ON THE 'INVERTED' DOUBLE OBJECT CONSTRUCTION

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1. Introduction
It has long been observed by the traditional Chinese grammarians and Chinese dialectologists that the indirect object can follow the direct object without any dative marker in Cantonese. This 'inverted' word order of double object constructions has been taken to be one of the major syntactic characteristics of Cantonese. In this paper, I examine the classification of verbs used in the dative constructions in Hong Kong Cantonese and prepare an account where I relate the word order of double object constructions to the thematic properties of the dative verbs. I argue that the 'inverted' double object construction is only possible with the verbs that assign a Goal thematic role to the indirect object. In particular, I argue that the 'inversion' structure is derived from the prepositional dative construction with a null dative marker under certain conditions. I provide phonological evidence to support this analysis. I also argue that typological variation with respect to the word order of double object construction is the result of lexical and thematic variation.

This paper is organized as follows. Section 2 examines the classification of dative verbs in Cantonese. In section 3, I discuss the thematic properties of dative verbs and their relation to the dative constructions. In section 4, I argue that the so-called 'inversion' structure should be treated as a par with the prepositional dative construction. I then propose that the 'inversion' structure is derived from prepositional dative construction with a null dative marker and present phonological and syntactic evidence in support of this hypothesis. Typological variation will be investigated in section 5.

2. Dative verbs and their classification

2.1. The patterns of dative construction in Cantonese
The so-called dative constructions typically consist of a direct object (DO) and an indirect object (IO). Since Cantonese does not mark these two objects morphologically to signal the grammatical function they have in the sentence, such function is generally expressed by the word order in which the two objects surface and by the use of the dative markers. The meaning of the objects also helps distinguish which NP is the direct object and which one is the indirect object. The one which refers to an inanimate object is generally interpreted

* In giving the ideas reported in this paper shape, I would like to thank Brian Agbayani, Lisa Cheng, Yung Gu, Jimmy Huang, Janet Kong, Thomas Lee, Luther Liu, Ho-Chung Ng, Kazue Takeda, Choo-Yee Tsui, Myriam Uribe-Etxebarría, Bo Wan, and Moira Yip for their help, discussion, and advice on various aspects of this work. I am especially grateful to Steve Matthews for carefully reading of the manuscript, and an anonymous reviewer for valuable comments. All remaining errors and shortcomings are of course my own.

1 Cantonese romanizations here follow the Linguistic Society of Hong Kong Cantonese Romanization Scheme. 'Tones are represented as follows: 1: high level, 2: high rising, 3: mid level, 4: low falling, 5: low rising and 6: low level. The following abbreviations are used in giving glosses for Cantonese examples: Cl: classifier, Dat: dative marker, Exp: experiential aspect marker, Mod: modifier marker, Par: particle, Perf: perfective aspect marker, 3sg: third person singular pronoun.
as the direct object while the one which refers to an animate object is usually interpreted as the indirect object. In this paper, I will focus on the three patterns of dative constructions in Cantonese shown in (1).

(1) a. PDC: V DO dative marker IO
b. DOC: V IO DO
c. IDOC: V DO IO

(1a) is the prepositional dative construction (PDC). The structure in (1b) is the so-called double object construction (DOC) in which the direct object follows the indirect object. The structure in (1c) is the 'inverted' double object construction (IDOC) where the direct object precedes the indirect object without any intervening dative marker. In the next subsection, I will classify the dative verbs with respect to these three patterns of dative constructions and further explore the characteristics of double object constructions in Cantonese drawing from the insights of earlier studies.

2.2. Toward a classification of dative verbs

Though many Cantonese verbs can take both a direct and an indirect object, they display very different properties with respect to the patterns of dative construction illustrated in (1). In this section, I present a classification of these verbs and argue that they can be classified in five different groups on the basis of their syntactic and thematic properties.

