

THE SYNTAX AND MORPHOLOGY OF MANDARIN (CHINESE) DRIVER AND TRUCK-DRIVER*

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This paper proposes an account within a single Spell-Out model of morpho-syntax for two types of nominal phrase constructions and two types of nominal compound constructions in Mandarin (Chinese). An outline of the single Spell-Out model of morpho-syntax is provided in Section 1. Section 2 introduces two types of nominal phrase constructions, non-predicative *de*-constructions and generic *de*-constructions. The syntactic derivation of generic *de*-constructions will be proposed in comparison with that of non-predicative *de*-constructions. Section 3 introduces two types of nominal compound constructions, endocentric nominal compounds and synthetic nominal compounds. The morphological derivation of synthetic nominal compounds will be proposed in comparison with that of endocentric nominal compounds. The morpho-syntactic derivation of generic *de*-constructions will be proposed in Section 4. In addition, the phonological forms of a generic *de*-construction and the corresponding synthetic nominal compound will be compared. Section 5 concludes with a summary of the accounts for grammatical and ungrammatical constructions of Mandarin *driver* and *truck-driver*.¹

1. A Single Spell-Out model of morpho-syntax

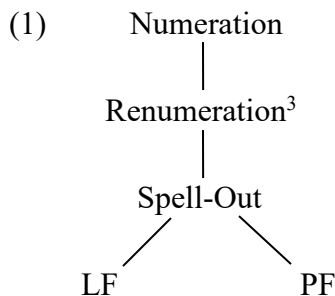
The single Spell-Out model of morpho-syntax (1) is in conformity with principles of Government and Binding (Chomsky 1981), Minimalism (Chomsky 1993), and Distributed Morphology (Halle and Marantz 1993). However, I posit that syntactic derivation and morphological derivation which share the same Numeration may be regarded as different phases of one morpho-syntactic derivation, and morphological derivations proceed to syntactic derivations via Renumeration (*cf.* Johnson 2003). Specifically, the highest xP formed in each morphological derivation may reenter the Numeration as an X or XP,² thereby the X or XP may be selected in a following syntactic

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¹ Please see <https://ling.auf.net/lingbuzz/003630> for my MA forum paper.

² The Distributed Morphology framework postulates that Roots ($\sqrt{\quad}$) need to Merge with a category-creating feature bundle (x°), such as an adjectivalizing head (a°), a nominalizing head (n°), or a verbalizing head (v°), to be categorized as an adjective (aP), a noun (nP), or a verb (vP). A categorized aP, nP, or vP may be recategorized as an xP by merging with another x° (Marantz 2001). Harley (2014) suggests that Roots are

derivation. I assume that once Renumeration has taken place, the xP is no longer a part of the morpho-syntactic derivation. On the other hand, the X or XP which is renumerated from the xP is regarded as a syntactic terminal node when it is selected in a syntactic derivation. I also suggest that syntactic and morphological derivations may share one single Spell-Out. In particular, the terminal nodes of a morphological derivation need not be interpreted at LF and pronounced at PF via Spell-Out before Renumeration takes place. Instead, terminal nodes of the morpho-syntactic derivation are interpreted at LF and pronounced at PF after the syntactic derivations have also terminated.



With respect to LF interpretation, I posit that each terminal node of a syntactic derivation, including an X or XP which is renumerated from an xP, is interpreted based on the internal structure of the x° which heads the xP. Specifically, I suggest that the first xP in which a Root is embedded may be regarded as the domain for non-compositional interpretation, and Roots must be interpreted compositionally when each of them is embedded in a different xP/domain for non-compositional interpretation. On the other hand, Roots may be interpreted idiosyncratically if they are embedded in the same xP/domain for non-compositional interpretation (à la Marantz 2001; 2007).

With respect to PF Vocabulary Insertion, I assume that each syntactic terminal X or XP (which is renumerated from an xP) is a domain for contextual allomorphy (à la Bobaljik 2012).⁴ Specifically, I suggest that Roots and x° are realized with phonological content in a cyclic manner if each of them is embedded in a different syntactic terminal node/domain for contextual allomorphy, such that each of the Root must be realized by a free morpheme. On the other hand, Roots and x° are realized freely if they are embedded in the same syntactic terminal node/domain for contextual allomorphy, such that each of the Roots may be realized by a morpheme that is bound by another morpheme which surfaces to the left or right of the morpheme.

syntactically individuated, such that a Root may merge with an xP and head a \sqrt{P} . Subsequently, the \sqrt{P} is subject to categorization and recategorization.

