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Abstract

This article proposes a syntax for Mandarin even/all constructions. We show that “focus movement” under ‘even’ is not deeply connected to semantic focus or stress, since the same movement occurs in the absence of focus or prosodic triggers. Rather, these movements are mediated by a feature shared across ‘even’ and ‘all’ constructions, which we propose is the maximality feature on a potentially covert operator. This result, when placed alongside findings by Horvath (2007) and Cable (2007), supports the hypothesis that A-bar “focus movement” is always operator-driven. The syntactic similarities between ‘even’ and ‘all’ in Mandarin suggest a semantics where ‘even’ is built compositionally from a non-focus-sensitive ‘all’ (dou) plus a scalar focus operator (lian). We present a preliminary semantics of this kind, and discuss some challenges it faces. Finally, we address “partial focus movement” data that are initially unexpected on our account, and show how they can be incorporated under a framework that allows copy movement and PF deletion.

Mandarin ‘even’, ‘all’ and the Trigger of Focus Movement

Noah Constant and Chloe Chenjie Gu*

1 Introduction

In this article, we provide a syntax for Mandarin ‘even/all’ constructions. We argue that movement in these constructions is driven by a potentially covert “maximality” operator, not by focus or prosody. This result, when placed alongside findings by Horvath (2007) and Cable (2007), supports the hypothesis that A-bar “focus movement” is always operator-driven. While the trigger of Mandarin focus movement is properly syntactic, our account makes use of constraints on spellout to predict a complex paradigm of copying, pied-piping, and partial focus movement.

We adopt Rooth’s (1985) semantics for focus, and mark alternative-generating semantic focus with $[]_F$. Following Rullmann (1997), ‘even’ introduces a presupposition that the focus value is the least likely among salient alternatives to satisfy the predicate, as in (1). The placement of semantic focus has a principled effect on the placement of prosodic stress, which we indicate with an underline. Stress underdetermines focus, so a given stress pattern may correspond to multiple focus structures. For example, in (2) the final stress on *Bob* is compatible with either narrow focus on $[Bob]_F$ or broad focus on $[_{VP} \text{introduced AI to Bob}]_F$.

- (1) I even introduced $[AI]_F$ to Bob.
Entails: I introduced AI to Bob.
Presupposes: $\forall x (x \neq AI) : \text{it is more likely I introduce } x \text{ to Bob than introduce AI to Bob.}$
- (2) I even introduced AI to Bob.

With Horvath (2007), we distinguish two senses of “focus movement”. The first, which we will not be concerned with here, is the type of clause-internal “scrambling” observed in Spanish (Zubizarreta, 1998), German (Büring, 2001), and Japanese (Ishihara, 2001). In general, scrambling targets a constituent that has no identifying syntactic features, and may be movement *out* of a prominent position. As such, the movement is plausibly prosodically driven; when two syntactic structures are available, the phonology may prefer the structure where a focused phrase can receive stress. A second type of focus movement is A-bar movement of a focused phrase to a designated focus position. This movement is long distance, island-sensitive, and licenses parasitic gaps. It has been observed in Hungarian (Brody, 1995; É. Kiss, 1998), Basque (Ortiz de Urbina, 1995), and Korean (Choe, 1995), and has been postulated to occur covertly in English (Krifka, 2006; Wagner, 2007).

Once A-bar focus movement is identified as a particular class of phenomena across languages, we can ask what the mechanics of the movement are. Is semantic focus directly accessible to the syntax, or is some intermediary responsible for the movement? Mandarin ‘even’ constructions provide a useful data point in addressing this question. On the surface, there seems to be a connection between semantic focus, prosodic stress, and syntactic movement. However, deeper investigation and comparison to ‘all’ constructions reveal that the trigger of movement is strictly syntactic.