2.2.1. The 'give' verbs

This type of verbs includes verbs such as: bei2 'to give', sing2 'to give (as a present)', sung3 'to give (as a present)', and zoeng2 'to award'. What is common of all the verbs in this group is that the interpretation of the indirect object is that it is the intended possessor of the direct object. In general, these verbs allow the PDC and IDOC patterns. DOC is possible, but it is not too natural.

2The definitions of 'direct object' and 'indirect object' here follow Huang (1959). Interestingly, when both the direct object and the indirect object are animate without any dative marker, such as (i), the interpretation is ambiguous, although some speakers still consider the reading where Siu-Ming is the direct object and Ling-Ling is the indirect object to be the salient one.

(i) "Ngo3 bei2-zo2 Siu-Ming2 Ling-Ling2.
I give Siu-Ming to Ling-Ling2 or I gave Siu-Ming Ling-Ling2."

3Following Lau (1972), Bennett (1978), Tang (1992), Wong (1994), Xu and Peyraube (1997) among others, I assume that the Cantonese dative markers are prepositions. There are two dative markers in this language: bei2 and gwo3. Bei2 is the most widely used dative marker. Comparatively, the acceptability of the dative marker gwo3 is rather low. Therefore, for the case of presentation, I only discuss the dative marker bei2 in this paper. For discussion of gwo3, see Tang 1992. La4 is also documented as a dative marker in Cantonese in Wismer 1906, Chan 1951, and Yuan 1958. Many speakers, however, consider the use of this dative marker to be unnatural in the modern Hong Kong Cantonese. I will not discuss constructions using this marker in this paper.


As the grammaticality judgment show, among the examples (2a-c), (2a) is the most natural word order. Though (2b) is grammatical, some speakers consider it to be slightly unnatural. It seems that the acceptability of (2b) and other IDOC sentences depend on semantic and phonological factors as well as on functional factors, such as the speed of speech, the heaviness of the objects, etc. Among all the verbs included in this group, the verb bei2 'to give' deserves special attention. What is peculiar to this verb is that it is phonologically identical to the dative marker bei2 'to'. When the verb bei2 'to give' is used, it contrasts with the other verbs in that IDOC seems to be the preferred pattern by some speakers who consider (3a) not as natural as (3b). In this regard, Shimizu (1972) points out that the reason why there is a preference to use (3b) instead of (3a) in sentences with the verb 'to give' is to avoid repetition of bei2.

2.2.2. The 'send' verbs

The 'send' verbs include, among others, the following predicates: bun1 'to move', daai3 'to bring', dai6 'to hand to', den3 'to peel', gau1 'to deliver', gaap3 'to lift food with

3According to Bruche-Schulz and Peyraube (1993), some speakers use the IDOC pattern in the context of 'being temper' or 'intimacy'. However, it seems to me that IDOC can also be used in an unnatural context.

4There are some idiom-like DOC expressions which do not have a PDC or IDOC counterpart, such as bei2 mu2 keoi3 som3 'let you put confidence in somebody (lit. "to give you confidence")', and waan1 ngo3 cing1-bun4 'to indemnify me for defamation (lit. "to return me stainless").
chopsticks’, *gei*3 ‘to send’, *lau*4 ‘to reserve’, *ling*1 ‘to carry with hand’, *lo*2 ‘to bring’, *mau*2 ‘to sell’, *poo*2 ‘to deliver’, *tek*3 ‘to kick’, and *wu*6 ‘to remit’. With this type of verb, the indirect object is transferred from somewhere to the indirect object.

(4) a. *Siu*2-*ming*2 *gei*1-*zo*2 *jat*1-*fung*1 *seon*3 *bei*2 *ngo*5. (PDC) *Siu-Ming send-Perf one-Cl letter Dat I* ‘Siu-Ming sent a letter to me.’

b. */?*Siu-*ming*2 *gei*1-*zo*2 *jat*1-*fung*1 *seon*3 *ngo*5. (IDOC) *Siu-Ming send-Perf one-Cl letter I* ‘Siu-Ming sent me a letter.’

c. *Siu-*ming*2 *gei*1-*zo*2 *ngo*5 *jat*1-*fung*1 *seon*3. (DOC) *Siu-Ming send-Perf I Cl letter* ‘Siu-Ming sent me a letter.’