³ While it is assumed that there is only one Numeration and one Spell-Out, there can be multiple Renumerations.

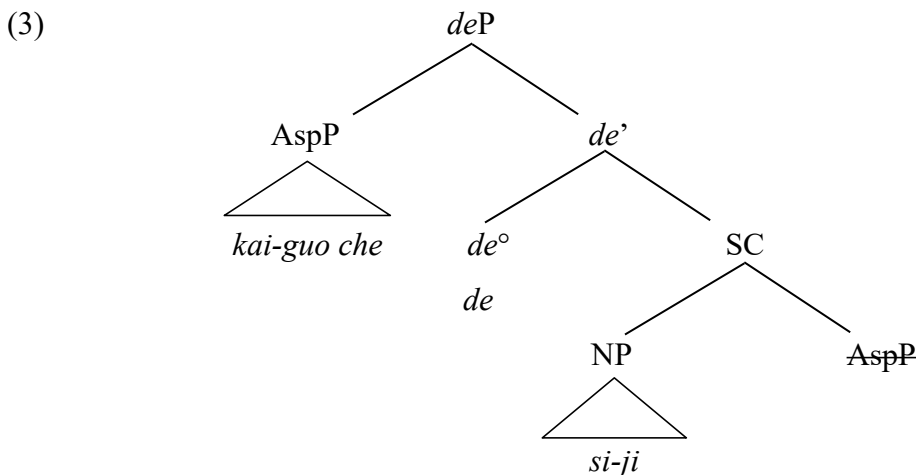
⁴ Bobaljik (2012) suggests that Vocabulary Items may only be contextually dependent on the features contained within the same complex head X, and not by features across an XP boundary (a.k.a The Complex Head Accessibility Domain). This suggests that each terminal node of a syntactic derivation may be regarded as the domain for contextual allomorphy.

2. Driver and truck-driver in nominal phrase constructions

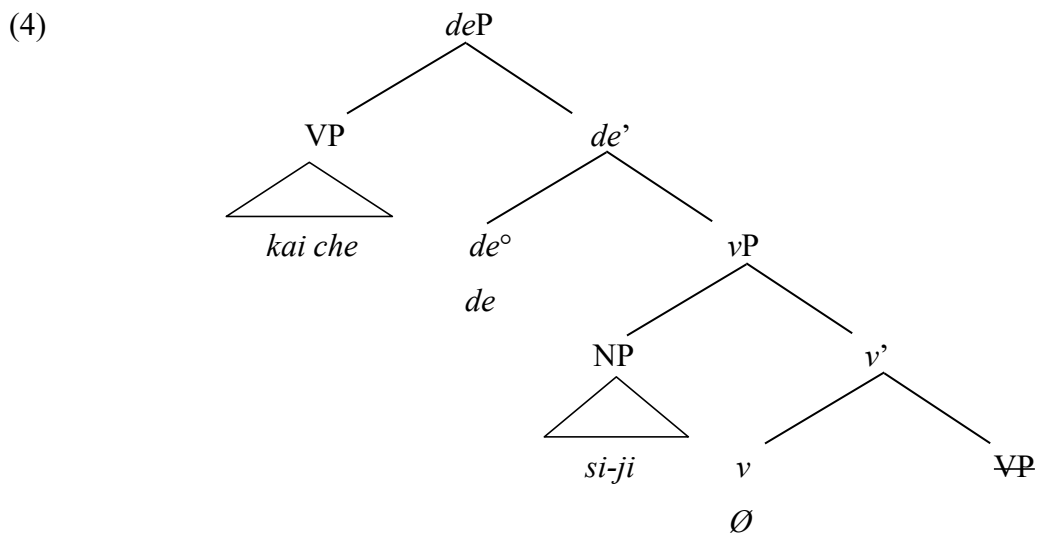
2.1 The syntactic derivation of non-predicative *de*-constructions

