

derived via either base generation or movement (Badan & Del Gobbo, 2011; Huang, 1982; Li, 2000; Shyu, 1995). The goal of this paper is to present new data which shows that the relative order of two topics is subject to two syntactic constraints: first of all, the base-generated topic must precede the moved topic, which relates to the notion of minimal effort; secondly, when both topics are derived via movement, their dependencies with the corresponding gaps in the comment clause observe the Path Containment Constraint proposed by Pesetsky (1982). These findings challenge the view that topics in Chinese are only constrained by a semantic “aboutness” relation with the comment clause (cf. Xu & Langendoen, 1985).

The paper is organised as follows: Section 2 provides an overview of the notion of topic and the double topicalisation construction in Chinese. Section 3 introduces the Topic Phrase as a syntactic approach to analysing Chinese topics. Section 4 describes two new observations regarding the relative order of double topics, and provides evidence that double topicalisation in Chinese is syntactically constrained. Section 5 concludes and discusses some implications.

2 Topics in Chinese

Literature on the notion of *topic* in syntax and information structure is plethora yet confusing: on the one hand, *topic* can be defined in relation to information structure, as a category that describes what the rest of the sentence is about (Dalrymple & Nikolaeva, 2011; Erteschik-Shir, 2007; Lambrecht, 1994); on the other hand, *topic* can be analysed as a syntactic position, with a nominal element occupying the specifier position of a Topic Phrase (Gasde & Paul, 1996; Xu, 2000). This paper focuses on the syntactic position of *topic* within Chinese grammar.

Chinese is often termed a topic-prominent language due to its extensive use of Topic-Comment constructions (Chao, 1968; Householder & Cheng, 1971; Y. Huang, 1994; Li & Thompson, 1981). Structurally speaking, a Chinese sentence typically contains a topic which is related either to a constituent within the following comment clause or to the comment as a whole, and such a relation is characterised by unbounded dependency and multiple applications of topicalisation (Li & Thompson, 1981; Xu, 2000). In terms of the grammatical relations as defined in traditional grammar, the basic word order of Chinese is arguably SVO, with the subject NP being an unmarked topic; this is the default mapping of grammatical relations and information structure in Chinese, and is well attested cross-linguistically (Herring, 1990). However, when subject and topic do not coincide, anything that precedes the subject is referred to as the topic (Li & Thompson, 1981). This is what Shi (2000) calls “the marked NPs”, and they are the ones that we are interested in here. In this paper, topics are syntactically defined as noun phrases that precede the subject in the clause-initial position.

Topic as a syntactic position plays a significant role in Chinese sentence constructions. Li and Thompson (1976) argue that some Topic-Comment structures in Chinese are not derived from any other base word order. For example:

- (2) [zhejiang shi], wo piping le ta
 this-CL matter 1SG criticise PERF 3SG
 ‘I criticised him/her because of this matter.’

No alternative word order is permitted:

³ In this paper, I will focus on nominal topics, setting aside issues related to PP, VP and IP topics. Interested readers may refer to Li (2000), Gasde and Paul (1996), Xu and Langendoen (1985), and Xu (2000) for discussions of a full range of topic structures in Chinese.

- (3) a. *wo zhejiang shi piping le ta
 I this- CL matter criticise PERF 3SG
 b. *wo piping le zhejiang shi ta
 I criticise PERF this- CL matter 3SG
 c. *wo piping le ta zhejiang shi
 I criticise PERF 3SG this- CL matter

In (3a)-(3c), *zhejiang shi* ‘this matter’ can only appear in the clause-initial position. In fact, (2) is an example of a so-called ‘dangling topic’, which seems to carry no grammatical relation with the clause that follows but only establishes what the rest of the sentence is about (Chen, 1996; Hu & Pan, 2009; Tan, 1991; Xu & Langendoen, 1985); a classic example comes from Li and Thompson (1981: 96):

- (4) [neichang huo], xingkui xiaofangyuan lai de kuai
 that- CL fire luckily firefighter come DE fast
 ‘As for that fire, luckily the firefighters came quickly.’

These observations raise interesting questions with regard to how Chinese topics are derived, motivating the debate of whether all topics are moved from an original position in the comment clause.

Syntactically speaking, a Chinese topic can be either base-generated or derived by movement, in line with the minimalist framework which assumes a dichotomy between base generation and movement (Li, 2000; Lin 1992; Shyu 1995; Tang, 1990; Xu & Langendoen, 1985). A base-generated topic finds itself in the canonical position at the beginning of a sentence; it leaves no gap or trace in the comment clause, and is not subject to island constraints. Shyu (1995: 176) describes the “dangling topics” in Chinese as base-generated topics (in an IP-adjoined position in her analysis), with evidence that such a topic cannot possibly originate from anywhere else in the comment clause, as shown by (1a) and (2). Base-generated topics are interpreted through a semantic “aboutness” relation with the comment clause, and they take up the highest specifier position in the entire sentence (Ernst and Wang 1995; Tang 1990). Meanwhile, a topic can also be derived via movement from an original position in the comment clause. Li (2000) argues extensively for movement as an option for deriving topics in Chinese; essentially, she shows that in the following example, the topic is a displaced PP, which cannot be the result of base-generation because of the lack of a PP pro (Saito, 1985):

- (5) [dui Zhangsan], wo zhidao ta t bu zenme guanxin
 to Zhangsan 1SG know 3SG NEG how care
 ‘For Zhangsan, I know he does not quite care.’ (Li, 2000:3)

PP topics, then, must be the result of movement, or to be more exact, “topicalisation”. With evidence from Japanese, Saito (1985) further claims that there is no reason for movement to be restricted to PP topics, extending it as a possibility for nominal topics as well. Thus nominal topics can be derived via either base-generation or movement. Li’s (2000) second argument in favour of moved topics involves the displacement of idiom chunks in topic position (i.e. the O in a V+O idiom can become a topic), which she takes as evidence for movement. Essentially, the displaced idiom chunk can be separated from its canonical object position across clauses to become a topic, as shown in (6a), but it is subject to island constraints, as shown in (6b) (Li, 2000: 3):

- (6) a. [mo], ta hui you dan changchang you de bu hao
 -mor 3SG can hu- but often hu- DE NEG good
 ‘He can be humorous, but cannot quite do it well.’
 b. ??[mo], Zhangsan renshi nage hui you de ren
 -mor Zhangsan know that can hu- DE person
 (Intended: Humor, Zhangsan knows the person who can do it.)

In (6b), the displaced idiom chunk is extracted from a complex NP island, and it is judged as only marginally acceptable. This argument, however, hinges on a minimalist definition of Chinese idioms (Huang, 1990; Sybesma, 1999). In short, topicalisation derived via movement is of A-bar type, and the resulting moved topics typically behave like movement structures in exhibiting locality conditions, such as showing island effects as (6b) shows (Badan & Del Gobbo, 2011; Huang, 1982; Huang & Li, 1995; Li, 2000; Pan & Hu, 2000; Shi, 2000; Shyu, 1995). In addition, they show reconstruction possibilities, which I will not elaborate here in the interest of space. These all provide evidence for the view that the relationship between a topic and its gap is subject to structural restrictions (Shi, 2000).

