

# FLIP-FLOP IN RESULTATIVE CONSTRUCTIONS\*

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## 1. Introduction

The resultative predicate R *flat* in a Resultative Construction (RC) *John hammered the metal flat* is predicated of the object *the metal*, rather than the subject *John* (cf. Levin and Rappaport Hovav 1995:50). Mandarin Chinese, like other languages, manifests the same **Standard RCs** with object-oriented RP, as shown in (1):

- (1) Lisi kan-*po*-le                    *zhe-ben shu*                    (NP1 V-R NP2)  
Lisi read-tattered-PERF this-CL book  
“Lisi read this book and (as a result) the book became tattered.”

Additionally, Mandarin allows the RESULT R to be predicated of the subject NP1, as shown in (2), which is called **Subject-Oriented RCs (S-O RC)** here. Remarkably, inverse argument order is accepted in Mandarin RCs. As exemplified in (3), the THEME (NP2) and the AGENT (NP1) with respect to the ACTION V are respectively the subject and the object on the surface. I name sentences with inverse argument order like (3) **Flip-Flop Constructions (FF)**.

- (2) *Lisi* kan-*lei*-le                    zhe-ben shu                    (NP1 V-R NP2) (S-O)  
Lisi read-tired-PERF this-CL book  
“Lisi read this book and (as a result) Lisi got tired.”
- (3) *zhe-ben shu* kan-*lei*-le                    *Lisi*                    (NP2 V-R NP1) (FF)  
this-CL book read-tired-PERF Lisi  
“(Reading) this book made Lisi tired.”

Previous analyses have treated FFs as a structure parallel to Analytical Causatives (AC) (4) which have an overt *Cause* verb *rang* “make/let” (Chen 1995) or *Ba*-constructions (*BA*) (5) where the *Cause* head is filled by *ba* (Sybesma 1999).

- (4) *zhe-ben shu rang Lisi* kan-*lei*-le                    (AC)  
this-CL book make Lisi read-tired-PERF  
“This book made Lisi tired by reading it.”
- (5) *zhe-ben shu ba Lisi* kan-*lei*-le                    (BA)  
this-CL book BA Lisi read-tired-PERF  
“This book made Lisi tired by reading it.”

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Under the previous analyses, NP2 in FF (3) is a base-generated external argument theta-selected by a covert *Cause* which subcategorizes for a VP, as parallel to the *Cause* verb *rang* in (4) and the *Cause* filled by *ba* in (5). FFs are derived by head movement from V-R complex to *Cause*, while NP1 is the external argument of the lower VP selected by the *Cause* head, as in AC (4) and BA (5).

In this paper, I argue that FFs cannot be analyzed as a variation of ACs/BAs. I will provide syntactic evidence to show that NP2 in FFs originates in a lower position c-commanded by NP1 and FFs are generated by VP Movement. I also argue that FFs are not derived from Standard RCs (1) or S-O RCs (2) but from **Verb-Doubling RCs**. Based on evidence taken from argument relations, syntactic and semantic behavior of FFs and a proposal that causation is a relation of two events, a causing event and a caused event, I propose that the formation of FFs is a consequence of VP movement of the causing event, which is joined with the caused event in a functional projection *Join Phrase (JP)*, to Spec of *CauseP*.

## 2. Properties of Flip-Flops

Besides the inverse argument word order on the surface, FFs display several other properties. These properties are essential in forming FFs.

First of all, in contrast to Standard RC (1) and S-O RC (2), FF (3) expresses causative meaning. FFs are also called Causative Resultatives (cf. Sybesma 1999).

Second, FFs can be formed when RP is predicated of NP1, rather than NP2.

- (6) \* *zhe-ben shu kan-po-le* Lisi \*(NP2 V-R NP1)  
 this-CL book read-tattered-PERF Lisi  
 “(Intended) Lisi’s reading this book made the book become tattered.”

Third, the RESULT RP in FFs is an obligatory component. Inverse argument without RP violates the thematic hierarchy: \* THEME > AGENT.

- (7) *zhe-ben shu kan-(lei)-le* Lisi  
 this-CL book read-tired-PERF Lisi  
 “\*The book read Lisi.”

Fourth, NP1 and NP2 in FFs bear the same thematic relation with respect to the V as that in Standard RC (1) and S-O RC (2). Namely, NP1 and NP2 in FFs, Standard RCs, and S-O RCs are understood as AGENT and THEME respecting V.