In Mandarin, a bare NP may be modified by various types of phrasal element (XP), such as an AP, an NP, or a non-finite VP (2a). Because non-finite VPs cannot serve as predicates of the NP, nominal constructions which surface as VP *de* NP are referred to as non-predicative *de*-constructions. den Dikken and Singhapreecha (2004) suggest that *de*-constructions such as (2b) are derived from the corresponding predicative construction (2c) through predicate inversion. Specifically, in the D-structure of *de*-constructions, a predicative construction, which is a small clause (SC), is formed where the NP subject is merged with the AspP predicate. The *de* particle, which realizes a de° , is responsible for the inversion of the AspP. Specifically, it is proposed that the SC is further merged in the complement of a *de*P, and the AspP predicate raises to the specifier of the *de*P, whereby the AspP may serve as a restrictive modifier of the NP argument. Consequently, in the S-structure, the AspP modifier surfaces to the left of the *de* particle. The NP argument surfaces to the right of the *de* particle because it is embedded in the complement of the *de*P. The syntactic derivation of (2b) from (2c) is illustrated in (3).

- (2) a. *kai che de si-ji*
 drive vehicle driver
 ‘vehicle-driving driver’
- b. *kai-guo che de si-ji*
 drive-ASP vehicle driver
 ‘a driver who has driven a vehicle’
- c. *si-ji kai-guo che*
 driver drive-ASP vehicle
 ‘A driver has driven a vehicle.’



Despite the non-predicative status of the non-finite VP in (2a), I propose that the NP in (2a) may be regarded as an external argument of the non-finite VP introduced by a light verb (*v*) which heads a *v*P (an extended projection of the VP). In other words, I propose that, in the D-structure of the non-predicative *de*-construction in (2a), the VP is base-generated in the complement of a *v*P, and the NP is base-generated in the specifier of the *v*P. I posit that the NP in (2a) is assigned an Agent role by the *v*, which is phonologically null. I further suggest that the *v*P is merged with a *de*[°] which heads a *de*P, and the VP raises to the specifier of the *de*P so as to serve as a restrictive modifier of the NP. The syntactic derivation of the non-predicative *de*-construction in (2a) is illustrated in (4).



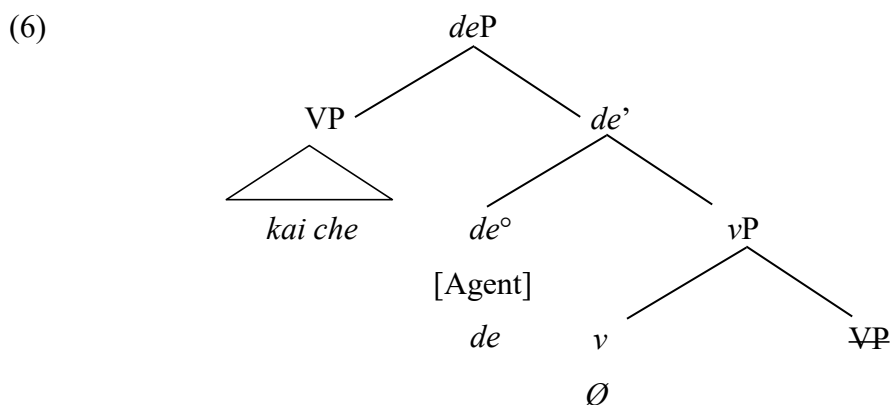
2.2 The syntactic derivation of generic *de*-constructions

Nominal phrases where a *de* particle surfaces to the right of a VP, as in (5a), are referred to as generic *de*-constructions, because these nominal phrases may be construed as generics with the same VP (5b). While the internal argument of the V in both non-predicative *de*-constructions (5c) and generic *de*-constructions (5d) may be further specified, only non-predicative *de*-constructions are recursive (5e). The ungrammaticality of (5f) indicates that generic *de*-constructions are non-recursive.

- (5) a. *kai* *che* *de*
 drive vehicle
 ‘driver’
- b. *kai* *che* *de kai* *che*
 drive vehicle drive vehicle
 ‘A driver drives a vehicle.’