2 Mandarin ‘even’

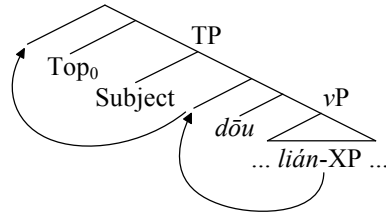
Mandarin is an analytic SVO language spoken in China. The judgments in this article are based on the Beijing dialect; however, we believe the facts described hold for many other dialects. ‘Even’ constructions in Mandarin consist of two parts: an obligatory adverbial *dōu* and an optional particle *lián*. *Dōu* is a sentential adverb (Lee, 1986; Cheng, 1991; Cheng, 1995; Lin, 1996), which is positioned below the subject and above VP-level projections. The meaning of *dōu* extends to cover both ‘even’ and ‘all’, and these uses are generally treated as arising from a single lexical item

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item (Shyu, 1995; Wu, 1999; Giannakidou and Cheng, 2006; Xiang, 2008). In ‘even’ constructions, a constituent roughly corresponding to the focus of ‘even’ moves to a “focus position” preceding *dōu* in the surface order. This fronted constituent is optionally marked by *lián*, which has been analyzed as a focus marker (Wu, 1999). However, we will see cases where a constituent smaller or larger than the semantic focus is *lián*-marked and raises to the focus position, suggesting a more indirect relationship between *lián* and focus. There is, however, a close relationship between *lián* and *dōu*, in that *lián* never occurs without *dōu* (or similar operators *yě* ‘also’ and *hái* ‘still’). *Lián* can combine with phrases of type DP, PP, and CP, but we narrow our view to the DP cases for reasons of space.

A typical case of ‘even’ is given in (3a), where the semantic focus ‘Beijing’ is marked with *lián* and moves to the left of *dōu*. Examples (3b,c) show that this movement is mandatory¹. In (4), we see another possible order, where a focused object surfaces before the subject. We analyze this order as deriving from (3a) via a topicalization process². On this analysis, we can hold that the *lián*-phrase always moves to spec-*dōu*, and further movements may be possible. When subjects are focused, as in (5), there is no change in the surface word order. However, we maintain that movement to spec-*dōu* takes place for the sake of uniformity. In (6) we give a schematic illustration of movement under ‘even’ and the subsequent option of topicalization.

- (3) a. tā (lián) běijīng dōu qù guò __ .
 he LIAN Beijing DOU go ASP
 ‘He’s even been to [Beijing]_F.’
 b. *tā dōu qù guò lián běijīng.
 he DOU go ASP LIAN Beijing
 c. tā (lián) dōu qù guò běijīng.
 he LIAN DOU go ASP Beijing
 *‘He’s even been to [Beijing]_F.’
- (4) (lián) běijīng tā dōu qù guò __ .
 LIAN Beijing he DOU go ASP
 ‘Even [Beijing]_F he’s been to.’
- (5) lián tā __ dōu qù guò běijīng.
 LIAN he DOU go ASP Beijing
 ‘Even [he]_F has been to Beijing.’
- (6)



¹The only exception we are aware of is broad sentential focus, where movement and *lián* are impossible. To express ‘It’s even snowing’, one can say ‘*dōu xià xuě le*’ (DOU fall snow ASP), but not ‘*lián xuě dōu xià le*’ (LIAN snow DOU fall ASP), which can only have the object focus reading: ‘Even [snow]_F fell’.

²Three pieces of evidence support this view. First, when an indefinite DP is focused by ‘even’ as in (i), it can only appear after the subject. This is consistent with the observation that topics in Mandarin cannot be indefinite (Chao, 1968; Li and Thompson, 1981). Second, there is an obligatory pause between the *lián*-phrase and the subject in (4), which we do not observe in (3a). We take this pause to indicate the topic status of the *lián*-phrase, on par with the intonational phrase boundary that sets off topicalized material in English. Finally, a topic-marking particle *-ne* can attach to the *lián*-phrase in (4) without changing the meaning, but if we add the same particle to (3a), it can only appear on the subject. These facts indicate that the word order in (3a) is basic, while (4) involves a further movement of the *lián*-phrase under topicality.

- (i) a. Zhāngsān lián [DP yī zhǒng méi-yǒu míngzi de yú] dōu chī guò __ .
 Zhangsan LIAN one CL not-have name DE fish DOU eat ASP
 ‘Zhangsan has even eaten a type of fish that doesn’t have a name.’
 b. *lián [DP yī zhǒng méi-yǒu míngzi de yú] Zhāngsān dōu chī guò __ .
 LIAN one CL not-have name DE fish Zhangsan DOU eat ASP
 ‘Even a type of fish that doesn’t have a name, Zhangsan has even eaten (it).’