Fifth, although FFs take agentive verbs (*kan* “read”) as the main predicate V, unlike the Standard RCs, FFs and S-O RCs do not express agentivity. Agentive adverb *guyi* “deliberately” is compatible with (8), but not S-O RC (9) or FF (10):

- (8) Lisi (*guyi*) *tang-zhou-le* zhe-jien chenshan (Standard RC)  
 Lisi deliberately iron-wrinkle-PERF this-CL shirt  
 “Lisi deliberately ironed the shirt and the shirt became wrinkled.”
- (9) *Lisi* (\**guyi*) *kan-lei-le* zhe-ben shu (S-O RC)  
 Lisi deliberately read-tired-PERF this-CL book  
 “Lisi deliberately read this book and (as a result) Lisi got tired.”

- (10) *zhe-ben shu* (\**guyi*) *kan-lei-le* *Lisi* (FF)  
 this-CL book deliberately read-tired-PERF Lisi  
 “\*Reading this book deliberately made Lisi tired.”

In the next section, I will compare FFs with Psych Verb Constructions in terms of their argument relation and some other similarities.

### 3. Flip-Flops vs. Psych Verb Constructions

Besides the properties above, FFs also share some similarities with Psych Verb Constructions (Psych), especially Object-EXPERIENCER Psychs (ObjEXP) (Pesetsky 1995). The most remarkable similarity between FFs and ObjEXP Psychs is that both display inverse argument order. Compare FF (3) with ObjEXP Psych (11)b:

- (11) a. *The children* feared/worried about *the dog*. (SubjEXP)  
 b. *The dog* frightened/worried *the children*. (ObjEXP)

Previous analyses accounting for ObjEXP Psychs can be sorted into three main approaches: NP movement (e.g. Belletti and Rizzi (B&R) (1988)), base-generation (e.g. Arad 1998) and a mixed approach (e.g. Pesetsky 1995, Pylkkänen 2000).

B&R (1988) propose an NP movement approach (also as Unaccusative approach) by arguing that ObjEXP verbs are unaccusative and NP2 in D-structure is the internal argument THEME that moves to the subject position through NP movement. One of B&R’s motivations is the phenomenon of backward binding in ObjEXP Psychs: a reverse binding relation between an anaphor *each other* contained within the subject and its antecedent appearing lower in the clause:

- (12) [The pictures of **each other**<sub>1</sub>] annoyed [**the children**<sub>1</sub>].

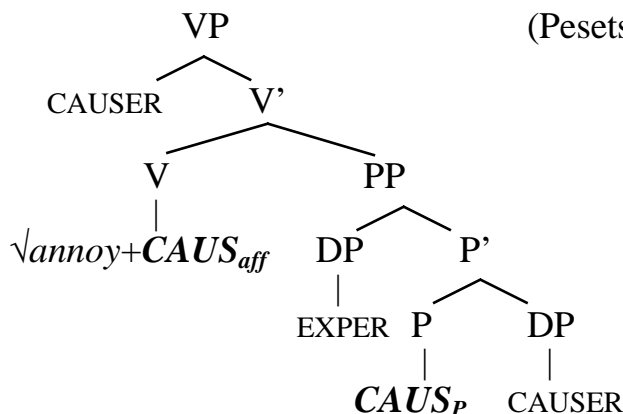
One problem of NP movement analysis, however, is that the movement of the THEME over NP1 violates the locality restriction of A-movement (cf. Rizzi 1990).

Arad (1998) proposes a base-generation account to tackle ObjEXP Psychs. She argues that ObjEXP Psychs (11)b are not derived from their SubjEXP counterparts (11)a; rather, they are causative constructions that have a true external argument, CAUSER, introduced by *v*, an external argument-introducing head above the VP-level. Arad maintains, following Pesetsky (1995), that ObjEXP verbs are not true unaccusatives and the backward binding motivating B&R’s proposal for ObjEXP Psych (12) is inadequate. Adopting Reinhart and Reuland’s (1993) theory of reflexives, Arad argues that the anaphor in (12) is not an argument of the Psych predicate but a logophor which does not fall under the binding principles. Thus, against B&R, (12) cannot be used to motivate an NP movement account.