- c. *kai* *ka-che* *de ren*
drive truck person
‘truck-driving person’
- d. *kai* *ka-che* *de*
drive truck
‘truck-driver’
- e. *kai* *che* *de ka-che* *de si-ji*
drive vehicle truck driver
‘vehicle-driving driver of truck’
- f. **ka-che* *de* *kai* *che* *de*
truck drive vehicle
Intended: ‘driver of truck’

I propose that generic *de*-constructions are formed when an Agent-flavored de° which heads a *deP* nominalizes a vP (an extended projection of the VP). In other words, the VP is base-generated in the complement of the vP . I further posit that the VP raises to the specifier of the *deP* so as to be interpreted as a restrictive modifier. The syntactic derivation of the generic *de*-constructions in (5a) is illustrated in (6).



I suggest that non-predicative *de*-constructions are recursive because a *deP* which does not inherit any thematic feature may be merged in the specifier of another xP (an extended projection of another XP), whereby it is assigned a thematic role by the x . By contrast, generic *de*-constructions are non-recursive because the *deP* inherits an [Agent] feature in de° , thereby it cannot be merged in the specifier of another xP . Importantly, the grammaticality contrast between (5e) and (5f) suggests that the generic *de*-constructions in (5a) cannot be analyzed as a non-predicative *de*-construction (4) where the NP is a phonologically null pronominal element (PRO).

3. Driver and truck-driver in nominal compound constructions

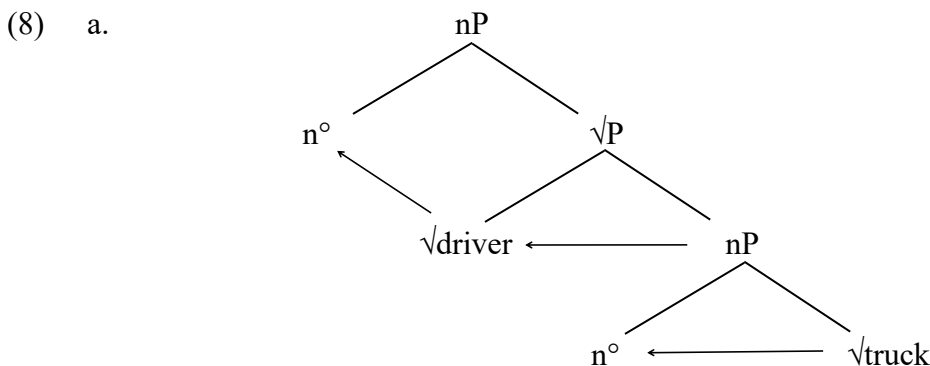
3.1 The morphological derivation of endocentric nominal compounds

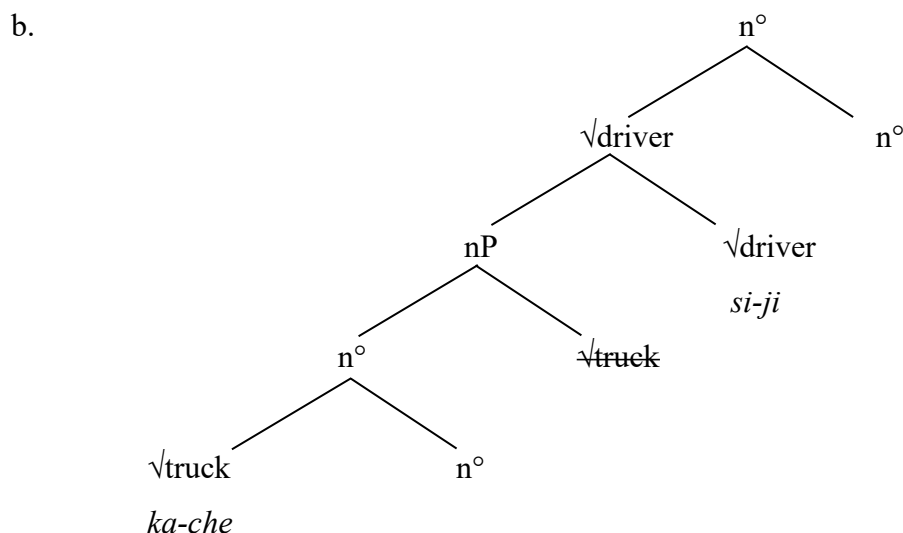
Endocentric nominal compounds in Mandarin are mostly right-headed. Namely, the right element/head of a right-headed nominal compound in Mandarin is a N. The left/non-head element of the compound may be an A, a N (7a) or a V. I argue that the head and the non-head element of the right-headed N-N compound in (7a) is interpreted compositionally, because the compound has the same interpretation as that of the non-predicative *de*-construction in (7b).

