

ON THE OPTIONALITY OF VERB RAISING: A VIEW FROM FLIP-FLOP SENTENCES IN CHINESE AND VIETNAMESE*

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1. Setting the stage: optional verb raising in flip-flop sentences

In the literature of linguistic typology, Chinese and Vietnamese are often put side by side at the far end of the scale of analyticity. This paper explores some major aspects of this robust analyticity from a comparative point of view. For one thing, it has been established that Chinese sports a prolific system of implicit light verbs, which results in a variety of syntax-semantics mismatches within the verbal domain (cf. Huang 1994, 1997, 2015, Lin 2001, Feng 2005, Tang 2010, Tsai 2015, 2016, 2020a, 2021a, among others). For another, being radically isolating, Chinese also sports quite a few “bare” constructions that make it typologically unique (for instance, bare finite clauses and bare conditionals built upon pairing identical *wh*-expressions).¹ In this paper, we deal with a construction with both typological traits, that is, the so-called flip-flop constructions. Take the following pair of Mandarin sentences for instance:

- (1) a. yi-bu che zuo wu-ge ren. (flip construction)
one-CL car sit five-CL person

‘A car holds five people (in the manner of sitting).’

- b. wu-ge ren zuo yi-bu che. (flop construction)
five-CL person sit one-CL car

‘Five people may/should/must sit in one car.’

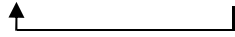
As pointed out by Tsai (2001), they may well involve implicit semi-functional categories, and are subject to unmarked capacity/deontic modal construals, hence often dubbed as “bare quantity sentences.” Specifically, a flip sentence such as (1a) contains an implicit modal verb

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¹ For detailed discussion and debates on bare conditionals (a.k.a. *wh*-conditionals), see Cheng and Huang 1996, 2020, Lin 1996, Tsai 1999, 2021b, Chierchia 2000, Luo and Crain 2011, Pan and Jiang 2015, and Liu 2016, among others.

ENO(ugh), which in turn induces verb-to-modal (V-to-M) raising, as illustrated in (2).²

(2) yi-bu che [ENO-**zuo**] wu-ge ren <zuo>

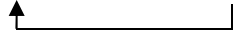


Moreover, ENO has a lexical counterpart *gou* ‘enough’, as in (3a), which triggers verb raising as well, see (3b) for an illustration.

(3) a. yi-bu che **gou** **zuo** wu-ge ren.
one-CL car enough sit five-CL person

‘A car is enough for five people to sit in.’

b. yi-bu che [**gou-zuo**] wu-ge ren <zuo>



It is also important to note that V-to-M raising appears to be optional in flip sentences: The main verb *zuo* ‘sit’ may stay *in situ* at the sentence-final position, whether the modal verb is lexical or not, as evidenced by (4a,b).

(4) a. yi-bu che wu-ge ren **zuo**.
one-CL car five-CL person sit

‘A car is (enough) for five people to sit in.’

b. yi-bu che **gou** wu-ge ren **zuo**.
one-CL car enough five-CL person sit

‘A car is enough for five people to sit in.’

The alternation in question is found not only with ENO and *gou* ‘enough’, but also in flip sentences featuring deontic modals such as *keyi* ‘may’, *yinggai* ‘should’, and *bixu* ‘must’, as exemplified by (5a,b) respectively.

(5) a. yi-bu che **keyi/yinggai/bixu** **zuo** wu-ge ren.
one-CL car may/ should/ must sit five-CL person

‘A car may/should/must hold five people (in the manner of sitting).’

b. yi-bu che **keyi/yinggai/bixu** wu-ge ren **zuo**.
one-CL car may/ should/ must five-CL person sit

‘A car may/should/must hold five people (in the manner of sitting).’

Note that when these modals are silent, the resulting constructions are exactly the same as (1a)

² In this paper, we reserve the term “flip-flop sentences” exclusively for the inversion structure with modal interpretations. Therefore, we do not concern ourselves with inversion associated with aspectual markers and hence episodic events, which may well involve an existential light verb of some sort. For theoretical debates and empirical issues, see L. Li 1983, A. Li 1998, 2014, Lu 2004, among many others.

and (4a). Therefore, (1a) and (4a) are ambiguous because Chinese modals are very often implicit, presumably due to its typological trait as a mood-prominent language (cf. Tsai 2019).