Both Pesetsky (1995) and Pylkkänen (2000) propose a mixed approach which combines the previous two approaches but they develop fairly different analyses. Pesetsky (1995) argues against B&R’s unaccusative approach by providing evidence that ObjEXP verbs do not pass tests for true unaccusativity. He suggests that ObjEXP Psychs exhibit the properties of causative constructions and structurally contain two occurrences of CAUS (*Cause*) morphemes, CAUS<sub>P</sub> and CAUS<sub>aff</sub>, together with two occurrences of CAUSERS, as shown in the structure (13):

(13)

(Pesetsky (1995: 209 (530)))



The root verb without *CAUS* assigns CAUSER role to its external argument but the presence of *CAUS<sub>aff</sub>* on the verb causes that verb to lose its ability to assign its external argument role. Both *CAUS<sub>p</sub>* and *CAUS<sub>aff</sub>* theta-select CAUSERS (base-generation) and they are similar enough in their theta-selectional properties that each discharges the features of the other. *CAUS<sub>p</sub>*, unlike the overt causative preposition, does not license Case on its object. Thus, *CAUS<sub>p</sub>* undergoes head movement to *CAUS<sub>aff</sub>* in order to have a checking function and the *CAUS<sub>p</sub>* CAUSER moves to the subject position (NP movement). Pesetsky claims that the movement of *CAUS<sub>p</sub>* CAUSER to the subject position does not create a thematic problem since the two CAUSERS are not semantically distinct. Thus, the lower CAUSER is bound by EXPERIENCER and the backward binding in (12) is explained.

Pylkkänen (2000) proposes a different mixed analysis. Using evidence from Finnish, Pylkkänen divides Psych causatives into two types, stative and non-stative. She argues that the participant in the subject position of stative Psychs is the TARGET of the caused mental state, while the participant in the subject position of non-stative Psychs is a participant of the causing event and not thematically related to the complement predicate (base-generation). Accordingly, stative Psychs are derived from their non-causative counterparts and involve NP raising/movement (B&R 1988), while non-stative Psychs contain a non-raising structure (Arad 1998).

Mandarin FFs are similar to ObjExp Psychs in their inverse argument order, causative meaning and, more remarkably, backward binding<sup>1</sup>, as shown in (14)<sup>2</sup>:

- (14) [*tamen*(-de)<sub>I</sub> xuesheng-de lunwen] *kan-lei-le* [*suoyou-de laoshi*]<sub>I</sub>  
 their student-'s thesis read-tired-PERF all teacher  
 "[All the teachers]<sub>I</sub> read [their<sub>I</sub> students' theses] and that made them<sub>I</sub> tired."

If the formation of FFs can be analyzed parallel to that of ObjEXP Psychs, then FFs are possibly generated by three ways: NP-Movement, base-generation or a mixed derivation. Alternatively, there could be another possibility. An account for FFs needs to deal with the relation between FFs (3) and S-O RCs (2), that is, whether or not the structure of FF and that of S-O RC are derivationally associated.

However, it is equally important to note that FFs differ from ObjEXP Psychs: (i) the V in FFs is agentive and (ii) an additional RP is obligatory in FFs but not in ObjEXP Psychs. Next, I will discuss the relation between FFs and ACs/BAs.

<sup>1</sup> I use bound pronoun to avoid the logophor problem of backward binding raised by Arad.

<sup>2</sup> I appreciate Audrey Li's suggestions on this issue and her generous contribution of the data.

#### 4. Flip-Flops vs. Analytical Causatives and *Ba*-Constructions

Previous analyses (Huang 1988, Chen 1995, Sybesma 1999, etc.) argue that FF (3) has a structure (15) similar to the AC/BA (16) which have an overt *Cause*, *rang/shi* “make/let” (Chen 1995) or filled by *ba* (Sybesma 1999). In the FF structure (15), NP2 is a base-generated external argument theta-marked by *Cause*, while NP1 is the EXPERIENCER and FF is derived by moving the [V-R] complex to *Cause*.

(15) [<sub>CauseP</sub> [zhe-ben shu] [<sub>Cause</sub> **kan-lei<sub>1</sub>-le** [<sub>VP</sub> Lisi *t<sub>1</sub>* ]]] (FF)  
 this-CL book read-tired-PERF Lisi  
 “(Reading) this book made Lisi tired.”

(16) [<sub>CauseP</sub> [zhe-ben shu] [<sub>Cause</sub> **rang/ba** [<sub>VP</sub> Lisi *kan-lei-le*]]] (AC/BA)  
 this-CL book make/BA Lisi read-tired-PERF  
 “This book made Lisi tired by reading it.”

At first glance, FFs seem to be derived through head movement and the analysis (15) does not violate thematic hierarchy. However, there are at least three factors indicating that the analysis (15) is problematic. First, as indicated in (14), FFs show a backward binding relation between NP1 and NP2, repeated in (17), whereas AC/BA do not have the same backward binding relation, as in (18):

(17) [*tamen*(-de)<sub>I</sub>xuesheng-de lunwen] *kan-lei-le* [*suoyou-de laoshi*]<sub>I</sub>  
 their student-'s thesis read-tired-PERF all teacher  
 “[All the teachers]<sub>I</sub> read [their<sub>I</sub> students’ theses] and that made them<sub>I</sub> tired.”

