

# **Feature inheritance and the Comp-trace effect in Chinese Relative Clauses: The case of *suo***

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## **Abstract**

It has been commonly held in the literature that *pro*-drop languages do not show the Comp-trace effect, which is commonly manifested as a modification of the C most closely c-commanding the extracted subject, either as C-omission or as C-alternation. This article, however, reveals that in Chinese, a *pro*-drop language with no overt declarative or relative C, there are actually signs of the Comp-trace effect. It shows up in relative clauses, with the manifestation as the unavailability of the particle *suo* in the T position of the minimal TP/CP containing the extracted subject.

Based on Chomsky's recent idea of "feature inheritance", we provide an analysis for the particle *suo* in Chinese relative clauses and thus explain why the Comp-trace effect in this language is manifested on T instead of C. Specifically, it is proposed that *suo* is the phonetic realization of the inherited [*urel*] feature on T under valuation. To explain why the Comp-trace effect in Chinese takes the form it does, Rizzi and Shlonsky's (2006, 2007) as well as Chomsky's (2001) analysis of the English *that*-trace effect is adopted. Specifically, in Chinese subject relativization, the minimal clause containing the extraction site is not a full-fledged one (i.e., a ForceP). Rather, it is a truncated one, perhaps a FinP or a TP. Given that *suo* is the overt realization of

the inherited [*urel*] feature, which is a [force] feature in nature, the absence of *suo* is well expected.

*Keywords:* Chinese; the Comp-trace effect; relative clause; *suo*; feature inheritance

## 1. Introduction

Sentences (1)-(2) illustrate a well-known subject-object asymmetry from English. A'-movement of an object out of a complement clause is unaffected by the presence or absence of the complementizer (Comp: C) *that*. However, when a subject undergoes A'-movement out of a complement clause, we get an ill-formed sentence if *that* is present. Thus, long distance subject extraction is only possible from a complement clause lacking an overt complementizer. This effect of the presence versus absence of *that* on long distance subject extraction is known as the *Comp-trace effect*, where *trace* refers to the trace of the displaced subject. Since the 1970s, this effect has figured prominently on the generative linguistic research agenda.

- (1) a. How many mechanics did [they say [(*\*that*) [*t* fixed the cars]]]?  
b. How many cars did [they say [(*that*) [the mechanics fixed *t*]]]?

Also in a language like French, we observe an asymmetry between objects and subjects that undergo long distance movement. As shown in (2b), an object wh-phrase can be moved out of a complement clause introduced by the canonical (declarative) complementizer *que*. A subject wh-phrase, on the contrary, cannot move out of the same clausal environment (see (2a)). Long distance subject extraction is only possible if *que* is changed into the non-canonical form *qui*. Notice that this change does not

occur when long distance object extraction takes place. In short, also in French we find a Comp-trace effect (i.e. *\*que t<sub>subject</sub>*). Like in English, there is a clear interaction between "Comp-behavior" and the possibility of subject extraction.

(2) a. Qui crois-tu [*\*que/qui [t va gagner]]?*

who believe-you C will win

'Who do you believe that will win?' (Rizzi and Shlonsky 2007: (1))

b. Qui crois-tu [*que/\*qui [Paul va aider t]]?*

who believe-you C Paul will help

'Who do you believe that Paul will help?'

It has been observed that not all languages exhibit the Comp-trace effect. According to the generalization by Perlmutter (1971), Rizzi (1982) and Jaeggli (1982), *pro*-drop languages like Italian, Spanish, and Portuguese do not show this effect. Moreover, previous studies of the effect have noted that long distance subject extraction can be made possible if some change on the C most closely c-commanding the subject trace takes place, more specifically C-omission (as in English (see (1a)), Swedish, Norwegian, Yiddish) or C-alternation (as in French (see (2a)), West Flemish, Irish). Given the role played by the formal manifestation of C, it seems natural to assume that in languages with no overt C, the Comp-trace effect cannot be diagnosed. In this article, however, we will demonstrate that in Chinese, a *pro*-drop language with no overt declarative C and (arguably) no overt relative C,<sup>1</sup> the Comp-trace effect

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<sup>1</sup> There have been claims that the modifier marker *de* in Chinese relative clauses is a relative C (see Cheng 1986; Ning 1993). Other analyses of the particle take it to be a determiner (Simpson

is indeed present as well, although in a slightly more hidden way. The evidence for this will come from a subject-object asymmetry in Chinese relative clauses, which is manifested as the availability—in the case of relativized objects— versus unavailability—in the case of relativized subjects— of the particle *suo* in the relative clause. Thus, the non-co-occurrence of *suo* and a subject trace ( $t_{\text{subject}}$ ) in Chinese relative clauses parallels the non-co-occurrence of *that* and  $t_{\text{subject}}$  in an English declarative clause (see (1a)). Furthermore, the co-occurrence of *suo* and an object trace ( $t_{\text{object}}$ ) parallels the legitimate co-occurrence of *that* and  $t_{\text{object}}$  (see (1b)). A core ingredient of our analysis will be that *suo* is the formal manifestation of a force feature on the phase head C that is inherited by T. As a result of this feature inheritance, the Comp-trace effect is slightly more hidden, in the sense that it is not the realization of C that matters, but the realization of a property on T inherited from C.

The article is organized as follows: in section 2 we show that in Chinese relativization, there is a subject-object asymmetry which is manifested as the (un)availability of the particle *suo* in the relative clause. We further argue that this asymmetry can be viewed as an instantiation of the Comp-trace effect. In section 3,

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2001, 2002), a modifier marker (Aoun and Li 2003), a ModP head (Rubin 2002), a Linker (Den Dikken and Singhapreecha 2004; Den Dikken 2006), a generalized  $\lambda$ -abstractor (Cheng and Sybesma 2006) or an underspecified classifier (Cheng and Sybesma 2009). Considering the fact that *de* functions as a marker of all kinds of nominal modifiers (i.e., possessors, relative clauses, preposition phrases, adjective phrases) on the one hand, and as a nominalizer of predicate phrases (AP, VP and PP) on the other, we take that it could not be a C. In this article, we will leave open the exact nature of this particle.

we present a review of three previous analyses of the particle *suo*, which have in common that they take a "bottom up" approach towards the distribution and licensing of *suo*. This section also contains a range of other data concerning the distribution of *suo*. In section 4 we propose a new analysis of *suo* that builds on Chomsky's (2007, 2008) recent idea of feature inheritance: specifically, *suo* is the formal manifestation of a force feature (more specifically: a [rel] feature) inherited by T from C. It will be shown how this "top down" approach explains why the Comp-trace effect surfaces differently in Chinese relative clauses. Section 5 concludes the article.

## **2. A (hidden) Comp-trace effect in Chinese**

Based on his observation that there is no subject-object asymmetry in Chinese (overt and covert) movement constructions like topicalization, quantifier raising and *wh*-interrogatives, Huang (1982) concludes that this language does not show the Comp-trace effect. This idea resonates with the generalization that in *pro*-drop languages, which Chinese belongs to, the Comp-trace effect does not show up (see Perlmutter 1971, Rizzi 1982, Jaeggli 1982). This has been held as a matter of course in subsequent syntactic studies of Chinese, including studies on second language acquisition (Zobl 1992; Yuan 1997; Finney 2003; Kong 2005; Lai 2006, among others).

It is indeed the case that signs of the Comp-trace effect or the subject-object asymmetry are not easy to come by, given that the language does not have an overt declarative or relative C. However, in this section, we will demonstrate that the effect can actually show up in Chinese, although in a different form than the usual C-omission or C-alternation strategies, as found in English (see (1)) and French (see

(2)), respectively. Specifically, we will argue that the Comp-trace effect is attested in Chinese relative clauses. However, as opposed to the English and French Comp-trace effects, the effect does not surface in the formal manifestation of C but rather in the formal manifestation of T; more specifically, the formal manifestation of a Force feature (more specifically a [rel] feature) inherited by T from the phase head C that heads the relative clause. The particle *suo* is taken to be the overt manifestation at PF of this inherited feature under valuation by the relative operator (Op) within its search domain, which is then attracted to [Spec,CP] by the edge feature of the phase head C. This is schematically represented in (3) and will be discussed more elaborately in section 4.<sup>2</sup>



As we will see in this more descriptive section, *suo* can occur in a relative clause with a relativized object (leaving behind an object trace) but cannot occur in a relative clause with a relativized subject (leaving behind a subject trace). In what follows, we discuss the main distributional properties of *suo*.

