Identifying Chinese Dependent Clauses in the Forms of Subjects

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Comments are welcome.

Abstract
How is the (in)-dependence of a clause identified in a language that has no tense or case morphology, such as Chinese? This paper investigates the control verb construction and the generic sentential subject construction, bringing to light the special forms and interpretations of the subjects of the dependent clauses in the constructions. The special properties are not found in the subjects of independent clauses. Therefore, contrasts between dependent and independent clauses are attestable in the language. The paper also proposes a derived predication analysis of the interpretation patterns of embedded empty subjects of the language.

Keywords: dependent clause, subject, complemented pronoun, derived predicate, the Generalized Control Rule, generic, Chinese

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1. Introduction

An embedded clause is subordinate to another clause. It can be introduced by a functional element, such as a complementizer. But certain types of clauses are intrinsically embedded, such as infinitives and gerunds in English, which are labelled as reduced clauses in Hooper & Thompson (1973: 484). We call them dependent clauses. Dependent clauses in tense-languages such as English can be identified by their defective tense and agreement marking on the predicates, and accordingly, their special syntax of the subjects. The special syntax of the subjects is manifested in various ways. For instance, the subject of the dependent clause under a control verb must be a PRO, bound by an argument of the control verb, as seen in (1a). In an ECM construction such as (1b), the case of the subject of the dependent clause is licensed by the verb that takes the clause as its internal argument. Moreover, in a dependent clause that functions as a subject, such as (1c), the case of the subject is licensed by the complementizer *for*.

(1) a. Jimmy tried {PRO/*he/*him} to play the game.
b. Kim expected {him/*he} to play the game.
c. For {him/*he} to play the game is difficult.

In a language that has no tense and agreement morphology on a verb, it is difficult to identify the finiteness contrast in predicates. Moreover, if the language has no case morphology on any type of nominals, it is also impossible to identify the finiteness contrast in the case patterns of subjects. Mandarin Chinese (Chinese, henceforth) has neither tense/agreement nor case morphology.

So far, various efforts have been made to identify the properties of an independent (or "finite") clause in Chinese (Huang 1982; Li 1990; Tang 1990; Gu 2007; Tsai 2008; Lin 2011; Grano 2013, among others). In these studies, it is the properties of predicates that are focused on. In this paper, I investigate the contrast between dependent and independent clauses in two new perspectives. First, instead of trying to identify properties of independent clauses, I probe properties of dependent clauses. Second, instead of trying to identify special properties of predicates, I probe special properties of subjects.

Different types of non-finite clauses (e.g., those in (1)) have different syntactic properties. In this paper, I discuss two types of dependent clauses in Chinese, showing that the special syntax of their subjects is correlated with different ways of integrating the dependent clause with a higher predication. First, in the complement clause under a control verb, the possible form of the subject is restricted to a minimal pronoun, as defined in Kratzer (2009), and such a subject shows the syntactic properties of PRO. Second, in a dependent clause that functions as a subject, a generic subject must be null (i.e., PRO_{arb}).

Many facts regarding the two types of dependent clauses, as far as I know, have not been noticed or explored before. My investigation leads to the conclusion that dependent clauses in Chinese can be identified by their special syntax of subjects, and therefore, a contrast between dependent and independent clauses can be attested in the language.

The two types of dependent clauses are discussed in Section 2 and Section 3, respectively. Section 4 concludes the paper.

2. Complement clauses with a controlled subject

2.1 Overt controllees and the Generalized Control Rule: A paradox?

According to Huang (1982), Tang (2000), and many others (see Hu et al. 2001 for references), verbs such as *shuo* 'say' and *juede* 'think' can take a "finite" clause as their complement, whereas control verbs such as *zhunbei* 'prepare' and *shefa* 'try' must take a "non-finite" clause as their complement. The subject of a "finite" clause can be overt, as seen in (2a); but "the subject embedded under a control verb must be null", i.e., in the form of a PRO (Huang 1989: 190), as seen in (2b) (≈ Huang's (14)).[1]

(2) a. A-Bao gen Lili juede wo ying-le na chang jingsai.
A-Bao and Lili think 1SG win-PRF that CL competition
'A-Bao and Lili think that I won in that competition.'

b. Lisi shefa [(*ta) lai].
Lisi try 3SG come
'Lisi tried to come.'

Hu et al. (2001), however, challenge this claim, giving examples such as (3a) and (3b) to show that the assumed non-finite clauses may have an overt subject.

(3) a. Wo zhunbei [mingtian xiawu tian hei yihou wo
1SG prepare tomorrow afternoon sky dark after 1SG
yi ge ren lai]
one CL man come
'I plan to come alone tomorrow afternoon after it gets dark.'

b. Ni zuihao shefa [jintian san-le hui yihou
2SG had.better try today end-PRF meeting after
ni yi ge ren lai].
2SG one CL person come
'You had better try to come by yourself today after the meeting is over.'

Based on examples like (3a) and (3b), Hu et al. (2001) claim that there is no finite-non-finite distinction in Chinese.[2] On the other hand, Huang (1989) claims that null subjects in all kinds of embedded clauses in Chinese behave like PROs in obligatory control constructions, since they seem to be bound by the nearest c-commanding nominal. This is called the Generalized Control Rule. Li (2014: 17) uses (4) to show that the empty subject of the adverbial clause is identified by *wo* 'I', which is the closest c-commanding nominal, rather than by any other nominal in the context, although there is no control verb in this example.

(4) Ta_1 shuo wo_2 yinwei [$\varnothing_{2/*1/*3}$ bu xihuan Zhangsan]
3SG say 1SG because _ not like Zhangsan

[1] Abbreviations: BA: causative marker; CL: classifier; DE: modification/nominalization marker; DPP: derived predicate predication; EXP: experiential aspect; PRF: perfect aspect; PRT: sentence-final particle; TOP: topic.

[2] Hu et al. (2001: 1130-1134) also give some examples in which the matrix verb is *quan* 'urge' or *bi* 'force' and the subject of the complement clause can be overt. However, in English, an object-control verb construction may have a counterpart in which the clausal argument is a finite clause. The clausal complement of the same verb *persuade* is infinitive in (ia), but finite in (ib). Thus, their examples do not necessarily show properties of dependent clauses under a control verb. Therefore, I will focus on unambiguous control verbs such as *zhunbei* 'prepare' and *shefa* 'try'.

(i) a. Mary persuaded [John] [PRO to feed the baby].
b. Mary persuaded [John] [that he should feed the baby].

you diar bu-hao-yisi.
have slight embarrassment
'He said I was somewhat embarrassed because e did not like Zhangsan.'

From Hu et al.'s (2001) perspective, it seems that the forms of embedded subjects of dependent clauses in control constructions are the same as those of independent clauses (as in (3)), and thus all Chinese sentences look like finite ones. On the other hand, from the perspective of the Generalized Control Rule, the interpretation pattern of embedded null subjects of independent clauses seems to be the same as that of dependent clauses of control constructions (as in (4)), and thus all Chinese sentences look like nonfinite ones. Is this a paradox? I will address the issue of overt subjects embedded under control verbs first, in 2.2 through 2.4, and then discuss the effect of the Generalized Control Rule in 2.5. We will find out an answer after getting a better understanding of the two issues.

2.2 The forms and readings of overt controllees

The subject of the complement clause of a control verb is a controllee. In this subsection, I report that the forms and readings of overt controllees, as in (3), are restricted in Chinese.

2.2.1 The multiple uses of a *cpro*

According to Postal (1966), a personal pronoun is a determiner when it takes an NP complement, e.g., *we honest policemen*. Following Szabolsci (2009a, b), I call such a complex complemented pronoun (*cpro* henceforth). A *cpro* may also contain a numeral, e.g., *we three* (see Szabolsci 2009a: 16). In Chinese, if a *cpro* has a numeral, it must be followed by a classifier, as in (5b).

(5) a. women yuyanxuejia
1PL linguist
'we linguists'

b. women san ge (ren)
1PL three CL person
'we three'

Baltin (2012: 10) notes that no singular pronoun occurs in a *cpro* in English (**I linguist*). This is also true for the numeral-less *cpros* in Chinese (**wo yuyanxuejia*); but if *yi* 'one' occurs, the pronoun in a *cpro* is singular (e.g., *wo yi ge ren* 'I one CL person').