(18) [*tamen*(-de)<sub>I</sub>xuesheng-de lunwen] rang/ba [*suoyou-de laoshi*]<sub>I</sub> *kan-lei-le*  
 their student-'s thesis make/BA all teacher read-tired-PERF  
 “[Their<sub>I</sub> students’ theses] made [all the teachers]<sub>\*I/2</sub> tired because of the reading.”

Second, the internal argument of an idiom chunk can act as NP2 in FFs, as shown in (19), while ACs/BAs do not show the same idiom chunk effect, as in (20):

(19) *leng shui po-de* Lisi (dou) *bu-hao-yi-si* (FF)  
 cold water pour-DE Lisi even embarrassed  
 “Lisi’s discouraging somebody made Lisi embarrassed.”

(20) \* *leng shui rang/ba* Lisi *po-de* (dou) *bu-hao-yi-si* (AC/BA)  
 cold water make/BA Lisi pour-DE even embarrassed  
 “(Intended) Lisi’s discouraging somebody made Lisi embarrassed.”

Third, when both NP1 and NP2 are animate, the FF is ambiguous in three ways<sup>3</sup> (as (21) without “deliberately”). However, by adding a volitional adverb, *guyi* “deliberately”, only Standard RC, but not FF or S-O RC reading, is available.

<sup>3</sup> Similar examples concerning the ambiguity in (21) have been initiated in Li (1990). Li discusses the possibility of forming V-V compounds based on the assumption of theta-identification. Li’s analysis, however, is different from the discussion of this paper.

In contrast, with animate NPs as subject and object, AC/BA do not show such ambiguity and agentive reading is available with the volitional adverb, as in (22).

- (21) [zhe-ge xiaohai] *guyi* zhui-lei-le [mama]  
 this-CL child deliberately chase-tired-PERF mother  
 a.\* (FF) “The mother deliberately chased the child and that made mother tired.”  
 b. (Standard) “The child deliberately chased the mother and the mother got tired.”  
 c.\* (S-O) “The child deliberately chased the mother and the child got tired.”
- (22) [zhe-ge xiaohai] *guyi rang/ba* [mama] zhui-tired-le] (AC/BA)  
 this-CL child deliberately make/BA mother chase-tired-PERF  
 “The child deliberately made the mother tired by chasing her.”

The differences between FF and AC/BA suggest three things: (i) the analysis of FF should be different from that of AC/BA; (ii) NP1 in FF c-commands NP2; (iii) NP2 in FF is not theta-marked by *Cause* but has moved from a position below NP1. Despite the causative meaning shared with AC/BA, FF is not a variation of AC/BA.

## 5. Flip-Flops and Bi-Eventive Analysis

As a starting point, we can say that NP2 in FFs is c-commanded by NP1 followed by a movement over NP1 without violating locality restriction. Therefore, the moved component cannot be NP but other category. Adopting Pykkänen’s (2002) bi-eventive proposal that Causation relates two events, a causing event and a caused event, FF (3) can be roughly interpreted as (23) accordingly:

- (23) Lisi was an AGENT of a book reading event that caused the tiredness of Lisi.

From (23), FF (3) consists of a causing event, the ACTION, and a caused event, the RESULT. Namely, it is the event (reading the book), rather than the entity (the book), that caused the RESULT. Empirically, the bi-eventive proposal is supported by a Verb-Doubling counterpart where the V can optionally accompany NP2 in the subject (24). There is a condition for the Verb-Doubling, the V that accompanies NP2 must be the same copy as the V in [V R/XP], but not other V:

- (24) [(*kan*/\**xie*/\**mai*) zhe-ben shu] *kan-lei-le* Lisi (cf. (3))  
 read/write/buy this-CL book read-tired-PERF Lisi  
 “Reading/\*Writing/\*Buying this book made Lisi tired.”

Verb-Doubling is not only observed in FF (24). Similar phenomenon is also found in RC sentence like (25), which I call **Verb-Doubling RC (V-Double RC)**:

- (25) Lisi [*kan* zhe-ben shu] *kan-lei-le* (cf. (24))  
 Lisi read this-CL book read-tired-PERF  
 “(lit.) Lisi did reading of the book and (as a result) Lisi got tired.”

While both (24) and (25) have two occurrences of V, semantically FFs convey causation but V-Double RCs do not. Next, I will discuss the two occurrences of V.