By contrast, a flop sentence such as (1b) disallows the *gou*-paraphrase, as evidenced by the ill-formedness of (6). (1b), as one might expect, lacks the capacity construal.

- (6) *wu-ge ren **gou** **zuo** yi-bu che.
 five-CL person enough sit one-CL car

Intended reading: ‘Five people are enough to sit in one car.’

On the other hand, a flop sentence does allow lexical deontic modal variants, as in (7a), where the V-to-M raising is obligatory, as shown by the ungrammaticality of (7b).

- (7) a. wu-ge ren **keyi/ yinggai/ bixu** **zuo** yi-bu che.
 five-CL person may/ should/ must sit one-CL car

‘Five people may/should/must sit in one car.’

- b. *wu-ge ren **keyi/ yinggai/ bixu** yi-bu che **zuo**.
 five-CL person may/ should/ must five-CL car sit

Intended reading: ‘Five people may/should/must sit in one car.’

Interestingly enough, this type of word order alternation is also attested in Vietnamese, another representative language leaning towards the analytic side, as illustrated by (8a,b) respectively:

- (8) a. Một chiếc xe ngồi năm người. (flip construction)
 one CL car sit five person

‘A car holds five people (in the manner of sitting).’

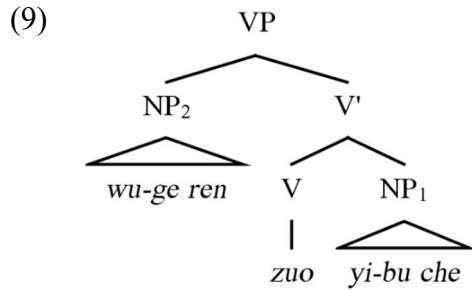
- b. Năm người ngồi một chiếc xe. (flop construction)
 five person sit one CL car

‘Five people may/should/must sit in one car.’

In this paper, we set out to investigate the nature of head movement in the flip-flop sentences from a comparative point of view. Specifically, we are to address the issue of whether the head movement involved is really optional on the part of flip sentences. If the optionality is only superficial, then we must find a way to account for it. In Section 2, we explain the reason why V-to-M raising is obligatory on the part of flop sentences. In Section 3, we examine the corresponding Vietnamese data. It is established that, for those cases where the main verb appears to remain *in situ*, we are actually dealing with a distinct bi-clausal construction where V-to-M raising is local. Section 4 concludes the paper.

2. A Labeling analysis

It has been proposed in the literature that flip and flop sentences have the same underlying argument structure (cf. Zhao and Tsai 2021). The proposal departs from the mainstream view in which they are treated as distinct constructions (see Han and Wen 2016, Zhu 2017, among others). As sketched in the tree diagram (9), the flip-flop pair in (1a,b) are built upon the main verb *zuo* ‘sit’ with its two quantity-denoting arguments.



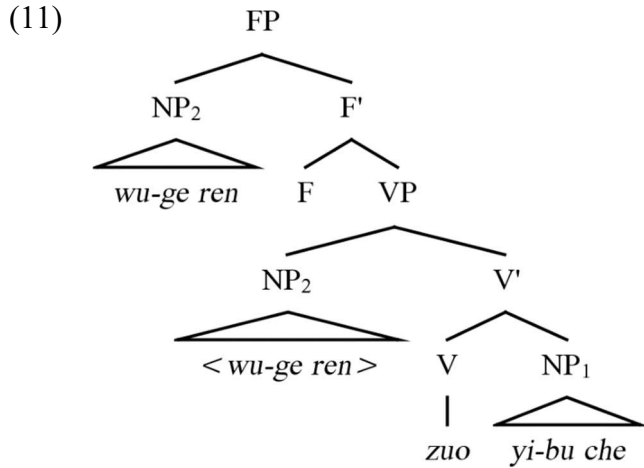
Following Huang et al. (2009), a lexical verb (V) is perceived as decomposable into a lexical root $\sqrt{}$ and a small number of light verbs (Lv). Chinese differs from English-type languages in allowing a V without an Lv, thus “exposing all participant information encoded in $\sqrt{}$ to syntax and thereby creating the effect of thematic liberality” (Huang et al. 2009: 62), as shown in (10).

$$(10) \quad V \in \{(\sqrt{}), [\text{Lv1 } \sqrt{}], [\text{Lv2 } \sqrt{}], [\text{Lv2 } [\text{Lv1 } \sqrt{}]]\} \text{ (Huang et al. 2009: 62)}$$