*Cpro*s do not induce a Principle C effect (Szabolsci 2009a: 15), as seen in (6). Examples like (7) show that *cpros* do not induce a Principle B effect, either.

(6) a. We know that only we linguists can do this.
b. We know that only we three can do this.
(7) We like us linguists.

As in English, a *cpro* in Chinese induces neither Principle C nor Principle B effects. In other words, it may be bound by a higher DP in either a higher clause or the local clause. In (8), as in (6), the *cpro* may be bound by the subject of the higher clause; and in (9), as in (7), the *cpro* may be bound by the subject of the same clause.

(8) a. [A-Bao gen A-Lin]$_i$ zhidao [tamen liang ge ren]$_{i/j}$ neng tiaowu.
A-Bao and A-Lin know 3PL two CL person can dance
'A-Bao and A-Lin know that they two can dance.' (bound/unbound)

b. Women zhidao women yuyanxuejia neng gaibian shijie.
1PL know 1PL linguist can change world
'We know that we linguists can change the world.' (bound)

(9) a. A-Bao gen A-Lin yinman-le tamen liang ge ren.
A-Bao and A-Lin conceal-PRF 3PL two CL person
'A-Bao and A-Lin concealed themselves. (bound)
'A-Bao and A-Lin concealed them two persons.' (unbound)

b. A-Bao zhi xuan-le ta yi ge ren.
A-Bao only choose-PRF 3SG one CL person
'A-Bao chose himself only. (bound)
'A-Bao chose him one person only.' (unbound)

c. Women jue bu chaoxiao women yuyanxuejia.
1PL absolutely not ridicule 1PL linguist
'We absolutely do not ridicule us linguists.' (bound)

In (8a) and (9a,b), the *cpro* also allows an unbound reading, like a pronoun and unlike an anaphor. If there is no ϕ-feature agreement between a *cpro* and another higher nominal, the *cpro* has an unbound reading only. For instance, in (10), the *cpro ta yi ge ren* 'he one person' is singular, but the only c-commanding nominal *A-Bao gen A-Lin* 'A-Bao and A-Lin' is plural. Then, the *cpro* does not have a bound reading.

(10) A-Bao gen A-Lin yinman-le ta yi ge ren.
A-Bao and A-Lin conceal-PRF 3SG one CL person
'A-Bao and A-Lin concealed him one person.' (unbound)

A *cpro* is thus different from both an isolated pronoun and an isolated numeral-*ge*-*ren* string. For an isolated pronoun, it may not be bound by another higher DP in the same clause, as shown in (11) (cf. (9)). This is expected from Principle B.

(11) [A-Bao gen A-Lin]$_i$ yinman-le tamen$_{k/*i}$.
A-Bao and A-Lin conceal-PRF 3PL
'A-Bao and A-Lin concealed them.' (unbound)

For an isolated numeral-*ge*-*ren* string, it may not be co-referential with a higher DP, either in the same clause, as seen in (12a) (cf. (9)), or in a higher clause, as seen in (12b) (cf. (8)). Such a string is an R-expression, which is subject to Principle C.

(12) a. [A-Xi gen A-Lin]$_i$ yinman-le [liang ge ren]$_{k/*i}$.
A-Xi and A-Lin conceal-PRF two CL person
'A-Xi and A-Lin concealed two persons.'

b. Tamen$_i$ renwei [A-Xi he Lili]$_k$ yinman-le [liang ge ren]$_{h/*i/*k}$.
3PL think A-Xi and Lili conceal-PRF two CL person
'They think that A-Xi and Lili concealed two persons.'

A *cpro* thus has the uses of both a pronoun and an anaphor. In its anaphor use, a *cpro* may be replaced with the reflexive *ziji* 'self'. Both *ziji* and a *cpro* share a property: they may be used as either an anaphor or an adverbial, if they precede a verb. In (13), *A-Lin* is the subject and the *cpro ta yi ge ren* or *ziji* is an adverbial.[3]

[3] When a *cpro* and *ziji* function as adverbials, they are not always exchangeable (I thank xxx for (i)):
(i) Lian Lili {ziji/*ta yi ge ren} dou qu duchang.
even Lili self/3SG one CL person also go casino
'Even Lili herself goes to a casino.'

(13) A-Lin {ta yi ge ren/ziji} qu-le duchang.
A-Lin 3SG one CL person/self go-PRF casino
'A-Lin went to a casino himself.'

One way to distinguish the argument use and the adverbial use of a *cpro* or *ziji* is the following: An argument may occur with the focus markers *lian…dou* 'even…also', as seen in (14a), but an adverbial use of a *cpro* or *ziji* may not, as seen in (14b).

(14) a. Lian Lili dou qu-le duchang.
even Lili also go-PRF casino
'Even Lili went to a casino.'
b. *Lili lian {ta yi ge ren/ziji} dou qu-le duchang.
Lili even 3SG one CL person/self also go-PRF casino

In this subsection, I have identified a new pronominal form in Chinese, a *cpro*, which is composed of a pronoun and a nominal. As in English and other languages, such a pronominal form is not subject to either Principle C or Principle B. Moreover, the status of a *cpro* in Chinese is ambiguous, depending on the syntactic context: a pronoun, an anaphor, and an adverbial if it precedes a verb.

2.2.2 An overt controllee: a *cpro* in its variable use

In a control verb construction, a PRO must be bound by an argument of the control verb, as in (15a) (Chomsky 1980, 1981; Manzini 1983; Bouchard 1984; Koster 1984; Borer 1989; Sag & Pollard 1991; Wyngaerd 1994; Landau 2000). It is thus different from either the subject of other types of non-finite clauses, such as the *for*-infinitive in (15b), or the subject of a finite clause, such as the embedded clause in (15c).

(15) a. Bill_i agreed $\text{PRO}_{i/*j}$ to join the club. b. Bill agreed for Mary to join the club.
c. They agreed that I must join the club.

In Hu et al.'s (2001) examples, the overt controllees are *cpro*s. In (16), the *cpro* may not be replaced with *Lisi* (Szabolcsi 2009a (34) shows a similar contrast in Hungarian):

(16) Wo zhunbei [mingtian xiawu tian hei yihou {wo yi
1SG prepare tomorrow afternoon sky dark after 1SG one
ge ren/*Lisi} lai]. (= (3a))
CL man/Lisi come
'I plan to come alone tomorrow afternoon after it gets dark.'

As discussed in Landau (2015b: 28), PRO may not be replaced with a lexical subject, since a control verb selects a property-denoting clause, and the operator movement of PRO forms such a clause (see below). In contrast, a lexical subject forms a proposition with its predicate, and the proposition may not be selected by a control verb.

Similar to a PRO, an overt controllee in Chinese must be bound by an argument of the control verb (Grano 2015: 145-146). First, a *cpro* subject in the complement clause of a control verb exhibits ϕ-feature agreement with an argument of the control verb. In the non-control construction in (17a), *Lili gen A-Lin* is a plural nominal, and the subject of the complement clause is a singular *cpro*. The sentence is acceptable. In in the control construction (17b), however, the subject of the control verb is the same plural nominal and the subject of complement clause is the same singular *cpro*; since no binding between them is

possible, the sentence is not acceptable. As expected, the person features between the subject of the control verb and the *cpro* subject in the complement clause must also match each other, as seen in (17c).

(17) a. Lili gen A-Lin tingshuo ta yi ge ren chi-fan.
Lili and A-Lin hear 3SG one CL person eat-meal
'Lili and A-Lin heard that he one person ate the meal.'

b. *Lili gen A-Lin shefa jintian ta yi ge ren chi-fan.
Lili and A-Lin try today 3SG one CL person eat-meal

c. Lili shefa jintian {ta/*wo} yi ge ren chi-fan.
Lili try today 3SG/1SG one CL person eat-meal
'Lili tried to eat alone today.'

Second, a *cpro* subject in the complement clause of a control verb must have a bound reading, although a *cpro* subject may have an unbound reading in other contexts. The *cpro ta yi ge ren* in the complement clause of *shuo* 'say' in (18a) allows either a bound reading or unbound reading (also see (8a)). In contrast, the same *cpro* in the clause selected by the control verb *xiang* 'want' in (18b) has a bound reading only.

(18) a. A-Bao$_i$ shuo jintian ta yi ge ren$_{i/k}$ chi-fan.
A-Bao say today 3SG one CL person eat-meal
'A-Bao$_i$ said he$_{i/k}$ would eat alone today.'

b. A-Bao$_i$ xiang jintian ta yi ge ren$_{i/*k}$ chi-fan.
A-Bao want today 3SG one CL person eat-meal
'A-Bao wants to eat alone today.'