- (7) a. *ka-che si-ji*
 truck driver
 ‘truck driver’
- b. *ka-che de si-ji*
 truck driver
 ‘driver of truck’

Harley (2009) proposes that right-headed N-N compounds, such as (7a), have the D-structure in (8a). Specifically, both the non-head N and the head N are Roots in the Numeration. The Root which is to be regarded as the non-head element ($\sqrt{\text{truck}}$) is merged with a n° whereby it is categorized as an nP. This nP is then merged with the other Root ($\sqrt{\text{driver}}$, which is to be regarded as the head of the compound) which heads a $\sqrt{\text{P}}$. Finally, the $\sqrt{\text{P}}$ is merged with another n° whereby it is categorized as an nP.

Harley (2009) further proposes incorporation into an x° is mandatory for each xP. That is, in (8a), $\sqrt{\text{truck}}$ is required to incorporate into n° which heads the embedded nP, and $\sqrt{\text{driver}}$ is required to incorporate into the n° which heads the matrix nP. In addition, according to the single Spell-Out model of morpho-syntax, I suggest that the embedded nP pseudo-incorporates into $\sqrt{\text{driver}}$ (*cf.* Massam 2001), whereby $\sqrt{\text{truck}}$ and $\sqrt{\text{driver}}$ are embedded in two different nPs/domains for non-compositional interpretation in the internal structure of the n° which heads the matrix nP (8b). As a result, the two Roots must be interpreted compositionally.





3.2 The morphological derivation of synthetic nominal compounds

Synthetic nominal compounds are derived from verbs. One type of synthetic nominal compounds in Mandarin consists of a V (left) and its internal argument (right), as in (9a). Notably, the V and its internal argument are interpreted compositionally, and the compound is interpreted as an Agent of the V it contains. While the internal argument of the V in generic *de*-constructions (5d) may be further specified, the ungrammaticality of (9b) indicates that the internal argument of the V in the synthetic nominal compound in (9a) cannot be further specified.

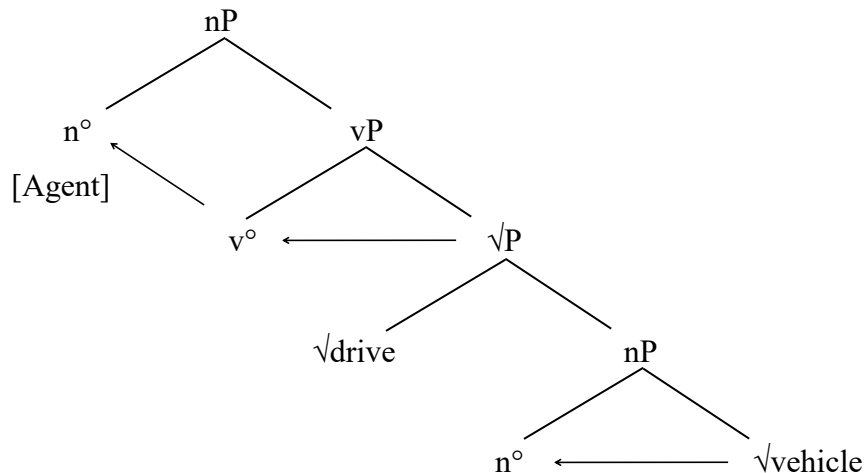
- (9) a. *si* *ji*
 drive vehicle
 ‘driver’
- b. **si* *ka-che*
 drive vehicle
 Intended: ‘truck-driver’

Alexiadou (2009) suggests that verb-derived nominal compounds are verbalized prior to nominalization. In this respect, I propose that the synthetic nominal compound in (9a) has the D-structure in (10a). Specifically, the Root which is to be regarded as the internal argument ($\sqrt{\text{vehicle}}$) is merged with a n° whereby it is categorized as an nP. This nP is then merged with the other Root ($\sqrt{\text{drive}}$, which is to be regarded as the V) which heads a $\sqrt{\text{P}}$. This $\sqrt{\text{P}}$ is merged with a v° whereby it is categorized as an vP, prior to the nominalization of this vP by an Agent-flavored n° .