The particle *suo*, which was a locative historically (Yap and Wang 2011), is an optional element in Chinese relative clauses. As noted by Chiu (1993, 1995) and Ting

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<sup>2</sup> We are aware that (3b) is not a "full-fledged" PF representation, in view of the fact that some of the information (e.g. the bracketing and categorial labeling) in (3b) arguably is not present at the level of pronunciation. Importantly, the term PF is used here to refer to the externalization (i.e., spell out as *suo* at PF) of the [rel] feature that is inherited by T.

(2003), it occupies a position lower than NP subjects and sentential adverbs, but higher than the negation markers, manner adverbs and predicate verbs. This distributional pattern is represented in (4) and exemplified in (5).

(4) NP-Subject > S-level adv > *SUO* > Neg > Manner adv > Verb

(adapted from Chiu 1995)

(5) [ta (\**suo*) dagai (*suo*) mei (\**suo*) renzhen (\**suo*) du] de na-ben shu

he *SUO* probably *SUO* not-have *SUO* carefully *SUO* read DE that-CL book

'the book that he probably didn't read carefully'

It has been argued in the literature that the aspectual negation marker *mei* 'not have' projects a higher projection above the Predicate Phrase (PredP) (in the sense of Bowers (1993), as argued in Hsieh (2001), cited in Aldridge (2011)),<sup>3</sup> or even occupies a position in the split-Infl area (Schaffar and Chen 2001). Considering that *suo* is located above *mei* and lower than sentential adverbs, which are held as adjuncts of TP or T', we would like to propose in line with Ting (2003) that *suo* is situated in the T position.

In the literature (Chiu 1993, 1995; Ting 2003, 2010; Jiang 2008), it has been observed that, within the relative clause, there is a subject-object asymmetry that regards the relativized site in relation to the appearance of *suo*. Specifically, in short-distance relativization, i.e., when the relative clause is a simplex clause, *suo* can occur in object relativization, but not in subject relativization. This is shown by the contrast in (6).

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<sup>3</sup> Aldridge (2011) also proposes that *suo* is above *vP* based on Archaic Chinese data.

(6) a. [(*\*suo*) mai naxie shu] de na-ge ren

SUO buy those book DE that-CL person

'the person that bought those books' (Ting 2003: (4a))

b. [Lisi *suo* mai] de naxie shu

Lisi SUO buy DE those book

'those books that Lisi bought' (Ting 2003: (3))

In long-distance relativization, *suo* can always occur outside of the minimal clause containing the relativized site (see (7a,b)). Importantly, it can only occur in the minimal clause when the relativized constituent is the object (see (8a,b)). Thus, *suo* does not appear in the minimal clause if the relativized site is the subject.

(7) a. [Lisi *suo* renwei [hui mai naxie shu]] de na-ge ren

Lisi SUO think will buy those book DE that-CL person

'the person that Lisi thinks will buy those books'

b. [Lisi *suo* renwei [Zhangsan hui mai]] de naxie shu

Lisi SUO think Zhangsan will buy DE those book

'those books that Lisi thinks that Zhangsan will buy'

(8) a. [Lisi renwei [(*\*suo*) hui mai naxie shu]] de na-ge ren

Lisi think SUO will buy those book DE that-CL person

'the person that Lisi thinks will buy those books'

b. [Lisi renwei [Zhangsan *suo* hui mai]] de naxie shu

Lisi think Zhangsan SUO will buy DE those book



'those books that Lisi thinks Zhangsan will buy'

Note that the above asymmetry is reminiscent of the subject-object asymmetry in English and French A'-movement constructions (see (1)-(2)). To be specific, in cases of subject A'-movement, the C most closely c-commanding the trace is omitted in English and is changed into a non-canonical form (viz. *qui*) in French. In cases of object A'-movement, the C most closely c-commanding the trace can surface in its canonical form (English: *that*; French *que*) or, only for English, remain unrealized. Thus, clauses containing a subject trace and clauses containing an object trace display different "Comp-behavior". This asymmetric behavior of clauses containing a subject trace and clauses containing an object trace in English and French, is paralleled by Chinese relative clauses in terms of the distribution of *suo*: the particle *suo* can occur in the minimal clause containing an object trace, but must be omitted in the minimal clause containing a subject trace. If we are right in saying that *suo* is located in T (see (4)-(5)), then we can characterize the difference between subject relativization and object relativization as one of "T-behavior". Furthermore, the effect of the presence versus absence of *suo* on subject extraction can be referred to as the "T-trace effect". If we follow Chomsky's (2007, 2008) proposal that properties of T are inherited from the phase head C, the "T (= *suo*)-trace effect" can be reduced to a Comp-trace effect. The implementation of this feature inheritance theory will be discussed in more detail in section 4.

In the rest of this section, we confront our approach, which tries to draw a parallel between the English/French Comp-trace effect and the Chinese Comp(-T)-trace effect, with a potential problem. It turns out that the parallel breaks

down when patterns in which the extracted nominal is the internal argument of an unaccusative verb are taken into consideration. As illustrated in (9) and (10) below, the Comp-trace effect always shows up in such a situation in languages like English and French. In other words, A'-movement of the internal argument of an unaccusative verb yields the same Comp-trace effect as A'-movement of the external argument of transitive and unergative verbs. That is, English *that* must be absent in the minimal clause containing the (base) extraction site (see (9)). In French, *que* must be changed into *qui* in such environments (see (10)).

(9) a. What did Janet say [(*\*that*) [had happened]]? (Lohndal 2009: (3))

b. What did Janet say [(*that*) [he believed [(*\*that*) [had happened]]]]?

(10)a. Qui crois-tu [*\*que/qui* [est venu]]?

who believe-you C is come

'Who do you believe has come?'

b. Qui crois-tu [que Jean dit [*\*que/qui* [est venu]]]?

who believe-you C Jean says C is come

'Who do you believe that Jean says has come?'

When we compare the C-behavior in (9) and (10) with the behavior of *suo* in Chinese relative clauses featuring relativization of the internal argument of an unaccusative verb, we notice a clear difference: the particle *suo* can occur in what we take to be the T position of the minimal TP/CP containing the extraction site, thus paralleling with object relativization instead of subject relativization.

- (11) a. [na-chang dongluan zhong (*suo*) siqu] de ren  
           that-CL riot middle SUO die-away DE person  
           'the people that died in the riot' (Ting 2003: 12a)
- b. [na-tiao xiaoxi zhong (*suo*) piaoguo] de kuye  
           that-CL small-stream middle SUO float-past DE withered-leaf  
           'the withered leaves that floated in the river' (Ting 2003: 12b)

The question obviously arises as to how to account for this difference between English/French, on the one hand, and Chinese, on the other hand. That is, why must English and French resort to Comp-strategies like *that*-ommission and C-alternation if the internal argument of an unaccusative verb is removed from within an embedded declarative clause, and why doesn't *suo*-ommission apply if the internal argument of the unaccusative verb is relativized in Chinese? If (un)availability of *suo* parallels the (un)availability of *that* (or the French alternation strategy, for that matter) we would expect the Comp-trace effects to be similar.

Trying to find an answer for this difference between English/French versus Chinese, let us first consider more closely what happens with the internal argument of the unaccusative verb. It is generally assumed for languages like English and French that the internal argument of an unaccusative verb undergoes A-movement from the complement position of V to [Spec,TP]. This may be for reasons of Case or for "EPP-checking"; we will leave that implicit here. What is important is that the internal argument of the unaccusative verb ends up in the same syntactic position ([Spec,TP]) as the external argument of a transitive or unergative verb. Consequently, long distance A'-movement of the internal argument of an unaccusative verb takes place

from the same syntactic position (viz. [Spec,TP]) as long distance A'-movement of the external argument of a transitive/unergative verb. Therefore, the Comp-trace effect depicted in (9)-(10) is expected.