Third, bound by a controller, PRO excludes a strict reading in VP-ellipsis, as seen in (19a) (Hornstein 1999: 73; Landau 2015a: 3; Baltin et al. 2015: 19); similarly, a *cpro* subject in the complement of a control verb also excludes a strict reading in VP-ellipsis, seen in (19b). In contrast, in the non-control example (20), a strict reading of the VP ellipsis is available.

(19) a. Mary$_i$ hoped [PRO$_i$ to get a new car] and Claire did too.
(≠ Claire hoped for Mary to get a new car)

b. A-Gui gen laopo dasuan [jianglai tamen liang ge ren
A-Gui and wife plan future 3PL two CL person
mai yi liang che, A-Bao gen Mimi ye shi.
buy one CL car A-Bao and Mimi also be
'A-Gui and his wife planned to buy a car in future, and A-Bao and Mimi did too.' (≠ 'A-Bao and Mimi hoped for A-Gui and his wife to buy a car.')

(20) A-Gui gen laopo tingshuo [tamen liang ge ren]$_{i+k}$ ying-le yi
A-Gui and wife hear 3PL two CL person win-PRF one
liang xin che, A-Bao gen Mimi ye shi.
CL new car A-Bao and Mimi also be
Possible: 'A-Gui and his wife heard that two persons$_{i+k}$ won a new car, and A-Bao and Mimi heard that the same two persons$_{i+k}$ won a new car.'

Fourth, a logophoric pronoun may be bound by the discourse role SOURCE (Sells 1987), whereas a PRO may not (Landau 2015b: 37-39). Likewise, although *ziji* 'self' in a logophoric use is bound by the SOURCE *Lisi* in (21a) (Huang & Liu 2000: (35)), the *cpro* subject in the complement clause of *dasuan* in (21b) may not be bound in this way.

(21) a. Lisi$_i$ shuo [Zhangsan chang piping ziji$_i$].
Lisi say Zhangsan often criticize self
'Lisi$_i$ says that Zhangsan often criticizes him$_i$.'

b. *Lisi$_i$ shuo Lili dasuan [ta yi ge ren]$_i$ qu Riben.
Lisi say Lili plan 3SG one CL person go Japan

These facts indicate that a *cpro* subject in the complement clause of a control verb is an overt form of PRO, a controllee, which must be bound by an argument of the control verb.

Why must a controllee be bound and why must it be bound by an argument of the control verb, rather than any other element in the context?

A controllee is a minimal pronoun (Kratzer 2009; Landau 2015b: 21-23). A minimal pronoun is composed of D and unvalued ϕ-features (gender, number, and person), i.e., [D,ϕ:]. In addition to PRO, other minimal pronouns include reflexives, bound lexical pronouns, resumptive pronouns, *pro* elements identified by local agreement, and relative pronouns. The choice among these options is determined by a combination of the syntactic context and the lexical inventory of the language. We can see that when a *cpro* functions as a controllee, it is a minimal pronoun, like a PRO. The unvalued ϕ-features of a minimal pronoun must be valued by another nominal in the syntactic context (Baltin et al. 2015, among others).

In a control verb construction, why must the binder of a PRO be an argument of the control verb? Consider the reading dependency of a relative clause construction. It is generally assumed that a relative pronoun is an operator, which moves to create a predicate from the relative clause (λ-abstraction); and the created clausal predicate takes the modified noun as its subject. The modified noun then functions as, economically, both the subject of the newly created predicate and the binder of the minimal pronoun (i.e., the operator), as in (22a). Similarly, one hypothesis on control verb constructions is that a PRO is an operator, similar to a relative pronoun, and the controller is similar to the noun modified by a relative clause. Specifically, a PRO undergoes an operator movement, creating a predicate from the hosting infinitive clause. Consequently, the controller functions as both the subject of the newly created predicate and the binder of the PRO, as in (22b). The predication relation between a controller and the infinitive clause is clearly discussed in Williams (1980: 209-212) (also see Chomsky 1980; Hendrick 1988; Clark 1990; Kratzer 2009: 198; Landau 2015a,b). Thus, in both cases, a minimal pronoun is bound by the higher DP that functions as the subject of the newly created clausal predicate, rather than any other element in the context.[4]

(22) a. Mary saw the [$_{NP}$ boy$_i$ [who$_{i/*k}$ [$_{IP}$ <who$_i$> danced last night]]].
b. John$_i$ managed [PRO$_{i/*k}$ [$_{IP}$ <PRO$_i$> to stay healthy]].

Note that, as stated in Landau (2005b), as predicate-forming operators, relative pronouns can be either overt or null, depending on the language and on the construction in languages that have overt forms. Thus, the fact that controllees are null (as PRO) in English, but can be overt in other languages, is not surprising.

Also, an operator moves to the edge of the clause. The fact that the *cpro* follows the adverbial *jianglai* 'future' in (19b) suggests that its movement, like that of a relative pronoun in some languages such as Hindi (Mahajan 2000), can be covert.

Landau (2011: 780) calls the predicate that is formed by an operator movement of a minimal pronoun "derived predicate". I thus call the predication that has such a predicate

[4] In the movement theory of control (Hornstein 1999), since the controller and the controllee form a movement chain, there is no issue of identifying the binder of the controllee. For arguments against the movement theory, see Landau (2003), Bobaljik & Landau (2009), Ndayiragije (2012), and the references therein.

Derived Predicate Predication (henceforth, DPP). In addition to relative clause and control verb constructions, DPP has also been argued to occur in constructions such as those in (23) (e.g., Chomsky 1977; Contreras 1993; Hick 2009; Landau 2011; Heycock 2013: 331-332).

(23) a. $John_i$ is easy [Op_i to please <Op_i>]
b. Mt. $Rainier_i$ is pretty [Op_i to look at <Op_i>]
c. $Mary_i$ is too important [Op_i to ignore <Op_i>]
d. We bought a $book_i$ [Op_i for John to read <Op_i>]
e. They brought a dog_i [Op_i to play with <Op_i>]

In the DPP of a control verb construction, as pointed out by Williams (1994: 95), "when the subject is the controller, it is not a structural sister of the infinitive, which is contained in the VP." Thus, although the subject c-commands the predicate, the two do not have to form a constituent. In (22b), *John* and [PRO [$_{IP}$ <PRO> *to stay healthy*]] do not form a constituent, since the intervening verb *managed* does not belong to this predication. Similarly, in (23a), *John* and [Op_i *to please* <Op_i>] do not form a constituent. There is no element to function as a relator (the head of RP, in the sense of den Dikken 2006) to link the subject and predicate exclusively as its Spec and complement, respectively, for the DPP in such constructions (*pace* Landau 2015b: 25, fn. 10). We claim that if DPP is structurally parasitic on another predication, it does not have to be represented by an independent RP.[5]

Syntactically, the DPP in a control verb construction is different from those in (23) in two aspects: the operator comes from a subject position only (see 2.3); and the predicate is parasitic on, or shared with, the clausal internal argument of the verb of the matrix predication:

(24) Matrix predication: external argument — internal argument

John *managed* [PRO [$_{IP}$ <PRO> *to stay healthy*]]

DPP: subject — predicate

Assume that θ-marking is different from predication (see Landau 2011 for recent arguments for this theory). In (24), *John* gets a unique θ-role from the matrix predicate. It is interpreted as a subject in the DPP relation, without getting an additional θ-role.

In this perspective, since a controllee is a minimal pronoun, it needs a binder in the syntactic context; and since the complement clause of a control verb functions as a DPP predicate, it needs a subject. The controller, which is an argument of the control verb, satisfies both requirements. It is the DPP that restricts the controllee to be bound in this particular way.