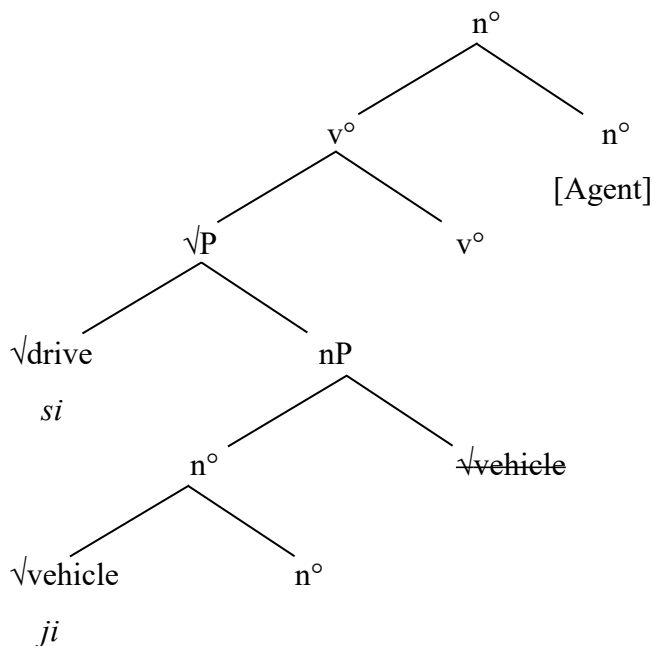
Because incorporation into an x° is mandatory for each xP, I suggest that $\sqrt{\text{vehicle}}$ is incorporated into the n° which heads the matrix nP, and the v° is incorporated into the n° which heads the matrix nP. According to the single Spell-Out model of morpho-syntax, I further posit that the $\sqrt{\text{P}}$ pseudo-incorporates into the v° , whereby $\sqrt{\text{vehicle}}$ and $\sqrt{\text{drive}}$

are embedded in two different nPs/domains for non-compositional interpretation in the internal structure of the n° which heads the matrix nP (10b). Consequently, the two Roots must be interpreted compositionally.

(10) a.



b.