These verbs allow the PDC pattern, as in (4a). In general, as (4b) illustrates, IDOC is not allowed with these verbs. All speakers consider (4c) to be ungrammatical.

2.2.3. The ‘fry’ verbs

The ‘fry’ verbs include *caau*2 ‘to fry’, *jing*2 ‘to photocopy’, *pai*1 ‘to cut’, *sai*2 ‘to wash’, *tong*3 ‘to iron’, *waz*5 ‘to draw’, *zam*1 ‘to pour’, *zik*1 ‘to knit’, *zim*2 ‘to make’, *zok*5 ‘to compose’, and *zao*2 ‘to cook’. All these verbs are verbs of creation. The indirect object is interpreted as the beneficiary of the event expressed by the verb.

(5) a. *Ling*2-*ling*2 *caau*2-*zo*2 *jat*1-*dip*6 *coi*3 *bei*2 *ngo*5. (PDC) *Ling-Ling fry-Perf one-Cl vegetable Dat I* ‘Ling-Ling fried vegetable for me.’

b. */?*Ling-*ling*2 *caau*2-*zo*2 *jat*1-*dip*6 *coi*3 *ngo*5. (IDOC) *Ling-Ling fry-Perf one-Cl vegetable I* ‘I fried vegetable for Ling.’

c. *Ling*2-*ling*2 *caau*2-*zo*2 *ngo*5 *jat*1-*dip*6 *coi*3. (DOC) *Ling-Ling fry-Perf I Cl vegetable* ‘Ling fried vegetable for I.’

This type of verbs allows the PDC pattern, as in (5a). Some speakers marginally allow IDOC. For example, (5b) is quite unnatural. DOC with this kind of verb is ungrammatical, as illustrated in (5c).

2.2.4. The ‘pluck’ verbs

The ‘pluck’ verbs include *ceong*2 ‘to snatch’, *gaau*2 ‘to choose’, *mau*2 ‘to buy’, *ling*1 ‘to take’, *lo*2 ‘to get’, *sai*1 ‘to steal’, and *zaau*6 ‘to pluck’. These verbs are mainly verbs of obtaining. The indirect object in PDC can be interpreted as beneficiary but it is interpreted as the source in DOC configuration.


b. */?*Ngo5 *zaak*6-*zo*2 *sap*6-*jat*1-*zi*1 *mui*4-*gwai*6-faa*1 *keoi*5. (IDOC) *I pluck-Perf eleven-Cl rose 3sg* ‘I plucked eleven roses for him/her.’

As illustrated in (6a), these verbs allow PDC. The acceptability of the IDOC pattern exemplified in (6b) is low. Though these verbs may allow DOC, as in (6c), they give a completely different interpretation: in particular, in which the indirect object is interpreted as the source.

2.2.5. The ‘teach’ verbs

Finally, this type of verbs includes *ceong*2-*gaau*2 ‘to inquire’, *gaau*2 ‘to teach’, *kaau*2 ‘to test’, *kaau*2 ‘to request’, and *mau*2 ‘to ask’ etc. They describe the acquisition of information, communication, and the transfer of ideas. Unlike other dative verbs, the ‘teach’ verbs do not allow PDC or IDOC. Only the DOC pattern is grammatical.

(7) a. *Ngo*5 *gaau*3 *gwong*2-*dung*1-*waa*2 *bei*2 *keoi*5. (PDC) *I teach Cantonese Dat 3sg* ‘I teach him/her Cantonese.’

b. */?*Ngo*5 *gaau*3 *gwong*2-*dung*1-*waa*2 *keoi*5. (IDOC) *I teach Cantonese 3sg* ‘I teach Cantonese to him/her.’

c. *Ngo*5 *gaau*3 *keoi*5 *gwong*2-*dung*1-*waa*2. (DOC) *I teach 3sg Cantonese* ‘I teach 3sg Cantonese.’

