

Of all the co-verbs which exist in Chinese as deverbal prepositions preceding the matrix lexical verb phrase (Ross (1991)), Mandarin Chinese *ba*- and long passive *bei*-constructions are strikingly similar as they both involve argument alternations which move the internal object argument of the lexical verb to a higher position:

- 1a) SUBJECT BA OBJECT<sub>i</sub> VERB PRO<sub>i</sub>  
 1b) OBJECT<sub>i</sub> BEI SUBJECT VERB PRO<sub>i</sub> (adapted from Feng (2002:148))

Furthermore, *ba* and *bei* are unique among co-verbs in not forming phrasal constituents with the nominal argument coming immediately after (2a)) and not assigning theta-roles, since the nominal argument (OBJECT in 1a), SUBJECT in 1b)) is better analysed as an argument of the matrix lexical verb merged in its specifier (2b)), which separates *ba* and *bei* from other theta-assigning co-verbs which do form phrasal constituents with their arguments (2c)):

- 2a) \*ba zhe-kuai rou ni xian qieqie ba / \*bei Lisi Zhangsan zuotian da-le  
 BA this-CL meat you first cut-cut SFP BEI Lisi Zhangsan yesterday hit-ASP  
 ‘this meat, you cut it first’ (Li (2006:382)) / ‘by Lisi, Zhangwan got hit yesterday.’ (Huang, Li, Li (2009:116))
- 2b) ta ba men xi-hao (he) chuanguhu ca-ganjing / ta bei qinren huaiyi (he) wairen zhize  
 he BA door wash-finish and window wipe-clean he BEI relative suspect and outsider blame  
 ‘he washed the door and wiped the window clean’ (Li (2006:383)) / ‘he was suspected by his relatives and blamed by outsiders’ (Hashimoto (1987:42))
- 2c) gen Zhangsan wo hen chudelai / yong dao ta sha-le henduo ji /  
 with Zhangsan I very get.along use knife he kill-ASP many chicken  
 zai zhuozhi-shang wo bai-le yi-pen hua / dui Lisi Zhangsan hen keqi  
 on table-LOC I put-ASP one-CL flower to Lisi Zhangsan very polite  
 ‘with Zhangsan I get along very well’ / ‘with a knife he killed many chickens’ / ‘on the table I put a pot of flower’ / ‘to Lisi Zhangsan is very polite’ (Huang, Li, Li (2009:116))

Numerous analyses posit A/A’-movement of the internal argument to account for the surface word order and Differential Argument Marking (DAM) properties in *ba* and *bei*-constructions (cf. Serzant and Witzelach-Makarevich (2017)), as *ba* and *bei* tend to select referential/specific object arguments and highly transitive, ‘affective’ verb phrases that must be marked for aspect (3a)) (Liu (1997), Li (2006)), though *bei* can also select other verbs (3b)) and extra Applicative arguments like adversatives which are incompatible with *ba* (3c)) (Huang, Li, Li (2009:157-160)):

- 3a) women ba Lisi ma\*(-le) \*(yidun) \*(de hen lihai) / Lisi bei women ma\*(-le) \*(yidun) \*(de hen lihai)  
 we BA Lisi scold-ASP once DE very serious Lisi BEI we scold-ASP once DE very serious  
 ‘We scolded Lisi once very seriously’ / ‘Lisi was scolded by us once very seriously’ (Huang, Li, Li (2009:157))
- 3b) \*laoshi ba ta-de zhitiao kanjian-le / ta-de zhitiao bei laoshi kanjian- le  
 teacher BA he-POSS paper.strip see-ASP he-POSS paper.strip BEI teacher see-ASP  
 ‘The teacher saw his paper strip’ / ‘his paper strip was seen by the teacher’ (Huang, Li, Li (2009:159))
- 3c) Linyi bei Wangwu jichu-le yi-zhi quanleida / \*Wangwu ba Linyi jichu-le yi-zhi quanleida  
 Linyi BEI Wangwu hit-ASP one-CL home.run Wangwu BA Linyi hit-ASP one-CL home.run  
 ‘Linyi had Wangwu hit a home run on him’ / ‘Wangwu hit a home run on Linyi’ (Huang, Li, Li (2009:159))

However, the object arguments in *ba*- and *bei*-constructions need not be definite/specific and can be headed by the indefinite article (*yi*) *ge* ‘a(n)’ (4)), which puts doubt in A’-movement to Topic/Focus. An alternative explanation might be that the nominal argument (*yige jihui* ‘an opportunity’, *ge chefu* ‘a driver’ in 4)) is not as much definite/specific but delimited as it is selected by telic verbs (*cuoguo* ‘miss’, *zhuazou* ‘arrest’ in 4)) (Ritter and Rosen (2000:211)):

- 4) ta ba yi ge jihui cuoguo-le / you ge chefu bei dabing zhuazou-le  
 he BA one CL opportunity miss-ASP EXIST CL driver BEI soldier arrest-ASP  
 ‘He missed an opportunity.’ (Liu (1997:94)) / ‘there was a driver who was taken away by soldiers’ (Li (1993:41))

