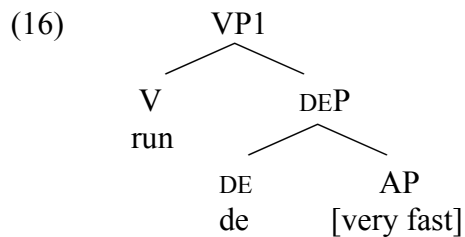
According to the Transitivity Requirement, there are two requirements pertaining to the verb. One is the structural requirement for a complement; the second requirement is the checking of the verb's theta-feature. In most cases, a verb will merge with an object complement that satisfies both the requirement for a complement and for an argument to check the theta-feature of the verb. The derivation in (16) satisfies the structural requirement for a complement, but leaves the verb's theta-feature unchecked.

    Following Cheng's analysis, we appeal to the operation Copy, which is subject to the Last Resort condition, satisfied by formal feature checking (including theta-role assignment/checking) (Hornstein and Nunes 2002). The verb has an unchecked theta-feature, which can be checked by the object *bu* 'step'; it copies in order to check the feature and to assign a theta-role to the object *bu* 'step', as in (17).

(17)
```
                    VP1
                   /    \
                  V      DEP
         <run2> ← <run1> /    \
                       DE      AP
                       de   [very fast]
```

Next, we have an instantiation of sideward movement as the copy of the verb merges with the object *bu* 'step', resulting in a second VP, as in (18).

(18)

VP1
 V1   DEP
<run1>
         DE   AP
         de   [very fast]

VP2
 V2   N
<run2> step
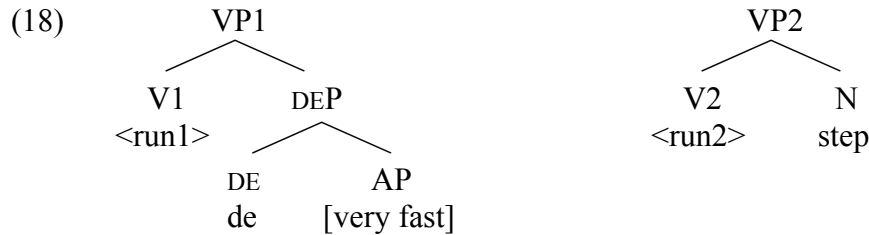
Following this, the newly formed VP2 adjoins to the rest of the structure, resulting in the verb copying construction, as in (19).

(19)

VP3
 VP2   VP1
 V2   N   V1   DEP
<run2> step <run1>
                     DE   AP
                     de   [very fast]
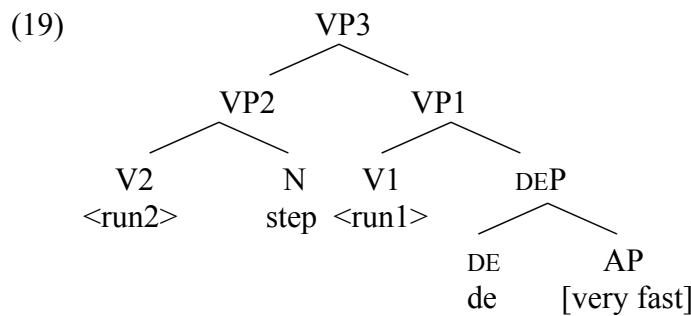
The structure in (19) yields the surface string in (15), in which both copies of the verb are pronounced, each followed by a single constituent.
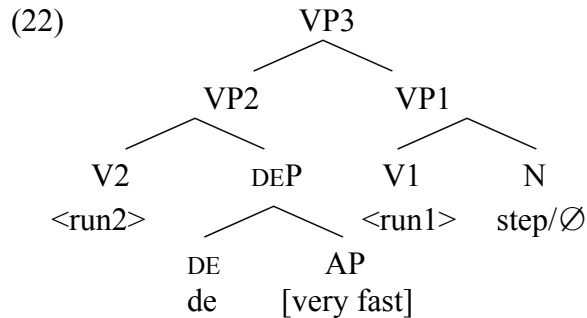
2.1.1 Order of Merge
    At this point in the analysis, a question might arise as to the order of merge of the two postverbal constituents. In the analysis presented above, it is the adverbial phrase that is merged first, followed by verb copying and a subsequent merge with the verb's thematic object. One might question why merging the object first, as in (20) and (21), is prohibited.