In addition to syntactic properties, semantic properties of an NP also determine whether it qualifies as a potential topic. With regards to the semantic characterisations of Chinese topics, according to Li and Thompson (1981), a topic can be either definite or generic, but not indefinite, as illustrated by the examples below:

- (7) a. [xiongmao], wo jian guo
panda 1SG see PERF
'Pandas (generic) I have seen.' OR 'The/This panda I have seen.'
- b. [zhe yizhi xiongmao], wo jian guo
this one-CL panda 1SG see PERF
'This panda I have seen.'
- c. *yizhi xiongmao, wo jian guo
one-CL panda 1SG see PERF
'A panda I have seen.'

To mean 'I have seen a panda', the sentence must be ordered in SVO, as the indefinite *yizhi xiongmao* 'a panda' does not qualify as a topic:

- (8) wo jian guo yizhi xiongmao
1SG see PERF one-CL panda
'I have seen a panda.'

Secondly, a topic serves the function of "frame setting" in the sense that it establishes what the rest of the sentence is about. Chafe (1976) also adopts this notion of "frame setting" for Chinese topics, and considers them as setting a spatial or temporal frame; many other researchers, including Xu (1995), describes this semantic relation between topic and comment in Chinese roughly as "aboutness", following Lambrecht's (1994) characterisation of topic in general. In a nutshell, topics in Chinese display semantic characteristics that are consistent with the notion of topic in relation to information structure, i.e. they are "topical", but they do not necessarily bear a grammatical relation in the comment clause, and they must appear clause-initially. Besides the syntactic and semantic properties, Chinese topics can be optionally marked by a short pause before the comment clause, or by using one of the topic-marking particles, e.g. *a*, *me*, *ne*, *ba* (Kroeger, 2004). These also serve as additional diagnostic tests for identifying topics in Chinese.

Topics can be phrases that are moved simultaneously from a variety of syntactic positions and, consequently, double topicalisation is permitted. There are three ways to form a double topicalisation construction in Chinese: it consists of either two base-generated topics (as in 9a), two moved topics (as in 9b), or one base-generated topic and one moved topic (as in 9c):

- (9) a. [zhongguo a], (da chengshi ne), Beijing zui luan
China TOP big city TOP Beijing most chaotic
'China, big cities, Beijing is the most chaotic.' (Gasde & Paul, 1996:269)
- b. [zhejiang shi]_i, (lixiansheng)_i, wo gaosu guo ______i ______j
This-CL matter Mr Li 1SG tell PERF

- ‘I have told Mr Li about this matter.’ (Xu & Langendoen, 1985:17)
- c. [hua], (meigui-hua)_i, ta zui xihuan _____ i
 flower rose-flower 3SG most like
 ‘Flowers, roses he likes them the best.’ (Paul, 2002: 710)

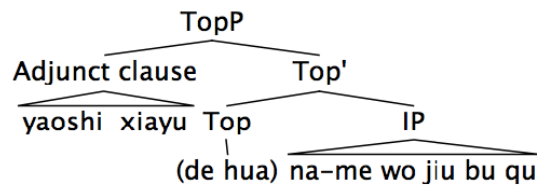
In (9b) and (9c), the moved topics are extracted from their original positions in the comment clause and moved to the clause-initial position. In particular, C. J. Huang (1982) refers to the phenomenon where a (nominal) constituent is moved to clause-initial topic position as “long-distance topicalisation”, suggesting a dependency relation between the moved topic and the gap that is analogous to wh-dependencies. This raises the question of whether such a dependency relation is also syntactically constrained in a parallel fashion to other A-bar dependencies, such as wh-dependencies and tough-constructions. But before answering this question, let me first introduce the Topic Phrase proposal as an analytical framework for the syntax of Chinese topics.

3 The Topic Phrase

This section lays out the framework for subsequent discussed observations by providing a brief sketch of the Topic Phrase analysis of Chinese topics within the Minimalist Program. The exploration is guided by two questions in mind: What position does a nominal topic occupy in a syntax tree, before and after any movement operation? What kind of structure can capture the internal organisation of the double topicalisation construction? In an analysis of causal and conditional sentences in Chinese, Gasde and Paul (1996) adopt the Topic Phrase (henceforth TopP), first introduced by Rizzi (1997), as a functional category with nominal topics occupying the specifier position of a TopP; the Topic head can be either empty or occupied by one of the topic markers including *a*, *ne*, *ma*, or *dehua*. Following Higginbotham (1985), Fukui (1986), and Bierwisch (1988), Gasde and Paul (1996) describe the function of the head *topic* to be “binding and specifying the referential argument of the verb”. This is illustrated in the following example:

- (10) [yaoshi xia yu] dehua, na-me wo jiu bu qu
 if fall rain TOP in:that:case 1SG then NEG go
 ‘If it rains, I won't go.’ (Gasde & Paul, 1996: 271)

Figure 1: Gasde and Paul's analysis of (10)



In line with Haiman (1978), Gasde and Paul (1996) also analyse the conditional clause *yaoshi xia yu* ‘if it rains’ as a topic which presupposes the existence of its referent – a state of affairs such as raining – in a possible world. As such, it provides the frame of reference for the comment clause, satisfying the condition for being an independent functional category. As for the comment clause, Gasde and Paul (1996) assumed a functional head Inflection which is specified as [\pm finite], a position that I will adopt in my analysis⁴.

⁴ Gasde & Paul (2002) also assume CP as the maximal projection above Topic Phrase, taking sentence-final particles like *a*, *ne*, *me*, etc which indicate evidentiality, in the head position. Whether or not a CP is well-motivated

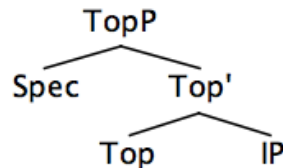
Xu (2000) also argues for a TopP approach of Chinese topics to account for the typological differences between topic-prominent languages and subject-prominent languages (Xu & Liu, 1998; Xu, 2000). He offers a comprehensive evaluation of three possible representations of topic: specifier of CP, adjunct to IP, and the specifier position of TopP. The specifier-to-CP analysis is rejected on the grounds that CP is not a well-motivated functional category in Chinese, because unlike Indo-European languages, there is no complementiser in Chinese to begin with (cf. Tang 1990, who considers pause particles as complementisers). Xu (2000) also rejects the adjunct-of-IP analysis, which many previous accounts accepted because of its ability to account for base-generated topics and double topicalisation (e.g. Ernst, 1989; Ernst & Wang, 1995; Shyu, 1995; Travis, 1988; Tang, 1990; Paul, 2002); in an adjunct-of-IP analysis of topic, multiple adjuncts are naturally expected to be possible. However, Xu (2000) criticises this proposal by pointing out two crucial differences between topicalisation in Chinese and scrambling in German, the latter of which is a case of adjunction to IP: topicalisation in Chinese, unlike scrambling in German, permits either a resumptive pronoun (as in 11a) or an unbounded dependency (as in 11b):

- (11) a. [zhangsan] a, (tade shuofa), mei ren xiangxin
 Zhangsan TOP 3SG-POSS story no person believe
 ‘Zhangsan, his story, nobody believes.’
- b. [buding], wo xiangxin ta hui xihuan
 pudding 1SG believe 3SG would like
 ‘Pudding, I believe he/she would like.’ (Xu, 2000: 28)
- c. *... daß IP Pudding_i IP niemand sagt CP t_i daß sie t_i mag.
 that pudding nobody says that 3SG likes
 (Intended: ... nobody says he/she likes pudding.) (Müller & Sternefeld, 1993: 465)

In particular, as (11b) shows, a topic in Chinese can be moved from inside an embedded clause, suggesting that it is not clause-bound. This contrasts with German scrambling in (11c), which is strictly clause-bound; a finite CP can never be crossed (Müller & Sternefeld, 1993). Xu (2000) reasons that since adjunction is restricted to operations like scrambling and extraposition, it is often employed in making a “minor rearrangement in word order”, but the topic construction in Chinese is already in its canonical word order and should not be analysed as adjunction.