2.2.3 The forms of controllees: null, *cpro* and the reflexive *ziji*

We have shown that a controllee is not necessarily null. Chinese is not the only language that allows overt controllees. Other languages, such as Korean (Yang 1985; Madigan 2008; Lee 2009), Romance (Burzio 1986; Cardinaletti 1999; Mensching 2000; Belletti 2005; Barbosa 2009; Livitz 2011), Zapotec (Polinsky & Potsdam 2006), Hungarian (Szabolcsi 2009a,b), and

[5] Chomsky (1981:312) assumes that in a *tough* construction, the matrix adjective (e.g., *tough*) and its following infinitive undergoes 'reanalysis'. Fleisher (2015: 91 fn. 27) correctly points out that this is "a rather ad hoc process whose chief outcome is to allow the reanalyzed predicate to assign a θ-role to the matrix subject." See Landau (2011) and Heycock (2013: 331-332) for discussions on how a derived predicate licenses the matrix subject in a *tough* construction and other constructions. Moreover, Williams (1983) and Napoli (1989) claim that predication does not have to be represented by a constituent. We however assume that this freedom is for a DPP only, which is parasitic on another predication. Non-DPP must be represented by an RP.

Tamil (Sundaresan 2010), all allow overt controllees. In Hungarian and Italian, for instance, an overt argument in the form of a quantified pronoun or *cpro* may occur in the position of a PRO. The following Hungarian examples are from Szabolsci (2009a: (21), (49)).

(25) a. Szeretnék cask én lenni magas.
would.like-1SG only 1SG be-INF tall
'I want it to be the case that I am the only one who is tall'

b. Szeretné-nk cask mi nyelvészek kap-ni magasabb fizetés-t.
would.like-1PL only 1PL linguists get-INF higher salary-ACC
'We would like it to be the case that only we linguists get a higher salary.'

c. Szeretné-nk cask mi hám-an kap-ni magasabb fizetés-t.
would.like-1PL only 1PL three-SXF get-INF higher salary-ACC
'We would like it to be the case that only we three get a higher salary.'

Although an overt controllee is in the form of a *cpro* or a quantified pronoun in languages such as Hungarian, it can also be in the form of a reflexive in some other languages such as Japanese and Korean (Landau 2015b: 80; Madigan 2008: 254). An overt controllee can also be the reflexive *ziji* 'self' in Chinese (Madigan 2008: 256).[6]

Recall that both a *cpro* and the reflexive *ziji* 'self' in Chinese may have an adverbial use (2.2.1). However, when they occur between a control verb and another verb, they are not adverbials. This is because, unlike the adverbial use in (13) (cf. (14b)), the *cpro*s and *ziji* in the position may occur with the focus markers *lian…dou*, as shown in (26).[7]

(26) Baba he Mama dasuan wanshang lian {tamen liang ge ren/ziji}
Dad and Mom plan evening even 3PL two CL person/self
dou qu duchang.
also go casino
'Dad and Mom made the plan that even they two go to a casino this evening.'

Hu et al. (2001: 1133) state that "There is one word, the reflexive *ziji*, that can always replace the PRO." It is true that in many cases, either a *cpro* or *ziji* can be a controllee, as seen in (26). However, we have observed that a controllee can always be null, and the two overt controllees, i.e., *ziji* and *cpro*, are not always exchangeable. For instance, if the embedded predicate is collective, a *cpro*, rather than *ziji*, can be an overt controllee. This is seen in (27), the split control construction (e.g., *John persuaded Mary to leave together*) in (28), and the partial control construction (e.g., *We thought that the chair preferred to gather at 6*) in (29).

[6] Various uses of *ziji* in object and subject positions in non-control constructions have been studied (Huang 1982: 331; Huang & Liu 2000 and the references therein), but the controllee use of *ziji* is still an understudied topic.

[7] The expression *ziji yi ge ren* (ia) (xxx, p.c.) behaves like an adverbial, since it rejects the focus marker *lian dou* 'even…also'. However, the form [pronoun + *ziji*], as in (ib), looks like a variant of the *ziji* controllee. The general properties of the *ziji* controllee discussed in the text can cover this form.

(i) a. A-Lin dasuan jintian (*lian) ziji yi ge ren (*dou) qu duchang.
A-Lin plan today even self one CL person also go casino

b. A-Lin dasuan jintian (lian) ta ziji (dou) qu duchang.
A-Lin plan today even 3SG self also go casino
Both: 'A-Lin planned to go to a casino alone today.'

(27) A-Lin gen Lili dasuan yihou {∅/tamen liang ge ren/*ziji] jiehun
A-Lin and Lili plan later _/3PL two CL person/self marry
'A-Lin and Lili planned to marry later.'

(28) Baba quan Mama jin-wan {∅/tamen liang ge ren/*ziji}
Dad urge Mom this-evening _/3PL two CL person/self
yiqi kan dianying.
together see movie
'Dad urged Mom to see a movie together this evening.'

(29) Wo dasuan tian hei yihou {∅/women ji ge ren/*ziji} zai
1SG plan sky dark after _/1PL several CL person/self at
huoche-zhan jihe.
train-station gather
'I plan that we several people gather at the train station after it gets dark.'

On the other hand, if the controller is not an e-type nominal, the controllee can be *ziji*, but not a *cpro*:

(30) a. {Henduo/Henshao} ren dasuan xianzai {∅/*tamen ji ge
many/few person plan now _/3PL several CL
ren/ziji} mai fangzi.
person/self buy house
'{Many/Few} people plan to buy a house now.'

b. {Renhe/Meige} ren dou dasuan xianzai {∅/*ta yi ge
any/each person all plan now _/3SG one CL
ren/ziji} mai fangzi.
ren/ziji} mai fangzi.
person/self buy house
'Everyone wants to buy a house now.'

In the languages that have overt controllees, a null controllee is always possible, as the default form. In Chinese, our above discussion further shows that the two possible overt forms of controllee, a *cpro* and *ziji*, are subject to different occurrence restrictions (also see footnote 3). Since an explanation of the differences is not crucial for the purpose of this paper, we set aside it for future investigation. In all of the examples in 2.3 and 2.4 below, if the *cpro* is replaced with *ziji*, the acceptability and reading patterns remain the same.

2.3 The subject status of controllees

A PRO comes from a subject position (cf. the ungrammatical **Bill tries Mary to praise*). In the Government and Binding theory, the subject status of PRO is established by its ungoverned position. In the minimalist approach, the notion of government disappears. The subject status of controllees has to be explained in a different way. Before we introduce an explanation, we want to show that an overt controllee also must be in the subject position.

In Chinese, a silent form or a *cpro* may generally occur in various argument positions, including an object position. In the non-control example (31a), the direct object in the embedded clause is either null or the *cpro ta yi ge ren*. Either one may be co-referential with the subject of the matrix clause. (31b) shows that a direct object in the control construction may not be a controllee.

(31) a. A-Lin$_i$ zhidao [Dali kuajiang-le {∅$_i$/ta yi ge ren$_i$}].
A-Lin know Dali praise-PRF _/3SG one CL person
Possible: 'A-Lin$_i$ knows that Dali praised him one person$_i$.'

b. *A-Lin$_i$ dasuan [Dali kuajiang {∅$_i$/ta yi ge ren$_i$}].
A-Lin plan Dali praise _/3SG one CL person

In the non-control construction in (32a), the indirect object in the embedded clause is either null or the *cpro ta yi ge ren*. Either one may be co-referential with the subject of the matrix clause. However, (32b) shows that the indirect objects in the control construction may not be a controllee.

(32) a. A-Lin$_i$ zhidao [A-De gei-le {∅$_i$/ta yi ge ren$_i$} qian].
A-Lin know A-De give-PRF _/3SG one CL person money
Possible: 'A-Lin$_i$ knows that A-De gave him one person$_i$ money.'

b. *A-Lin$_i$ dasuan [A-De gei {∅$_i$/ta yi ge ren$_i$} qian].
A-Lin plan A-De give _/3SG one CL person money

The examples in (33) further show that even when the controller is not a subject, the controllee must be a subject.

(33) a. A-Lin bipo A-Bao$_i$ {∅$_i$/ta yi ge ren$_i$} wei haizi.
A-Lin force A-Bao _/3SG one CL person feed child
'A-Lin forced A-Bao to feed the child.'

b. *A-Lin bipo A-Bao$_i$ [laoshi kuajiang {∅$_i$/ta yi ge ren$_i$}].
A-Lin force A-Bao teacher praise _/3SG one CL person

A controllee is thus different from a logophoric pronoun, which, as seen in (21a), may occur in an object position.

The unique subject status of controllees is also seen in another fact. Although topicalization may not occur in English infinitives of any type, not restricted to controlled infinitives (Hooper & Thompson 1973; Bianchi 1999: 206f), it may occur in the complement clause of a control verb in Chinese, as seen in (34) (contra Ernst & Wang (1995: 245).[8] Importantly, a topic *cpro* may not be a controllee, as shown by (35).