Evidence that the movement in ‘even’ constructions is unbounded and island-sensitive is given in (7) and (8), respectively. When the focus of ‘even’ occurs in an island, *lián* marks the entire island, which “pied-pipes” to the focus position. This instance of pied-piping as a response to focus association into an island mirrors the covert pied-piping assumed by Drubig (1994) and Wagner (2007), and could be taken as support for the movement theory of focus association. However, in the end, we argue that movement under Mandarin ‘even’ is not driven directly by focus, and we suspect the same holds for the covert movement under English ‘only’.

- (7) *lián* *lú*ròu [CP *wǒ* *dōu* *néng* *xiǎngxiàng* [CP *zhāngsān* *huì* *chī* ___]].
 LIAN donkey I DOU can imagine Zhangsan would eat
 ‘I can even imagine that Zhangsan would eat [donkey]_F.’
- (8) a. **lián* [_{DP} *Lǚ-Xùn*] *wǒ* *dōu* *bù* *xiǎng* *kàn* [_{DP} (*tā*) *xiě* *de* *shū*].
 LIAN Lu-Xun I DOU not want read he write DE book
 b. *lián* [_{DP} *Lǚ-Xùn* *xiě* *de* *shū*] *wǒ* *dōu* *bù* *xiǎng* *kàn* ___ .
 LIAN Lu-Xun write DE book I DOU not want read
 ‘I don’t even want to read the books [Lu Xun]_F writes.’

Example (8) shows that contra Wu (1999), *lián* is not a focus marker. Descriptively, *lián* attaches to the smallest constituent that both (i) contains the focus of ‘even’, and (ii) is a potential target for movement. We suggest that *lián* is an operator that accesses the focus value of its argument, and thus needs to combine with a constituent containing focus. In ‘even’ constructions, it is the phrase marked by *lián* that is subject to A-bar movement. This indirect relation between movement and focus suggests that the movement targets features of *lián*, rather than properties of the semantic focus.

3 What Drives Focus Movement?

3.1 Previous Work

One of the most widely studied cases of A-bar focus movement is that in Hungarian. However, there is no consensus on what the driving force behind Hungarian focus movement is. Brody (1995) suggests that the movement is driven directly by focus features. Szendrői (2003), on the other hand, holds that Hungarian focus movement is to satisfy prosodic constraints, and similar prosody-driven accounts have been proposed for A-bar focus movement in Basque (Arregi, 2001) and Nlhe7kepmxcin (Koch, 2008). Horvath (2007) provides compelling arguments that Hungarian “focus movement” cannot be driven directly by focus or prosody. One strong piece of evidence is that focused material behaves differently under different operators³. In Hungarian, the focus of ‘only’ must raise to the focus position, but the focus of ‘even’ never moves. Nevertheless, both raised and in-situ focuses get main stress. Furthermore, Horvath observes that the focus of the answer to a Wh- question (that is, the constituent that answers the question) is fronted only when the answer is exhaustive. To capture the common core between ‘only’ and exhaustive answers, Horvath postulates a covert “exhaustive identification” (EI) operator which operates on the focus of ‘only’ and exhaustive answers, and is probed for by an EI₀ head higher in the structure.

A similar proposal is made by Cable (2007) for Wh- movement cross-linguistically, based on evidence from Tlingit. While Wh- movement is traditionally seen as involving a direct relationship between interrogative C₀ and a semantically focused (following Beck, 2006) Wh-phrase, Cable posits an intervening Q operator that mediates between these pieces, and which is overt in Tlingit. If Wh- movement relates C₀ to Q, the constituent that moves is simply the phrase marked by Q, and there is no need for a formal pied-piping mechanism.

³Another piece of evidence is that focused phrases “pied-pipe” more material than Wh- phrases. Note, however, that this comparison is impossible in Mandarin because Wh- is in situ.

