The Invertible Construction in Chinese

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ABSTRACT

This paper argues that the Invertible Construction (IC) in Chinese is a kind of distributive construction. What appears to be an inversion of word order is best understood as the division of the theme NP to be acted upon by a number of agents for an embedded event. This analysis best captures a number of otherwise intractable properties of the IC including the necessarily quantitative interpretation of the NPs and the incompatibility with adverbs of volition.

1 Introduction

The paper revisits the so-called Invertible Construction in Chinese (henceforth IC); see also (Li & Thompson, 1981:377-395; Li, 1996, 1998; Wee, 2008). Among them, one highly relevant work was a semantic constraint oriented Constructional Grammar account for the IC in Chinese (Huang et al., 1999). Adopting an LFG framework, this paper offers an arguably more comprehensive account of IC through mapping an event structure containing three participants to a dyadic argument structure, thereby producing IC’s signature inversion effect as well as other characteristics that otherwise appear to be unrelated.

Traditionally, the IC, or the Flip-flop construction has been described as having the canonical NP₁ V NP₂ being inverted to produce NP₂ V NP₁, (1).

(1) Invertible Construction in Chinese (IC)  
NP₁ V NP₂ ↔ NP₂ V NP₁

a. 八个人吃三碗饭

8-CL-person eat 3-CL-rice  
Eight people to eat three bowls of rice

b. 三碗饭吃八个人

san-wan-fan chi ba-ge-ren  
3-CL-rice eat 8-CL-person  
Three bowls of rice to eat eight people

In (1a, b), the English glosses are provided in the infinitive since the Chinese expression is neutral with regard to the specification of tense and aspect. We shall continue to do so throughout the rest of this paper to maintain a faithful translation to the original language’s grammar rather than the literary content. The sentence in (1a) has the canonical order of the noun phrases in terms of agenthood and patienthood. In contrast, (1b) is “inverted” or “flip-flopped”. The “inverted” form (1b) is more marked than (1a) in that speakers are sometimes stunned by the apparently weird interpretation of the rice being human-eaters before they draw upon the intended reading. It should however be noted that the markedness of (1b) is not due to ungrammaticality, as will be evident when compared with the anomalous reading of (2b) below.

(2) Non-invertability

a. 八个人砸三只碗

8-CL-person break 3-CL-bowls  
Eight people to break three bowls

b. * 三只碗砸八个人

san-zhi-wan za ba-ge-ren  
3-CL-bowls break 8-CL-person

1 Note that any possible metaphorical inferences derived from (1b) are excluded from this paper. The present study is confined to the grammatical content of data.
Reading A: three bowls to break 8 people
Reading B: *three bowls to be broken by 8 people

As presented in (1), the IC appears to be a curious case of a freer word order in a language like Chinese that has no overt case marking, thus the label “IC” refers to both orders i.e., NP₁ V NP₂ (canonical order) and NP₂ V NP₁ (flip-flopped order) that share the same semantic interpretation, which is as shall be explained in Sections 3 and 4, a distributive reading.

It is important to recognize the incompatibility of the IC with expressions of volition (3).

(3) **Incompatibility of the IC with volition**

a. 八个人故意吃三碗饭 (cf. (1a))
   *ba-ge-ren guyi chi san-wan-fan*
   8-CL-person intentionally eat 3-CL-rice
   8 people intentionally to eat three bowls of rice

b.* 三碗饭故意吃八个人 (cf. (1b))
   *san-wan-fan guyi chi ba-ge-ren*
   3-CL-rice intentionally eat 8-CL-person
   3 bowls of rice intentionally to eat 8 people

If the IC is a case of simple inversion, one would expect (3b) to be acceptable given the acceptability of (3a). Incompatibility with expressions of volition demonstrates that the IC does not involve agenthood.

Another property of the IC is the constraint on the quantity readings of the participant NPs, (4) and (5).

(4) **Quantity reading of NP₁**

a. 张三吃三碗饭
   *Zhangsan chi san-wan-fan*
   Zhangsan eat 3-CL-rice
   Zhangsan to eat three bowls of rice

b.* 三碗饭吃张三
   *san-wan-fan chi Zhangsan*
   3-CL-rice eat Zhangsan
   Three bowls of rice to eat Zhangsan

(5) **Quantity reading of NP₂**

a. 八个人吃饭
   *ba-ge-ren chi fan*
   8-CL-people eat rice
   Eight people to eat rice

b.* 饭吃八个人
   *fan chi ba-ge-ren*
   Rice eat 8-CL-people
   Rice to eat eight people

The acceptability of (4a, 5a) in contrast with (4b, 5b) points to the constraint that the participant NPs in the IC must be quantities and non-referential, a point also noted in Li (1996) and Wee (2008).

A third important observation about the IC is the stability of valence. As may be seen with how the IC interacts with monadic or triadic verbs. As shown in (6), *gei “give”* is triadic; *san-ge-xiaofendui “three teams”* is the SOURCE/AGENT, *wu-ge-shequ “five communities”* is the GOAL/BENEFICIARY, and *shi-tai-dianshiji “ten TVs”* the THEME.