This brings us to the TopP analysis. Xu (2000) claims that TopP in a topic-prominent language is parallel to CP in a subject-prominent language, both of which are the maximal projection above IP. In line with Gasde and Paul (1996), he considers the various topic markers as the head of a TopP, and the topic appears in the specifier position under a TopP:

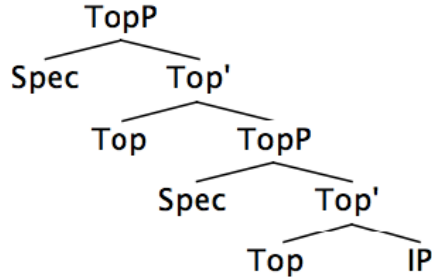
Figure 2: Topic Phrase analysis



is still under much debate (see Xu 2000), and it is an issue that will not be taken up here. For now, I side with Xu (2000) in assuming no CP in Chinese, and I will focus on the Topic Phrase as the maximal projection above the Inflectional Phrase for the rest of this paper.

Moreover, there is a general consensus that TopP can recur (Gasde & Paul 1996; Xu, 2000). Xu (2000) specifically notes that in a typical topic-prominent language like Chinese, multiple TopPs may be projected⁵:

Figure 3: *Recursivity of the Topic Phrase*



Note that although TopP is recursive, there can be no more than two topics in the clause-initial position. In cases where there are two moved topics, the reason is self-evident: moved topics originate from object position in the comment clause, and a predicate can take at most two objects. With regards to base-generated topics, in principle there is no limit, but constructions with more than two base-generated topics are never attested; I suspect this may be a matter of communicative efficiency, as well as the gradable nature of topichood in information structure: there can only be so many things that are *topical* enough to be established as what the rest of the sentence is about.

In sum, the arguments offered by Gasde and Paul (1996) and Xu (2000) cast doubt on the analysis of Chinese topic as specifier to CP or adjunct to IP, motivating TopP as a functional category which accounts for the syntactic significance of the topic construction in Chinese. In Section 4, my analysis of double topicalisation largely adopts Xu's (2000) framework, in which the topic appears in the specifier position under a recursive TopP. The relative order of double topics is subject to two syntactic constraints, which I will elaborate on immediately.

4 The relative order of double topics

A natural extension of the recursivity of TopP is how base-generated and moved topics are organised in a double topicalisation construction, and what characterises the relative organisation of double topics. In the following, I present new data from Chinese double topicalisation constructions to show that moved topics do observe two movement constraints.

My first observation is that in a double topicalisation construction, when there is one base-generated topic and one moved topic, the base-generated topic must precede the moved topic. Badan and Del Gobbo (2011) also discuss the relative order of different types of topics in Chinese; they identify an Aboutness Topic and a Left Dislocation Topic, which roughly correspond to the base-generated topic and the moved topic, respectively⁶. Badan and Del Gobbo (2011) correctly point out that recursive Aboutness Topics and Left Dislocation Topics are both possible in double topicalisation, and they further claim that when these two types of topics co-occur, the Aboutness Topic must precede the Left Dislocation Topic. Unfortunately, the examples in Badan and Del Gobbo (2011: 26) suffer from severe unnaturalness, lending little actual support for their argument:

⁵ In Xu's (2000) framework, the head Top can take another TopP as its complement, and the topic in specifier position is not limited to NP but can also accept PP, VP, and IP. IPs such as causal and conditional clauses, as shown by Gasde and Paul (1996), can also be analysed as a topic under Topic Phrase, although these are not the kind of topics that we are concerned with here.

⁶ In Badan and Del Gobbo (2011), the Left Dislocation Topic also includes PPs.

- (12) ?? [wo suoyou de pengyou], (dui Zhangsan), wo yijing shuohua.
 I all DE friend to Zhangsan 1SG already speak
 ‘Among all my friends, to Zhangsan, I already spoke.’
- (13) ?? [wo de jiaoren], (ti baba), Zhangsan jiedao hen duo qian le.
 I DE family for father Zhangsan borrow very much money PERF
 ‘As for my family, for my father, Zhangsan already borrowed much money.’

These two examples are cited as evidence for the relative order of the base-generated topic and the moved topic⁷, yet all eight informants that I have consulted share the intuition that these examples do not sound like natural Chinese sentences at all; in fact, many informants promptly reported that these two sentences did not make any sense to them⁸. In light of these pitfalls, I will present new data to show that there is indeed a syntactic constraint on the relative order of base-generated topics and moved topics in double topicalisation construction in Chinese.

Consider (14a), which contains a base-generated topic and a moved topic that can co-occur “in the external topic position” (Paul, 2002: 710). The first topic (henceforth TOP1) *hua* ‘flower’, sometimes termed a “dangling topic”, is base-generated – it bears no grammatical relation with the comment clause. On the other hand, the second topic (henceforth TOP2) *meigui-hua* ‘rose’ is a direct object moved to the pre-verbal topic position. Reversing the order of TOP1 and TOP2 results in infelicity⁹, as shown by (14b):

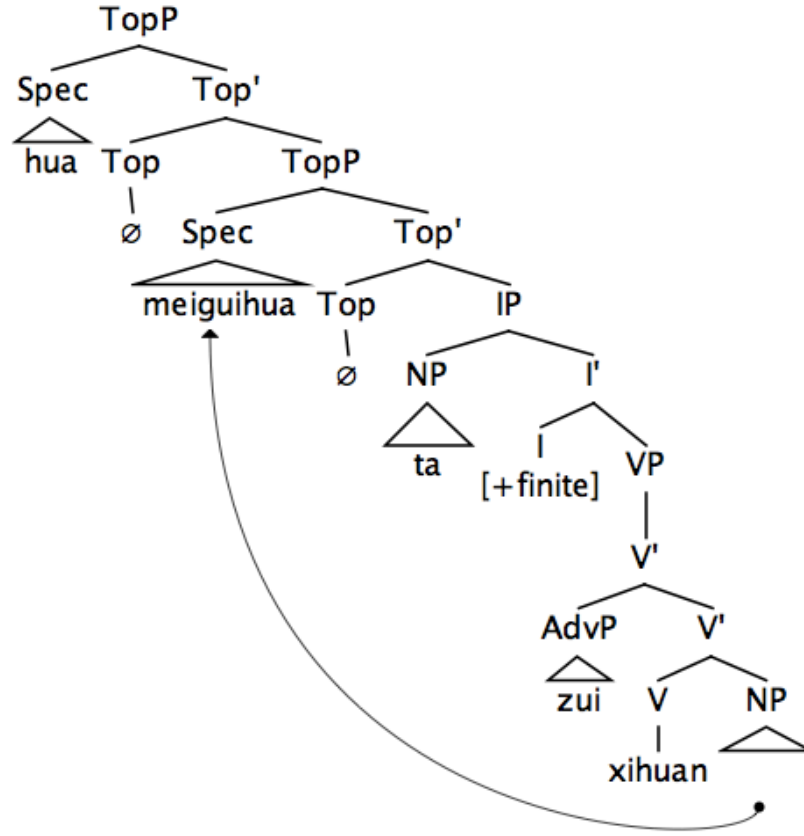
- (14) a. [hua], (meigui-hua)_i, ta zui xihuan _____ i
 flower rose-flower 3SG most like
 ‘Flowers, roses he/she likes them the best.’
- b. *[meigui-hua]_i, (hua), ta zui xihuan _____ i
 rose-flower flower 3SG most like
 *‘Roses, he/she likes flowers best.’