3.2 Maximality Drives Mandarin ‘even’/‘all’

Like Hungarian focus movement (and Tlingit Wh- movement), Mandarin focus movement is not driven by focus or stress. This can be demonstrated by comparing the movement facts for ‘even’, ‘only’, and ‘all’. Recall that the focus of ‘even’ must be fronted and receive stress, as in (9). The focus of ‘only’ also requires stress, but must stay in situ, as in (10)⁴. Finally, in ‘all’ constructions, the quantified phrase raises to precede *dōu*, but does not receive main stress, as in (11).

- (9) tā lián píngguǒ dōu chī wán le.
 he LIAN apple DOU eat finish ASP
 ‘He even finished [the apples]_F.’
- (10) tā zhǐ chī wán le píngguǒ.
 He only eat finish ASP apple
 ‘He only finished [the apples]_F.’
- (11) tā píngguǒ dōu chī wán le.
 He apple DOU eat finish ASP
 ‘He finished all the apples.’

In ‘all’ constructions, as with ‘even’, movement of the quantified phrase is mandatory. Thus, (12) cannot get the interpretation ‘They’ve read all of those three books.’ Wh- indeterminate pronouns can also be quantified over by ‘all’, as in Japanese (Kratzer and Shimoyama, 2002), and raise to the focus position, as in (13a). If a Wh- word remains in-situ as in (13b), only a question interpretation is available. Like the movement with ‘even’, movement under ‘all’ is unbounded and island-sensitive as shown in (14, 15)⁵.

- (12) tāmen dōu kàn guò nèi sān běn shū.
 they DOU read ASP that three CL book
 ‘They’ve all read those three books.’
- (13) a. zhāngsān shénme dōu xǐhuan ____ .
 Zhangsan what DOU like
 ‘Zhangsan likes anything.’
 b. zhāngsān dōu xǐhuan shénme?
 Zhangsan DOU like what
 ‘What things does Zhangsan like?’
- (14) wǒ shéi dōu bù xiǎng ràng lìsì dézui ____ .
 I who DOU not want have Lisi offend
 ‘I don’t want Lisi to offend anyone.’
- (15) a. *shéi wǒ dōu bù xiǎng kàn [DP(tā) xiě de shū].
 who I DOU not want read he write DE book
 b. [DP shéi xiě de shū] wǒ dōu bù xiǎng kàn ____ .
 who write DE book I DOU not want read
 ‘I don’t want to read the books anyone writes.’ (There are no books I want to read.)

We have seen that Mandarin ‘even’ and ‘all’ constructions are similar in that they both involve A-bar movement of a quantified element to the specifier of *dōu*. This shared landing site suggests that *dōu* is syntactically related to the movement in both constructions. Adopting a minimalist view of movement, we propose that *dōu* probes for a matching feature on the moving phrase in both ‘even’ and ‘all’ constructions. To determine precisely what feature *dōu* is probing for, we start by observing how definite readings are attained in ‘all’ constructions. In Mandarin,

⁴Another ‘only’ construction in Mandarin involves *cái* ‘only (then)’, sometimes in conjunction with *zhǐ-yǒu* ‘only-have’. We do not address this construction here, and it may exhibit different behavior with respect to stress and movement.

⁵The island test in (15) assumes that *dōu* is quantifying over the Wh- word rather than the complex DP. However if we replace *shéi* ‘who’ with *tāmen* ‘them’ in (15b), the head noun *shū* ‘book(s)’ must be interpreted as plural, suggesting that in this case the embedded DP is not a possible restrictor of *dōu*.

when the conventional SVO word order is used, DP's lacking demonstratives are interpreted as indefinite, as (16a) shows. However, in 'all' constructions, such DP's get a definite interpretation, as in (16b). This shift from indefinite to definite does not come for free. Without *dōu*, a DP like [three CL book] cannot refer to a specific set of three books.