(20)   *ta pao de hen kuai pao bu
          he run DE very fast run step
        'He runs very fast'

(21)   *ta pao de hen kuai pao ∅

          he run DE very fast run ∅ step
        'He runs very fast'

These ungrammatical sentences would have the following structure:

(22)
```
                        VP3
                       /    \
                   VP2        VP1
                  /   \      /    \
               V2      DEP  V1      N
            <run2>    /  \ <run1>  step/∅
                    DE    AP
                    de  [very fast]
```
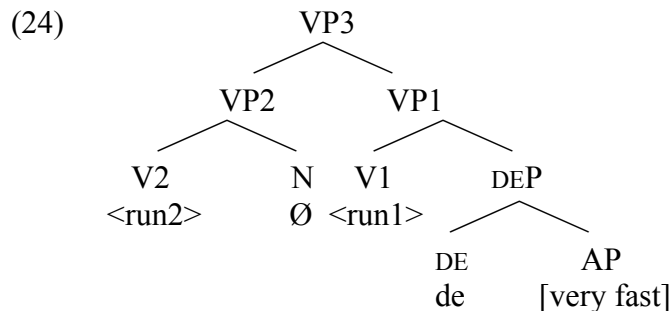
A quick inspection of the derivation leads us to what prohibits the above structure. Recall that the verb needs to merge with a complement and to check its theta-feature. If the verb is first merged with the bare noun, both requirements have been satisfied, and there is no formal feature to trigger verb copying, thus ruling out (20) and (21). However, if the verb is first merged with the adverbial phrase, we have satisfied the need for a complement but not the checking of the theta-feature. It is this formal theta-feature that triggers verb copying. If the formal feature is checked, Last Resort ensures that there is no unnecessary verb copying, and we are unable to derive (20) or (21).

2.2 Null object variant

Of the four variants of non-referential verb use, the null object variant is most similar to its English counterpart, containing a null object rather than an overt bare noun.

(23) ta pao de hen kuai
      he run DE very fast
      'He runs very fast'

In this case, rather than it being the overt bare noun that can check the verb's unchecked theta-feature, it is the null object that is merged with the copied verb and that checks its theta-feature.

(24)
```
                        VP3
                       /    \
                   VP2        VP1
                  /   \      /    \
               V2      N    V1      DEP
            <run2>     ∅  <run1>   /   \
                                 DE     AP
                                 de  [very fast]
```

This results in a PF representation such as that in (25), which is unacceptable, as it yields the ungrammatical sentence in (26).

(25)   [$_{VP}$ [$_{VP}$ <run> Ø] [$_{VP}$ <run> de very fast]]

(26)   *ta pao pao de hen   kuai
          he run run DE very fast
        'he runs runs very fast'

To account for the unacceptability of (26), I appeal to Richards' (2001, 2006) Distinctness condition on linearization, outlined in the following section.

2.2.1 Distinctness condition on linearization

Richards (2001, 2006) posits a constraint on linearization that acts at the syntax-phonology interface and prevents the linearization of syntactically adjacent categories with the same label. Under his analysis, linearization statements make reference only to node labels, not to particular nodes of the tree, and thus cannot impose an ordering on two nodes with the same label. For example, one ordering statement for (27) is that in (28).

(27)   [$_{TP}$ [$_{DP}$ John] [$_{T'}$ [$_T$ has] [$_{vP}$ eaten the macaroni]]]

(28)   <DP, T>

The linearization statement in (28) is such that the image of DP (*John*) precedes the image of T (*has*). However, according to Richards' analysis, the LCA does not see the lexical material *John* or *has*, but only the node labels. Richards hypothesizes that this is most likely because lexical insertion for functional heads takes place after linearization; therefore, Richards' Distinctness condition acts on functional heads, which supposedly undergo Late Insertion. Lexical heads on the other hand seem to freely violate Distinctness, possibly because they undergo Early Insertion; the differing lexical material that is inserted in each head allows the LCA to distinguish between otherwise identical adjacent categories. However, in the case of the verb copying sentences, the two copies of the verb are lexical heads, and therefore undergo Early Insertion. We are therefore still left with the challenge of explaining the unacceptability of (26), which corresponds to the PF representation in (29). What we need to rule out is the linearization statement in (30).