(6) **IC with triadic verbs**

a. 三个小分队给五个社区十台电视机
   *san-ge-xiaofendui geiwu-ge-shequ shi-tai-dianshiji*
   3-CL-team give 5-CL-community 10-CL-TV
   Three teams to give ten TVs to five communities

b.? 五个社区给三个小分队十台电视机
   *wu-ge-shequ gei san-ge-xiaofendui shi-tai-dianshiji*
   5-CL-community give 3-CL-team 10-CL-TV
   Ten TVs to be given to three teams by five communities

c.? 十台电视机给五个社区三个小分队
   *shi-tai-dianshiji gei wu-ge-shequ san-ge-xiaofendui*
   10-CL-TV give 5-CL-community 3-CL-team
   Ten TVs to be given to five communities and three teams

d.? 五个社区三个小分队给十台电视机
   *wu-ge-shequ san-ge-xiaofendui gei shi-tai-dianshiji*
   5-CL-community 3-CL-team give 10-CL-TV
   Five communities and three teams to be given ten TVs

e.* 十台电视机五个社区给三个小分队
   *shi-tai-dianshiji wu-ge-shequ gei san-ge-xiaofendui*
   10-CL-TV 5-CL-community give 3-CL-team
   Ten TVs and five communities to be given to three teams

f. 十台电视机五个社区
As shown in the acceptability of (6f, g) but the marginality of (6b-d) and the unacceptability of (6e), the IC appears to prefer the expression of two NPs. In (7), we see how an otherwise monadic verb triggers the overt expression of another NP.

(7) **IC with monadic verbs**

a. 八个人哭了
   ba-ge-ren ku le
   8-CL-people cry ASP-LE
   Eight people cried

b.* 八个人哭
   ba-ge-ren ku
   8-CL-people cry
   Eight people to cry

c.* 三口棺材哭
   san-kou-guancai ku
   3-CL-coffin cry
   Three coffins to cry

d. 八个人哭三口棺材
   ba-ge-ren ku san-kou-guancai
   8-CL-people cry 3-CL-coffin
   Eight people to cry beside three coffins

e. 三口棺材哭八个人
   san-kou-guancai ku ba-ge-ren
   3-CL-coffin cry 8-CL-people
   Three coffins to cry eight people

Whether the verb in the IC is triadic or monadic verbs, the data above suggest the dyadic valence of the IC.

In view of above observations, any account of the IC must take into consideration the characteristics listed (8).

(8) **Central characteristics of the IC**

a. The license in ordering the theme/patient NPs before the Agent NPs (i.e. the impression of inversion)

b. The unavailability of the IC with certain verbs

c. The incompatibility of the IC with volition

d. The quantity readings of the participant NPs

e. The dyadic valence of the IC

This paper argues that capturing all the above aspects of the IC is best done by understanding the IC as a kind of distributive construction that expresses the divisibility of the theme NP. This captures under a single analytical umbrella the apparently unrelated set of puzzles involving the inverted word order, the incompatibility with volition, as well as the dyadicity of the construction without resorting to very complex structures that might be necessary in a purely syntactic account. The analysis is fleshed out using the conceptual framework of Mohanan’s (1994) multi-dimensional syntax, where interface between semantics and syntax can be explicitly expressed and elaborated in the ensuing sections.

2 **The Dimensions of Syntax**

Regardless of the theoretical framework to which one may subscribe, any syntactic theory must relate (a) the grouping of words, i.e. the constituencies of a given word string; (b) the grammatical function of substrings of words in a sentence, i.e. subject and objecthood against which case and concord are manifest; (c) the valence of predicates, e.g. the transitivity of the main verbs; and (d) the semantic roles played by the participants expressed in the sentence, i.e. thematic roles.

In Government and Binding frameworks, these four “dimensions” of syntax are captured via the movement of syntactic constituents, the binding of traces and the assignment of various properties projected from lexical and/or functional heads (Chomsky, 1981; Haegeman, 1991). Subsequent frameworks such as Minimalism adopt essentially the same strategy (Radford, 1997), also for more alternative frameworks like that of Van Valin and La Polla (1997). Lexical-Functional Grammar (Bresnan, 1982, 2001) relates various dimensions in (a-d) by mapping across different levels.

Consider for example a Chinese sentence such as (9), and a syntactic representation of its constituents as given in Figure 1.

(9) 八个人骑三匹马
   Ba-ge-ren qi san-pi ma
   8-CL-people ride 3-CL horses
Eight people to ride three horses.

Figure 1. Constituent Structure of (9)

Eight-CL people to ride three-CL horses

Figure 2. A multi-dimensional model of (9)

Three. The Syntax-Semantics Interface

This section focuses on spelling out why IC licenses two different word orders. This will be most obvious when the semantics of the IC are fully fleshed. The effects will be most transparent when this is presented using Mohanan’s (1994) multidimensional model.