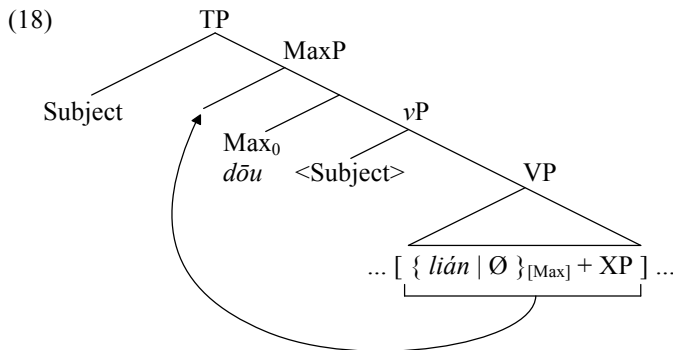
- (16) a. wǒ kàn le [DP sān běn shū].
 I read ASP three CL book
 'I read three books.' (≠ 'I read the three books.')
- b. wǒ [DP sān běn shū] dōu kàn le ____.
 I three CL book DOU read ASP
 'I read (all of) the three books.'

Movement to a preverbal position alone does not guarantee a definite reading, as (17a) shows. The Mandarin *bǎ*-construction is a structure where SOV word order is required, but 'three books' in (17a) is interpreted as indefinite, as in (16a). In contrast, the use of *dōu* in *bǎ*-constructions produces the definite reading (17b).

- (17) a. tā bǎ [DP sān běn shū] kàn wán le ____.
 she BA three CL book read finish ASP
 'She read three books.' (identity unknown)
- b. tā bǎ [DP sān běn shū] dōu kàn wán le ____.
 she BA three CL book DOU read finish ASP
 'She read (all of) the three books.' (three particular books)

Semantically, the definite reading of 'the three books' is produced when a maximality operator takes the denotation 'three books' and returns a unique plural object consisting of three books (Link, 1983). Such an operator can be null, as the shift from indefinite to definite in (16a) and (16b) shows. However, while the Max-operator is not pronounced in Mandarin 'all' constructions, it can be detected by movement facts. When *dōu* is present, the DP that Max-Op attaches to has to move to spec-*dōu*. We propose that *dōu* is probing for a Max-Op, and the movement of 'three books' is a side-effect, as the Max-Op forms a unit with whatever material it attaches to. Without the Max-Op, 'three books' will be interpreted as indefinite and it does not have any feature *dōu* probes for.

Giannakidou and Cheng (2006), based on the distribution of definite and indefinite free choice items in Mandarin, argue that *dōu* itself is a maximality operator. Our account concurs with Giannakidou and Cheng (2006) on the existence of the maximality operator when *dōu* is present in a construction⁶, but differs on how the syntactic details work out. On our analysis, *dōu* is a head that is analogous to interrogative C. It probes for the Max-Op, just as interrogative C probes for a Q particle (see Cable, 2007).



⁶One exception to this generalization is (13b), where *dōu* quantifies over the Wh- word to give the plural reading 'What (all) does Zhangsan like?'. Assuming this is the same *dōu* used in statements, this example is evidence against any claim that movement in 'even'/'all' constructions is triggered solely by *dōu*. Given our [Max] operator driven analysis, we would hold that a Mandarin Wh- word occurs either with a covert Q operator or a covert maximality operator, but never with both.

If [Max] is behind movement to *spec-dōu*, then *lián* must also have the [Max] feature⁷. However, *lián* differs in its semantics, contributing the scalar presupposition that the focus is the least likely alternative to satisfy the predicate. Intuitively, it seems plausible that *lián* involves maximality, since ‘even’ generally implies that all individuals in the alternative set satisfy the predicate. To make this intuition more precise, we need to posit a semantics for the operator. However, it is challenging to assign a compositional semantics for *lián* that is compatible with a single *dōu* covering both ‘even’ and ‘all’ constructions. We do not aim to resolve this issue here, but present evidence that such an account is on the right track.

3.3 Composition of ‘even’

Cross-linguistically, it is not uncommon for ‘even’ constructions to involve two functional elements: a scalar focus particle occurring near the focus, and an operator meaning ‘all’, ‘also’, or ‘still’ appearing higher, where ‘even’ takes scope⁸. In Hungarian, the focus of ‘even’ is marked with *még* ‘even’, while the scope is marked with *is* ‘also’, as in (19) (Donka Farkas, p.c.). In English, ‘even’ can appear in either of these positions, as (20) shows. Furthermore, in cases like (21), a non-temporal use of ‘still’ occurs in conjunction with ‘even’, marking the scope of the operator. Finally, Mandarin ‘even’ is built from *lián* combined with either *dōu* ‘all’, *yě* ‘also’, or (for some speakers) *hái* ‘still/yet’.