Let us now turn to the Chinese examples in (11). Why is it possible for *suo* to show up in the minimal clause containing the relativized site? If the internal argument of a Chinese unaccusative verb were to move to [Spec,TP], one would expect subsequent A'-movement from this position to trigger *suo*-ommission, analogously to the omission of *that* in the English example in (9). The fact that *suo*-ommission does not take place suggests that, as opposed to English/French, Chinese does not need to move the internal argument of the unaccusative verb to [Spec,TP]. This may be caused by the *pro*-drop behavior of Chinese.

As is well-known, Chinese is a *pro*-drop language, but it belongs to a different type from inflection-rich languages like Italian, Spanish and Portuguese. While the *pro* in Italian-type languages can only be identified by the information encoded in the inflectional endings, empty subjects (and objects) in Chinese can be identified by contextual factors, as is illustrated in (12) below.

(12) Zhangsan gangcai lai zhao ni. *pro* hen shengqi.

Zhangsan just-now come look-for you very angry

'Zhangsan<sub>i</sub> looked for you just now. He<sub>i</sub> was very angry.'

Another difference between Italian-type *pro*-drop languages and Chinese concerns the distribution of the "real subject" (i.e., the overt subject carrying a semantic role) in sentences featuring an expletive *pro*. In Italian-type languages, real subjects can

always appear in a post-verbal position, with the [Spec,TP] position occupied by *pro*; see (13). In Chinese, on the contrary, the real subject has to appear in a preverbal position, except when the predicate is an unaccusative verb. This is illustrated in (14)-(15), where (14) shows the obligatory pre-verbal placement of the noun phrase *Zhangsan*, which is the subject of the transitive verb *xihuan*, and (15) shows the possible post-verbal placement of *xuduo ren*, which is an argument of the unaccusative verb *siqu*.

(13) a. Credo [che [*pro* abbia telefonato Gianni]].

I-think C            have telephoned Gianni

'I think Gianni has made the call.' (Rizzi 1990:62)

b. Credo [che [*pro* verra        Gianni]]

I-think C            will-come Gianni

'I think Gianni will come.'

(14) a. Wo renwei [Zhangsan xihuan Lisi].

I think Zhangsan like Lisi

'I think Zhangsan likes Lisi.'

b. \*Wo renwei [*pro* xihuan Lisi Zhangsan].

I think            like Lisi Zhangsan

'I think Zhangsan likes Lisi.'

(15) a. Na-chang dongluan zhong xuduo ren        siqu-le.

that-CL riot        middle many person die-away-Asp

'Many people died in that riot.'

b. Na-chang dongluan zhong *pro* siqu-le        xuduo ren.

that-CL riot middle die-away-Asp many person

From the examples in (14)-(15), we may conclude that, as regards the placement of the "real subject", Chinese is somewhere between English and French on the one side and Italian-type languages on the other. It patterns with English and French in that in declaratives the external argument of transitive and unergative verbs has to be positioned in a preverbal position, satisfying the EPP requirement of T.<sup>4</sup> It is like Italian-type languages in that the internal argument of unaccusative verbs can stay in its base-generated, postverbal position, with the EPP requirement of T satisfied by (expletive) *pro*.

Keeping in mind that the internal argument can remain in its base-generated postverbal position and does not have to move to [Spec,TP], let us return to the relative clauses in (11) and answer the question why the relative clause can feature the particle *suo*. Our answer to this question is the following: the relativized internal argument of the unaccusative verb (*siqu*, *piaoguo*) does not have to move to [Spec,TP], which is occupied by expletive *pro*, and consequently can undergo A'-movement directly to [Spec,CP]. Notice that this A'-movement operation is identical to the one found in object-relativization (see (6b)), where the relativized object also moves directly to [Spec,CP]. Given this parallelism, the appearance of *suo* in (11) is what we expect.<sup>5</sup>

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<sup>4</sup> See Z.-H. Lin (2011) for arguments that all clauses in Chinese have an EPP requirement.

<sup>5</sup> A'-extraction of the real subject (i.e., the associate of *there*) in English *there be* construction patterns with relativization of the internal argument of unaccusative verbs in Chinese, as illustrated in (ib) below.

To summarize, we argued in this section that Chinese also displays the Comp-trace effect, although in a slightly more indirect way. The effect shows up in relative clauses. Unlike the Comp-trace effect in English and French, which is manifested as some change on C (omission of *that* or *que-qui* alternation), the effect in Chinese shows up in the T position of the minimal CP/TP containing the site of relativization, with the obligatory absence of *suo* in T as the surface manifestation of the Comp-trace effect (quite analogously to the obligatory absence of *that* in C in English). We further showed another asymmetry between English/French on the one hand and Chinese on the other. The first two languages exhibit the Comp-trace effect when A'-movement is applied to the external argument of a transitive or unergative verb, but also when it is applied to the internal argument of an unaccusative verb. The reason for this "uniform" Comp-trace effect in English relates to the obligatory A-movement to [Spec,TP] of the internal argument of the unaccusative verb. As a result of this, A'-movement of the "clausal subject" always takes place from the same syntactic position in English, viz. Spec,TP. We showed that in Chinese the Comp-trace effect (surfacing as obligatory omission of *suo*) shows up in relative constructions featuring relativization of the external argument of transitive and unergative verbs, but not in relative constructions featuring relativization of the internal argument of an unaccusative verb (i.e. *suo* can surface in T). We accounted for the latter difference by taking into consideration the special properties of *pro*-drop in Chinese and the related distributional behavior of internal arguments of unaccusative verbs.

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(i) a. What do you think (\*that) *t* is in the box?

b. What do you think (that) there is *t* in the box? (Lohndal 2009: (2)).

In section 4, we will explain why the Comp-trace effect in Chinese shows up in the T position, and why it is realized as the unavailability of the particle *suo*. In addition, we will investigate other distributional properties of *suo* in order to see whether our analysis can provide a satisfactory account of them. Before presenting our analysis in more detail, we will first have a review of previous analyses of this particle in section 3.

### **3. Previous analyses of *suo***

The feature inheritance analysis of *suo* sketched in the previous section can be characterized as a "top down" approach towards the licensing of *suo* in the sense that the appearance of *suo* is determined by a constituent (viz. C) that is higher in the clausal structure than the structural locus of *suo*. In other words, "licensing" comes from above. In this respect, our approach differs from three earlier analyses of the particle *suo* in Chinese, which take a more "bottom up" approach in the sense that the presence of *suo* is sanctioned by movement, either of *suo* itself to a higher functional head (Ting 2003, 2010; see section 3.2), or of an element that moves into the specifier of the functional head that is realized as *suo*. According to Chiu (1993, 1995; see section 3.1) this functional head is *Suo*, according to Jiang (2008; see section 3.3) it is *v*.

#### **3.1. *Suo* as a functional head**

Chiu (1993, 1995) proposes that *suo* is a functional head. Within the tenets of the Government and Binding Theory (Chomsky 1981), she gives a Split-IP analysis for Chinese clause structure. According to this analysis, a sentence is projected as a



NomP (Nominative Phrase). The subject occupies [Spec,NomP] and is assigned the nominative case there. Below NomP and above TP, there is a functional projection, called SuoP, whose head could be overtly realized as *suo*. Like the AgrO in Pollock (1989) and Chomsky (1991), Suo is responsible for the assignment of the Accusative Case to the object. When the object moves through [Spec,SuoP], it is assigned Accusative Case there; when no object undergoes movement, Suo assigns the Accusative Case to a *pro* base-generated in its specifier, which then transfers the case to the object via a case chain. The two mechanisms of Case assignment are demonstrated in (16a-b) respectively.

- (16)                    wo                    su )                    xihuan n -ben
- a. [[O<sub>i</sub> Nom<sub>p</sub> [Suo<sub>p</sub> <sup>t<sub>i</sub></sup> Suo<sub>T</sub> like t<sub>i</sub>]] D a shu book<sub>i</sub> 'the book that I like'  
p [p I<sub>p</sub> ] ] E that L
- b. Wo                    E                    n -ben .  
xihuan<sub>p</sub> <sup>pr</sup> Suo<sub>T</sub> like a shu book<sub>i</sub> ] ] 'I like that book.'  
p [p [that book] ] ]

Chiu further proposes a constraint on the phonetic realization of the functional head, according to which *suo* can only appear when the object moves via [Spec,SuoP].