## 5.1 The Double Occurrences of V

Although there are two occurrences of V, V1 and V2, in FF (24) and V-Double RC (25), there are at least three reasons to believe that V1 is the main V, while V2 is.

First, an aspect marker, perfective *-le*, can be suffixed to V2, but not V1:

- (26) a. Lisi [*kan zhe-ben shu*] **kan-lei-le** (V-Double RC)  
 Lisi read this-CL book read-tired-PERF  
 “(lit.) Lisi read the book and (as a result) Lisi got tired.”
- b. [*kan zhe-ben shu*] **kan-lei-le** Lisi (V-Double FF)  
 read this-CL book read-tired-PERF Lisi  
 “Reading this book made Lisi tired.”
- (27) a.\* Lisi [**kan-le** zhe-ben shu] *kan-lei* (V-Double RC)  
 Lisi read-PERF this-CL book read-tired  
 “(Intended) Lisi read the book and (as a result) Lisi got tired.”
- b.\* [**kan-le** zhe-ben shu] *kan-lei* Lisi (V-Double FF)  
 read-PERF this-CL book read-tired Lisi  
 “(Intended) Reading this book made Lisi tired.”

Second, V2 can be negated by the negated perfective *mei-you* “not-have”, while the negation cannot precede V1:

- (28) a. Lisi [*kan zhe-ben shu*] **mei-you kan-lei** (V-Double RC)  
 Lisi read this-CL book not-have read-tired  
 “(lit.) Lisi read the book and (as a result) Lisi did not get tired.”
- b. [*kan zhe-ben shu*] **mei-you kan-lei** Lisi (V-Double FF)  
 read this-CL book not-have read-tired Lisi  
 “Reading this book did not make Lisi tired.”
- (29) a.\* Lisi [**mei-you kan** zhe-ben shu] *kan-lei* (V-Double RC)  
 Lisi not-have read this-CL book read-tired  
 “(Intended) Lisi did not read the book and (as a result) Lisi got tired.”
- b.\* [**mei-you kan** zhe-ben shu] *kan-lei* Lisi (V-Double FF)  
 not-have read this-CL book read-tired Lisi  
 “(Intended) Reading this book did not make Lisi tired.”

Third, V2 can form an *A-not-A* question (a special *yes/no* question generated by reduplicating the verb V and inserting the negation *bu* between the two identical Vs (Huang 1982), while V1 cannot (for the analysis of the infix *de*, see Wu 2004):

- (30) a. Lisi [*kan zhe-ben shu*] **kan-bu-kan-de-lei?** (V-Double RC)  
 Lisi read this-CL book read-not-read-DE-tired  
 “(lit.) Can Lisi get tired after he read the book?”

b. [*kan zhe-ben shu*] **kan-bu-kan-de-lei** Lisi? (V-Double FF)  
 read this-CL book read-not-read-DE-tired Lisi  
 “Can the book reading make Lisi tired?”

(31) a.\* Lisi [**kan-bu-kan** zhe-ben shu] *kan-lei-le*? (V-Double RC)  
 Lisi read-not-read this-CL book read-tired-PERF  
 “(Intended) Did Lisi do book reading and he got tired?”

b.\* [**kan-bu-kan** zhe-ben shu] *kan-lei-le* Lisi? (V-Double FF)  
 read-not-read this-CL book read-tired Lisi  
 “(Intended) Did Lisi do book reading that made Lisi tired?”

The diagnoses shown above indicate that V1 is not a full-fledged verb, while V2 is. Therefore, V2 should be the main predicate in both FFs and V-Double RCs.

## 5.2 Flip-Flops: A Result of VP Movement

Based on the discussions, I propose that V1 and NP2 form a constituent [V1 NP2] interpreted as a causing event of FFs. I suggest that V-Double RCs are the initial structure of FFs and FFs are derived by VP movement of [V1 NP2] to the subject position of *CauseP* and head movement of [V2 R] complex to *Cause* head position:

(32) NP1 [V1 NP2] [V2 RP] (V-Double RC (cf. (25))  
 ⇒ [V1 NP2]<sub>I</sub> [V2 RP]<sub>2</sub> NP1 t<sub>1</sub> t<sub>2</sub> (V-Double FF (cf. (24))

Note that the VP movement of [V1 NP2] in FF (32) cannot be analyzed as an operation of Object Topicalization (33)a or VP-Focusing (33)b.