(34) a. A-Bao dasuan [zhe ge kaosheng ∅ bu luqu].
A-Bao plan this CL applicant _ not enroll
'A-Bao planned not to enroll this applicant.'

[8] A relative clause may also host a topic. Pan (2015) shows that both gappy relativization and gappy argument-fronting exhibit island and crossover effects, patterning with a movement chain in Chinese.

(i) a. He's a man to whom liberty we could never grant. (Baltin 1982: 17; Bianchi 1999: 179)

b. na ge fangzi yijing mai-le de xuesheng
that CL house already buy-PRF DE student
'the student who has already bought a house'

c. na ge shucai zhi chi qincai de xiaohai
that CL vegetable only eat celery DE kid
'the kid who eats only celery among various vegetables'

b. A-Bao he Dali dasuan [naxie ren tamen liang ge bu jian]
A-Bao and Dali plan those person 3PL two CL not see
'A-Bao and Dali planned not to see those people.'[9]

(35) *[A-Bao gen Dali]$_i$ dasuan tamen liang ge ren$_i$ Lili bu jian.
A-Bao and Dali plan 3PL two CL person Lili not see
Intended: 'A-Bao and Dali want it to be the case that Lili does not see them.'

Recall that a controllee moves to create a clausal predicate. According to Landau (2015a,b), the movement of PRO is syntactically driven by an unvalued D feature in Fin. He claims (2015a: 15) that the Fin of the PRO-hosting infinitive clause is "endowed with a selectional feature [*u*D] that attracts PRO to its specifier", and according to the Minimal Link Condition, Fin attracts the closest D-bearing element, namely, the subject. "Thus, the subjecthood of PRO is derived with no resource to unmotivated stipulations concerning case or government" (Landau 2015b: 27).

However, the acceptability contrast between (34) and (35) poses two questions: why in (34), the topic nominal, which surfaces as the highest nominal in the clause, does not block the covert movement of the *cpro* to FinP, and why in (35), the topic *cpro*, which surfaces as the highest nominal in the clause, is not attracted to FinP.

Both questions are related to topicalization. In Rizzi (1997: 288), a topic is licensed by TopicP. If the operator movement of a controllee is attracted by [*u*D] of a functional head in the C-domain, this head should be the highest one in the C-domain, scoping the whole clause. Considering Rizzi's hierarchy Force >> Topic >> Fin > I, I assume that the functional head is Force, which is higher than TopicP. The two questions can be answered by a rule that bans movement within the same C-domain (e.g., Grohmann 2002; 2003). If the LF position of a topic is at TopicP, it is in the same C-domain with ForceP. In (34), the topic does not interact with the covert movement of the *cpro* from IP to ForceP, because it is not able to move to ForceP itself. The topic is invisible to the attractor. Note that in (36) (Landau 2015b: 27), the movement of *where* from the infinitive to the matrix is not blocked by the operator movement in the *tough*-construction. Thus the absence of an interaction between the topicalization and the operator movement in (34) is not surprising.

(36) Where are red pebbles most difficult to find?

In (35), after the *cpro* object lands at Spec of TopicP via topicalization, it is not able to move to ForceP anymore, since the launching site (TopicP) and the landing site (ForceP) are in the same C-domain. If the subject *Lili* is attracted to ForceP instead, since it is not a minimal pronoun, it fails to function as an operator. As a consequence, the clause may not be selected by a control verb (Landau 2015b: 28).[10] [11]

Thus, only the most prominent argument of the complement clause of a control verb, i.e., the subject, can be a controllee. Wiltschko (2014: 160-164) states that a fundamental property of the dependent clause of a control verb construction is its pronominal nature. Such a clause expresses a pronominal situation, licensed by a higher predicate. The pronominal

[9] (i) is acceptable, although the controllee is a pronoun, rather than a *cpro*. We leave this for future research.

(i) Naxie haizi dasuan shuiguo tamen zhi chi caomei.
those child plan fruit 3PL only eat strawberry
'Those children made the plan that for fruits, they would eat strawberries only.'

[10] Kroeger (1993) claims that controllees can be topics in Tagalog. But Landau (2015b: 79) points out that there are alternative analyses of the relevant data, and thus the strict subjecthood of controllees is maintained.

[11] The fact that a subject may, but a topic may not, be a controllee shows that subject has its unique syntactic status, distinguished from topic, in the language (contra Li & Thompson 1981; see Paul & Whitman 2015 for a recent doubt on the so-called topic prominent language status of Chinese).

situation can be decomposed into the two basic parts of the clause: subject and predicate. The dependency of an embedded clause is never defined by, say, an object. For the dependent clause under a control verb, in addition to various defective properties of the predicate cross-linguistically (e.g., the infinitive form of the verb), one defective property of the subject is that it is consistently a variable, bound by an argument of the control verb.

2.4 Overt controllees and the structural richness of the C-domain

Not all control verbs allow overt controllees. In Hungarian (Szabolsci 2009) and Korean (Madigan 2008), overt controllees occur in the logophoric control. This is also true in Chinese.

Logophoric control occurs in an attitude environment, different from nonlogophoric control. Predicates of the former type include factive ones, as in (37a), and desiderative ones, as in (37b). Predicates of the latter type include modal, aspectual, and implicative ones, as in (38a), (38b), and (38c), respectively (Landau 2015a,b).

(37) a. Mary was shocked to find the solution. b. Mary intended to find the solution.
(38) a. John is able [PRO to swim faster than you run].
b. Mary started [PRO to draw a picture]. c. Bill managed [PRO to finish on time].

In a non-attitude context, the truth condition of the whole control construction is independent of whether the person referred to by the controller is "aware" that the event pertains to her/himself. For instance, (38b) is true if Mary started to draw a picture, regardless of whether Mary was aware that it was her that was considered in the picture-drawing context. Similarly, (39) is true if Lili did start to read a newspaper, regardless of whether she was aware that it was her that the reading event is about.

(39) Lili kaishi kan baozhi.
Lili start read newspaper
'Lili started to read a newspaper.'

In an attitude context, however, the person referred to by the controller must be aware that the event pertains to her/himself. Thus, this type of control has an obligatory *de se* reading. To see this reading, consider an adapted scenario from Landau (2015a: 1).

Imagine that Kelly is planning a birthday party. She is not sure how much alcohol she wants in the party because she is worried that some of the guests might get drunk and become rude and unpleasant. Kelly's friends, Sue and Jacky, calm her down. They tell Kelly not to worry: "Nobody will get that drunk, and anyway, we know all the people you invited. They will behave themselves at the party, we promise". Sue and Jacky do not, in fact, plan to attend the party, as they have travel plans for the day before. But Kelly was not aware of these plans, so she did, in fact, send them an email invitation to the party (which they have not opened yet). In this scenario, Sue and Jacky made a promise about a group of people, which, unknown to themselves, includes themselves. Consider the following report of this situation.

(40) $[\text{Sue and Jacky}]_i$ promised $[\text{PRO}_i$ to behave themselves at the party].

(40) is clearly false in the given scenario. Sue and Jacky made no first person commitment in promising what they did to Kelly, since they were not aware of the fact that they are among the invitees. This is described as an obligatory *de se* construal of the PRO subject of the infinitival complement. The exclusive *de se* reading of PRO in attitude contexts is recognized as a distinctive property of PRO (Morgan 1970; Chierchia 1990: Percus and Sauerland 2003, among others; see Landau 2015a for a review).

In the same scenario, (41) is also false, regardless of whether the controllee is null or the *cpro tamen liang ge ren* 'they two persons' (we replace the names *Sue* and *Jacky* with the Chinese names *Lili* and *Mimi*, respectively).

(41) Lili he Mimi daying zai wanhui-shang {∅/tamen liang ge
Lili and Mimi promise at party-on _/3PL two CL
ren} bu hunao.
person not be.mischievous
'Lili and Mimi made the promise that they would not be mischievous at the party.'