Apart from the arbitrary nature of the realization condition of *suo*, there are some other problems with this analysis. First, it predicts that *suo* only occurs when the relativized constituent is the object of a transitive verb. This prediction, as is pointed out by Ting (2003) and Jiang (2008), is not borne out. As we have shown in (11a-b), the particle can appear when the relativized constituent is the internal argument of an unaccusative verb. Moreover, in cases where the subject of a complement clause is relativized, it is possible for *suo* to appear in the T position of the matrix clause in

which the complement clause is embedded. This is illustrated in (7a), reproduced here as (17).

- (17) [Lisi *suo* renwei [will mai naxie shu]] de na-ge ren  
Lisi SUO think will buy those book DE that-CL person  
'the person that Lisi thinks will buy those books'

Given that internal arguments of unaccusative verbs cannot get Accusative Case by definition and in view of the fact the subject in the complement clause has already been assigned a Nominative Case, it is impossible for them to move into the specifier position of a functional head (i.e., *Suo*) to get the Accusative Case.

Second, as demonstrated by (18), when an object within the complement clause is relativized, it is possible for *suo* to appear in the complement clause as well as in the higher matrix clause.

- (18) a. [[Lisi (*suo*) renwei [Zhangsan (*suo*) hui mai] de naxie shu  
Lisi SUO think Zhangsan SUO will buy DE those book  
'those books that Lisi thinks Zhangsan will buy'  
b. [women (*suo*) yaoqiu ta (*suo*) dadao] de kecheng mubiao  
we SUO require he SUO reach DE course objective  
'the course objective that we required him to fulfill'

Chiu's analysis predicts that in such cases, the object would move cyclically to the specifier of the *Suo*P in both the complement clause and the matrix clause, receiving

the Accusative Case each time it lands in [Spec,SuoP]. Such a stepwise movement process in which Accusative Case is assigned twice to the relativized object is neither possible nor necessary.

### 3.2 *Suo* as a clitic pronoun

Ting (2003, 2010) proposes that *suo* is a resumptive pronominal clitic. It originates as the head of the relativized constituent. In order to check its discourse feature [F],<sup>6</sup> it head-moves to I or F (a functional head between I and *v*) in a way parallel to Romance object cliticization as discussed in Kayne (1989a), Roberts (1997) and Uriagereka (1995). Her (2003) and (2010) analyses are illustrated, respectively, in (19a) and (19b) below.<sup>7,8</sup>

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<sup>6</sup> Ting (2010), in line with Ou (2007), proposes that *suo* has a function of emphasizing the predicate it precedes. Apart from this function, it may also have some other ideational, (non-)contextual, personal and esthetic functions. We take these functions to be related with the fact that as a residue in Archaic Chinese, *suo* adds some degree of formality to the relative clause containing it.

<sup>7</sup> Although Ting (2010) assumes a raising approach to relative clauses (see Kayne 1994), she points out that her analysis is also compatible with the matching approach, which she assumes in her (2003) paper.

<sup>8</sup> Ou (2007) proposes a similar analysis to Ting (2010). According to her, *suo* is originally the sister of the relativized DP. To derive a relative clause, the complex DP (*suo*-DP) is first raised to a [Spec,FP] position, from where the relative DP raises cyclically, stranding *suo*.

- (19) a.  $[_{NP} [_{CP} OP_i [_{IP} Lisi [_{I} suo+I [_{VP} mai [_{NP} [_{N'} t_{suo}]]]]]]] de shu_i]$   
 Lisi SUO buy  $t_{suo}$  DE book  
 ↑  
 'the book(s) that Lisi bought'
- b.  $[_{NP} [_{CP} \dots [_{IP} Lisi [_{I} I [_{FP} suo+F [_{VP} mai [_{DP} t_{suo} [_{NP} t_i ]]]]]]]] de shu_i]$   
 ↑

Ting's analysis also faces some problems. First, in the D-stranding analysis of resumptive pronouns (henceforth: RP) proposed by Boeckx (2003) and Boeckx and Grohmann (2004), the stranded D is always a semantically strong one in the sense of Milsark (1977), conveying specificity, definiteness or D-linking. Assuming this analysis, as Ting (2010) does, we would predict that where *suo* appears in a relative clause, the relativized constituent has to be a strong DP. Thus if Ting's analysis is on the right track, we would expect that *suo* cannot occur in amount relatives, as it has been argued that the relativized constituent of an amount relative (also called degree or maximalizing relative) is a degree phrase instead of a strong DP (see Carlson 1977; Heim 1987; Grosu and Landman 1998; Grosu 2000a, 2000b, 2002; Bhatt 2002; Corver 2009). Quite unexpectedly under Ting's analysis, we do find amount relative clauses like (20) containing *suo*. Thus it seems incorrect to treat *suo* as an RP.

- (20) [ta meitian suo pao t] de na ershi gongli  
 he everyday SUO run DE that twenty kilometer  
 'the twenty kilometers that he runs everyday'

Second, analyzing *suo* as an RP implies that this particle is a variant of the regular RP *ta* (he/she/him/her/it) or *tamen* (they/them). Hence a relative clause containing *suo* should be semantically identical with one containing a regular RP.

This prediction, however, is not borne out. For example, (21a) may imply that I examine different patients on different mornings, while (21b) presupposes that the patient that I examine each morning should be the same person.

(21) a. [wo meitian zaoshang suo jiancha liang-bian] de na-ge bingren

I every-day morning SUO examine two-time DE that-CL patient

'the patient that I examine twice every morning'

b. [wo meitian zaoshang jiancha ta liang-bian] de na-ge bingren

I every-day morning examine RP two-time DE that-CL patient

'the patient whom I examine twice every morning'

The contrast between (21a) and (21b) suggests that *suo* and RP do not behave alike. Therefore, it is preferable that we do not analyze them as variants of the same element.

Third, the resumptive analysis predicts that there could be at most one occurrence of *suo* in a relative clause, considering the fact that cross-linguistically RPs in (complex) relative clauses typically occur only once. Consequently, to account for the multiple occurrences of *suo* in (18), Ting (2010) turns to a relative clause stacking analysis, taking the matrix clause of the relative construction to be a relative clause with an elided modifier marker *de* (i.e. ~~de~~). Unlike standard approaches towards relative clause stacking as discussed in Gobbo (2004) and Larson and Takahashi (2004), Ting proposes that in cases like (18), the modifier of the (antecedent) head of the relative construction is not a complex relative clause. Thus, *Zhangsan (suo) hui mai* in (18a) is not analyzed as a complement clause of the matrix

verb *renwei*. Rather she assumes that *Lisi (suo) renwei* in (18a) functions independently as a relative clause that modifies *Zhangsan (suo) hui mai de*, which is understood as a thematic object of the predicate (*renwei*) in the first clause. Thus (18a) should be represented as (22) below.

(22) [[[Op<sub>i</sub> Lisi (*suo*) renwei t<sub>i</sub> ~~de~~] [Op<sub>j</sub> Zhangsan (*suo*) hui mai t<sub>j</sub> de]<sub>i</sub>] naxie shu]  
 Lisi SUO think DE Zhangsan SUO will buy DE those book  
 'those books that Lisi thinks Zhangsan will buy'

This analysis in terms of stacked relative clauses seems to suffer from a defect. Since a relative construction is usually a referential nominal expression (i.e., a DP) in nature (See Kayne 1994 and Bianchi 1999 for relevant discussion), assuming the part preceding *naxie shu* ('those books') in (22) to be a relative construction means that it is modified by a DP, instead of a property-denoting element. Given that the function of a relative clause is to combine with a relative head noun (i.e., the NP part in the antecedent) in order to yield an intersective reading (Heim and Kratzer 1998), or to satisfy the property variable of the determiner or demonstrative (Bach and Cooper 1978; J.-W. Lin 2003), the relative clause has to be a property-denoting element (i.e., a predicate) instead of a DP.