(29)   *[$_{VP}$ [$_{VP}$ <run> Ø] [$_{VP}$ <run> de very fast]]

(30)   *VP2 (*run*) > V1 (*run*) > DE > AP (*hen kuai*)

Because Distinctness does not distinguish between maximal and minimal projections (Richards 2006), we expect Distinctness to rule out VP2>V1 because it consists of two adjacent identical categories; at the same time, we expect Distinctness to fail because V is a lexical head.

The crucial observation here is that in the case of verb copying, it is irrelevant whether lexical insertion occurs before or after linearization. VP2>V1 is ruled out on the basis of adjacent identical category as well as adjacent identical lexical material, since the lexical material inserted in both heads is nondistinct. The LCA therefore sees the following:

(31)   <VP2 (*run*), V1 (*run*), De, AP (*very fast*)>

Since VP2 (*run*) and V1 (*run*) are adjacent and identical in category and in lexical and phonetic content, the Distinctness condition on linearization is violated.
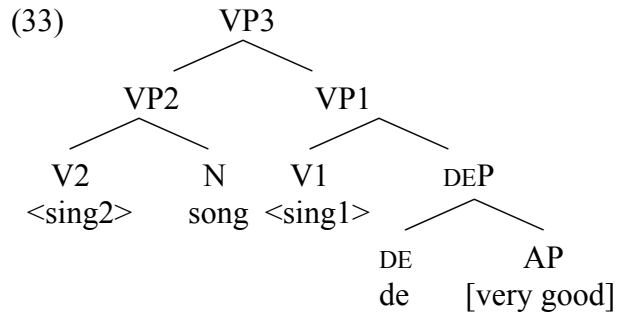
Given that only one copy of the verb can be pronounced here, we appeal to formal feature elimination to determine which copy is privileged at PF. While the originally merged copy <run1> has an unchecked theta-feature (triggering Copy), the adjoined copy <run2> has its theta-feature checked by the object *bu* 'step'. Therefore, it is this copy (<run2>) that is phonetically spelled out at PF.

2.3 The object fronting variant
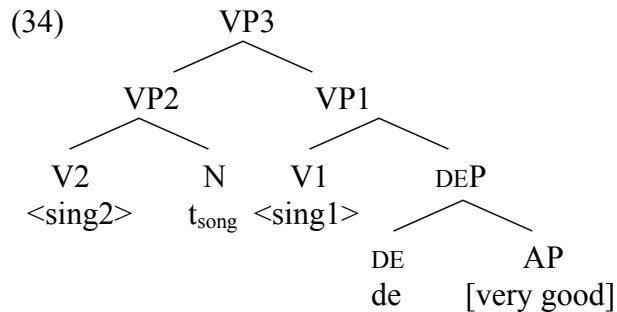
Next, we analyze the object fronting variant, repeated below.

(32)   ta ge   chang de hen hao
         he song sing   DE very good
         i. 'He sings very well'
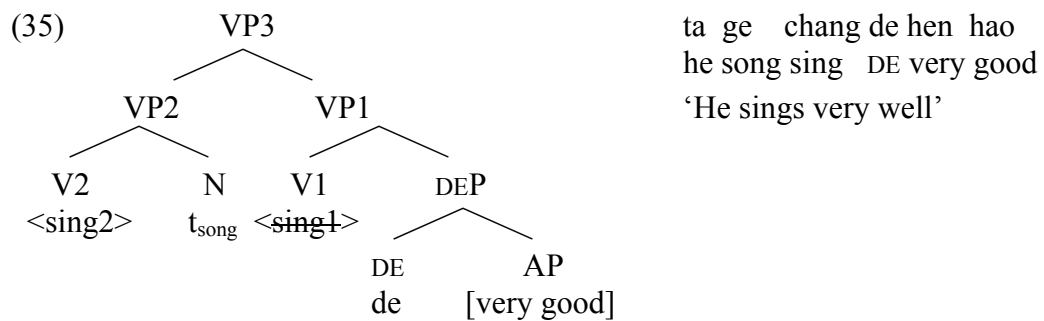   ii. 'He sang it very well'

The object fronting construction can be analyzed as an instance of sentence-internal topicalization. The syntax behind the construction is that of the verb copying construction, and the derivation up to the point of topicalization proceeds much like that discussed in section 2.1. The verb is merged with the adverbial phrase, and verb copying is triggered by the verb's unchecked theta-feature. After verb copying occurs, the copy of the verb merges with the bare noun object, and the newly created VP adjoins to the original structure:

(33)

```
                    VP3
              ┌──────┴──────┐
            VP2             VP1
          ┌──┴──┐        ┌───┴───┐
         V2     N       V1      DEP
       <sing2> song  <sing1>  ┌──┴──┐
                             DE     AP
                             de  [very good]
```

What follows is sentence-internal topicalization, wherein the object moves to a position located between the subject and the verb. In the next section, I discuss a *ba*-fronting analysis of this construction. For now, it suffices to say that following the topicalization of the object, we are left with two adjacent copies of the verb:

(34)

```
                    VP3
              ┌──────┴──────┐
            VP2             VP1
          ┌──┴──┐        ┌───┴───┐
         V2     N       V1      DEP
       <sing2> t_song <sing1>  ┌──┴──┐
                             DE     AP
                             de  [very good]
```

Again, we appeal to the Distinctness condition on linearization to rule out this structure. The V2 copy is privileged, as it carries fewer unchecked formal features; consequently one copy of the verb is overtly realized, resulting in the correctly spelled out form at PF.

(35)

```
                    VP3
              ┌──────┴──────┐
            VP2             VP1
          ┌──┴──┐        ┌───┴───┐
         V2     N       V1      DEP
       <sing2> t_song <s̶i̶n̶g̶1̶>  ┌──┴──┐
                             DE     AP
                             de  [very good]
```

ta ge   chang de hen hao
he song sing DE very good
'He sings very well'

The next section discusses the variable grammaticality judgements that seem to arise from the object fronting construction, and what these judgements can tell us about the appropriate use of the construction, as well as the landing site of the fronted bare noun. I

also suggest a preliminary analysis in which the construction is analyzed as containing a null *ba* particle.

2.3.1 *Ba*-topicalization of generic bare nouns

The issue of topicalizing generic bare nouns is one that has not been touched upon in the literature, owing to the generalization of topicalized objects as definite, specific, and affected. Generic bare nouns, at least on the surface, carry none of these properties; they are indefinite, non-specific, and unaffected. The very lack of such properties have allowed analyses such as Cheng and Sybesma (1998) to regard these objects as mere syntactic dummies. But regardless of the variability of the judgements on object fronting, native speakers somehow have the intuition that object fronting lends more emphasis and focus to the object than to the action denoted by the verb.

In cases where a single native speaker judges it acceptable for some verbs to appear with fronted objects and unacceptable for others, we can glean insight into the properties of object fronting on the basis of these judgements. For example, a Taiwanese Mandarin speaker found that object fronting was acceptable for all the verbs in Table 1, with the exception of *pao bu* 'run step' and *zou lu* 'walk road'.

The patterns of acceptability seem to suggest the following unusual properties: i) the generic bare noun requires a potential referent; ii) this potential referent is affected by the action. These are problematic for two reasons. First, generic bare nouns are typically analyzed as prototypical, indefinite, non-referential themes of the verbs that select them, while topicalization typically occurs only with referential, definite objects. Second, only definite, specific objects are typically analyzed as affected objects. The generic fronting construction therefore represents a conundrum for these conventional analyses.

A strikingly similar construction is the *ba* construction, which contains a fronted definite, affected object through the use of the *ba* particle, as seen in the following examples, taken from Sybesma (1999):

> (36) wo ba hua   cha zai huaping-li le
>   I   BA flower stick at   vase-inside LE
>   'I stuck the flowers into the vase'

> (37) wo ba huaping cha-man-le   hua
>   I   BA vase   stick-full-LE flower
>   'I stuck the vase full of flowers'

Ba-sentences have been analyzed as describing the particular action made upon an object (Li 1974:205, cited by Sybesma 1999). Because of the focus on the action's impact on the *ba*-fronted object, *ba*-NPs tend to be specific; while it has been argued that they cannot be 'non-specific indefinite', they can be indefinite as long as they are specific (Sybesma 1999). Under conventional analyses, *ba*-fronting is typically reserved for

definite, affected objects. However, *ba*-fronting also seems to be available with the generic bare noun *hua* 'speech', as in (38).

(38)   ta ba hua   shuo de hen nan   ting
       he BA speech speak DE very difficult hear
       'He spoke (it) in a nasty way'

According to one native speaker, the sentence in (38) can be uttered with or without the *ba* particle, and the object *speech* can be interpreted as referential or non-referential, depending on the context. This is particularly interesting in light of the fact that every *ba*-construction has a non-*ba* counterpart (Sybesma 1999).