Landau (2015a,b) claims that a *de se* reading comes from the computation of a certain feature of a functional projection in the C-domain of an infinitive. Putting certain technical details aside, in his theory, the Spec of the functional head has a *pro* variable, and the acquaintance relation between an attitude holder and the variable is fixed as a SELF relation. Importantly, the functional projection is missing in the nonlogophoric control. This syntactic analysis captures the semantic contrast that a logophoric control has an obligatory *de se* reading, seen in (40) and (41), whereas a nonlogophoric one does not, seen in (38) and (39). Therefore, the structure of the C-domain of the logophoric control is richer than that of the nonlogophoric control. It is possible that the control verbs in (38) and (39) do not select the clause that has the functional projection mentioned above, whereas other control verbs, including *daying* 'promise', *dasuan* 'plan', *zhunbei* 'prepare', and *xiang* 'want', do.

The contrast between the rich-layered control and the poor-layered control correlates with the contrast that the controllee may be overt in the former, as seen in (41b) above, but not in the latter, as seen in (42).

(42) Lili gan-shang-le (*ta yi ge ren) da na liang huoche.
Lili rush-on-PRF 3SG one CL person take that CL train
'Lili succeeded in taking that train.'

This correlation is aligned with the constraint that the controllee in a logophoric control must be [+human] (Landau 2015b: 66) and an overt controllee, in either the form of a *cpro*, which is headed by a personal pronoun, or *ziji*, also must be [+human].

This rich-layered and poor-layered control contrast also correlates with a topicalization contrast in Chinese. The former may host a topic in the complement clause, as seen in (43), regardless of whether the controllee is null or overt ((43a) = (34b)). In contrast, the latter may not host a topic in the complement clause, as seen in (44b) and (45b).

(43) a. A-Bao gen A-Lin dasuan naxie ren {∅/tamen liang ge bu
A-Bao and A-Lin plan those people _/3PL two CL not
jian.
see
'A-Bao and A-Lin planned not to see those people.'

b. A-Bao gen A-Lin dasuan shuiguo {∅/tamen liang ge
A-Bao and A-Lin plan fruit _/3PL two CL
ren} zhi chi caomei.
person only eat strawberry
'A-Bao and A-Lin planned to eat strawberries only, among various fruits.'

(44) a. Da-Bao gan tiaozhan na wei jiaoshou.
Da-Bao dare challenge that CL professor
'Da-Bao dares to challenge that professor.'

b. *Da-bao gan na wei jiaoshou tiaozhan.
Da-Bao dare that CL professor challenge

(45) a. Da-Bao kaishi chi caomei.
Da-Bao start eat strawberry
'D-Bao starts to eat strawberries.'

b. *Da-Bao kaishi shuiguo zhi chi caomei.
Da-Bao start fruit only eat strawberry

Assume that both types of control have ForceP in the complement clause, so that the controllee is able to undergo an operator movement (2.2.2). We now see that the rich-layered control also has TopicP in the complement clause, whereas the poor-layered one does not.

The possible occurrence of a topic in the embedded clause of a rich-layered control construction in Chinese indicates that at least for this type of control, the complement clause is a category of a C-domain, as traditionally assumed in generative grammar, rather than vP, as claimed by Grano (2013, 2015).

Moreover, the fact that a null controllee is always fine in both types of control confirms the conclusion achieved in 2.2.3: the null form is the default form of a controllee.

2.5 Deriving the Generalized Control Rule

2.5.1 The GCR and three relevant facts

We have seen that overt controllees show properties of PROs, and thus it is not true that from the perspective of subject forms, all clauses behave like independent (or finite) clauses in Chinese. We now turn to another possible claim, which implies that all clauses in Chinese behave like the infinitive complement of a control verb in the way of interpreting embedded empty subjects. The claim might be inferred from the Generalized Control Rule (GCR, Huang 1982, 1984, 1989: 193), which states that an empty subject (PRO or pro) in an embedded clause must be coindexed with another nearest c-commanding subject.[12] In (46), for instance, the empty subject of the adverbial clause in the second conjunct must be identified by *A-Gui*, which is the closest c-commanding nominal, rather than by any other nominal in the context.

(46) A-Bao [yinwei Lili congming] xihuan ta, A-Gui ze [yinwei
A-Bao because Lili smart like 3SG A-Gui but because
∅ shanliang] xihuan ta.
_ kind like 3SG
'A-Bao likes her because Lili is smart, but A-Gui likes her because he (A-Gui) is nice.'

We need to emphasize three facts regarding the interpretations of embedded empty subjects in Chinese. First, as stated in the GCR, the binder of an empty subject must be a subject. In (47a), the embedded empty subject is not bound by the nearest c-commanding DP *na-yangde xuezhe* 'that kind of scholar', which is a topic. (47b) shows the same point.

(47) a. Wo zhidao [zhe-yangde xuezhe [na ge gongsi]$_i$ bu hui
1SG know this-kind scholar that CL company not will
guyong], dan [na-yangde xuezhe ∅$_i$ jiu hui guyong].
hire but that-kind scholar _ then will hire
'I know that this kind of scholar that company will not hire, but that kind of scholar it will hire.'

[12] The GCR is formulated to cover both subjects and objects. We discuss its effects on subjects only. See Li (2014) and Tomioka (2014) for discussions on GCR effects on objects.

b. Wu Laoshi renwei [zhe ge xuesheng ta_i jiao-guo], dan
Wu teacher think this CL student 3SG teach-EXP but
[na ge xuesheng $\varnothing_i$ mei jiao-guo].
that CL student _ not teach-EXP
'Teacher Wu thinks that this student he taught but that student he did not teach.'

Second, there is no binding between the empty subject of a Small Clause and the nearest c-commanding subject. In (48a), the empty subject of the Small Clause in the second conjunct is coindexed with *Lili* in the first conjunct, rather than *A-Bao*, which is the closest higher subject. (48b) and (48c) show the same point.

(48) a. A-Gui xian [$Lili_i$ tai aoman], A-Bao xian [$\varnothing_i$ tai
A-Gui dislike Lili too arrogant A-Ba dislike _ too
luosuo].
long.winded
'A-Gui dislikes Lili's being too arrogant and A-Bao dislikes her being too longwinded.'

b. A-Gui taoyan [$zheli_i$ chang xiayu], A-Bao ze taoyan [$\varnothing_i$
A-Gui dislike here often rain A-Bao however dislike _
jiaotong bubian].
transportation inconvenient
'A-Gui dislikes that it often rains here but A-Bao dislikes that the transportation is inconvenient here.'

c. Lili ma, A-Di renwei [ta_i tai xiaoqi], er
Lili TOP A-Di consider 3SG too stingy but
A-Lin ze renwei [$\varnothing_i$ guofen jiejian].
A-Lin however consider _ too frugal
'As for Lili, A-Di considers her too stingy but A-Lin considers her too frugal.'

Third, there is no binding between the empty subject of a nominalized clause and the nearest c-commanding subject. In (49), the empty subject of *gongxian* 'contribution' in the second conjunct is coindexed with *ta* in the first conjunct, rather than *wo* 'I', which is the closest higher subject.

(49) Zhiyu Lao-Qiao, ni jieshao [ta_i dui yuyanxue de
regarding old-Qiao 2SG introduce 3SG to linguistics DE
gongxian], wo jieshao [$\varnothing_i$ dui xinlixue de gongxian].
contribution 1SG introduce _ to psychology DE contribution
'As for Old Qiao, you introduce his contributions to linguistics, and I introduce his contribution to psychology.'

One might assume that the N node of the nominalization blocks the binding relation between e and *wo* in (49) (cf. Huang 1998: 201 (50)). But the three facts, as well as the binding pattern in examples like (46), can be explained by the possibility of a DPP-formation.

2.5.2 Obligatory binding of embedded empty subjects via DPP

Assume the empty subjects in 2.5.1 are *pro*s. Both PRO and *pro* are minimal pronouns. Their unvalued ϕ-features need to be valued by another nominal. Also, "the radical impoverishment of a minimal pronoun allows it to turn into an operator, once moved" (Landau 2015b: 27). As we made clear in 2.2.2, the obligatory binding of a controllee by its controller follows the

same principle of the obligatory binding of a subject relative pronoun by its antecedent. In a relative clause construction, an operator (i.e., a relative pronoun or its null version) moves to create a predicate, and so does a controllee. Importantly, first, in both types of binding, the binder must be external to the derived predicate. In the relative clause in (50), for example, the subject gap in the relative clause is not associated with the topic *xiezi* 'shoe', although the latter is the nearest c-commanding DP (also see footnote 8).

(50) Wo renshi yi ge [xiezi ∅ zong chuan-fan] de xiaohai.
1SG know one CL shoe _ always wear-reverse DE child
'I know a child who always puts his shoes on the wrong feet.'