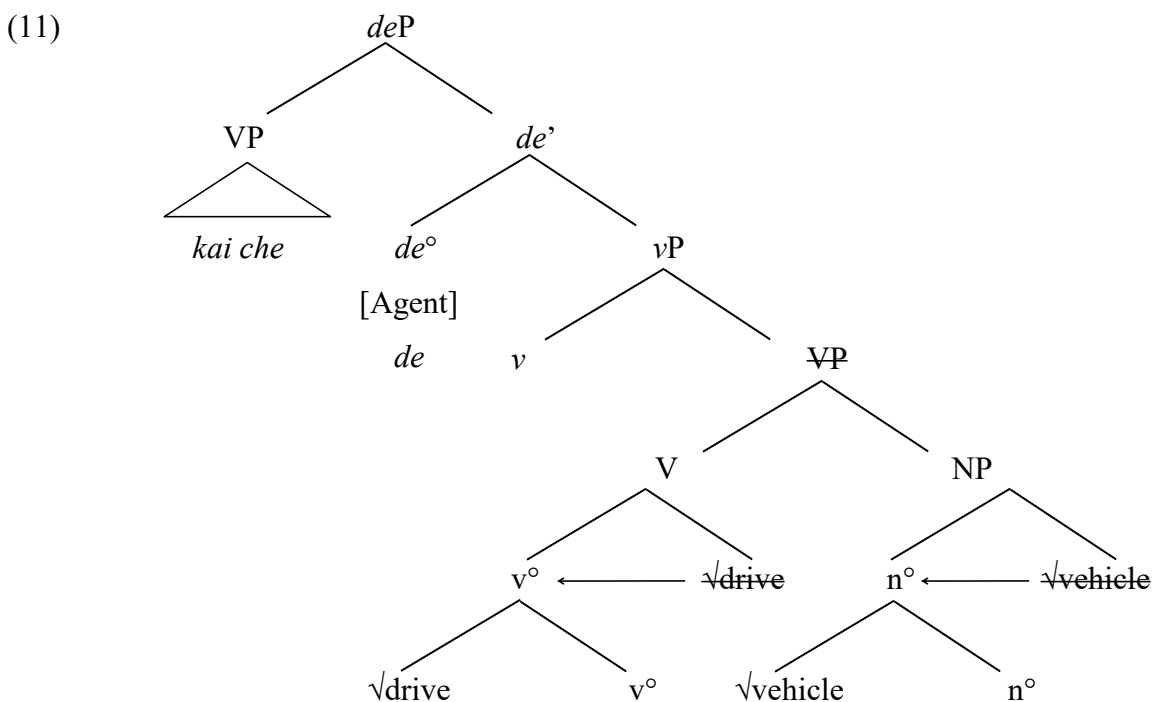


Finally, I argue that the complement of the \sqrt{P} is s-selected by the Root which heads the \sqrt{P} (but see Merchant 2017). Therefore, the grammaticality contrast between (9a) and (9b) may be accounted for by the s-selection requirement of \sqrt{drive} . Specifically, it seems that \sqrt{drive} can only s-select non-specified nPs such as *vehicle*, therefore, merging a specified nPs such as *truck* with \sqrt{drive} will result in ungrammaticality (9b).

4. Renumeration and Vocabulary Insertion

4.1 The morpho-syntactic derivation of generic *de*-constructions

According to the single Spell-Out model of morpho-syntax, the V and its internal argument of a generic *de*-construction (which are abbreviated as a VP in (6)), such as (5a), must have been a vP and an nP (formed in two different morphological derivations) which reenter the Numeration as a V and an NP, thereby the V and the NP may be selected in the syntactic derivation of generic *de*-constructions (6). I posit that, in the morpho-syntactic derivation of (5a), the vP is formed when $\sqrt{\text{drive}}$ is verbalized by a v° , and the nP is formed when $\sqrt{\text{vehicle}}$ is nominalized by a n° (11).



Notably, in (8), the synthetic nominal compound in (9a) is analyzed as $\sqrt{\text{driver}}$ in the morphological derivation of the endocentric nominal compound in (7a). This suggests that the highest nP which is formed in the morphological derivation in (10) may reenter the Numeration as a Root, thereby the Root may be selected in a subsequent morphological derivation (8).

4.2 The realization of driver

Because the single Spell-Out model of morpho-syntax postulates that morphological derivations and the syntactic derivation which proceeds from the morphological derivations share one single Spell-Out, I argue that Vocabulary Insertion does not take place until after the syntactic derivation has also terminated. For example, in (11), *kai* and *che* do not realize $\sqrt{\text{drive}}$ and $\sqrt{\text{vehicle}}$ until after the *deP* is formed. Notably, in (10b),

$\sqrt{\text{drive}}$ and $\sqrt{\text{vehicle}}$ are realized by *si* and *ji*. This section seeks to provide an account for the ungrammatical phonological forms in (12). Specifically, it seems that *si* cannot realize $\sqrt{\text{drive}}$ in (11). Nor can *kai* realize $\sqrt{\text{drive}}$ in (10b). Similarly, *ji* cannot realize $\sqrt{\text{vehicle}}$ in (11). Nor can *ji* realize $\sqrt{\text{vehicle}}$ in (10b).

(12) a.	* <i>kai</i>	<i>ji</i>	<i>de</i>	a'.	<i>kai</i>	<i>che</i>	<i>de</i>
	drive	vehicle			drive	vehicle	
	Intended: 'driver'				'driver'		
b.	* <i>si</i>	<i>che</i>	<i>de</i>	b'.	<i>kai</i>	<i>che</i>	<i>de</i>
	drive	vehicle			drive	vehicle	
	Intended: 'driver'				'driver'		
c.	* <i>kai</i>	<i>ji</i>		c'.	<i>si</i>	<i>ji</i>	
	drive	vehicle			drive	vehicle	
	Intended: 'driver'				'driver'		
d.	* <i>si</i>	<i>che</i>		d'.	<i>si</i>	<i>ji</i>	
	drive	vehicle			drive	vehicle	
	Intended: 'driver'				'driver'		

I propose that *si* and *ji* are the suppletive forms for *kai* and *che* for $\sqrt{\text{drive}}$ and $\sqrt{\text{vehicle}}$, respectively. This means that *si* and *ji* must be more specified than *kai* and *che*. Therefore, (12c) and (12d) are ungrammatical because $\sqrt{\text{drive}}$ and $\sqrt{\text{vehicle}}$ may be realized by *kai* or *che* only when they cannot be realized by more specified Vocabulary Items, *si* and *ji*.