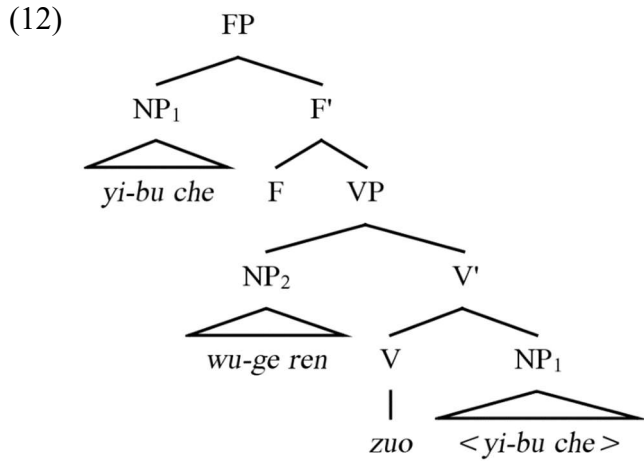
This option of the V formation in Chinese is available for Vietnamese as well. Root-only Vs (like *zuo* ‘sit’ in (1) and *ngồi* ‘sit’ in (8)) may enter syntactic derivation as long as they hold certain thematic/semantic relations with the arguments.

To account for the disparity between flip and flop sentences on the surface, Zhao and Tsai (2021) adopt Chomsky’s (2013) version of Labeling mechanism, according to which a syntactic object SO needs a label to specify its grammatical status. A fixed labeling algorithm LA licenses and allows SOs to be interpreted at the interfaces. In the best-case scenario, i.e., when $\text{SO} = \{H, \text{XP}\}$ (H a head and XP not a head), LA selects H as the label of the syntactic object. LA itself cannot determine the label of an SO if both of its components are heads (i.e. $\text{SO} = \{X, Y\}$) or non-heads (i.e. $\text{SO} = \{\text{XY}, \text{YP}\}$). For the latter, two options are available: either one phrase moves away and the other phrase provides the label, or a feature shared between these projections will provide the needed label.

As seen above in (9), merging the head *zuo* ‘sit’ with NP₁ will result in a successfully labeled object. When the newly formed VP merges with NP₂, LA is unable to determine where the label should come from. Since they do not share a common feature, further movement is required to break up this symmetrical structure and prevent labeling failure. If NP₂ raises to a higher functional projection FP, the flop construction (1b) is derived, as shown in the diagram (11).



Alternatively, if it is the NP₁ that moves out of its base position, the part visible to LA is NP₂-V (not NP₂-VP), and the resulting object is successfully labeled as V. This derivation brings about the flip construction (1a), as illustrated in the diagram (12).



In order to derive the linear order of (1a), the verb *zuo* ‘sit’ must appear in-between the two NPs. The configuration results from raising V to a higher functional projection FP, which we identify as a ModP (Modal Phrase), following an earlier proposal made in Tsai 2001, 2019, 2020b. On the other hand, if V stays in-situ, we have the word order of (4a), where the main verb shows up at the end of the sentence. Hence the appearance of the optionality of verb raising.

Now the question boils down to why this optionality is even allowed in the flip construction given the Minimalist considerations. We will look into Vietnamese data first, and attempt to address the issue.

3. Head movement in Vietnamese

Before continuing with our discussion on V-to-M raising in Vietnamese, it is instructive to show that head movement is generally allowed in the language. More specifically, Vietnamese also exhibits a number of curious cases of syntax-semantics mismatches, which

we take to be evidence for head movement. As a point of exposition, let us briefly examine the two following cases.

First, take a look at (13): Despite that the DP *Tí* appears to be the external argument of *khám* ‘examine’, it is the doctor, rather than *Tí*, who serves as the examiner. To provide a plausible account, we assume the presence of verb movement closely tied to the involvement of implicit light verbs such as DO, CAUSE and LET (Huang 1994, 1997, Lin 2001, Feng 2005 Tang 2010, Tsai 2015, among others).³ As sketched in (14), the main verb *khám* ‘examine’ first adjoins to the light verb DO of *vP*. The verbal complex *khám-DO* then raises further to LET/CAUSE, i.e., the head of the upper *vP* that hosts *Tí* in its Spec. The second step may well be motivated by the need to substantiate the phonological prominence of a silent light verb at PF (cf. Tsai 2015).