Likewise, in the complement clause of a control verb, a controllee operator is never bound by a topic in the same complement clause, as seen in (34) and (43). We have claimed in 2.3 that the LF position of a controllee is ForceP, which is higher than that of a topic, TopicP. Similarly, the LF position of the operator that creates a predicate in DPP, including the relative operator in (50), is higher than the LF position of a topic. Accordingly, the binder of such an operator may not be a clause-internal topic. Also, if a clause functions as a predicate, no element contained in the clause may function as the subject of the predicate. Thus only the nearest c-commanding DP that is external to the clause can be the binder. This restriction explains the first fact of empty subjects mentioned in the last subsection.

Second, "sentential predicates are necessarily derived (by Op-merger)" (Landau 2011: 782), and in order for an operator to move, the structure of the clause must be rich enough to provide a landing site for the movement. The landing site is higher than the surface position of a subject. We have proposed that the site is in ForceP (2.3). A Small Clause has no ForceP. Thus, there is no operator movement in examples such as (48). If the subject of a Small Clause is empty, it is not identified in the same way as a relative pronoun. As for a nominalized clause, according to Fu (1994), no functional projection higher than IP occurs before the clause is merged with a nominalizing element, and thus the structure is not able to accommodate any operator movement, either. Consequently, if the subject of a nominalized clause is null, as in (49), it is not identified in the same way as a relative pronoun. This explains the second and third fact of empty subjects mentioned in the last subsection.

In 2.2.3, we showed that for the poor-layered control, although operator movement is possible, the functional structure in the C-domain is too poor to host a topic. The following examples in (51) and (52) further show that Small Clauses and nominalized clauses, which have no C-domain functional projection, may not host a topic, either, as expected (similarly, **I disapprove of such books your reading*. See Hooper & Thompson 1973: 485).

(51) a. Lili taoyan A-Gui jiao binglang.
Lili dislike A-Gui chew betelnut
'Lili dislikes A-Gui's chewing of betelnuts.'
b. *Lili taoyao binglang A-Gui jiao
Lili dislike betelnut A-Gui chew

(52) a. Wo liaojie Sanmao dui wenxue de gongxian.
1SG know Sanmao to literature DE contribution
'I know Sanmao's contribution to literature.'
b. *Wo liaojie (dui) wenxue, Sanmao de gongxian.
1SG know to literature Sanmao DE contribution

Based on our above discussion, we propose a DPP interpretation rule in (53), to capture the co-indexing pattern that the GCR tries to cover:

(53) The DPP Interpretation Rule
If a clause-internal argument is able to undergo an operator movement to establish a DPP relation with a DP external to the clause, the argument is co-indexed with the DP.

According to (53), obligatory binding of an empty subject is implemented via DPP. Let us re-examine (46), repeated here as (54), in the perspective of (53).

(54) A-Bao [yinwei Lili congming] xihuan ta, A-Gui ze [yinwei
A-Bao because Lili smart like 3SG A-Gui but because
∅ shanliang] xihuan ta.
_ kind like 3SG
'A-Bao likes her because Lili is smart, but A-Gui likes her because he (A-Gui) is nice.'

In (54), the occurrence of the complementizer *yinwei* 'because' indicates that a C-domain is available, and thus the CP-internal empty subject may undergo an operator movement, to form a DPP. The predicate of the DPP is the adverbial clause and its subject is the nearest c-commanding nominal, *A-Gui*. As a consequence, *A-Gui* is not only the subject of the derived predicate, as well as the subject of the predicate *xihuan ta*, but also the binder of the operator, i.e., the embedded empty subject. Similarly, in the *de*-resultative construction in (55) (Huang 1992: 112), the post-*de* string is a CP (Li 1999), and thus the empty subject in the CP must be bound by the nearest higher nominal external to the clause, i.e., *ma* 'horse'.

(55) Zhangsan$_i$ ba ma$_k$ qi de [$\varnothing_{k/*i/*j}$ hen lei].
Zhagsan BA horse ride DE _ very tired
'Zhangsan rode the horse and got it tired.'

Note that as we discussed in 2.2.2, the subject and the predicate of a DPP do not have to form a constituent. In (54), *wo* and the adverbial clause do not form a constituent. Also, in (55), *ma* 'horse' and the post-*de* clause do not form a constituent

All null arguments need to be indexed or interpreted. There are various rules for such indexing. The DPP Interpretation Rule in (53) is just one of various ways to interpret an empty argument. The effect of the GCR is not seen in Japanese (Li 2014: 62). In the Japanese example in (56) (Tomioka 2014: (13)), for example, the empty subject of the adverbial clause can be identified by *Erika*, rather than the nearest c-commanding DP *Yumi*.

(56) Mari-wa [Erika-ga atama-ii-kara] suki-da-ga, Yumi-wa
Mari-TOP Erika-NOM head-good-because fond.of-COP-but, Yumi-TOP
[∅, seikaku-ga ii-kara] suki-da.
_ personality-NOM good-because fond.of-COP
'Mari likes (Erika) because Erika is intelligent, but Yumi likes her because she (= Erika) is nice.'

As pointed out by Tomioka (2014: 73), "This contrast between Chinese and Japanese is not about the possibility of argument ellipsis. It is possible and indeed quite likely that we are dealing with phonologically null pronouns (i.e., *pro*) in both languages, but their interpretive possibilities are different." Descriptively, the GCR addresses a language-specific constraint on the interpretation of empty subjects in embedded clauses in Chinese. In our analysis, in (56), instead of the DPP Interpretation Rule, it is a semantic parallelism rule that

restricts the interpretation of the empty subject. Specifically, the syntactic position of the empty subject in the second conjunct is parallel to that of *Erika* in the first conjunct. Consequently, the empty subject is co-indexed with *Erika* (see Lang 1984 for more discussion of a parallelism rule in ellipsis).

The fact that the GCR does not apply to Japanese indicates that the rule in (53) may be superior to other interpretation rules in Chinese, but not in some other languages. Presumably, in Chinese, new DPP must be formed whenever it is possible. Because of the λ-abstraction, an embedded clause that has an empty subject must function as a derived predicate, taking a higher DP as its subject. In Small Clause and nominalization constructions, since the DPP-forming is not available syntactically, the same parallelism rule seen in (56) applies instead.

It needs to be clarified that the motivation of the GCR is to give a general rule to interpret embedded empty subjects, PRO and *pro*. It does not intend to deny the syntactic contrasts between dependent (nonfinite) clauses and independent (finite) clauses. The mechanism of DPP underlying the GCR is operative in both nonfinite clauses (e.g., in the *tough* construction) and finite clauses such as relative clauses and the clauses following a left-dislocated phrase (e.g., *John*, [*something terrible happened to him*]; see Landau 2011: 809). Thus, the effect of the GCR does not mean that all clauses in Chinese are non-finite.

2.6 Section summary

In this section, we have provided evidence to show that a controllee can be overt in Chinese. We have identified two forms of overt controllees in the language: a *cpro* and the reflexive *ziji*. Similar to PRO, they are variables, must occur in the subject position, and like the overt controllees in some other languages, they have obligatory *de se* readings. We have also preliminarily described the different occurrence restrictions of the two overt controllees.

As claimed by Szabolsci (2009a, b), the null PF form of a controllee is not universal. The exact possible forms of such arguments are a language-specific issue. Accordingly, one cannot use the availability of overt controllees to deny the existence of control dependency in Chinese, as in Hu et al. (2001).[13] We can therefore confirm that the complement clause of a control verb is a dependent clause also in Chinese (Huang 1989: 191), and the dependency is attested in the special syntax of the subject. Thus Chinese does have a distinction between dependent and independent clauses.

We have also proposed a DPP Interpretation Rule to account for the effects of the GCR. The effects do not mean that all clauses in Chinese are non-finite. Based on our discussion of both overt controllees and the GCR, we conclude that there is no real paradox.

3. Subject clauses with a generic subject

Williams (1980) distinguishes two types of control: obligatory control and nonobligatory control. Only in the former, the PRO must have an antecedent. In the last section, we have identified the possible forms of a controllee in obligatory control constructions in Chinese. In this section, we identify the Chinese counterpart of the arbitrary PRO (PRO_{arb}) subject, which occurs in non-obligatory control constructions, such as (57a). I will show that as in English, this kind of subject must be null in Chinese, as seen in (57b).