(33) a. [*zhe-ben shu*]<sub>I</sub>, Lisi kan-lei-le e<sub>1</sub> (Object Topicalization)  
 this-CL book Lisi read-tired-PERF  
 “This book, Lisi got tired by reading it.”

b. [*kan zhe-ben shu*]<sub>I</sub>, Lisi e<sub>1</sub> kan-lei-le (VP Focusing)  
 read this-CL book, Lisi read-tired-PERF  
 “Reading this book, Lisi got tired (by reading it).”

There are two reasons against the account. First, (33) and (24) differ in their surface word orders. Second, (33) do not, but (24) does, express causation since only FF (24), but not (33)a or (33)b, is the appropriate answer for the question (34).

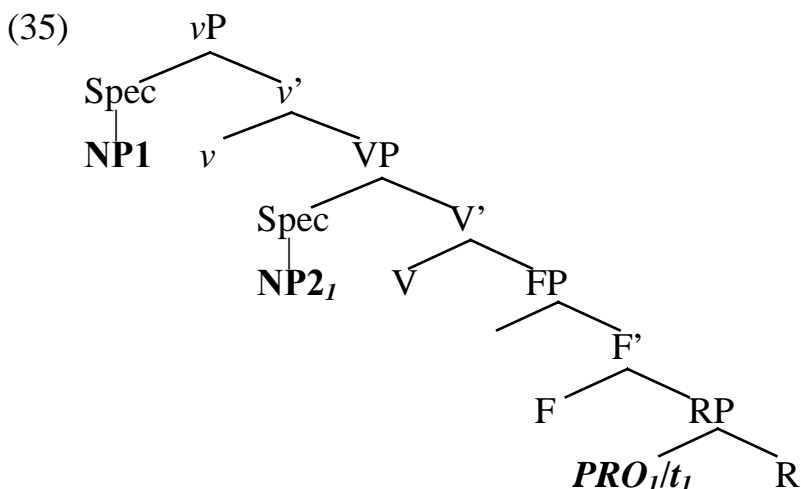
(34) Q: [*zhe-ge xiaohai*] dui Lisi zeme le?  
 this-CL child to Lisi how PERF  
 “(lit.) How/What did the child bring to Lisi?”

In the next section, I will discuss another potential base structure, S-O RC (2), for the formation of FFs and argue that FFs cannot be derived from S-O RCs. I will further propose a structure to account for the formation of FFs.

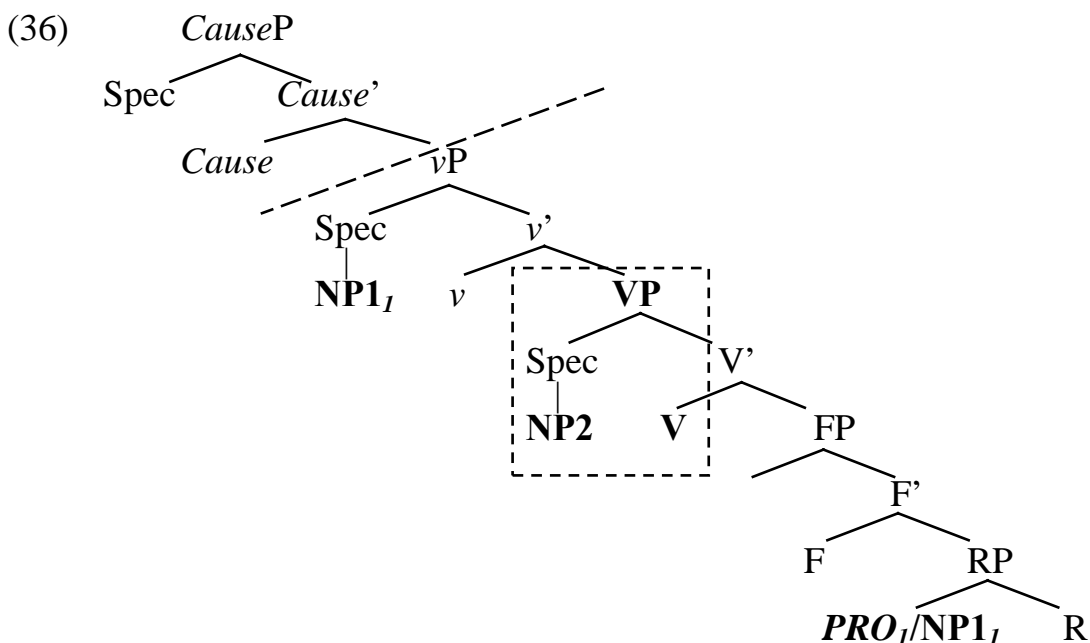


## 6. The Account for Flip-Flops

Under the analyses of Huang (1992), Tang (1997), Sybesma (1999) and Wu (2002), Standard RC (1) has a structure like (35) in which NP1 is generated in [Spec,  $v$ P], while NP2 may be generated in either [Spec, VP] (cf. Huang 1992) or [Spec, RP] (cf. Tang 1997, Sybesma 1999 and Wu 2002), depending on the analyses. The RESULT RP is the complement of a functional category F which bears an aspectual feature and functionally is a closure to the open range of the matrix predicate V.