A-movement is also unlikely in light of intervening arguments between the theta-positions of arguments generated within the lexical verb phrase (Hale and Keyser (1993)) and their surface positions, which prohibits Spec-to-Spec movement on grounds of Minimality/Locality (Rizzi (1990)), and this has led to *ad hoc* and suspect postulation of escape-hatches in the form of Null Operator Projections (NOP) via which movement to the specifier of *ba* and *bei* is argued to be possible (Feng (1995, 2002), Ting (1998), Huang (1999)). Most problematic is that none of these movement analyses say anything about the general ‘affectedness’ of the lexical verb in these constructions, which has been relegated to vague pragmatic implicature (Li (2006)). In order to account for these DAM properties, this paper proposes an Applicative analysis of *ba*- and long passive *bei*-constructions which involve externally merging new coindexed arguments in line with the thematic and formal constraints of Applicatives and DAM cross-linguistically (Aissen (2003), Pytkkanen (2008)). Furthermore, the Chinese data suggests that there may be additional functional Voice heads (Passive (*bei*)/Active (*ba*)) on the clausal spine above aspectual/thematic heads which involve semantically-driven rather than Case-driven argument alternations as seen in European languages (Chappell (1983)). This is supported by the historical formation of Chinese co-verbs which involves monoclausal restructuring of serial verbs and the formation of Voice heads above Asp(ect).

In the verbal/clausal domain, one can recognize three argument-alternating functional heads in Chinese (Passive-Active-Affect), since while *bei* can dominate and passivise *ba* (5a)), both can also dominate *gei* (5b)) which is optionally inserted as an unaccusative head denoting ‘affectedness’ (Tang (2001), Kuo (2010)):

5a) ta bei pengyou ba yi-ge taitai gei pian-zou-le  
 He BEI friend BA one-CL wife GEI cheat-away-ASP  
 ‘He was cheated by his friend of one of his wife.’ (Chen (2003:1173))

5b) didi ba beii gei da-sui-le / beizi bei ta gei da-po-le  
 younger.brother BA cup GEI hit-break-ASP cup BEI he GEI hit-break-ASP  
 ‘Younger brother broke the cup’ (Tang (2001:283)) / ‘the cup was broken by him.’ (Tang (2001:259))

This hierarchy of arguments along with their base theta-positions (SpecBEI... SpecBA... SpecGEI... SpecPred... SpecTrans (cf. Bowers (2002))) where the internal object argument (e.g. *ta... yi ge taitai* ‘a wife of his’ in 5a)), which seems to show possessor raising (*ta* ‘his’) from the original DP argument (*ta (de) yi ge taitai*) (Kuo (2009)) as is characteristic of Applicatives (Pylkkanen (2008:8ff)) and the external subject argument (e.g. *pengyou* ‘friend’ in 5a)) of the matrix lexical verb (e.g. *pianzou* ‘cheat away’ in 5a)) are intertwined in such a way ( $t_k \dots pengyou_i \dots t_k yi ge taitai_j \dots t_i \dots t_j$ ) that Spec-to-Spec A-movement is strictly forbidden by principles of Minimality/Locality. Rather, it can be argued that *bei*, *ba* and *gei* are Applicative heads which introduce new patientive, agentive and affected arguments which are coindexed with the corresponding arguments in the lexical verb phrase, as shown by optional resumptive pronouns:

6) Zhangsan bei Lisi (gei) da-le (ta) yixia / Lisi ba Linyi (gei) da-le (ta) yixia  
 Zhangsan BEI Lisi GEI hit-ASP him once Lisi BA Linyi GEI hit-ASP him once  
 ‘Zhangsan was hit once by Lisi.’ (Huang, Li, Li (2009:127)) / ‘Lisi hit Linyi once.’ (Huang, Li, Li (2009:162))

These resumptive pronouns (*ta* in 6)), which rule out A-movement as seen in short *bei*-passives (Huang (1999:439ff)), suggest that the lexical verb does not lose argument relations but rather gains new arguments in *ba*-, *bei*- and *gei*-constructions which are coreferential with the arguments in the lexical verb phrase, and this entails that the lexical verb must undergo head movement in order to form the appropriate argument structure for the associated A-positions in *bei* (patientive), *ba* (agentive) and *gei* (affected). These DAM properties can be traced back to the lexical origins of *ba* ‘to take/hold’ and *bei* ‘to receive/undergo’ in serial verb constructions (Bennett (1968)) where they undergo clause union when the second verb phrase contains arguments that can be reanalyzed as coreferential with the arguments in the first verb phrase, which, in the case of *ba*, requires a prosodically strong, highly ‘affective’ verb phrase that can select the object of *ba* as its own preposed internal argument (7a)) (Feng (2002:143-146)) and for *bei* the verb phrase should have canonical SV(O) order whose object can be externally merged in the specifier of *bei* as the patient of the passivized verb (7b)):

7a) hai ba shen-xin xi ren zhi  
 also BA body-heart carefully examine it  
 ‘he also took his physique and carefully examined it’ > ‘he also carefully examined his physique’ (*Dunhuang wenshu*)

7b) chen bei shangshu zhaowen  
 I BEI official summon  
 ‘I received the summon of the officials’ > ‘I was summoned by the officials’ (*Caizhonglangji*)

There are asymmetries between Passive (*bei*) and Active (*ba*) Applicative heads, since while *ba* and *bei* share common derivational properties of coindexed argument-alternation between the new argument introduced and the argument in their verb phrase complements, the differences in scope of complementation entail that *ba* dominates *gei* (5a-b)) which merges the ‘affected’ internal object argument in SpecGEI and forces verb movement of the lexical verb in consistency with the aspectual/thematic properties of ‘affectedness’ (7a)), whereas *bei* merged higher than *ba* (5a) may select a wider range of active verbs (3a-c)) as long as the ‘patientive’ internal object argument can be merged in SpecBEI (7b)).

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