- (13) *Tí* *khám* *bác sỹ*.
 Ti examine doctor

‘*Ti* has himself examined by the doctor.’

#‘*Ti* examines the doctor.’

- (14) [_{VP} *Tí*_i [[***khám-DO***]-LET/CAUSE] [_{TP} *Op_i* [_{TP} *bác sỹ* *T* [_{VP} <***khám-DO***> <*Op_i*>]]]]
- 

Accordingly, (13) with the weak causative reading can be paraphrased as ‘*Ti* lets/causes the doctor to examine him.’ The second reading is more marked in this context and implies a simpler structure involving only a standard V-to-*v* raising; the verb *khám* selects *Tí* as its external argument and *bác sỹ* ‘doctor’ as its internal argument.

The second mismatch has to do with the intransitive psych verb *buồn* ‘sad’ in (15a). By comparing it with (15b), it becomes rather puzzling why *buồn* appears to take yet another argument (i.e., *Tèo*) as its object.

- (15) a. *Tí* *buồn*.
 Ti sad

‘*Ti* is sad.’

- b. *Tí* *buồn* *Tèo*.
 Ti sad *Teo*

‘*Ti* is saddened by *Teo*.’

One way to make sense of this is to say that the main verb has undergone a series of head movements as schematized in (16). First, *buồn* ‘sad’ raises to the achievement light verb BECOME before “rolling up” further to CAUSE at the upper *vP*. The newly formed verbal

³ LET licenses a permissive (or weak causative) reading in which the subject allows an event realized by its complement to happen.

complex then raises to the high ApplP (Applicative Phrase) along the lines of Tsai 2018. The head Appl introduces the Affectee *Ti*, and encodes an affective relation between *Ti* and the saddening event associated with *Tèo*.

- (16) [ApplP *Ti*_i [[[**buồn**-BECOME]-CAUSE]-Appl] [_{VP} *Op*_i [_{VP} *Tèo* <[~~**buồn**-BECOME~~]-CAUSE>] [TP <*Op*_i T [_{VP} <**buồn**-BECOME>]]]]]
-

We can therefore establish that verb raising is attested in Vietnamese, as evidenced by the above cases of syntax-semantics mismatches. Crucially, these head movements are all obligatory since leaving them *in situ* will result in ungrammatical sentences, as evidenced by (17-18).

- (17) **Ti* bác sỹ khám.
 Ti doctor examine

- (18) **Ti* *Tèo* buồn.
 Ti *Teo* sad

As a matter of fact, every copy of the raised heads is subject to PF-deletion except for the highest verbal complex, as already seen in (14-16).

4. *In-situ* alternative of flip sentences: an illusion

Recall that in section 1, Chinese flip sentences are shown to allow the main verb to stay *in situ* in the presence of modals like *gou* ‘enough’ and *keyi* ‘may’. This option, however, is not attested in Vietnamese. As shown by (19-20), placing the main verb *ngồi* ‘sit’ at the sentence-final position consistently results in ungrammaticality.

- (19) a. Một chiếc xe đủ ngồi năm người.
 one CL car enough sit five person

‘A car is enough for five people to sit in.’

- b. *Một chiếc xe đủ năm người ngồi.
 one CL car enough five person sit

Intended reading: ‘A car is enough for five people to sit in.’

- (20) a. Một chiếc xe có thể/ nên/ phải ngồi năm người.
 one CL car may/ should/ must sit five person

‘A car may/should/must hold five people (in the manner of sitting).’

- b. *Một chiếc xe có thể/ nên/ phải năm người ngồi.
 one CL car may/ should/ must five person sit

Intended reading: ‘A car may/should/must hold five people (in the manner of sitting).’

If we are to maintain the analysis previously proposed for Chinese, we are forced to conclude that Vietnamese does not pattern with Chinese with respect to V-to-M raising, as the highest copy of the Vietnamese verbal complex must always be spelled out, despite the striking similarities in other aspects of the two languages. Further data from Vietnamese indicates that this conclusion is misleading. Specifically, we notice that (19b) and (20b) can be improved if they are perceived as involving a covert element *để*, meaning either ‘to’ or ‘let’, in front of *năm người* ‘five people’. In fact, these sentences are perfectly acceptable if such an element is lexical, as shown by (21) and (22) respectively.

- (21) Một chiếc xe **đủ** **để** năm người **ngồi**.
 one CL car enough to five person sit

‘A car is enough for five people to sit in.’