### 3.3 *Suo* as a realization of the edge feature on *v*

Jiang (2008), assuming Chomsky's (2000, 2001) phase theory, proposes that *suo* is base-generated as the phase head of *v*P with an edge feature, which is satisfied when an element inside the complement domain of the phase is moved to [Spec,*v*P] (for

cyclic A'-movement).<sup>9</sup> It is overtly realized when there is agreement between the *v* head and the element moved to its specifier position. Otherwise, it is covertly realized.

We believe that this analysis also faces some empirical problems. First, as we have argued in Section 2, *suo* is situated quite high in the clausal structure, more specifically in the T area. Evidence for this comes from its linear ordering with respect to the aspectual negative marker *mei* (not have): *suo* typically precedes *mei* (see (5)), and consequently occupies a structural position which is higher than that of *mei* (cf. Kayne's (1994) LCA, according to which linear precedence between two elements A and B implies an asymmetric c-command relation between A and B). Given that the functional projection *v*P is taken to be hierarchically lower than the functional layer headed by the aspectual negative marker *mei*, we can conclude from the linearization *suo mei* (rather than \**mei suo*) that *suo* is not the head of *v*P.

Second, although Jiang's analysis correctly predicts that local subject relativization does not license *suo*, her analysis incorrectly rules out the possibility of having *suo* in adjunct relativization. She assumes that subjects and adjuncts are base-generated in the edge position of the *v*P phase prior to relativization; hence when these elements are relativized, no movement to [Spec, *v*P] is needed and as a result *suo* is not licensed in the resulting relative clause. This prediction holds true for subject relativization (see (6a)). However, it is not borne out when adjunct relativization is considered. As Ting (2003) has pointed out, *suo* is legitimate when a locative phrase is relativized (see (23a)) and is quite acceptable in relative

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<sup>9</sup> Zhang (2001) also suggests that *suo* is situated in the [Spec, *v*P] position, which could be an operator, an RP or simply the spell-out of trace. As it is not a fully developed idea, we will not further discuss it here.

constructions involving relativization of a time adjunct (see (23b)).

(23) a. [women *suo* shengcun] de shehui

we SUO live DE society

'the society where we live' (Ting 2003: 9b)

b. ??[Lisi *suo* gongzuo] de shijian

Lisi SUO work DE time

'the time that Lisi works' (Adapted from Ting 2003: 11)

Also in newspapers and web corpora we find quite some instances where relativization of reason and manner adjuncts licenses the occurrence of *suo*. See (24) for some examples:

(24) a. [wo *suo* gandong] de yuanyin

I SUO move DE reason

'the reason why I am moved'

[http://wanbao.qingdaonews.com/html/2007-01/05/content\\_655860.htm](http://wanbao.qingdaonews.com/html/2007-01/05/content_655860.htm)

b. [meige-ren *suo* fuchu] de fangshi

everyone SUO pay DE manner

'the ways that different people pay contribution'

[http://blog.sina.com.cn/s/blog\\_4c0c7dcf0100dceb.html](http://blog.sina.com.cn/s/blog_4c0c7dcf0100dceb.html)

Finally, it should be noted that Jiang draws a parallel between the overt realization of *suo* in Chinese and past participle agreement in French object



*wh*-extraction (Kayne 1989b). According to Kayne, past participle agreement shows up when the *wh*-object moves from the complement position of V to a position adjoined to AgrP, where it enters into an agreement relation with the Agr-head. Jiang reinterprets Kayne's Agr as *v*, thus reanalyzing the I-Agr-V structure as I-*v*-V, and proposes that the occurrence of *suo* in *v* is a reflex of the agreement relation between the *v* head and the element moved to its edge position. It has to be noted, though, that in French only canonical object *wh*-extraction licenses past participle agreement. When the extracted constituent is the internal argument of an unaccusative verb or the subject of a complement clause, no past participle agreement is sanctioned. Thus, if Jiang's analysis is on the right track, it remains to be explained why in cases where the relativized element is the internal argument of an unaccusative verb (see (11)) or the subject of a complement clause (see (7a)), the presence of *suo* is also sanctioned.<sup>10</sup> Even if it is granted that the parallel is not perfect, given that the *v* selecting an unaccusative verb is a defective one, it is unclear what is meant by agreement between this *v* and the internal argument.<sup>11</sup>

To sum up section 3, we have reviewed three major analyses of the particle *suo* in Chinese, pointing out that they all face some empirical problems. What these analyses have in common is that they all take a "bottom-up" approach, where the presence of *suo* is sanctioned by movement, either of *suo* itself to its surface position (T or F), or of an element via the specifier of the functional head (Suo or *v*), with the presence of *suo* being a reflection of the established Spec-Head configuration. In what follows, we will take a "top-down" approach, where *suo* is analyzed as the overt

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<sup>10</sup> *Suo* then appears in the matrix clause of the complement clause whose subject is relativized.

<sup>11</sup> Note that Jiang (2008) adopts Legate's (2003) idea that defective *v* is also a phase.

realization of the force feature inherited by T from the phase head C.

#### **4. Feature inheritance, *suo*, and the Comp-trace effect in Chinese**

In this section we present an analysis of the nature and distribution of *suo* in terms of feature inheritance. Section 4.1 discusses the inheritance mechanism and provides an account of the distributional properties of *suo*. Section 4.2 provides an analysis of the Chinese Comp-trace effect, i.e., the obligatory absence of *suo* in relative constructions involving short distance subject relativization.

##### **4.1. Feature inheritance and the nature of *suo***

Chomsky (2007, 2008, 2011) proposes that formal features of non-phase heads (T and V) are inherited from their selecting phase heads (C and *v*, respectively) and that these inherited formal features may have some phonetic realization at the Sensory-Motor (SM) interface. As noted by M. Richards (2007), Miyagawa (2010), and Obata and Epstein (2011), this theoretical innovation is both conceptually desirable and empirically supported. Since the advent of phase theory in Chomsky (2000, 2001), it has been commonly accepted that operations beyond initial merge take place only within phases. Thus, it is conceptually desirable to merge grammatical features that are responsible for computations like Agree and Move (i.e., I-Merge) solely on phase heads. Empirically, this proposal is justified by the fact that agreement properties show up on C in some West Germanic languages/dialects.<sup>12</sup>

With respect to the C-T complex, Chomsky mainly discusses the passing on of  $\phi$ -features. But it is implied (in Chomsky 2007, 2008) and even suggested (in

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<sup>12</sup> See, among others, Haegeman (1992) and Carstens (2003) for relevant agreement facts.

Chomsky 2011) that other features on C can also, and may indeed have to be inherited by T. This latter vein of thought has been pursued by Miyagawa (2010) and Lochbihler and Mathieu (2008). Miyagawa demonstrates that the topic/focus feature in discourse-configurational languages can be inherited by T from C, while Lochbihler and Mathieu propose that the "initial change" phenomenon in Ojibwe (and other Algonquian languages) *wh*-movement constructions is the morphological reflection of the discourse features ( $\delta$ -features) on T, inherited from C.<sup>13</sup>

Following Rizzi (1990), we take the relative C to have a different feature matrix from the declarative C. Specifically, we propose that it carries an uninterpretable force feature [*urel*], which has to be valued by the interpretable [*rel*] feature of the relativized constituent (i.e., the relative operator). The [*urel*] feature, like the topic/focus feature in discourse-configurational languages and the discourse features in Ojibwe, could be inherited by T, and optionally realized at the Sensory-Motor interface as *suo* upon valuation by the relative operator within its search domain (i.e., its c-command domain).<sup>14</sup> Thus, [*urel*] is inherited by T the moment T(P) is selected by the relative C, and gets valued by the relative operator within its search domain. Subsequently, the relative operator is attracted to [*Spec,CP*] by the edge feature of the

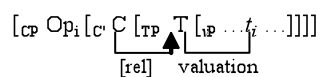
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<sup>13</sup> In Algonquian languages like Ojibwe, tense is represented as a verbal affix. In *wh*-movement constructions (in the sense of Chomsky (1977), including *wh*-interrogatives, relatives, focus structure, etc.), the initial vowel of the affix is changed accordingly, hence the name "initial change". For details, see Lochbihler and Mathieu (2008).