- (19) *Még ez is tetszik.*
 even that also like
 ‘I even like [that one]_F.’
- (20) a. He even ate [the octopus]_F.
 b. He ate even [the octopus]_F.
- (21) a. Even [natural]_F toothpastes still have ingredients that you really don’t want in your body.
 b. Actually, even [non-smokers]_F still have a risk of developing smoking-related illness.

If ‘even’ constructions often involve a focus particle combining with a potentially non-focus operator, this suggests a two-part semantics where the focus particle manipulates the focus alternatives and the higher operator quantifies without direct access to alternatives. The following denotations attempt an analysis of this kind for Mandarin, but are not completely satisfying. As the common core between ‘even’ and ‘all’, we give *dōu* the semantics of a generalized quantifier, as in (22a)⁹. If the *lián*-phrase is to be the restrictor to *dōu*, then *lián* will have to transform the entity-denoting focus into a set of entities that can be given as arguments to the nuclear scope. A crude implementation of this idea is the denotation in (22b), which simply returns the focus alternative set as an ordinary semantic value. However, on this analysis it is difficult to phrase the scalar presupposition that *lián* introduces, since the predicate used to define the scale is inaccessible to *lián*. The scalar presupposition in (22b) is awkwardly defined relative to “some salient property”, rather than the particular predicate in question. This account also fails to capture the dependency between *lián* and *dōu*, predicting that *lián* might occur in the absence of any quantifier. One way around these problems is to treat *lián* as a higher order operator that combines with focus, and takes as argument the predicate containing the quantifier, with its restrictor still unsaturated. On this analysis, *lián* scopes above *dōu* at LF, and the scalar presupposition can be constructed by passing singleton sets as arguments to the function $\llbracket d\bar{d}ou\ vP \rrbracket$, as in (22c).

- (22) a. $\llbracket d\bar{d}ou \rrbracket = \lambda P_{\langle e,t \rangle} \lambda Q_{\langle e,t \rangle} \forall x [Q(x) \rightarrow P(x)]$
 b. $\llbracket lián\ XP \rrbracket = \llbracket XP \rrbracket^f$
 defined iff $\llbracket XP \rrbracket$ is least likely of $\llbracket XP \rrbracket^f$ to satisfy some salient property.

⁷Additionally, we need a silent counterpart of *lián* for cases where *dōu* alone conveys ‘even’.

⁸The scope of ‘even’ corresponds to the property which the focus is judged least likely to satisfy.

⁹We use a “reverse” generalized quantifier that takes its nuclear scope as the first argument and its restrictor as the second. This reflects the intuition that $[d\bar{d}ou\ vP]$ forms a constituent while $[lián\text{-}XP\ d\bar{d}ou]$ does not. Also, ordering the quantifier’s arguments this way allows for the higher order *lián* posited in (22c).

- c. $\llbracket \text{lián XP} \rrbracket = \lambda F_{\langle \langle e, t \rangle \rangle} F(\llbracket \text{XP} \rrbracket^f)$
 defined iff $\{ \llbracket \text{XP} \rrbracket \}$ is the least likely singleton in the power set of $\llbracket \text{XP} \rrbracket^f$ to satisfy $F(\cdot)$.

Whether this type of account is tenable is a question for future research. One specific challenge is ensuring that *lián* can combine compositionally with other operators, including *yě* ‘also’ and *hái* ‘still’, which we do not investigate here. Another problem is that the denotations above would require all the alternative propositions to be true in *lián* + *dōu* constructions. However, as with English ‘even’, Mandarin *lián* + *dōu* is acceptable in contexts where the predicate holds of no alternatives other than the focus itself¹⁰, as shown in (23). We leave these issues open here.

- (23) Context: Zhangsan is the worst student in the class. Students take a test, one by one.
 Zhangsan takes it first, and passes. You take it next, and fail.
- a. Even [Zhangsan]_F passed! How could you fail?
 b. *lián Zhāngsān dōu tōngguò le.*
 LIAN Zhangsan DOU pass ASP
 ‘Even [Zhangsan]_F passed.’