If S-O RC (2) has a structure similar to (35), FF (3) then is initiated from (2) by generating a *CauseP* above the structure (35) and an operation of VP movement to Spec, *CauseP*, since S-O RC and FF differ in their argument order and semantically FF (3) conveys causation, The structure of FF (3) would be like (36):



However, (36) is problematic for three reasons: (i) V and NP2 do not form a constituent; (ii) NP2 intervenes the c-commanding relation between NP1/*PRO* in [Spec, RP] and its antecedent in [Spec,  $v$ P]; (iii) after R-to- $v$  movement to form a compound, S-O RCs may have an inaccurate surface representation (37):

- (37) *Lisi kan-lei-le* (\**kan*) zhe-ben shu (cf. (2))  
 Lisi read-tired-PERF read this-CL book

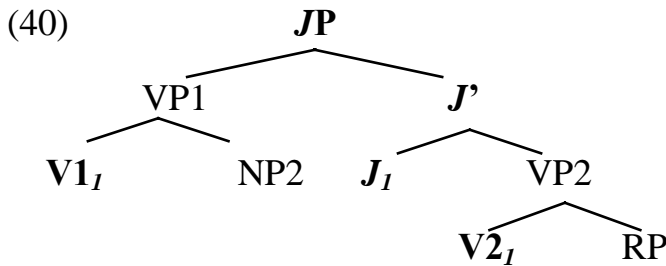
Accordingly, (36) cannot account for either FFs or S-O RCs, and FFs are not derived from (36). Alternatively, the proposal (32) that FFs are derived from V-Double RCs looks more promising. The derivation of FFs is schematized in (38).

- (38) a. [(V1) NP2] [V2 RP] NP1                    **V-Double FF** (cf. (2) and (24))  
 b. NP1 [V1 NP2] [V2 RP]                    **V-Double RC** (cf. (25))

Along with the discussions, we have the following generalizations (39) of FFs:

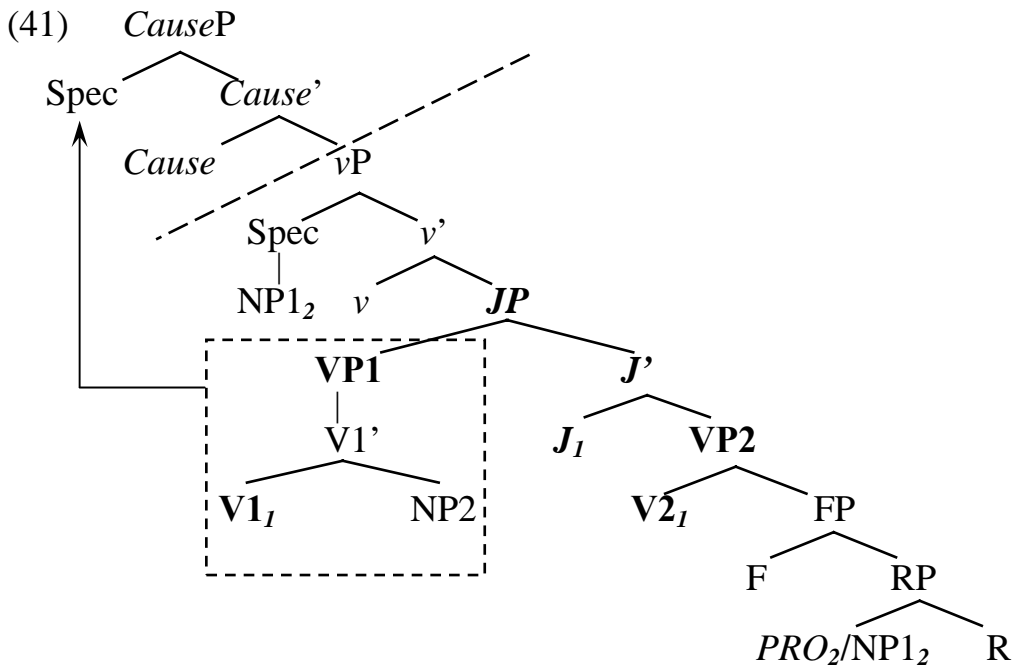
- (39) a. FF is **NOT** derived from a structure like (36);  
 b. FF is structurally associated with its V-Double RC counterpart;  
 c. V and NP2 form a VP constituent [V NP2];  
 d. [V NP2] has moved;  
 e. V in FF has two complements, NP2 and RP;  
 f. The V in [V NP2] and the V in [V RP] must be the same V;  
 g. The V in [V NP2] is not the main V, while the V in [V RP] is.