Interestingly, if the direct object of *gaau*2 ‘to teach’ is related to tricks, such as *sau*1-*sau*2 ‘tactic’, *ziu*1 ‘trick’, the three patterns, PDC, IDOC as well as DOC are acceptable, as indicated in (8).

(8) a. *Ngo*5 *gaau*3-*zo*2 *loeng*3-*dou*6 *sau*3-*sau*2 *bei*2 *keoi*5. (PDC) *I teach-Perf two-Cl tactic Dat 3sg* ‘I taught some tactics to him/her.’

b. */?*Ngo*5 *gaau*3-*zo*2 *loeng*3-*dou*6 *sau*3-*sau*2 *keoi*5. (IDOC) *I teach-Perf two-Cl tactic 3sg* ‘I taught him/her some tactics.’

c. *Ngo*5 *gaau*3 *keoi*5 *loeng*3-*dou*6 *sau*3-*sau*2. (DOC) *I teach 3sg two-Cl tactic* ‘I taught him/her some tactics.’

*Yuan et al (1969)* point out that the indirect object in (6c) can be genitivized as a modifier of the indirect object without changing the basic meaning: if this is correct, (6c) is not a DOC.

*Cheung (1972:85)* treats *dong*1 ‘consider’ on a par with the ‘teach’ verbs. For example, *(i) Ngo*5 *dong*1 *keoi*5 *hou*3-*yan*4 *tm*1. *I consider 3sg good-person Part* ‘I consider him/her a good fellow.’ However, unlike typical dative verbs, *dong*1 ‘consider’ does not denote an action of transfer or an action of benefit. The ‘consider’ type verbs should be analyzed differently from the dative verbs. See *Tang 1997* for detailed discussion in Mandarin Chinese.
In fact the choice of the direct object in PDC and IDOC in (8) is very restricted. It seems that it is an idiomatic usage which may be a 'residue' of Old Chinese.  

2.2.6. Summary
Based on the above discussion, the five types of dative verbs can be further classified into three main categories: (a) verbs that allow the PDC, IDOC as well as DOC patterns, i.e. the 'give' verbs, (b) verbs that only allow PDC, i.e. the 'send', 'fry' and 'pluck' verbs; and (c) verbs that only allow DOC, i.e. the 'teach' verbs. With respect to the three patterns of dative constructions, then the dative verbs in Cantonese can be classified as in table (9).

The classification is based on whether or not they fit into the various patterns of dative constructions discussed above.

(9) Dative constructions and dative verbs in Cantonese

<table>
<thead>
<tr>
<th></th>
<th>'give'</th>
<th>'send', 'fry', 'pluck'</th>
<th>'teach'</th>
</tr>
</thead>
<tbody>
<tr>
<td>PDC</td>
<td>OK</td>
<td>OK</td>
<td></td>
</tr>
<tr>
<td>IDOC</td>
<td>OK</td>
<td>*?</td>
<td></td>
</tr>
<tr>
<td>DOC</td>
<td>?</td>
<td>*</td>
<td>OK</td>
</tr>
</tbody>
</table>

As shown in table (9), all dative verbs but the 'teach' verbs allow PDC. The occurrence of IDOC is very restricted. In general, it is limited to the 'give' type verbs. As for the DOC pattern with the 'give' verbs, its occurrence in Cantonese is restricted to those cases where the direct object is heavy or stressed. In the discussion in the next section, I will focus on IDOC in Cantonese and try to link the syntactic properties of each of these types of verb to the internal thematic structure of these dative verbs.

3. Thematic roles and dative constructions

What is clear from the discussion above is that, in general, only the 'give' verbs allow IDOC in Cantonese. Why are the 'give' verbs so special? In opposition to the rest of the verbs, the 'give' verbs are verbs of change of possession. Moreover, the 'send' verbs are verbs of sending and carrying or verbs of throwing, the 'fry' verbs are verbs of creation, the 'pluck' verbs are verbs of removing, and the 'teach' verbs are verbs of communication. Thus, it is only the 'give' type verbs that are verbs of change of possession. In other words, only verbs that denote a change of possession allow the IDOC pattern. The restrictions on the IDOC pattern are derived from the semantic properties of dative verbs.