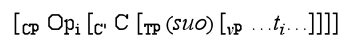
<sup>14</sup> There is an alternative to this proposal. Namely, the [*urel*] feature can be optionally inherited by T and *suo* is phonetically realized only when it is inherited. We will not pursue this alternative in this paper.

relative C. This is illustrated in (25)(=3)), which is the derivation that is at the basis of object-relativization of a transitive verb (see (6b)) and relativization of the internal argument of an unaccusative verb (see (11)). We assume that in relative constructions involving relativization of an adjunct (see (23)-(24)), the relativization site is in a position adjoined to vP.<sup>15</sup> This means that the adjunct operator that originates in that position is located within the search (i.e. c-command) domain of the functional head T that carries the inherited feature *[urel]*. This way, the adjunct operator can value the unvalued rel-feature on T.

(25) a. Syntax



b. PF



Note that our analysis, according to which the particle *suo*, which has a locative origin, is the realization of the inherited *[rel]* feature on T, is not without ground. In fact, the relative C in quite a number of languages is derived from a locative element. This holds, for example, for Greek *pu* (Joseph and Philippaki-Warburton 1987; Nicholas 1998), Bulgarian *deto* (Krapova 2009), Bavarian *wo* (Bayer 1984) and Danish *der* (Vikner 1991). Apart from catching this cross-linguistic similarity, the feature inheritance analysis proposed here can account for the distributional behavior of *suo*.

A first distributional property of *suo* that follows from our analysis regards its

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<sup>15</sup> We assume Rizzi's (1997, 2006) cartographic approach to clause structure, but for reasons of simplicity, CP instead of ForceP is represented as the head from which T inherits the *[urel]* feature.

absence in island environments. Given that an element cannot move out of a syntactic island, and in view of the fact that the occurrence of *suo* implies that the relative operator has undergone movement from a position within TP to [Spec,CP], this analysis correctly predicts that the particle *suo* cannot occur in a (clausal) syntactic island contained within the relative clause. This has been observed by Chiu (1993, 1995), Ting (2003) and Jiang (2008), and is exemplified by (26a-b), both of which are adapted from Chiu (1995: (44)). In (26a), the relative operator cannot be originated within the sentential subject (*Lisi suo kan e*) as the latter is a syntactic island. Rather it has to be base-generated in and then moved out from a topic position c-commanding the sentential subject. Since the appearance of *suo* goes together with the application of relative operator movement from a position c-commanded by the hosting position of the particle, it follows that *suo* cannot occur within the sentential subject that is embedded within the relative clause. In (26b), the relative operator cannot find its origin within the complex NP, since extraction out of this domain violates the Complex Noun Phrase Constraint. Again, it has to be base-generated and consequently moved out from a topic position c-commanding the complex NP. Given the appearance of *suo* is dependent on the application of operator movement from a position c-commanded by its hosting position, it is expected that *suo* cannot surface within the clause of the complex NP.

(26) a. [Op<sub>i</sub> [<sub>t<sub>i</sub></sub> [[Lisi (\**suo*) kan *e<sub>i</sub>*] zui heshi]]] de shu<sub>i</sub>

Lisi SUO read most suitable DE book

'the book that it is most appropriate for Lisi to read'

b. [Op<sub>j</sub> [<sub>t<sub>j</sub></sub> [[[*e<sub>i</sub>* (\**suo*) zu *e<sub>j</sub>*] de ren<sub>i</sub>] hen duo]]] de na-dong fangzi<sub>j</sub>

SUO rent DE person very many DE that-CL house

'the house that the people who rented it are many'

A second distributional property of *suo* that can be accounted for in terms of a feature inheritance approach comes from relative constructions involving long distance relativization. As illustrated in (27), *suo* can occur both in the embedded complement clause and in the matrix clause of a complex relative clause:

(27) a. [[Lisi (*suo*) renwei [Zhangsan (*suo*) hui mai] de naxie shu

Lisi SUO think Zhangsan SUO will buy DE those book

'those books that Lisi thinks Zhangsan will buy'

b. [women (*suo*) yaoqiu ta (*suo*) dadao] de kecheng mubiao

we SUO require he SUO reach DE course objective

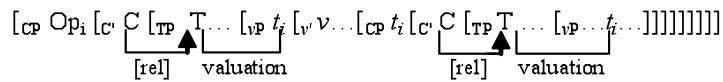
'the course objective that we required him to fulfill'

In line with McCloskey (2002) and Rizzi (2006) among others, we assume that the embedded C (i.e. the C of the complement clause) in cases of long-distance relativization can carry a pseudo unvalued force feature [*urel*].<sup>16</sup> This feature can also be inherited by the T it selects and get valued by the relative operator in its search domain. This is schematically represented in (28):

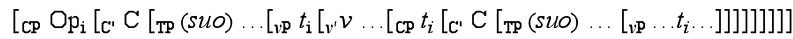
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<sup>16</sup> According to McCloskey (2002), a pseudo formal feature is a purely formal feature that triggers intermediate movement for the sake of cyclicity, but does not trigger interpretative processes.

(28) a. Syntax



b. PF



A third distributional property of *suo* that our feature inheritance analysis can account for comes from relative constructions involving an RP. The distributional restriction that is pertinent here is the impossibility of having an RP and *suo* in the same minimal TP within a relative clause. Specifically, in simplex relative clauses that can have either an RP (*ta/tamen*) or a gap in the relativized site, *suo* is only compatible with the gap strategy (see (29)). When an RP is obligatory—for example, when the relativized site corresponds to the complement of a preposition—*suo* cannot occur within the relative clause (see (30)).

(29) a.(?) [wo ai-le      ta san-nian] de na-ge ren

I love-Asp RP three year DE that-CL person

'the person I loved for three years'

b. [wo *suo* ai-le      san-nian] de na-ge ren

I *SUO* love-Asp three-year DE that-CL person

'the person I loved for three years'

c. \*[wo *suo* ai-le      ta san-nian] de na-ge ren

I *SUO* love-Asp RP three-year DE that-CL person (Ting 2003: (7a-c))

(30) a. [Lisi gen \*(*ta*) zhu-guo] de na-ge ren

Lisi with RP live-Asp DE that-CL person

'the person that Lisi lived with' (Chiu 1995: (6))

b. [Lisi (\**suo*) gen *ta* zhu-guo] de na-ge ren

Lisi SUO with RP live-Asp DE that-CL person

When the relative clause is a complex one, however, it is possible for *suo* to co-occur with an RP, with the RP staying in the lower clause and *suo* in the higher one (see (31)).

(31) a. [ni *suo* renwei [Lisi gen *ta* zhu-guo]] de na-ge ren

you SUO think Lisi with RP live-Asp DE that-CL person

'the person whom you think that Lisi have lived with'

b. [ni *suo* renwei [wo ai-le *ta* san-nian]] de na-ge ren

you SUO renwei I love-Asp RP three-year DE that-CL person

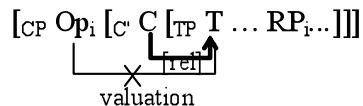
'the person that you think that I have loved for three years'

The question arises how to account for this distributional pattern of *suo* under the feature inheritance approach adopted in this article. As a crucial ingredient of our analysis of this pattern, we adopt Aoun and Li's (2003) proposal that Chinese distinguishes two types of relative clauses: (i) relative clauses with a gap that is the result of operator movement, and (ii) relative clauses with an RP, which Aoun and Li analyze in terms of a base-generated operator that A'-binds the RP. Under this analysis of relative clauses containing an RP, in short-distance relativization, the operator that could value the [*urel*] feature on T (inherited from C) is base-generated in Spec,CP and consequently not within the search (i.e., c-command) domain of T. Hence, the [*urel*] feature on C can only be valued upon the (external) merging of the

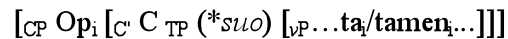


relative operator in Spec,CP. The feature can in principle be inherited by T, but cannot get valued there, since the RP, which is bound by the operator, does not bear a *[rel]* feature. As a result, no *suo* is realized in T at the point of transfer.