- (22) Một chiếc xe **có thể/ nên/ phải** **để** năm người **ngồi**.
 one CL car may/ should/ must let five person sit

‘A car may/should/must allow five people to sit in.’

The involvement of *để* ‘to’ in (21) may well signal a bi-clausal configuration, since it is often taken to head an infinitival clause. As a result, *đủ* ‘enough’ in (21) is best analysed as a verb selecting a clausal complement headed by *để* (see also Tsai 2001, Lin et al. 2018). In (22), *để* ‘let, allow’ as a verb most likely selects an infinitival clause as well, thus the sentence is also bi-clausal in nature. Crucially, this analysis offers an insight into the apparent flip-flop alternation mentioned in our previous discussion. Namely, Vietnamese facts suggest that the optionality of verb movement is only apparent: V-to-M raising is possible in typical flip sentences such as (19a) and (20a) simply because the configuration is mono-clausal, and there is no intervening head. (21) and (22), by contrast, have distinct underlying structures where *ngồi* ‘sit’ is prevented from raising from the infinitive complement to the matrix clause.

Nevertheless, it seems arbitrary to simply stipulate that the sentence-final verb is not subject to V-to-M raising. (23) below shows that the verb *ngồi* ‘sit’ may indeed raise over *năm người* ‘five people’. One way to account for this phenomenon is to assume the existence of a silent modal in the complement clause, which in turn triggers the V-to-M raising in question.

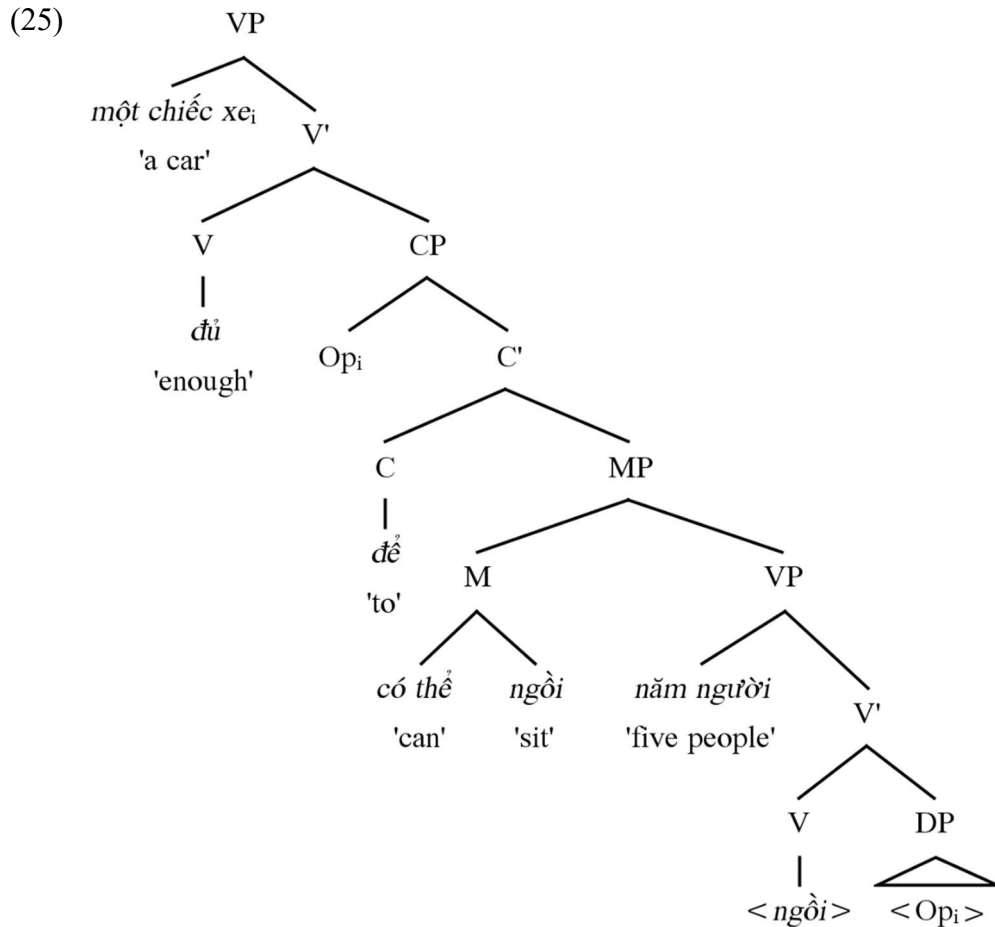
- (23) Một chiếc xe **đủ** **để** **ngồi** năm người.
 one CL car enough to sit five person

‘A car is enough for five people to sit in.’