3.4 Exceptional Pronouns

While movement under ‘even’ and ‘all’ is similar in many respects, and we argue that it is in fact the same syntactic process, we are obliged to note one difference. As (24) shows, structures of the form [DP₁ DP₂ *dōu* VP] cannot receive an ‘all’ interpretation when the quantified phrase DP₂ is a pronoun¹¹. However, this interpretation is available in cases where a pronoun has moved through spec-*dōu* to either subject or topic position, as in (25,26). In contrast, *lián*-marked pronouns are free to surface in specifier of *dōu*, as in (27). We postulate that this difference derives from the differing prosody of the two constructions, as introduced in (9,11).

- (24) *zhāngsān tāmen dōu xǐhuan ___.*
 Zhangsan them DOU like
 ??‘Zhangsan likes (all of) them.’
- (25) *tāmen dōu xǐhuan wǒ.*
 they DOU like me
 ‘They (all) like me.’
- (26) *tāmen zhāngsān dōu xǐhuan ___.*
 them Zhangsan DOU like
 ‘As for them, Zhangsan likes (all of) them.’
- (27) *zhāngsān lián tāmen dōu xǐhuan ___.*
 Zhangsan LIAN them DOU like
 ‘Zhangsan even likes [them]_F.’

4 Partial Movement and Copying

We have seen already that the fronted element in ‘even’ constructions can be larger than the semantic focus, in cases where the focus is inside an island. This mismatch is unsurprising if the target of movement is not focus itself, but a focus operator like *lián* that is relatively free in its syntax. Another challenge is posed by cases where a sub-constituent of the focus is targeted for

¹⁰Note that (23a) supports Rullmann’s (1997) refinement to the traditional Karttunen and Peters (1979) analysis of ‘even’. On Rullmann’s account, the “existential presupposition” of ‘even’ (that at least one alternative proposition holds) is not encoded directly, but may in certain cases be derived pragmatically from the scalar presupposition. This account is compatible with examples like (23a) where the presupposition is not met. However one puzzle for this analysis is why changing the position of ‘even’ should bring back the existential presupposition in an example like “Zhangsan even passed! How could you fail?”, where we judge that at least one other student must have passed as well. Similarly, in Mandarin, (23b) worsens in the context provided if *dōu* is changed to *yě* ‘also’ or *hái* ‘still’.

¹¹A different reading of (24) is acceptable, where the pronoun is the subject, and the object ‘Zhangsan’ has been topicalized: ‘As for Zhangsan, they like him’.

movement. This type of “partial focus movement” gives rise to focus ambiguity of the kind we saw in (2). In (28), raising the constituent [_{DP} *tóufa*] ‘hair’ gives rise to a transparent DP-focus reading, but also produces an opaque VP-focus reading, where the alternatives are predicates that contrast with ‘comb hair’. Because we usually do not have many things to comb, (28b) is the more salient of these two readings.

- (28) tā lián tóufa dōu bù shū ____ .
 he LIAN hair DOU not comb
 a. ‘He doesn’t even comb [his hair]_F.’ (not to mention *combing* other things)
 b. ‘He doesn’t even [comb his hair]_F.’ (not to mention *doing* other things)

The possibility of partial focus movement challenges the [Max]-driven analysis presented above. Specifically, if the target for movement is a focus-sensitive operator that attaches somewhere above the focus, we should not expect to see a piece of the focus moving. The following case of focus copying provides a clue as to why partial focus movement might exist. Example (29) has VP focus on the intransitive [_{VP} *chī*] ‘eat’, which appears in both the focus position and its base position¹². Furthermore, if this meaning is to be expressed with a *lián* + *dōu* construction, copying the verb is necessary.

- (29) tā lián chī dōu bù chī.
 she LIAN eat DOU not eat
 ‘She doesn’t even [eat]_F.’