(32) a. Syntax

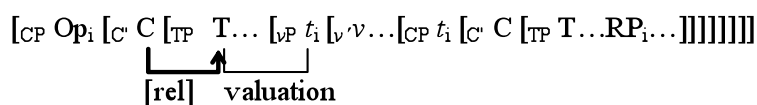


b. PF

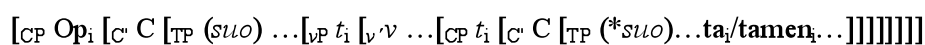


Let us now consider the examples in (31), in which *suo* surfaces in the matrix clause of the complex relative clause that contains an RP in the more deeply embedded clause. We will assume that the operator base-generated in the minimal clause containing the RP is available for further valuation after it has valued the (pseudo) *[urel]* of the C of the embedded clause. In other words, an operator carrying an interpretable *[rel]* feature can be active at different steps in the derivation. If this is the case, the *[rel]* feature of the operator occupying *[Spec,CP]* of the embedded clause is within the search (i.e. c-command) domain of the *[urel]* inherited by the matrix T from the matrix C. Consequently, the former is able to value the latter, resulting in the optional occurrence of *suo* in T at the SM interface, as illustrated in (33).

(33) a. Syntax



b. PF



## 4.2 “*suo*-omission” as a manifestation of the Comp-trace effect

In Section 2, we have identified the unavailability of *suo* in the minimal TP/CP containing the relativized subject position as an instantiation of the Comp-trace effect in Chinese, drawing a parallel with C-omission ('*that*-deletion') in English and C-alternation in French. Analogously to the obligatory absence of English *that* in patterns involving long distance subject extraction from within a declarative clause (see (34)), the particle *suo* must be absent in the minimal clause containing the extraction site of the relativized subject; see (6a), which is repeated here as (34b):

(34)a. Who do you think (that) kissed her?

b. [(\**suo*) mai naxie shu] de na-ge ren

SUO buy those book DE that-CL person

'the person that bought those books' (Ting 2003: (4a))

We also saw that patterns involving object extraction behave differently from patterns involving subject extraction. Specifically, object extraction does not require the absence of *that* or *suo*. In other words, we have a subject-object asymmetry here.

(35) a. Who do you think (that) he kissed?

b. [Lisi *suo* mai] de naxie shu

Lisi SUO buy DE those book

'those books that Lisi bought' (Ting 2003: (3))

The question arises how to analyze the Chinese instantiation of the Comp-trace effect,

which analogously to the English *that*-trace effect could be labelled 'the *suo*-trace effect'. Calling it the 'trace-*suo*' effect would actually be more accurate in our approach, given the fact that the [rel] feature inherited from C spells out as *suo* on T and therefore follows the subject trace. In what follows, we will present an analysis of the *suo*-trace effect that is based on existing analyses of Comp-trace effects in languages like English and French. Specifically, we will use insights from Rizzi and Shlonsky's (2006, 2007) as well as Chomsky's (2011) approach towards Comp-trace effects.

Rizzi and Shlonsky's (2007) approach towards the (im)possibility of subject extraction is based on two major ideas: firstly, an element moved to a position dedicated to some scope-discourse interpretive property (a so-called criterial position) is frozen in place (so-called Criterial Freezing); secondly, classical EPP, the requirement that clauses have subjects, can be restated as a criterial requirement, the Subject criterion. The latter idea forces movement of a thematic subject to the criterial subject position (i.e. [Spec,SubjP]), the former idea accounts for the nonextractability of the subject. The subject cannot move on since it is "frozen" in [Spec,SubjP]. This is depicted more precisely for sentence (36a) in the (partial) structural representation in (36b), which in accordance with the cartographic approach to sentential structure exhibits a rich left peripheral structure (see Rizzi 1997, 2006).

(36)a. \*Who<sub>i</sub> do you think that t<sub>i</sub> kissed her

b. [<sub>ForceP</sub> *that* [<sub>FinP</sub> t<sub>that</sub> [<sub>SubjP</sub> *who* Subj ... [ t<sub>who</sub> ... ]]]]

In (36b), the subject has moved from its thematic position to [Spec,SubjP]. Given

Criterion Freezing, the subject *who* cannot move any further. Consequently, a long-distance *wh*-movement pattern like (36a) is ruled out; it violates Criterion Freezing. Notice by the way that Rizzi and Shlonsky analyze the subordinator *that* as an element that originates in *Fin*, where it expresses finiteness, and moves to *Force*, to check the declarative *Force* feature.

Thus, the English *that*-trace effect (as well as the French *que*-trace effect in (2a)) is reduced to Criterion Freezing in Rizzi and Shlonsky's analysis. This raises the question as to what happens in constructions in which subject extraction does take place from within an embedded clause (in other words, constructions in which the *Comp*-trace effect is circumvented). According to Rizzi and Shlonsky's analysis, this is only possible when the thematic subject is allowed to skip the criterial Subject position (i.e., [*Spec,SubjP*]). They argue that there are different strategies for skipping the Subject-position. These strategies may differ cross-linguistically, but it happens that more than one strategy can be employed by a single language.<sup>17</sup>

As we saw in section 1, French allows subject extraction from within an embedded clause, if the complementizer *que* changes into *qui* (see example (2a)). Rizzi and Shlonsky (2007) argue that *que-qui* alternation is a way of avoiding movement of the thematic subject to [*Spec,SubjP*]. More specifically, they propose that the [*Subj*] property of the functional head *Subj* can be satisfied by a quasi-expletive, nominal (i.e., [+*N*]) *Fin* (i.e., a *Fin* head with  $\phi$ -features) that takes *SubjP* as its complement. In other words, the Subject criterion is satisfied in a head-head (i.e. *Fin*<sub>[+*N*]-*Subj*) configuration. This nominal *Fin* surfaces as *-i* in PF. The</sub>

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<sup>17</sup> For the specific strategies available to different languages, see N. Richards (2001), Rizzi and Shlonsky (2007), and Boeckx (2008) for an overview.

*qui*-strategy is depicted in (37):<sup>18</sup>

(37) [<sub>ForceP</sub> NP<sub>i</sub> Force [<sub>FinP</sub> Fin<sub>[+N]</sub> [<sub>SubjP</sub> Subj ... [ *t<sub>i</sub>* ... ]]]]  
*que*            *i* (= *qui*)

Rizzi and Shlonsky argue that this "French" strategy is also used in English short-distance subject relativization (as in *The man that came (recognized me)*), with the only difference being that the [+N] Fin satisfying the [Subj] feature has no phonetic content. The relevant configuration is given in (38):<sup>19</sup>

(38) [<sub>ForceP</sub> NP<sub>i</sub> Force [<sub>FinP</sub> Fin<sub>[+N]</sub> [<sub>SubjP</sub> Subj ... [ *t<sub>i</sub>* ... ]]]]  
*that*             $\emptyset$  (= *that*)

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<sup>18</sup> According to Rizzi and Shlonsky (2007), (37) is also employed in French short-distance subject relativization as well as in subject *wh*-interrogatives in those dialects allowing the co-occurrence of a *wh*-element and an overt C in the Comp-area, such as Quebec French, as exemplified by (ia-b) below.

(i) a. l'homme [*\*que/qui* [*t* gagnera la course]]

the-person C will-win the race 'the man who will win the race'

b. Qui *\*que/qui* [*t* est venu]? [Quebec French]

who C be come

'Who has come?' (Rizzi and Shlonsky 2007: (30))

<sup>19</sup> Rizzi and Shlonsky (2007) further suggest that this is also the case for those English dialects where the *that*-trace sequence is grammatical in long-distance A'-constructions. For a different explanation for the lack of *that*-trace effect in English short-distance subject relativization, see Kayne (2010), where relative *that* is analyzed as a relative pronoun.

Let us now see how Rizzi and Shlonsky implement the "C-omission" strategy (also known as *that*-deletion) in their approach towards subject extraction. How can a violation of Criterial Freezing be avoided by not realizing the subordinator *that* in English (as in *Who do you think kissed her*)? Rizzi and Shlonsky (p. 149) argue that, as opposed to the French *qui*-strategy it has nothing to do with the nature of the relationship between the functional heads Force and Fin. Rather they propose that finite declarative clauses lacking an overt C in English do not involve a full-fledged CP, but a reduced/truncated clausal structure. More specifically, they propose that truncation applies to the layers ForceP (headed by *that*), FinP and SubjP. This leaves us with an AgrP-projection, i.e., the projection responsible for the case-agreement system. Since SubjP is not projected, no "criterial freezing" is involved, and the subject can move from the [Spec,AgrP] of the embedded clause cyclically to the matrix [Spec,CP] position (i.e., [Spec,ForceP]); see (39), where ForceP and VP represent phrasal layers of the matrix clause and AgrP corresponds to the embedded (truncated) clause.