The appropriate account for FFs must cover all of the generalizations in (39). I suggest that the two occurrence of V in FF (24) and V-Double RC (25) have to be co-indexed, (39)f, and structurally the two constituents, [V NP2] and [V RP], are joined. I propose a functional projection *J(oin)*, given in (40), which is responsible for the relation of the two constituents and the identification of the two Vs.



(40) shows that V1 and V2 respectively form two constituents, [V1 NP2] and [V2 RP], with their complements ((39)c, (39)e). *J* is a functional projection that joins two VPs, VP1 is the Spec, while VP2 is the complement. *J* and V1 are in a Spec-Head relation through co-indexation (following Travis and Lamontagne’s (1992) proposal that Spec-Head relation is a relation between the head and the head of the Spec), while *J* and V2 are in a Head-Complement relation (39)g, similar to that between INFL and V. Thus, V1 and V2 are co-indexed, (39)f.

I suggest that V-Double RC (38)b is a “subject sharing” structure in which [V1 NP2] and [V2 RP] share the same external argument, NP1. V-Double RC (38)b thus contains a *JP* structure (40) plus a projection of *vP* which introduces the external argument NP1 (cf. Krazter 1996, Arad 1998, Pylkkänen 2002). FFs and V-Double RCs are structurally associated with a *Cause* projection generated above V-Double RCs. The initial structure of FFs can be represented as in (41):



The formation of FFs is derived by VP movement of [V1 NP2] to the Spec of *CauseP* (39)d and a head movement from the [V2 RP] complex to the head *Cause*. The analysis (41) does not have the problems that (36) has.

## 7. Extensions

The inverse argument order of FFs is not only found in Resultatives but also in constructions that contain Duration XP and Consumption XP, as shown in (42):

- (42) a. [(**kan**) *zhe-ben shu*] **kan-le** *Lisi* (*\*san-ge xiaoshi*) (Duration)  
 read this-CL book read-PERF Lisi three-CL hour  
 “Reading this book took Lisi three hours.”
- b. [(**mai**) *zhe-ben shu*] **mai-le** *Lisi* (*\*wu-shi kuai*) (Consumption)  
 buy this-CL book buy-PERF Lisi five-ten kuai  
 “Buying this book cost Lisi fifty dollars.”

The sentences in (42) also show the properties as that of Resultative FFs: the Duration/Consumption XP is obligatory; NP1 and NP2 bear the same thematic relation with respect to the V; (42) is not agentive; XP is interpreted as predicate of NP1, rather than NP2; and (42) convey causative meaning. Remarkably, the sentences in (42) also have their V-Double RC counterparts, as shown in (43).

- (43) a. *Lisi* [**kan** *zhe-ben shu*] **kan-le** (*\*san-ge xiaoshi*) (Duration)  
 Lisi read this-CL book read-PERF three-CL hour  
 “Lisi did book reading and (as a result) it took him three hours.”
- b. *Lisi* [**mai** *zhe-ben shu*] **mai-le** (*\*wu-shi kuai*) (Consumption)  
 Lisi buy this-CL book buy-PERF five-ten kuai  
 “Lisi did book purchasing and it cost him fifty dollars.”

The parallelism between Duration/Consumption FFs (42) and Resultative FFs (3) suggests that the proposed analysis (41) is an appropriate account for FF structures, Resultative FFs (3) and Duration/Consumption FFs (42), in general.

## 8. Conclusion

By providing the evidence from backward binding and idiom chunk effect, this paper argues that the inverse argument structure of Flip-Flops cannot be analyzed as a variation of Analytical Causatives or *Ba*-constructions. More evidence is raised to exclude the possibility that FFs are derived from a structure like Standard or Subject-Oriented RCs. By examining the distribution of the inverse argument phenomena in FFs and adopting the idea that causation consists of a causing event and a caused event, I propose the structure (41) to argue that this inverse argument variation of RCs should involve a functional projection *JP* joining the two events and FFs are derived by VP movement and V-to-*Cause* movement.

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