I further suggest that *si* and *ji* are contextually specified. Because *si* and *ji* are expected to realize $\sqrt{\text{drive}}$ and $\sqrt{\text{vehicle}}$ in (10b), I posit that *si* may realize $\sqrt{\text{drive}}$ only when there is another Root, such as $\sqrt{\text{vehicle}}$, in the same syntactic terminal node/domain for contextual allomorphy. Similarly, *ji* may realize $\sqrt{\text{vehicle}}$ only when there is another Root, such as $\sqrt{\text{drive}}$, in the same syntactic terminal node/domain for contextual allomorphy. Because in (11), $\sqrt{\text{drive}}$ is embedded in a V, whereas $\sqrt{\text{vehicle}}$ is embedded in an NP, it follows that $\sqrt{\text{drive}}$ and $\sqrt{\text{vehicle}}$ are not in the same syntactic terminal node/domain for contextual allomorphy. Therefore, (12a) and (12b) are ungrammatical because $\sqrt{\text{drive}}$ and $\sqrt{\text{vehicle}}$ cannot be realized by *si* and *ji*. Instead, *kai* and *che* must be inserted to $\sqrt{\text{drive}}$ and $\sqrt{\text{vehicle}}$ even if they are less specified. According to the single Spell-Out model of morpho-syntax, it is not surprised that *kai* and *che* are free morphemes, while *si* may be bound by *ji* and vice versa.

5. Conclusion

In conclusion, this paper provided an account for two constructions of *driver* in Mandarin, the generic *de*-construction in (5a) and the synthetic nominal compound in (9a), along the lines of a single Spell-Out model of morpho-syntax. The grammaticality contrast between (5d) and (9b) indicated that the internal argument of the V in (5d) may be further

specified, while that in (9b) cannot be further specified. Instead, one must appeal to the endocentric nominal compound in (7a) or the non-predicative *de*-construction in (7b) to express *truck-driver*. The ungrammatical phonological forms in (12) suggested that terminal nodes of a nominal phrase construction must be realized by free morphemes, while a nominal compound construction may be realized by bound morphemes.

Last but not least, I suggest that non-predicative *de*-constructions (5) and endocentric nominal compounds where the head and non-head element are interpreted compositionally (8) exhibit similarities with respect to their derivations. Specifically, in (5), the VP merged with the *v* which heads a *v*P is asymmetrically c-commanded by the NP. Similarly, in (8), the Root merged with the *n*^o which heads the embedded nP is asymmetrically c-commanded by the other Root which heads the $\sqrt{\text{P}}$ categorized as an nP. In addition, the inversion of the VP and the NP takes place in (5). Similarly, the inversion of the two Roots also takes place in (8). I posit that the similarities may have consequences for the nature of modification and its relation to argument structure.

Along the same lines, I propose that generic *de*-constructions (6) and synthetic nominal compounds where a *V* surfaces to the left of its internal argument (10) also exhibit similarities with respect to their derivations. Specifically, in (6), the VP is merged with a *v* which heads a *v*P, and the *v*P is further merged with an Agent-flavored *de*^o which heads a *de*P. Similarly, in (10), the $\sqrt{\text{P}}$ is merged with a *v*^o which heads a *v*P, and the *v*P is further merged with an Agent-flavored *n*^o that heads an nP. In addition, the inversion of the *V* and its internal argument (which are abbreviated as a VP) does not take place in (6). Similarly, the inversion of the two Roots (which are regarded as the *V* and its internal argument) also does not take place in (10). I argue that the similarities may have consequences for the nature of nominalization and its relation to argument structure.

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