(39) [<sub>ForceP</sub> NP<sub>i</sub> Force ... [<sub>VP</sub> V [<sub>AgrP</sub> *t<sub>i</sub>* Agr ...]]]

In line with Rizzi and Shlonsky's approach, Chomsky's (2011) analyzes the *that*-trace effect in (36a) in terms of criterial freezing, where freezing is induced by a [force] feature F (subsuming Q as a special case) on T that is inherited from C (*that*). If the inherited feature F on T agrees with both the phi-features and the Q-feature of the subject-wh-phrase in [Spec,TP], the subject-wh-phrase is subject to criterial

freezing. Since the inherited F-feature on T agrees with the Q-feature of the subject-wh-phrase, the wh-phrase need not, and therefore does not, raise any further.

Chomsky further proposes that subject extraction is possible when the clause has a "weakened" form, i.e. lacks a ForceP layer and corresponds perhaps to a FinP. In other words, the embedded clause from which the subject is extracted has a truncated form. Importantly, if ForceP is absent, T cannot inherit the feature F from C. As a result of the absence of F on T, the subject-wh-phrase can and must move to the Spec-position of the main clause CP (i.e. ForceP), where the Q-feature of the subject wh-phrase gets licensed.

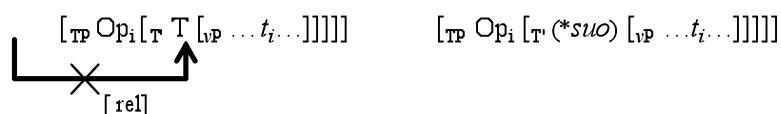
With Rizzi and Shlonsky's (2006, 2007) as well as Chomsky's (2011) analyses in mind, let us now try to give an explanation of the obligatory absence of *suo* in relative constructions involving short distance relativization. Along the lines of Rizzi and Shlonsky's as well as Chomsky's analysis of the English *that*-trace effect in long-distance A'-constructions, we propose that in Chinese subject relativization, the minimal clause containing the extracted subject is not a full-fledged ForceP, but a truncated form, either a FinP or a TP.<sup>20</sup> If this is the case, there is no Force head for T to inherit the [*urel*] feature from. As a result, no occurrence of *suo* is possible in T at PF. This is illustrated in (40), where for the sake of simplicity we use TP to represent the truncated/"weakened" form of the clausal complement.

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<sup>20</sup> This view on subject relativization might be supported by the fact that in languages like Buli, Danish and Gullar, where relative clauses are always CPs, subject relativization simply requires a different C from relativization of other constituents. See Hiraiwa (2003), Boeckx (2008), and Vikner (1991) for relevant discussion of the relative Cs in the three languages.

(40) a. Syntax

b. PF



Thus, according to this analysis, a simplex relative clause containing a relativized subject (see (34b)) consists of a truncated clausal expression (TP or FinP) that has the relative subject operator in the Spec-position of the TP or FinP and the trace/copy in the base position where the subject operator receives its thematic role.

It should be noted that this truncation approach towards long distance subject extraction receives broader support in the literature. First of all, it should be pointed out that the idea that a relative clause can have a less fully extended structure than ForceP/CP has been implied in Heim and Kratzer (1998:89). They assume that the establishment of a relativization relation simply requires that there be a relative pronoun at the top of the structure and a trace in the lower base-generated position. Also Branigan (2011) argues within his provocative syntax framework that subject relative clauses involve only a FinP. Moreover, the idea that a relative clause can be smaller than a CP has been pursued by Bianchi (1999) and Doherty (1997, 2000) in their analysis of relative clauses with neither overt relative C nor an overt operator, and by Marvin (2002) and Giurgea and Soare (2010) in their analysis of nonfinite relatives.

We close off this section with a brief discussion of example (7a), repeated here as (41):

(41) [Lisi *suo* renwei [hui mai naxie shu]] de na-ge ren

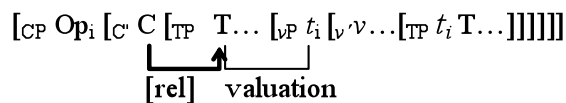


Lisi *SUO* think will buy those book DE that-CL person

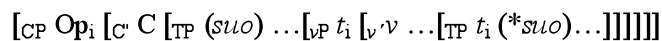
'the person that Lisi thinks will buy those books'

In this example, *suo* is present in the matrix clause of the complex relative clause. Importantly, and in line with the analysis sketched above, *suo* cannot be present in the (truncated) complement clause that contains the extraction site of the relativized subject. As opposed to the complement clause, the matrix clause of the complex relative clause does project a CP-layer (i.e., ForceP). The uninterpretable [rel] feature of the matrix-C (i.e. Force) is inherited by the matrix-T and spells out as *suo* in PF. In its search (i.e., c-command) domain, T<sub>[rel]</sub> finds the interpretable [rel] feature on the relative operator that occupies the highest Spec-position of the truncated clause (TP or FinP). The operator finally moves to the Spec-position of the matrix-clause. The derived relative clause structure is schematically represented in (42), where we use TP to represent the truncated clause:

(42) a. Syntax



b. PF



Summarizing, we have shown in this section that the obligatory absence of *suo* in Chinese relative clauses (i.e., in the minimal clause containing the relativized subject site) can be accounted for in terms of a truncation analysis. Since Force(P) is absent in this minimal clause, the T-head cannot receive a [rel] feature from Force and,

consequently, *suo* never surfaces in T. If the relativized subject operator originates within a truncated complement clause, the matrix T can inherit a [rel] feature from the matrix-Force and enter into an agreement relationship with the subject operator of the complement clause. In that case, the [rel] feature on the matrix T can spell out as *suo*.

## 5. Conclusion

The Comp-trace effect has been one of the most extensively explored linguistic phenomena in the generative literature since the 1970s. It is commonly manifested as a change on the C most closely c-commanding the extracted subject, either as C-omission or C-alternation. Since Perlmutter (1971), Rizzi (1982) and Jaeggli (1982), it has been commonly held that the effect cannot be diagnosed in *pro*-drop languages. This article, however, reveals that in Chinese, a *pro*-drop language with no overt declarative or relative C, there is a subject-object asymmetry paralleling the Comp-trace effect as extensively discussed in languages like English and French. This effect shows up on T instead of C, with the manifestation as the unavailability of the particle *suo*.

Based on Chomsky's recent idea of "feature inheritance", this article provides an analysis of the particle *suo* in Chinese relative clauses and explains why the Comp-trace effect in this language is manifested on T instead of C. Specifically, it is proposed that the particle is the phonetic realization of the inherited [urel] feature (,which is a kind of [force] feature,) on T under valuation.

To account for the fact that the Comp-trace effect in Chinese is manifested as the unavailability of *suo*, Rizzi and Shlonsky's (2006, 2007) as well as Chomsky's (2001) analysis of the English *that*-trace effect in long-distance A'-constructions is adopted.

Specifically, in Chinese subject relativization, the minimal CP containing the extraction site is not a full-fledged one (i.e., a ForceP). Rather, it is a less-fully projected one, perhaps a FinP or a TP. Given that *suo* is the overt realization of the inherited [*urel*] feature, which is a [force] feature in nature, the absence of *suo* is well expected.

If the analysis in this article is on the right track, it provides support to the idea of feature inheritance from the phase head (Chomsky 2007, 2008, 2011; M. Richards 2007) and adds empirical evidence to the proposal that force features can also be inherited (Miyagawa 2010; Lochbihler and Mathieu 2008). It also demonstrates that the Comp-trace effect, which has long been held as a modification of C in non-*pro*-drop languages, can actually occur in a *pro*-drop language with no overt declarative or relative C. The particular form of the Comp-trace effect in Chinese may have some implications on the direction of analyzing the effect in other languages.

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