We might recall from Section 1 that the IC requires the NPs to have a quantificational reading and is incompatible with expressions of volition. These two properties together suggest that the IC is in fact a construction that expresses the distribution of the theme NP. This implies that at the semantics level there is a complexity of predication, offering the license of word order inversion. Further, as noted in Section 1, the IC is dyadic, hence it must be stipulated that the construction has a valence of two. To this end, we propose the representation in Figure 3 for IC.

Figure 3. Model of the IC

Eight-CL people to ride three-CL horses
when one sees verbs like ride or eat. The static here is that of “distributivity” with the interpretation that \( y \) is to be the dividend. This explains why the NPs in ICs are necessarily numeral NPs that do not bear referentiality are non-volitional (Li, 1998; Wee, 2001).

The IC contains a sub-event \( \text{EV}_{R1} \) that corresponds to the verb, but that is not what the IC is. The IC is the whole structure, with the semantics corresponding to \( \text{EV}_{R2} \). There is therefore a third and higher semantic participant corresponding to \( y \), which is co-referent with the embedded \( y \), the former being the theme of the matrix stative event \( \text{EV}_{R2} \) and the latter the theme/patient of the embedded event \( \text{EV}_{R1} \).

From Figure 3, there are two options of mapping the semantic participants to the arguments in the Arg-Str. Notice that there are only two argument positions. If mapping lines are not allowed to cross (more on this in relation to the Uniformity of Theta Assignment Hypothesis later), there are exactly two possible mappings: either \( y \) maps to the first argument slot and \( x \) to the second, or \( x \) could map to the first and \( y \) to the second. This effectively produces two possible word orders for the same semantic representation. The impression of inversion is thus illusory of what is in our account the optionality of mapping between the semantic participants and the argument positions.

The account squares nicely with the Uniformity of Theta Assignment Hypothesis (UTAH, Baker, 1997) where semantic prominence aligns with the linear order of the arguments. UTAH militates against possibilities of cross mappings between the Sem-Str and the Arg-Str, which therefore predicts that there will only be two possible orders for the IC and would also ensure that all semantic participants will surface (recall that \( y \) and \( y \) are co-referent).

Returning to the example in (1), we now offer the following explanations. Firstly, given that there are two orders in the IC, one of the orders will be coincidental to the canonical expression that would have an agentive reading. That agentive reading would correspond to \( \text{EV}_{R1} \) but crucially there is no higher matrix \( \text{EV}_{R2} \) bearing the stative predicate. Secondly, since the IC has a distributive reading due to the presence of \( \text{EV}_{R2} \), there will be three semantic participants which must be mapped into the Arg-Str that has only two slots. With UTAH, this produces exactly two word orders. Thirdly, the stativity of \( \text{EV}_{R2} \) predicts incompatibility of expressions of volition. Finally, the dyadicity of the IC is accounted for by the Arg-Str that has only two slots, and is therefore oblivious to the valence of the verb. In IC, it is the valence of the construction. In the case of (1) where the verb is eat, the solution is largely the same as that given in Figure 3, except that here the \( \text{EV}_{R1} \) is an accomplishment, shown in Figure 4.

![Figure 4. IC with accomplishment verbs](image)

In summary, the hypothesized model in Figure 3 works well in that it explains the puzzles put forward in Section 1, successfully predicting all the main characteristics of the IC:

i. the dyadic valence of the IC;
ii. the quantity reading of the IC;
iii. the incompatibility of the IC with volition; and
iv. the unavailability of the IC with certain verbs

There is only one issue has not been explored in this paper regarding the IC. We have not attempted to sort out which verbs are compatible with IC, as evidently not attested with the example in (2), and also probably not with the verb ride in (9). It is certainly an important issue for a comprehensive grasp of the IC and presumably some kind of constraint must be at work. Wee (2008) suspects that the issue may not be syntactic or semantic at all, but rather due to pragmatic factors. We shall have to leave this area unexplored for now.

4. Concluding Remarks

This paper explains the IC as essentially a kind of
distributive construction (calculation formula), with dyadic valences, i.e., the dividend and the divisor. This divisibility nature of the IC determines that the participant roles must be quantity denoting. In explaining the syntax-semantics interface that is so central to how the IC works, this paper adopted an LFG based multi-dimensional framework. However, it must be noted that any other framework that is capable of expressing this interface would be compatible with the analysis advocated here.

ACKNOWLEDGMENT
We would like to thank HK PolyU-PKU Research Centre for Chinese Linguistics for the support to present this paper at PACLIC-29. First author would also like to thank the Phonology Lab at the Hong Kong Baptist University under the directorship of Dr. Wee for the stimulating discussion that led to the idea of this paper. All remaining errors are ours.

REFERENCES

ABBREVIATIONS & SYMBOLS IN THE CONTENT
Activity: ACT
Argument structure: Arg-Str
ASP: aspect marker
Classifier(s): CL
Determiner: Det
Determiner Phrase: DP
Event: EV
Lexical Functional Grammar: LFG
Grammatical Constituent Structure: C-Str
Grammatical Function Structure: F-Str
Invertible Construction: IC
Le: LE (aspectual marker)
Number: Num
Numeral phrase: NumP
Particle: Prt
Semantic Structure: Sem-Str
Syntactically unacceptable: *
Semantically odd: ?