Such a distinction suggests that the availability of the different patterns of dative-construction in (1a-c) may be related to the thematic structure of the verbs. The thematic role assigned to the indirect object by the 'give' verbs is Goal. With the 'give' verbs, the indirect object is the intended possessor of the direct object. In contrast with this, thoughts the thematic role assigned to the indirect object by the 'send' verbs could be interpreted as Goal, these verbs are fundamentally spatial, but not possessional. In the dative constructions, the 'send' verbs indicate change in location. Consequently, the thematic role assigned to the indirect object by the 'send' verbs should be distinguished from that assigned by the 'give' verbs. For ease of exposition, I will tentatively assume that the thematic role that the indirect object of the 'send' verbs bears is a complex role composed of Goal and Location. As for the 'fry' and 'pluck' verbs, they denote an action which can be regarded as being done for someone's benefit. The thematic role that the indirect object of the 'fry' and 'pluck' verbs bears is best interpreted as Benefactive. The thematic role assigned by the 'teach' verbs to the indirect object could be analyzed as either Patient or Source. In other words, in contrast with the rest of dative verbs, the 'give' verbs only assign the thematic role Goal to the indirect object. In this vein, based on our observations of the grammaticality of IDOC, I state the following descriptive generalization for Cantonese:

(10) An 'inverted' double object construction is grammatical only if the dative verb assigns only the thematic role Goal to the indirect object.

In conclusion, IDOC is acceptable in Cantonese only if the dative verbs belong to the 'give' type, i.e. verbs that assign only Goal to the indirect object.

4. The 'inversion' structure and the null dative marker hypothesis

In this section, I will first review various hypotheses of the formation of IDOC in Cantonese and point out their weaknesses. I will then present an alternative analysis of the phenomenon. In particular, I will argue in favor of a null dative marker approach where IDOC is derived from PDC with a null dative marker.

Cheng (1988) proposes that IDOC and some of the DOC have different structures. In particular, she argues that IDOC with the verb beit 'to give' is derived from (11a), where the verb beit 'to give' will move to the upper empty V position.

(11) a. \[ VP [\nu e] [\nu p DO [\nu V beit IO]] \] (IDOC in Cantonese)
    b. \[ VP [\nu e] [\nu p DO [\nu V get IO]] \] (DOC in Mandarin)
    c. \[ VP [\nu e] [\nu p IO [\nu V song DO]] \] (DOC in Mandarin)

She assumes, on the other hand, that the structures of the double object construction with the verbs get 'to give' and song 'to give (a present)' in Mandarin are represented as in (11b) and (11c) respectively. In (11c), the verb song 'to give (a present)' moves to the empty V position while in (11b) the V reanalyzes as V and moves to the empty V position because get 'to give' does not have 'full verbal property'. The reason why the V in (11a) cannot reanalyze as a V is due to its [+V] feature. For the sake of argumentation, let us assume that it is correct. However, in (11a-c), if, as Cheng proposes, dative verbs assign Theme to DO and Goal to IO, the question then arises: Why do the dative verbs bear the thematic hierarchy 'Theme > Goal' in (11a) and in (11b) but 'Goal > Theme' in (11c)? This analysis seems quite problematic under UTAH, the Uniformity of Theta Assignment Hypothesis (Baker 1988) widely assumed in current syntactic theory.

One way to solve this problem would be to assume that IDOC is derived from DOC by object shift: either by leftward movement of the direct object or by rightward
movement of the indirect object. 12 Though this proposal could avoid the violation of UTAH, the problem now is how those speakers who accept IDOC can derive the 'inversion' structure from the ungrammatical DOC examples with the 'send', 'fry' and 'pluck' verbs. As pointed out by Zhan (1981: §4) and Xu and Peyraube (1997), if the assumption that IDOC is derived from DOC by means of object shift is correct, we would wrongly generate those ungrammatical DOC examples with the 'teach' verbs; for instance, the asymmetry relation between (7b) and (7c). Consequently, unless we stipulate that in Cantonese grammar object shift is obligatory in DOC with the 'send', 'fry' and 'pluck' verbs and it is forbidden in DOC with the 'teach' verbs, the object shift approach is both too weak and too powerful at the same time. This approach will not be adopted in this paper.