This line of thinking is not unreasonable given the fact that a lexical modal like *có thể* ‘can’ can be inserted immediately before the raised verb, as shown in (24). The relevant derivation is illustrated in the tree diagram (25).

- (24) Một chiếc xe đủ để có thể ngồi năm người.
 one CL car enough to can sit five person

‘A car is enough to be able to hold five people.’



From a cross-linguistic point of view, the fact that (23) allows an embedded modal construal in parallel to (24) is not at all surprising. Meier (2003) proposes that the complement clause of the English *enough* operator has a (usually covert) existential modal expression. (26b) differs from (26a) only in the presence of a lexical modal *be able*, and the two sentences are virtually equivalent in semantic terms.

- (26) a. Bertha is old **enough** to drive a car. (Meier 2003: 70)

b. Bertha is old **enough** to **be able** to drive a car. (Meier 2003: 70)

A similar observation is made for Portuguese in Marques 2012: (27b), where the modal verb *poder* ‘be able’ is present, has essentially the same semantics as (27a).

- (27) a. A Ana teve inteligência suficiente para resolver a equação.
 the Ana had-PFV intelligence enough to to-solve the equation

‘Ana had enough intelligence to solve the equation.’ (Marques 2012: 259)

- b. A Ana teve inteligência **suficiente** para **poder** resolver a equação.
 theAna had-PFV intelligence enough to be able to-solve the equation

‘Ana had enough intelligence to be able to solve the equation.’ (Marques 2012: 261)

That being said, the sentence-final placement of the verb is puzzling still given that V-to-M raising is obligatory. If the analysis presented above is on the right track, we would predict that (21) contains a silent modal in its complement clause as well. This is quite possibly the case, as an overt modal *có thể* ‘can’ can be inserted immediately before the verb *ngồi* ‘sit’, see (28). It can therefore be maintained that raising occurs whether the modal is lexical or not, as long as locality is observed.

- (28) Một chiếc xe **đủ** **để** năm người **có thể** **ngồi**.
 one CL car enough to five person can sit

‘A car is enough for five people to be able to sit.’

However, that the modal *có thể* ‘can’ may either precede or follow the embedded subject *năm người* ‘five people’ raises yet another issue. Namely, assuming that the modal expression occupies a fixed position, *năm người* must somehow move out of its base-generated position in (28). But topicalization is not an option inside the embedded clause, as evidenced by the ill-formedness of (29).

- (29) *Một chiếc xe **đủ** **để** năm người **thì** **có thể** **ngồi**.
 one CL car enough to five person TOP can sit

A clue to this mystery lies in the fact that (28) can be paraphrased as (30) where *cho* ‘for’ is added between *để* ‘to’ and the embedded subject. In the presence of *cho*, *để* is omissible.

- (30) Một chiếc xe **đủ** (**để**) **cho** năm người **có thể** **ngồi**.
 one CL car enough to for five person can sit

‘A car is enough for five people to be able to sit.’

It is noteworthy that when *cho* enters the equation, the modal verb *có thể* can no longer precede the embedded subject, as shown in (31).