I propose that the object fronting construction is an instantiation of the *ba*-construction, only with a null *ba* particle. While generic bare nouns are typically indefinite and non-specific, if a bare noun is fronted via the *ba* particle, and a referent can be found from the discourse context, the object is interpreted as referential (definite and specific). That is, when "Zhangsan drive-car fast", there is implicitly assumed to be some car that he causes to move quickly; but when "Zhangsan car-drive fast", *car* occupies SpecVP, its referentiality is both syntactically and contextually represented, and the interpretation is that a specific car is being made to move quickly. Nouns that cannot have referents in the real world, such as *bu* 'step', cannot be fronted because there is no such SpecVP position available for the bare noun.

Syntactically speaking, Sybesma (1999) analyzes the *ba* particle as occupying the head of *v*, and the fronted object as raising from its complement position to the Specifier of VP. I suggest that this is also the case of the generic bare noun which, when raised to the SpecVP position, is interpreted as specific and definite – if and only if a referent can be found from the discourse context. In cases where no referent can ever be found from the context (which is true in most cases of the use of *run-step* and *walk-road*), there is no SpecVP position available for the bare noun, and the *ba*-construction cannot be formed.

What has been proposed above is only a preliminary analysis based on the grammaticality judgements of two native speakers. The object fronting construction is not very commonly used in non-referential contexts and there are few analyses that have been provided for the non-referential use of the construction. A more specific and detailed study of the construction and its use by native speakers will certainly lead to a more comprehensive analysis of the construction as well as a better understanding of bare noun use in general.

2.4 The double-complement variant

As discussed in section 1, sentences that contain a verb followed immediately by both its generic bare noun and a postverbal adverbial phrase, as in (39), are unacceptable in Chinese.

(39)   *ta pao bu de hen kuai
          he run step DE very fast
        'He runs very fast'

I analyze (39) as an instance of the verb copying construction, but one in which only one copy of the verb is pronounced. To account for the unacceptability of such a construction, I propose that there are at least three reasons why both copies of the verb must be pronounced, discussed in the following sections.

2.4.1 Chain reduction

According to Nunes (2004), chain reduction takes place in order to prevent linearization contradictions. For example, Nunes provides the following to demonstrate how nontrivial chains are linearized:

(40)   [John^i [was [kissed John^i]]]

Because the higher copy of *John* asymmetrically c-commands the copula *was*, *John* should precede *was*, giving us the order <*John^i, was*>. Furthermore, because the copula *was* asymmetrically c-commands the lower copy of *John*, we should obtain the order <*was, John^i*>. Because the two copies of *John* are nondistinct, we should predict that *John* must precede itself, a contradictory linearization statement that results in a PF crash.

Returning to the case of verb copying in Chinese, we might expect similar linearization problems if both copies of the verb are pronounced. That is, the following linearization problem might arise: <run> must both precede and follow *step*. But in the case of verb copying, we are actually dealing with an instantiation of sideward movement rather than standard movement. Crucially, in sideward movement, neither copy of the verb actually c-commands the other. As a result, we avoid linearization problems and chain reduction does not occur.

2.4.2 Morphological reanalysis

Another reason for the realization of both copies can be found in morphological fusion, the timing of which can determine whether single or multiple copies are spelled out at PF. Crucially, fusion involving one copy (after Copy/Move has already occurred) renders the fused copy distinct from the non-fused one. Cheng (2007) proposes that the *de* particle incorporates into <run1> after verb copying has already taken place, resulting in a V-*de* complex that allows the LCA to treat V2 as distinct from the [$_V$ V1-DE] complex. Because of fusion, we have two distinct copies that are both overtly realized at PF.

2.4.3 *de*-enclisis

One final account for the overt realization of both verb copies appeals to enclisis of the *de* particle. While Nunes' (2004) proposal for Formal Feature Elimination works for general cases in which all things being equal, it is the higher copy that is engaged in more checking relations and is therefore privileged at PF, there are cases where the phonetic realization of the head of the chain violates other well-formedness conditions of the phonological component.

Our verb copying constructions in Chinese present just such a case, wherein copy spellout is determined by phonological well-formedness. Assuming that *de* is an enclitic that phonologically incorporates into <run1>, we have what appears to be enclisis across a prosodic boundary in the case where only one copy of the verb is pronounced. If both copies of the verb are pronounced, *de* has no problem encliticizing to V1, as in (41a). However, if only the V2 copy of the verb is pronounced, *de* must encliticize across a prosodic boundary, as in (41b), which results in a prosodically ill-formed structure.