⁷ Question marks in (1) and (2) are added by me, based on judgments reported by eight informants, all of whom are native speakers of Mandarin Chinese.

⁸ Upon careful examination, both examples seem to suffer from having the Left Dislocation Topic in the wrong context; the PP topics *dui Zhangsan* ‘to Zhangsan’ and *ti baba* ‘for dad’ can only be used in a contrastive context when they are topicalised. In addition, (12) also lacks the perfective marker *le* after *shuo* ‘say’ in a finite clause. Therefore, it appears that (12) and (13) are anomalous for independent reasons other than violating the generalisation stated by Badan and Del Gobbo (2011); judgments for these examples improve when the above mentioned problems are fixed.

⁹ It is possible that the infelicity in (14b) may be due to a semantic constraint that requires TOP2 to be a subset of TOP1 if they are in a part-whole relationship (Xu, 1995). I will return to this point soon.

Figure 4: Topic Phrase analysis of (14a)



Moreover, not only can bare nouns be extracted from the comment clause, the moved topic can also be an NP extracted from a Classifier Phrase, provided that it follows the base-generated topic. (15a) is an example modified from Xu (2000: 32), where the base-generated TOP1 *zaocan* ‘breakfast’¹⁰, which carries no grammatical relation to the comment clause, is found in the most peripheral position. On the other hand, the moved TOP2, *mianbao* ‘bread’, is found closer to its gap in the comment clause. The same moved topic can also be extracted from an embedded clause (as in 15b), as long as it follows the base-generated topic in the sentence:

- (15) a. [zaocan] ne, (mianbao)_i dehua, ta zhi chi yi-pian ______i
 breakfast TOP bread TOP 3SG only eat one-CL
 ‘As for breakfast, as for bread, he/she only eats one slice.’
- b. [zaocan] ne, (mianbao)_j dehua, wo guji ta zhi chi yi-pian ______j
 breakfast TOP bread TOP 1SG figure 3SG only eat one-CL
 ‘As for breakfast, as for bread, I figure that he/she only eats one slice.’

¹⁰ One may wonder if *zaocan* ‘breakfast’ should be analysed as a temporal adjunct instead, i.e., a PP. The following example shows that *zaocan* ‘breakfast’ cannot act as a temporal adjunct by itself:

- (i) zaocan *(de shihou), baba qu shangban le
 breakfast DE time dad go be:at:work PERF
 (Intended: during breakfast time, dad went to work.)

Figure 5: Topic Phrase analysis of (15a)

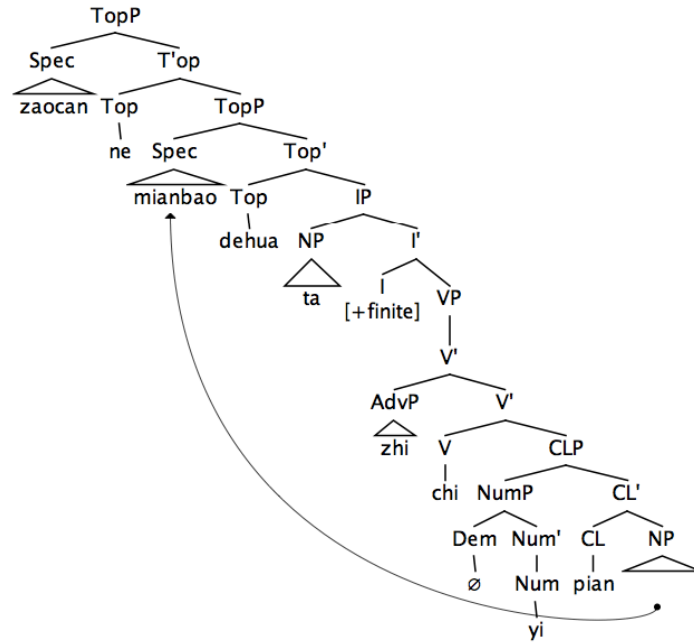
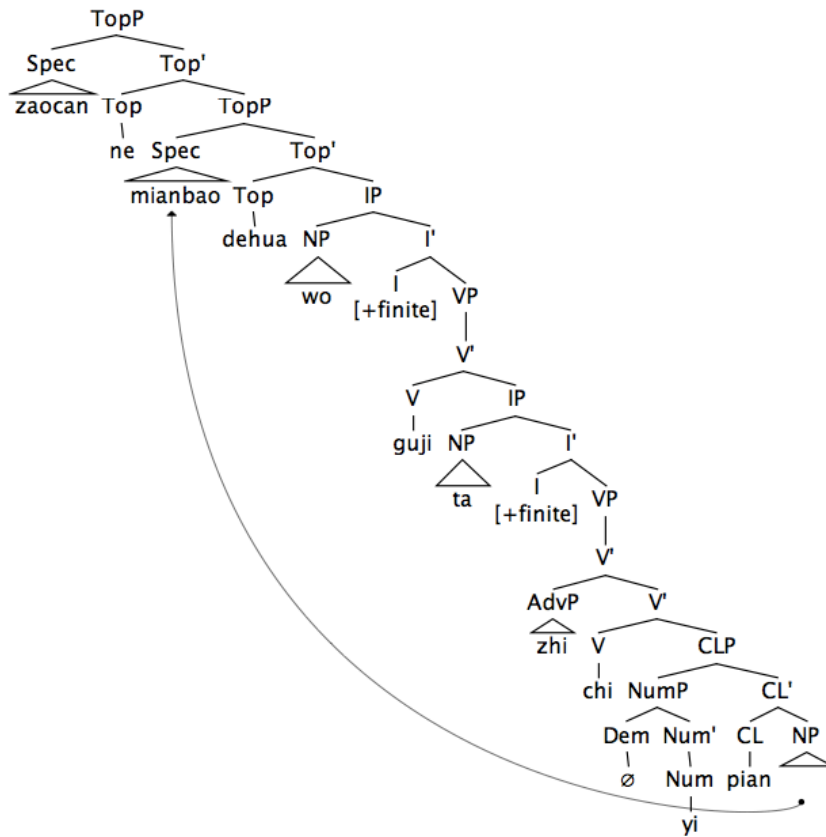


Figure 6: Topic Phrase analysis of (15b)



As predicted, reversing the order of these two topics leads to infelicity:

- (15) c. *[mianbao]_i ne, (zaocan) dehua, ta zhi chi yi-pian ______i
 bread TOP breakfast TOP 3SG only eat one-CL
 *‘As for bread, as for breakfast, he/she only eats one slice.’