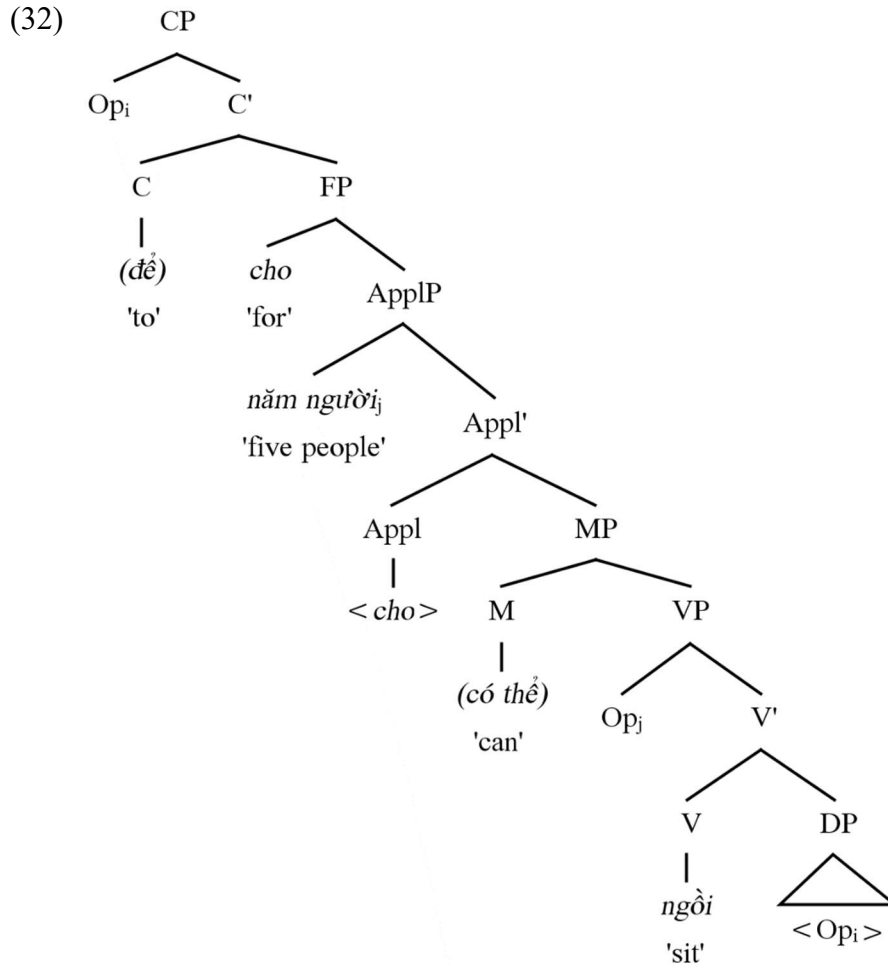
- (31) a. *Một chiếc xe **đủ** (**để**) **cho** **có thể** **ngồi** năm người.
 one CL car enough to for can sit five person

Intended reading: ‘A car is enough for five people to (be able to) sit.’

- b. *Một chiếc xe **đủ** (**để**) **cho** **có thể** năm người **ngồi**.
 one CL car enough to for can five person sit

Intended reading: ‘A car is enough for five people to (be able to) sit.’

As a working hypothesis, we take *cho* to be a high applicative head involving a relation between an individual and an event (cf. Pytkäinen 2002). It is this applicative head which introduces an argument coindexed with the lower null Op, the external argument of the verb *ngồi* ‘sit’, as illustrated in the tree diagram (32). The two distinct positions of *năm người* ‘five people’ with respect to the modal *có thể* ‘can’ thus follows naturally from this syntactic account.



In light of our observation on Vietnamese flip-flop constructions presented above, a more refined treatment is in order for their Chinese counterparts. We would like to entertain the possibility that a typical flip sentence such as (33a) is mono-clausal, where the verb *zuo* ‘sit’ undergoes V-to-M raising to the capacity modal *gou* ‘enough’, whereas its “in-situ” alternative in (33b) is actually bi-clausal, where *gou* is treated as a verb, hence no V-to-M raising.

- (33) a. yi-bu che **gou** **zuo** wu-ge ren.
 one-CL car enough sit five-CL person
 ‘A car is enough for five people to sit in.’
- b. yi-bu che **gou** wu-ge ren **zuo**.
 one-CL car enough five-CL person sit
 ‘A car is enough for five people to sit in.’

By adopting this analysis, a more principled account can be maintained, according to which V-to-M movement is obligatory whenever the locality condition is observed. More importantly, we are able to eliminate the optionality of head raising, as well as the assumption that the lower copy of the raised verb can be pronounced at PF.

5. Conclusion

To sum up, we have presented a unified account of verb raising in both Chinese and Vietnamese flip-flop constructions. We argue that the optionality of V-to-M movement in question is only an illusion, based on various facts from the distribution of Vietnamese modals and their silent counterparts. More specifically, flip sentences should be broken down further into two types: One type involves a mono-clausal configuration where verb raising is obligatory. By contrast, the other type involves a bi-clausal configuration where the verb in the complement clause raises to a local modal, which can be either lexical or silent. We have therefore presented a case study where the puzzle for one language can be solved by a cross-linguistic comparison with another language, which in turn demonstrates the value of the methodology of comparative syntax.

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