(41)a. *pao* bu # *pao* **de** hen kuai   where # = prosodic boundary
     b. *pao **bu** # ~~*pao*~~ **de** hen kuai

As we can see in the above example, appealing to enclisis across prosodic boundaries provides yet another reason why both copies of the verb must be overtly realized.

2.4.4 Summary

We have provided three reasons why the double-complement variant does not exist in Chinese. These reasons account for the obligatory spellout of both copies of the verb. First, chain reduction does not necessarily occur because neither copy of the verb c-commands the other. Second, the *de* particle can be analyzed as incorporating into <run1>, resulting in a V-*de* complex that is linearized as an element distinct from V2. Third, the enclisis of the *de* particle across a prosodic boundary results in a prosodically ill-formed structure, such that both copies of the verb must be pronounced.

In summary, once verb copying happens, constraints at the PF interface determine the spellout of the construction, and result in the realization of both copies, as long as there is an intervening element between the two copies of the verb. If the spellout of both copies is obligatory, then (39) is unattested in the language because it does not spell out both copies.

3. Conclusion

The verb copying analysis allows us to account for the distribution of generic bare nouns in Chinese. This analysis proposes that all instances of non-referential verb use in which the verb first merges with a non-thematic complement (such as an adverbial phrase) are underlying instances of the verb copying construction. It is proposed that constraints on linearization, distinctness, and phonetic realization of verb copies at the PF interface

determine which variant of non-referential verb use surfaces. The PF representations for the four variants are as follows:

(42)   [$_{VP}$ [$_{VP}$ <run> step] [$_{VP}$ <run> de very fast]]

(43)   [$_{VP}$ [$_{VP}$ <run> ∅] [$_{VP}$ <run> de very fast]]

(44)   [$_{VP}$ [$_{VP}$ <run> t$_{step}$] [$_{VP}$ <run> de very fast]]

(45)   *[$_{VP}$ [$_{VP}$ <run> step] [$_{VP}$ <run> de very fast]]

This type of analysis suggests that even in variants where only one copy of the verb surfaces, there are in fact two copies of the verb in the syntax. This is supported by the Transitivity Requirement, as well as by Cheng and Sybesma's (1998) analysis. According to the Transitivity Requirement, we must satisfy both the structural requirement for a complement, and the checking of the verb's theta-feature. Assuming that there is a postverbal adverbial phrase that must be merged, verb copying will always be triggered to check the theta-feature. Furthermore, Cheng and Sybesma's (1998) analysis suggests that the verbs that appear with overt generic bare nouns are always transitive in Chinese. Their evidence is that a null object in Chinese is *pro*, and non-referential readings can therefore only be achieved "transitively". While the present analysis proposes that the null object in Chinese can also be the non-referential bare noun, it maintains the proposal that the verbs in question are always transitive in Chinese, and therefore always have a theta-feature to be checked.

The crucial differences between English and Chinese that lead to different non-referential structures seem to be related to the existence of the overt generic bare noun in Chinese, the Phrase Structure Constraint, and differing thematic hierarchies in English and Chinese. Crucially, non-referential themes and manner adverbials are in complementary distribution in Chinese, appearing as complements of the verb. As a result, verb copying always occurs in cases where a postverbal adverbial phrase is merged, and we obligatorily end up with only one constituent pronounced following each copy of the verb. A verb is therefore only ever first-merged with a single complement, deriving the Phrase Structure Constraint proposed in Huang (1982).

The analysis proposed in this paper also hinges on the assumption that verbs are, at least in their syntactic representation, obligatorily transitive, as per Roberge's (2002) Transitivity Requirement. Chinese and English seem to exhibit a mirror image pattern of object distribution in this respect, with overt realization of non-referential objects and null realization of referential objects in Chinese, and null realization of non-referential objects and overt realization of referential objects in English. The overt realization of non-referential objects in Chinese appears to support Roberge's Transitivity Requirement. While the non-referential use of verbs has traditionally been analyzed as "intransitive" based on languages such as English, the data from Chinese seem to suggest that there is in fact an object position that can be filled, even in the most "intransitive" of cases.

In conclusion, the proposed analysis accounts for the four variants of non-referential verb use in Chinese, and has larger implications for the study of transitivity as well as the study of how verbal complementation differ typologically in English and Chinese.

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