I would like to propose that these problems can be solved if we adopt the null dative marker approach suggested by Qiao (1966), Shimizu (1972), Bennett (1978), Tang (1992), Bruche-Schulz and Peyraube (1993), Xu and Peyraube (1997), among others. According to this approach, IDOC is derived from PDC with a null dative marker. 13 In other words, the underlying structure of IDOC will be the same as PDC, as indicated in (12) where 'O' is a null dative marker.

(12) a. V [NP DO] [PP [pbei] [NP IO]] (PDC)
b. V [NP DO] [PP [pO] [NP IO]] (IDOC)

In (12), DO and IO will be assigned thematic roles Theme and Goal respectively. In this case, the thematic hierarchy is 'Theme > Goal' and UTAH will not be violated. Violation of UTAH is not a problem anymore.

As I argue next, there is empirical evidence in support of analysis along these lines and in particular in support of the postulation of the null dative marker. For one thing, this empty position is 'observable' phonologically. In this regard, Qiao (1966: §34) reports that there is usually a pause between the direct object and the indirect object in IDOC. Consider the examples in (13). If we compare these two examples, we notice that in (13a) there is a pause (indicated by ')') between the direct object go2-bun2 zhi2-din2 'dictionary' and the indirect object Siu-Ming. In contrast with DOC in (13b), the pause in (13a) is clearer and longer. Instead of a pause, for many speakers, the last syllable of the direct object zhi2-din2 'dictionary' in (13a) can be lengthened; in this regard, (13a) that contrasts with (13b), where lengthening of the last syllable of the indirect object Siu-Ming in (13b) is not natural.

12Huang and Zhan (1983) seem to suggest that IDOC is formed by postponing the indirect object. Killingley (1993) suggests that DOC is the 'normal' word order for Cantonese and IDOC is formed by shifting the objects. Thanks to Steve Matthews for pointing out the work by Killingley to me.

13It does not matter in the discussion whether the null dative marker is formed by deleting the phonological features in the PF component or such phonological information is already encoded in the lexical entry. Furthermore, the details of the structure of PDC and IDOC are omitted in (12). See Tang, Xu and Peyraube 1997 for discussion in Cantonese in terms of Larsonson VP-shell.

14According to Selkirk's Silent Demibeat Addition hypothesis, a silent demibeat is added at the end of the metrical grid that is aligned with some syntactic categories. Following this hypothesis, then, since the two objects in (14a) are separated by an NP boundary and a P, two silent demibeats will be assigned to the position between dictionary and Siu-Ming in (14a), one after the NP and one after the empty P, whereas only one demibeat will be assigned to the gap between Siu-Ming and Cantonese in (14b). This is shown in the representations of metrical grid alignment in (15), where 'x' represents a silent beat. These silent grid positions are either realized as a pause or associated with the final syllable to form final lengthening giving representation to syntactic timing. Thus, we expect to find a pause between the direct object and the indirect object in IDOC.

(13) a. Ngo5 bei2-zo2 go2-bun2 zhi2-din2 // Siu2-ming4. (IDOC)
    I give-Perf that-CI dictionary Siu-Ming
    'I gave that dictionary to Siu-Ming.'

b. ?NgO5 gau2-gwo2 Siu2-ming4 // Gwong2-dung1 waa2. (DOC)
    I teach-Exp Siu-Ming Cantonese
    'I have taught Siu-Ming Cantonese.'