Thus, when there is a base-generated topic and a moved topic, the base-generated topic must precede the moved topic; this judgment is confirmed by all eight informants that I have consulted. However, it remains a possibility that the infelicity in (14b) and (15c) is due to a semantic/pragmatic constraint that requires TOP2 to be a subset of TOP1, if they are in a part-whole relationship (Xu, 1995). Since ‘rose’ is a type of ‘flower’ and presupposes the latter, having ‘flower’ as TOP2 no longer makes any meaningful contribution to the sentence. It is not surprising that TOP1 and TOP2 are often semantically related since all topics must bear the “aboutness” relation to the comment clause, but such consideration brings to my attention the difficulty to pin down whether this constraint on the relative order of these two types of topics is actually syntactic or semantic in nature. But consider (16a) and (16b), which are inspired by the well-known example in Chao (1968):

- (16) a. [neichang huo], (xiaofang dui)_i, ta wangji tongzhi ______i le
 that-CL fire firefight team 3SG forget notify PERF
 ‘As for that fire, the firefighting team, he/she even forgot to notify them.’
 b. *[xiaofang dui]_i, (neichang huo), ta wangji tongzhi ______i le
 firefight team that-CL fire 3SG forget notify PERF
 *‘The firefighting team, as for that fire, he/she even forgot to notify them.’

In this case, it is relatively difficult to argue that ‘firefighting team’ is somehow a subset of ‘fire’ (or vice versa), although they are clearly related to each other semantically (as we would expect so). This demonstrates that the constraint on the relative order of a base-generated and a moved topic is indeed syntactic in nature.

The syntactic constraint on the relative order of a base-generated and a moved topic may be explained by the locality constraint on movement. The idea of minimal effort places a shortness requirement on movement operations, such that movements must be “as short as possible” (Li, 2000; Hornstein, Nunes, & Grohmann, 2005): a nominal topic cannot move over a position P (in this case, the specifier position of the lower TopP) that the nominal topic could have occupied if the element filling P wasn’t there. In other words, the move must meet the requirement of “the closest expression”, which can be defined in c-command relations: in the above example, the specifier of the topmost TopP (i.e. *zaocan* ‘breakfast’) c-commands the specifier of TOP2 (i.e. *mianbao* ‘bread’), which in turn c-commands the nominal domain that TOP2 is extracted from. To meet the closest expression requirement, ‘mianbao’ must be moved to the specifier position of the secondary TopP, without crossing over any intervening base-generated nominal topics. Thus (14b), (15c), and (16b) are infelicitous as a result of not meeting this requirement. Under such an analysis, the TopP treatment is still sufficient for representing two different types of topics in Chinese, as long as ‘minimal effort’ is stated as a meta-constraint.

The second observation on the relative order of double topics is that when both topics are derived via movement, they must be in a nested dependency relation with their gaps in the comment clause. (17) is an example of two moved topics, taken from Xu and Langendoen (1985: 17):

- (17) a. [zhejiang shi]_i, (lixiansheng)_j, wo gaosu guo ______j ______i
 This-CL matter Mr Li 1SG tell PERF
 ‘I have told Mr Li about this matter.’

- b. *[lixiansheng]_i, (zhejiang shi)_j, wo gaosu guo ______j ______i
 Mr Li This-CL matter 1SG tell PERF
 ‘I have told Mr Li about this matter.’

This observation is reminiscent of the nested requirement on multiple dependencies. It has been long observed that acceptability of double dependencies is sensitive to the order of extracted constituents; multiple extractions must be “nested” (Fodor, 1978; Kaplan & Bresnan, 1982; Pesetsky, 1982). For example:

- (18) a. [Violins this well crafted]_i, [the sonatas]_j are easy to play ______j on ______i.
 b. *[Sonatas this simple]_i, [the violins]_j are easy to play ______i on ______j.

It must be noted that the kind of dependency under discussion here is always between a filler and a gap, not between a filler and a resumptive pronoun. If we draw a “dependency line” from each gap to the extracted constituent, permitted dependencies are the ones in which the lines do not cross, as in (14a) but not (14b).

Fodor (1978) notes examples where *wh*-movement has created a prepositional phrase gap and *tough*-movement has created a noun phrase gap, as in (19a); if we replace *wh*-movement with topicalisation, as in (19b), the sentence remains acceptable; it is transformed from (19c):

- (19) a. At which distance_i is the chart_j easiest for you to read ______j ______i?
 b. At this distance_i, the chart_j is easiest for you to read ______j ______i.
 c. It is easy for you to read the chart at this distance.

Based on observations of various types of filler-gap dependencies, Fodor (1978) proposed the well-known Nested Dependency Constraint (NDC), which forbids “two or more filler-gap dependencies in the same sentence to have crossed scopes”. This is initially formulated as a “no-ambiguity constraint” as part of “performance grammar”; it serves to simplify “the gap-filling routines” of the parser during the process of interpretation. Basically, only disjoint or nested dependencies are permitted because NDC is respected – with almost no exception – by parsers when they interpret sentences with two filler-gap dependencies, in the sense that NDC helps disambiguate sentences that are potentially ambiguous with respect to how the two gaps are to be filled. As part of the parsing mechanism, NDC predicts that such a “no-ambiguity constraint” will be imposed and computed most readily during real-time processing of double dependencies (Fodor, 1978; Clifton & Frazier, 1989).

However, NDC has been criticised for being both too strong and too weak: it is too strong in the sense that counter-examples have been identified from Scandinavian languages, as we will see below; it is also too weak in lacking the explanatory power that justifies why nested relations, rather than crossed ones, are chosen as the parsing constraint. In light of these pitfalls, Pesetsky (1982) proposes a grammatical account of nested dependencies and suggests that a generalised theory of the Empty Category Principle be formulated in terms of paths between the maximal categories dominating the empty categories and their antecedents, and if two paths intersect, one must be contained in the other. This is dubbed the Path Containment Constraint (PCC), and the direct consequence of such a constraint is that for \bar{A} -dependencies, only nested paths are possible whereas crossed paths are ruled out:

- (20) a. This problem_i, Mary knows who_j to consult ______j about ______i.
 b. *This specialist_i, Mary knows what problems_j to consult ______i about ______j.

\bar{A} -dependencies typically include *wh*-movement, relativization, topicalisation, and *tough*-movement. In the Minimalist Program, the ban on improper movement simply states that “movement from an A position may target an A-bar position, but movement from an A-bar position may only target other A-bar positions” (Kobe, 2010).