(57) a. [PRO_{arb} to eat/eating too much lettuce] is not healthy.

b. [PRO_{arb} xiyan] you hai. (Huang 1989: 193)
smoke have harm
'Smoking is harmful.'

[13] Based on an acquisition study, Yang and Yang (2015) also conclude that control dependency is attestable in Mandarin Chinese.

Generic pronouns (or called human impersonal pronouns), such as *one* or *you* in English, *Man* 'one' in German, and *on* 'one' in French, have no antecedent, as seen in (58). They "are used to fill an argument slot of a predicate without establishing a referential link to any discourse referent." (Gast & van der Auwera 2013: 122)

(58) a. Man lebt nur einmal. [German]
one live.SG only once
'You only live once.'
b. It is so smoggy in Los Angeles that you can barely breaths. (Creissels 2013: 54)

In Chinese, various forms can be used as a generic argument: *ren* 'person', the second person singular pronoun *ni* 'you' (Chao 1968: 648), and *yi ge ren* 'one CL person' (e.g., Wu & Bodomo 2009: 492).

(59) a. Ren chang he shui.
person often drink water
'Men often drink water.'
b. {Ren/Yi ge ren} yao you liangxin.
person/one CL person should have conscience
'One should have conscience.'
c. {Ren/Yi ge ren} you liang zhi shou.
person/one CL person have two CL hand
'One has two hands.'

(60) Women dou zhidao ren yao you liangxin.
2PL all know person should have conscience
'We all know that one should have conscience.'

(61) Zheyang de shi jiao {ni/ren} shou-bu-liao.
such DE matter let 2SG/person unbearable
'Such matters are unbearable.'

(62) Zai Riben, ruguo ni diu-le qianbao, ni hui zhaodao.
at Japan if 2SG lose-PRF wallet 2SG will find
'In Japan, if you have lost your wallet, you will be able to find it.'

The overt generic argument occurs as a subject in (59), as the subject of the complement clause in (60), as a causee argument in (61), and as both the subject of the conditional clause and the subject of the matrix clause in (62) (a similar pair-use of *one* in English distinguishes its generic from indefinite use; see Moltmann 2006: 263-264).

In a subject clause, if a generic subject is followed by a modal verb, it can also be in the form of *ren* 'person' or *yi ge ren* 'one CL person' (I am grateful to xxx for giving me (63)):

(63) [{Ren/Yi ge ren} yao PRO jueding ziji de sheng-ri]
person/one CL person want decide self DE birth-day
shi bukeneng de.
be impossible PRT
'If one wants to decide his birthday, that is impossible.'

A PRO_{arb} subject occurs in a non-finite sentential subject (cf. Koster 1978; see Hornstein & Lightfoot 1987: 30), as seen in (64). It correlates with an overt generic subject in a finite clause (Moltmann 2006). Like the generic pronouns *one* and *you*, a PRO_{arb} has no

antecedent (e.g., Hornstein & Lightfoot 1987: 29; Hornstein 1999: 73). It may be bound by a null generic operator (Landau 2000: 25).

(64) a. [PRO_{arb} to eat/eating too much lettuce] is not healthy.
b. Mary knows that [[PRO_{arb} to behave oneself] is important].
c. It was believed that [[PRO_{arb} shaving] was important].

A hitherto unnoticed fact is that none of the three overt forms of generic argument in Chinese, i.e., *ren*, *ni*, and *yi ge ren*, may occur in the position of PRO_{arb}, i.e., in a sentential subject which has no modal, while keeping its generic use. Instead, the intended generic reading of the subject must be expressed by a null form. In (65) through (67), neither *ni* nor *ren* may occur as a subject in the sentential subject, for the intended meaning.

(65) a. [(*ren/*ni) chang he shui] hen zhongyao.
person/2SG often drink water very important
'To drink water is important.'
b. (*ren/*ni) xiyan you hai. (cf. (57b))
person/2SG smoke have harm

(66) a. Zai Riben, [(*ren) zhu minsu] hen rongyi.
at Japan person stay B&B very easy
'It is very easy to lodge a B&B (bed & breakfast hotel) in Japan.'
b. Zai Riben, [ni zhu minsu] hen rongyi.
at Japan 2SG stay B&B very easy
Only possible reading: 'It is very easy for you (in contrast to others) to lodge in a B&B in Japan.'

(67) [(*ni/*ren) ting yinyue] shi yi zhong xiangshou.
2SG/person listen music be one kind enjoy
'To listen to music is an enjoyment.'

The examples in (68) show that if *yi ge ren* occurs as a subject in a subject clause, no generic reading is available, either. These examples have a contrastive reading only.

(68) a. Zai Riben, [yi ge ren zhu minsu] hen rongyi.
at Japan one CL person stay B&B very easy
Only: 'In Japan, it is easy for one person alone (in contrast to two or more people) to lodge in a B&B.' Not: 'In Japan, to lodge in a B&B is very easy.'
b. [Yi ge ren ting yinyue] shi yi zhong xiangshou.
One CL person listen music be one kind enjoy
Only: 'It is an enjoyment for one person alone (in contrast to two or more people) to listen to music.' Not: 'It is an enjoyment to listen to music.'

In Section 2, we saw that a controllee can be a *cpro* in Chinese. The example in (69) shows that the *cpro ni yi ge ren* may not be a generic subject in a subject clause.

(69) *Ni yi ge ren ting yinyue shi yi zhong xiangshou.
2SG one cl person listen music be one kind enjoy
Intended: 'It is an enjoyment to listen to music.'

The intended meaning of the null generic subject of a subject clause can be expressed by the PP *dui…laisuo* 'for', as seen in (70). However, the PP functions as an adverbial of the matrix predicate, rather than a subject of the subject clause.

(70) [Dui ren laishuo], [PRO_{arb} he shui] hen zhongyao.
to person regard drink water very important
'For people, to drink water is important.'

Li and Thompson (1981: 139) states that the reflexive *ziji* 'self' can be used as a generic pronoun. The examples in (71) seem to suggest that *ziji* in this use might occur as the subject of a subject clause:

(71) a. [Ziji xiaoxin] shi congming zhiju.
self careful be wise action
'To be careful is wise.'
b. [Ziji you qian] zui hao.
self have money most good
'It's good to have money.'

However, as stated in Battistella and Xu (1990: 224), in such constructions, it is possible to treat the *ziji* as the combination of PRO_{arb} and an emphatic *ziji*. The emphatic use of *ziji* is seen in (72b), which is parallel to the emphatic use of *herself* in (72a). Recall that preverbal ziji has an adverbial use ((13)). If the adverbial analysis is available, the hypothesis that *ziji* itself can be an overt form of PRO_{arb} is not convincing.

(72) a. She herself should do that.
b. Zhangsan ziji shao cai.
Zhangsan self cook food
'Zhangsan cooks food himself' (as opposed to anyone else cooking for him).

We conclude that in a modal-less generic subject clause, which is one type of dependent clause, the subject is obligatorily null (PRO_{arb}) in Chinese, as in languages such as English. The restriction on the subject form is decided by the syntactic properties, rather than semantic properties, of the hosting clause. Thus it is not true that "Mandarin appears to lack non-finite subject clauses (subject clauses can always host modals/overt subjects and so appear to be finite)." (Sheehan & van der Wal 2015: sec. 2.1)[14]

4. Conclusions

In this paper, I have presented the special syntax of the subjects of two types of dependent clauses in Chinese. First, in the complement clause of a control verb, the forms of a subject are restricted to a *cpro*, *ziji* 'self', or the default null form (PRO); and the subject must be bound by an argument of the control verb. Second, in a dependent subject clause, a generic subject must be null (PRO_{arb}).

[14] The null subject of the subject clause in (i) can be interpreted in the discourse context, e.g., referring to a robot or the speaker. The fact that the empty subject has no generic reading shows that a null subject in a subject clause need not have a generic reading.

(i) [*pro* you liang zhi shou] hen zhongyao.
_ have two CL hand very important
'It is important for this to have two hands.'

Importantly, none of these restrictions on forms and interpretations is found in the subjects of independent clauses in the language. Dependent clauses are represented in non-finite clauses in many languages, and finiteness is a purely syntactic property (e.g., Cowper 2013). In the absence of finiteness inflection on verbs and case morphology on nominals, this research shows that special syntactic properties of various dependent clauses are still identifiable in Chinese.

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