The pausing and the final lengthening in (13a) suggest that the syntactic structure of (13a) and that of (13b) is different. This could be accounted for under Selkirk's 1984 Silent Demibeat Addition hypothesis. Let us suppose that IDOC contains an NP and a P whereas DOC contains two NPs. A partial structure of (13a) and that of (13b) would be as in (14a) and (14b) respectively, where 'C' stands for the null preposition.

    b. ... Siu-Ming [N]NP [[ Cantonese ] ] [NP]

15Supporting evidence for the null dative marker hypothesis comes from the fact that most speakers accept IDOC when the dative verb is bei2 'to give'. Since the dative marker bei2 shares the same phonological features with the dative verb bei2 'to give', the strategy of using a null dative marker might be due to identity avoidance. Recall that IDOC, for example (16b), is always preferred to PDC such as (16a) to avoid phonological identity when the verb is bei2 'to give'.

14These include (a) a word, (b) a word that is the head of a nonadjunct constituent, (c) a phrase, and (d) a daughter phrase of S. She stipulates that if a word is a phrase, it will not receive two demibeats but only one.

15My analysis seems contrary to Selkirk (1984: §6.2), according to which the application of Silent Demibeat Addition is restricted to lexical categories which would seem to exclude prepositions. This is not necessary a problem. The status of prepositions is sometimes unclear. Abney (1987: §2.3) points out that prepositions straddle the line between functional and lexical categories and they could be underspecified. Fukui (1986: §2.5) further suggests that the status of prepositions may be subject to parametric variation. I assume that prepositions are lexical categories in Cantonese.

(16) a. \(?Ngo\) be\textsuperscript{2}-zo\textsuperscript{2} jat\textsuperscript{1}-zi\textsuperscript{1} bat\textsuperscript{1} be\textsuperscript{2} kei\textsuperscript{5}. (3a)
I give-Perf one-Cl pen Dat 3sg
'I gave a pen to him/her.'
b. \(?Ngo\) be\textsuperscript{2}-zo\textsuperscript{2} jat\textsuperscript{1}-zi\textsuperscript{1} bat\textsuperscript{1} kei\textsuperscript{5}. (3b)
I give-Perf one-Cl pen 3sg

Under the minimalist conception of language, linguistic expressions are the optimal realizations of the interface conditions at the interface levels PF and LF, where ‘optimality’ is determined by the principles of derivational economy (Chomsky 1993 et seq). Let us assume that the dative marker has to be null in order to satisfy some PF interface conditions. Suppose that the avoidance of phonological identity is one of those PF interface conditions.\textsuperscript{17} The derivation of (16a) is deviant since it cannot satisfy the interface conditions, typically at the PF component. If that turns out to be correct, an optimal output would be a structure in which the dative marker is null when it is required for PF convergence. One piece of evidence to show that PF convergence is the driving factor comes from the fact that, as the distance between the two phonologically identical \textit{beri}'s increases, the grammaticality of this type of example improves. This is illustrated in (17).\textsuperscript{18}

(17) a. \(?Ngo\) be\textsuperscript{2}-zo\textsuperscript{2} bun\textsuperscript{2} jung\textsuperscript{6} Zung\textsuperscript{1} man\textsuperscript{2} se\textsuperscript{2} ge\textsuperscript{3} jyu\textsuperscript{5} fua\textsuperscript{3} syu\textsuperscript{1} be\textsuperscript{2} kei\textsuperscript{5}.
I give-Perf Cl use Chinese write Mod grammar book Dat 3sg
'I give a grammar book written in Chinese to him/her.'
b. \(?Ngo\) be\textsuperscript{2} bun\textsuperscript{2} syu\textsuperscript{1} be\textsuperscript{2} kei\textsuperscript{5}.
I give Cl book Dat 3sg
'I give a book to him/her.'
c. \(?Go\) \textsuperscript{2}-bun\textsuperscript{2} syu\textsuperscript{1}, \(Ngo\) be\textsuperscript{2}-zo\textsuperscript{2} e\textsuperscript{1} jat\textsuperscript{1} be\textsuperscript{2} kei\textsuperscript{5}.
that-Cl book I give-Perf Dat 3sg
'As for that book, I gave it to him/her.'
d. \(?Go\) \textsuperscript{2}-bun\textsuperscript{2} syu\textsuperscript{1}, \(Ngo\) wui\textsuperscript{5} be\textsuperscript{2} jat\textsuperscript{1} be\textsuperscript{2} kei\textsuperscript{5}.
that-Cl book I will give Dat 3sg
'As for that book, I will give it to him/her.'