Both PCC and NDC result in linearly nested dependency relations between the topics and their gaps in Chinese double topicalisation constructions. However, since PCC is a grammatical constraint rather than a parsing constraint, it is not restricted to potentially ambiguous constructions and thus makes different predictions with regards to the scope of the restriction that nested dependencies apply to. A more crucial difference between NDC and PCC is that NDC is a constraint on the linear order of double dependencies, which is not only inadequate but also empirically wrong. Evidence against the idea of crossed dependency as a general parsing principle is available in some Scandinavian languages. It has been shown that that crossed dependencies appear to exist in Norwegian topicalisation (Maling & Zaenen, 1982; Christensen, 1982), violating the NDC:

- (21) [Denne gaven]_i vil du ikke gjette (hvem)_j jeg fikk _____i fra _____j.
 this gift will 2SG not guess who 1SG got from
 ‘This gift, you cannot guess who I got from.’ (Maling & Zaenen, 1982: 236)

Furthermore, Swedish also seems to allow both crossed and nested dependencies, although crossed readings are more dispreferred compared to those in Norwegian, and in cases of crossed dependency, gaps tend to be filled by resumptive pronouns. Having said that, Engdahl (1982: 170) shows that both nested and crossed readings are available, and resumptive pronouns are not necessary if there is no ambiguity:

- (22) [Strömming]_i är den (här)_j kniven omöjlig att rensa _____i med _____j.
 Herring is this here knife impossible to clean with
 ‘Herring, this knife is impossible to clean with.’

Richards (2001) explains that the lack of PCC effects in Norwegian and Swedish is due to the availability of object shift in these Scandinavian languages. Based on these findings, Dalrymple & King (2013) reason that the constraint on nested dependencies is better considered as part of the grammar of some – but not all – languages, rather than a general parsing constraint on language processing. On the other hand, the PCC is structure-dependent and applicable only to \bar{A} -dependencies. Pesetsky (1982) replaced Fodor’s (1978) ‘dependency line’ with its two-dimensional analog ‘path’, which is essentially a line segment in a tree that ‘runs from the first maximal projection dominating a trace and the first maximal projection dominating its local A-binder’. A direct consequence of this difference is that under PCC, linear dependency lines may be crossed in certain constructions/languages, but the two paths that overlap must have one containing the other (Pesetsky, 1982); this will be illustrated with examples immediately. For the rest of the paper, I will adopt Pesetsky’s PCC (1982) in my discussion of the relative order of two moved topics in Chinese.

Although there has been extensive psycholinguistic research comparing nested dependencies and serial dependencies in Chinese relative clauses (Gibson & Wu, 2013; Hsiao & Gibson, 2003; Hsu, Phillips, & Yoshida, 2005; Lin & Bever, 2010; Wu, Kaiser, & Andersen, 2010; among many others), dependency relations in Chinese topicalisation remain largely unexplored. However, Marácz (1989) and É. Kiss (1987) have provided a substantial theoretical analysis of Hungarian double topicalisation, and both of them share the assumption that topicalisation structures can result from syntactic movement in addition to base generation. To provide further cross-linguistic support for the PCC, I first draw a parallel between double topicalisation constructions in Hungarian and Chinese, and then present new data to show that the paths between moved topics and their corresponding gaps must also be in a containment relation.

In a study of multiple dependencies in Hungarian topicalisation, Rado (1997) examines some grammatical and parsing principles (such as NDC and PCC) that are necessary to interpret simultaneous dependencies between two topics or *wh*-phrases and their traces. She uses the following examples to illustrate a double topicalisation construction in Hungarian:

- (23) a. Kati-tol_i, Mari-tol_j Tibor hallotta _____j, hogy Pista elvalt _____i.

- Kati-from Mari-from Tibor heard that Pista divorced
 ‘As for Mari_j, Tibor heard from her_j that Kati_i, Pista divorced her_i.’
 b. *Kati-tol_i, Mari-tol_j Tibor hallotta _____i, hogy Pista elvalt _____j.
 Kati-from Mari-from Tibor heard that Pista divorced
 ‘As for Kati_i, Tibor heard from her_i that Mari_j, Pista divorced her_j.’ (Rado, 1997: 150)

Once again, the paths between moved topics and their corresponding gaps must also be contained. Rado (1997) summarises this observation as follows:

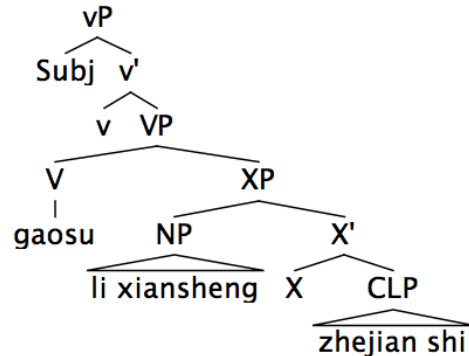
- (24) Topic_i Topic_j [_____j [_____i]]
 #Topic_i Topic_j [_____i [_____j]]

Let us now turn to double topicalisation in Chinese. Consider (17), repeated here as (25a) and illustrated for PPC:

- (25) a. [zhejiang shi]_i, (lixiansheng)_j, wo gaosu guo _____j _____i
 This-CL matter Mr Li 1SG tell PERF
 ‘I have told Mr Li about this matter.’

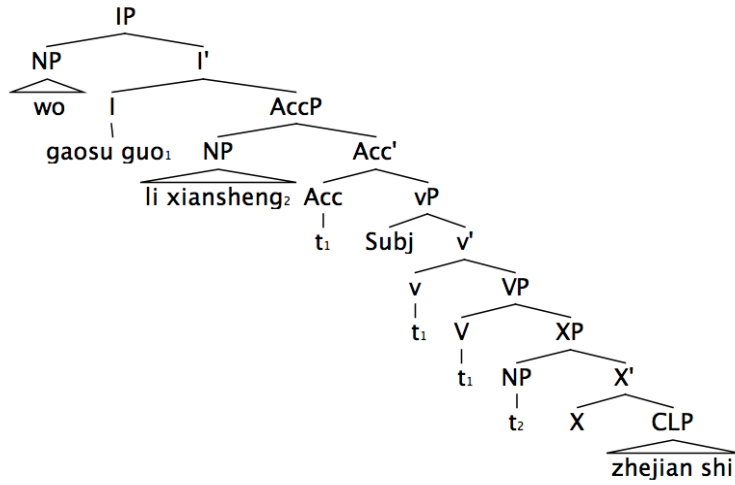
I adopt a Larsonian (Larson, 1988, 1990), binary-branching representation of VPs, and a small-clause analysis of double objects (Kayne, 1984; Beck & Johnson, 2004). This gives us the underlying representation of (25a) as follows:

Figure 7: Underlying representation of (25a)



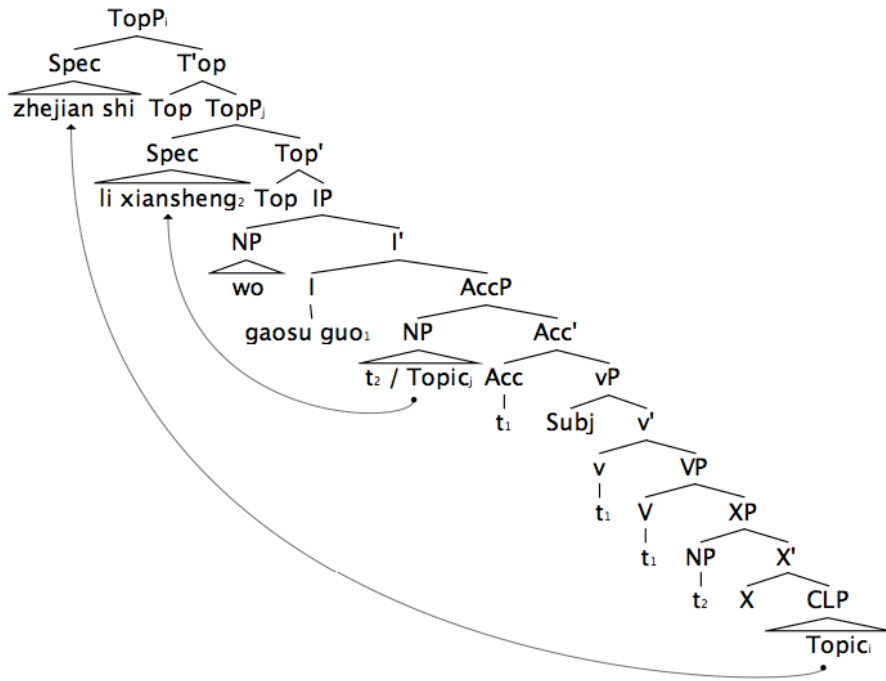
Following Kayne’s (1984) proposal, verb movement (i.e. move the verb through the position occupied by *v* and into a higher *I*⁰ position) and object movement (i.e. move the direct object into a position that determines its Case, which is the AccP between the surface position of the verb and *v*P) will form the following surface representation of (25a) before topicalisation takes place:

Figure 8: Surface representation of (25a) before topicalisation



When *lixiansheng* ‘Mr Li’ and *zhejianshi* ‘this matter’ are both topicalised, we can derive the following surface representation¹¹:

Figure 9: Surface representation of (25a) after topicalisation

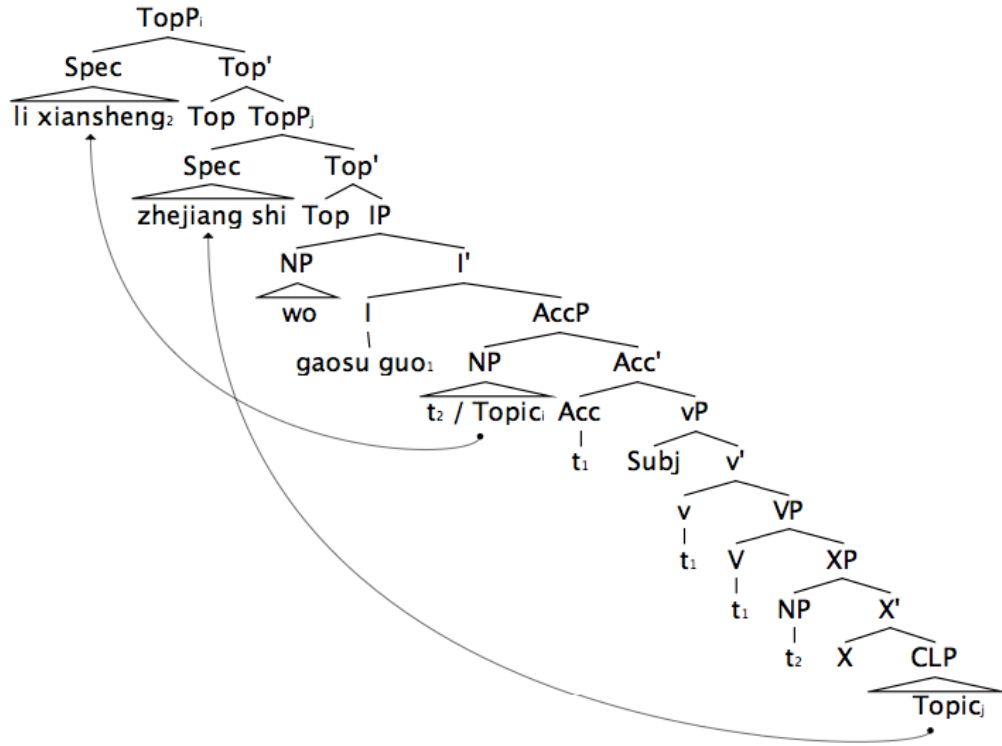


¹¹ One reviewer points out that this derivation involves the idea that “an IP can be constructed with subsequent movement operations and then that structure can receive further construction with more subsequent movement”, i.e., forming TopP on top of IP, which seems to raise the question of how syntax knows that some elements within a structure will be topicalized only later. My explanation is that the grammar described here is exceptional in this respect because (i) Chinese is a topic-prominent language where TopP is readily available in the syntactic structure and (ii) this process is achieved via Move rather than Merge, so there is no violation to the Merge before Move condition (Chomsky 1995, 2000).

In (25a), both topics are extracted from their original positions in the comment clause, as a result of complements being topicalised and moved to clause-initial position. Crucially, the path between *lixiansheng* ‘Mr Li’ and its gap Topic_i (i.e. NP... AccP... IP... TopP_j) is contained in the path between *zhejianshi* ‘this matter’ and its gap Topic_j (i.e. CLP... XP... VP... vP... AccP... IP... TopP_j ... TopP_i). Reversing the order of TOP1 and TOP2 leads to infelicity:

- (25) b. * $[\text{lixiansheng}]_i$, (*zhejian shi*) $_j$, wo gaosu guo _____ $_i$ _____ $_j$
 Mr Li This-CL matter 1SG tell PERF
 ‘I have told Mr Li about this matter.’

Figure 10: Surface representation of (25b) after topicalisation



In (25b), the path between *lixiansheng* ‘Mr Li’ and its gap Topic_i (i.e. NP... AccP... IP... TopP_j ... TopP_i) now crosses with the path between *zhejianshi* ‘this matter’ and its gap Topic_j (i.e. CLP... XP... VP... vP... AccP... IP... TopP_j). The relation between these two paths does not observe the PCC, rendering (25b) infelicitous.

This points toward a constraint on the relative order of two moved topics: the paths between two moved topics and their gaps in the comment clause must be in a containment relation. In fact, this constraint seems to apply to all double topicalisation constructions that involve two moved topics. The following examples feature various other verbal predicates that can take two NPs as their objects, with (a) being the contained path version of the sentence, (b) the version with both objects in their original positions in the comment clause, and (c) the crossed path version:

- (26) a. [nage wenti]_i, (liu laoshi)_j, wo wen guo ______j ______i
 that-CL question Liu teacher 1SG ask PERF
 ‘That question, Mr/Ms Liu I have asked him/her.’
 b. wo wen guo liu laoshi_j nage wenti_i
 1SG ask PERF Liu teacher that-CL question
 ‘I have asked Mr/Ms Liu about this question.’
 c. *[liulaoshi]_i, (nage wenti)_j, wo wen guo ______i ______j
 Liu teacher that-CL question 1SG ask PERF
 ‘Mr/Ms Liu, I have asked him/her about that question.’
- (27) a. [shengfan]_i, (lubian xiao gou)_j, wo wei guo ______j ______i
 leftover-rice streetside small dog 1SG feed PERF
 ‘Leftovers, I have fed them to small dogs on the streetside.’
 b. wo wei guo lubian xiao gou_j shengfan_i
 1SG feed PERF streetside small dog leftover-rice
 ‘I have fed small dogs on the street side some leftovers.’
 c. *[lubian xiao gou]_i, (shengfan)_j, wo wei guo ______i ______j
 streetside small dog leftover-rice 1SG feed PERF
 ‘Leftovers, I have fed them to small dogs on the streetside.’
- (28) a. [zhe-ge jiefa]_i, (na-ge ban)_j, Liu laoshi zhengzai jiao ______j ______i
 this-CL solution that-CL class Liu teacher PROG teach
 ‘This solution, Mr/Ms Liu is teaching it to students in that class.’
 b. liu laoshi zhengzai jiao na-ge ban_j zhe-ge jiefa_i
 Liu teacher PROG teach that-CL class this-CL solution
 ‘Mr/Ms Liu is teaching that class this solution.’
 c. *[na-ge ban]_i, (zhe-ge jiefa)_j, Liu laoshi zhengzai jiao ______i ______j
 that-CL class this-CL solution Liu teacher PROG teach
 ‘This solution, Mr/Ms Liu is teaching it to students in that class.’