To account for both the partial movement and the copying data, we propose a PF deletion analysis under the copy theory of movement (Chomsky, 1993). The analysis is similar to the one Landau uses to capture Hebrew partial VP fronting (Landau, 2006, 2007). Landau argues that VP topicalization in Hebrew triggers partial VP fronting due to the interaction of PF constraints with conflicting needs. Specifically, the tense head T^0 needs material to spell out (and there is no option of English-style *do* support), and topicalization requires the spellout of material in topic position. For Mandarin, the essential observation is that, as in Hebrew, some verbal material must remain low in the clause, possibly to spell out tense and/or aspectual features. At the same time, the *lián*-phrase of an ‘even’ construction must be spelled out in the specifier of *dōu* (or higher). In the case of an intransitive verb under focus, the only way to satisfy these two constraints is to pronounce the VP in both the focus and base positions. With a transitive VP under focus, raising the object alone is a way of satisfying the above-mentioned spellout constraints without resorting to multiple spellout of any lexical item. The various spellout options for VP focuses are given in (30) and (31)¹³. We observe that, all else being equal, the highest copy spells out, and that redundancy will be minimized.

- (30) a. tā lián [_{VP} *chī*] dōu bù [*chī*]. (double VP)
 b. *tā lián [_{VP} *chī*] dōu bù [~~*chī*~~]. (* front VP)
 c. *tā lián [_{VP} ~~*chī*~~] dōu bù [*chī*]. (* no movement)
 she LIAN eat DOU not eat
 ‘She doesn’t even [eat]_F.’
 (31) a. tā lián [_{VP} ~~*jiàn*~~ fùmǔ] dōu bù [*jiàn* fùmǔ]. (front O)
 b. ?tā lián [_{VP} *jiàn* fùmǔ] dōu bù [*jiàn* fùmǔ]. (? double V)
 c. *tā lián [_{VP} *jiàn* fùmǔ] dōu bù [~~*jiàn*~~ fùmǔ]. (* front VP)
 d. *tā lián [_{VP} *jiàn* fùmǔ] dōu bù [~~*jiàn*~~ fùmǔ]. (* double O)

¹²Mandarin has a host of deverbal “dummy objects” (e.g. *zǒu* (*yī*) *zǒu*; literally ‘walk a walk’) that produce a meaning similar to ‘verb a little’. However, the focused element in (29) must be a copy of the verb, as *chī* ‘eat’ cannot function as an object. We thank Amy Rose Deal for bringing this issue to our attention.

¹³If each lexical item is to be spelled out at least once, there are four possible configurations beyond the ones listed in (31). These are all ungrammatical on the intended reading. One of these four is marginal but has a narrow V-focus interpretation: ?*tā lián jiàn dōu bù jiàn fùmǔ* ‘She doesn’t even [see]_F her parents.’ Also, note that we’ve side-stepped the question of why *lián* always spells out in the higher position.

- e. *tā lián [vp jiàn fùmǔ] dōu bù [jiàn fùmǔ]. (* no movement)
 she LIAN see parents DOU not see parents
 ‘She doesn’t even [see her parents]_F.’

Depending on theoretical biases, the marginal grammaticality of (31b) could be taken as highlighting the fact that violable PF constraints, rather than “hard” rules of syntax, govern the paradigm above. In any case, we have shown that an understanding of general constraints on Mandarin spellout allows us to maintain the claim that *lián* takes an argument with a focus value, and never anything smaller. Copy movement of a Max-Op marked phrase to *dōu* is carried out by the syntax regardless of the consequences on prosody, and PF is left with the choice of what, if anything, to delete.

5 Conclusion

We have shown that “focus movement” in Mandarin ‘even’ constructions is not deeply connected to semantic focus or stress, since the movement can occur in the absence of focus or prosodic triggers. Rather, this movement is mediated by a feature shared across ‘even’ and ‘all’ constructions, which we propose is the maximality feature on a potentially covert operator. This result resonates with recent work by Horvath (2007) and Cable (2007) regarding the possible triggers of A-bar movement generally. The shared syntactic frame for ‘even’ and ‘all’ suggests a semantics where ‘even’ is built compositionally from a non-focus-sensitive ‘all’ (*dōu*) plus a scalar focus operator (*lián*). We laid out the basic structure of a compositional account, but also brought up some challenges that it faces. Finally, we looked at “partial focus movement” and copying data and showed how they can be integrated under our analysis by use of general PF constraints, along the lines of Landau (2006, 2007).

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