Interestingly, upon hearing examples (26c), (27c), and (28c), the native speakers that I consulted showed a remarkably strong tendency to salvage the crossed path constructions by adding a resumptive pronoun that fills the first gap (i.e. adding *ta* in the position of ______i). In these cases, when the second gap has been filled by a resumptive pronoun, the topic back to which this resumptive pronoun refers is analysed as base-generated (Badan & Del Gobbo, 2011; Li, 2000; Shyu, 1995). As such, the ill-formed (26c) can be re-formulated as (29):

- (29) [liu laoshi]_i, (nage wenti)_j, wo wen guo ta_i
 Liu teacher that-CL question 1SG ask PERF 3SG
 ‘Mr/Ms Liu, I have asked him/her about that question.’

Note that it is impossible to have both gaps filled by a pronoun, although the reason is rather unclear; I speculate that it is because the third person pronouns for inanimate and animate NPs are phonologically identical (although orthographically distinct) in Chinese, resulting in certain phonological rules that forbid two consecutive *ta*¹². Additionally, although *ta* is ambiguous between animate and

¹² One reviewer insightfully asked if it is possible to topicalise non-third person or perhaps third-person plural NPs to test this hypothesis, i.e. if one can use double resumptive pronouns in sentences like *As for me, that gift, she already gave me it*. Upon introspection, it seems that Chinese simply disallows double resumptive pronouns, although more work needs to be done to verify this claim.

inanimate pronouns in speech, in (29) it unambiguously refers back to *liulaoshi* ‘Teacher Liu’, the animate topic; the same holds for (26-28), where TOP1 is inanimate and TOP2 is animate. However, because of this systematic distribution of topic animacy in the above examples, it is yet to be determined whether speakers are using semantic or syntactic information to interpret sentences with double topics. Further examination reveals that both animacy hierarchy and semantic role are at play in determining the interpretation of *ta* when it refers back to one of the topics. Consider the following two examples:

- (30) a. [na-tiao gou]_i, (zhe-zhi laohu)_j, wo wei guo ta_j
 that-CL dog this-CL tiger 1SG feed PERF 3SG
 ‘As for that dog, as for this tiger_j, I have fed it_j with the dog.’
 b. [zhe-zhi laohu]_i, (na-tiao gou)_j, wo wei guo ta_j
 this-CL tiger that-CL dog 1SG feed PERF 3SG
 ‘As for this tiger, as for that dog_j, I have fed it_j with the tiger.’

In (30a) and (30b), *ta* refers unambiguously to the animate recipient: it is the tiger whom I fed the dog to in (30a), and it is the dog whom I fed the tiger to in (30b). These interpretations are more difficult to arrive at compared to (26-28), but they can be obtained the way we have predicted. In both examples, my informants successfully arrived at the predicted readings, even though (30b) is arguably a less likely event in the real world¹³. Therefore, when there are two topics in the clause-initial position and one *ta* in the comment clause, *ta* refers to the topic that is an animate recipient.

Furthermore, the following example from Xu (2000: 28) demonstrates that both topics can be moved from their original positions in an embedded environment:

- (31) a. [zhejiang shi]_i, (youxie ren)_j, ta shuo ta mei gaosu _____j _____i
 this-CL matter exist-PL person 3SG say 3SG NEG tell
 ‘This matter, some people, (s)he said (s)he never told them about it.’
 b. *[youxie ren]_i, (zhejiang shi)_j, ta shuo ta mei gaosu _____i _____j
 exist-PL person this-CL matter 3SG say 3SG NEG tell
 ‘Some people, this matter, (s)he said (s)he never told them about it.’

Once again the moved topics are in a path containment relation, and all eight informants also showed a very strong tendency to promptly fill the first gap in (31b) with the plural pronoun *ta-men* ‘they’, which refers back to *youxieren* ‘some people’ and would in theory salvage the crossed path construction by leaving only one gap in the comment clause.

5. Conclusions & implications

In this paper, I have provided a sketch of the double topicalisation construction in Chinese, where two nominal topics, derived via either base generation or movement, are found in the clause-initial position. To investigate the internal organisation of double topics, I have established my stance on analysing topics in Chinese as a grammatical function that occupies the specifier position of a TopP, which is a functional category proposed for topic-prominent languages like Chinese. The TopP analysis is motivated by the need to represent the significance of topic in Chinese sentence constructions, and it is well-defended through cross-linguistic empirical evidence. Moreover, the recursivity of TopP makes it possible to account for the existence of double topicalisation constructions.

By adopting a TopP analysis, I have offered new data to demonstrate that the relative order of topics in Chinese double topicalisation constructions indeed manifests the notion of minimal effort, which

¹³ I found it helpful to set up a fictional scenario before presenting examples like (30a) and (30b) to the informants, e.g. “Imagine we are in the world of *Life of Pi* or *The Island with Bear Grylls*, where animals have to eat animals alive, or vice versa.....”.

places a shortness requirement on movement operations. When there is one base-generated topic and one moved topic, the base-generated topic must precede the moved topic, which follows the idea of minimal effort that places a shortness requirement on movement operations. Secondly, when both topics in a double topicalisation construction are moved topics, their relative order is governed by a grammatical constraint that requires two movement paths to be contained; in other words, the paths between two moved topics and their corresponding gaps in the comment clause must be in a containment relation. The PCC effect found in Chinese double topicalisation construction patterns with many A-bar movements in English, but is the opposite of what has been reported for multiple wh-movement in Bulgarian where intersecting multiple filler-gap dependencies obligatorily cross, which raises further architectural questions such as whether there is a universal requirement that underlies multiple long-distance dependency relations (Richards, 2001). If so, what does such a requirement look like? Is there a way to reconcile the different patterns in Chinese and Bulgarian? I will leave these questions for future research.

These findings challenge the view that topicalisation in Chinese is merely done through a semantic “aboutness” relation with the comment clause (cf. Xu & Langendoen, 1985). Instead, they suggest that topicalisation is subject to syntactic constraints that govern the relative order of double topics in Chinese, which falls under the broad notion of minimal effort. The grammatical function of a syntactic constituent is typically indicated by word order or inflectional morphology (or both). Being a topic-prominent language, Chinese has relatively more rigid word order compared to English, but it also has little inflectional morphology, making it difficult to pin down the grammatical function of a constituent based on traditional grounds. Nevertheless, native speakers of Chinese do not seem to have any problem interpreting double topicalisation constructions, largely because of the kind of syntactic constraints described above. The grammar that underlies Chinese topicalisation is designed as such that minimal effort is required from the speaker to resolve any potential ambiguity despite the lack of overt morphological cues.

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