In (17b), the two \textit{beri}'s are separated by a two syllable noun phrase. Compared with (17b), (17a) in which an aspect marker and a heavy noun phrase intervene between the two \textit{beri}'s, sounds much better. (17c) and (17d) are examples of topicalization,\textsuperscript{19} though (17c) in which the two \textit{beri}'s are separated only by an aspect marker is still intelligible, it does not sound very natural. (17d), where the two homophonous \textit{beri}'s are adjacent to each other at PF, is bad. If the overt dative marker is replaced by a null dative marker in (17c) and (17d), we predict that the violation will be avoided and that therefore the examples will be grammatical. (18) shows that this prediction, as a matter of fact, is born out.

(18) a. \(?Go\) \textsuperscript{2}-bun\textsuperscript{2} syu\textsuperscript{1}, \(Ngo\) be\textsuperscript{2}-zo\textsuperscript{2} e\textsuperscript{1} jat\textsuperscript{1} be\textsuperscript{2} kei\textsuperscript{5}.
that-Cl book I give-Perf (Dat) 3sg
'As for that book, I gave it to him/her.'
b. \(?Go\) \textsuperscript{2}-bun\textsuperscript{2} syu\textsuperscript{1}, \(Ngo\) wui\textsuperscript{5} be\textsuperscript{2} jat\textsuperscript{1} be\textsuperscript{2} kei\textsuperscript{5}.
that-Cl book I will give (Dat) 3sg
'As for that book, I will give it to him/her.'

The relevant point being made here is that the violation of phonological identity is gradient depending on the distance between the two \textit{beri}'s and dative marker has to be null when the two homophonous \textit{beri}'s are too close to each other at PF. Consequently, the occurrence of the null dative marker is for PF convergence.

Evidence from quantification of \textit{sai}\textsuperscript{2} further shows that the indirect object in DOC should be a PP. \textit{sai}\textsuperscript{2} 'all, each' is a quantifier which requires that the element associated with it be divisible/plural (Lee 1994, Tang 1996).

(19) a. \(*Ngo\) be\textsuperscript{2}-sai\textsuperscript{3} ni\textsuperscript{1} fung\textsuperscript{1} seon\textsuperscript{3} [be\textsuperscript{2} kei\textsuperscript{5} de\textsuperscript{6}].
(PDC)
I give-all this Cl letter Dat they
'I have given (all) this letter to (all) of them.'
b. \(*Ngo\) be\textsuperscript{2}-sai\textsuperscript{3} ni\textsuperscript{1} fung\textsuperscript{1} seon\textsuperscript{3} [kei\textsuperscript{5} de\textsuperscript{6}].
(IDOC)
I give-all this Cl letter they

c. \(Ngo\) man\textsuperscript{6}-sai\textsuperscript{3} [kei\textsuperscript{5} de\textsuperscript{6}][ni\textsuperscript{1}-di\textsuperscript{4} man\textsuperscript{6}ta\textsuperscript{4}.]
(DOC)
I ask-all they this-Cl question
(i) 'I have asked all of them these questions.'
(ii) 'I have asked them all these questions.'

In (19a) and (19b), since the direct object ni\textsuperscript{1} fung\textsuperscript{1} seon\textsuperscript{3} 'this letter' is unable to be divided into parts in that context, it cannot be associated with \textit{sai}\textsuperscript{3}. Even though the indirect object kei\textsuperscript{5} de\textsuperscript{6} 'they' is divisible/plural, \textit{sai}\textsuperscript{3} cannot be associated with it. The unsatisfactory of (19a) and (19b) is due to the violation of the divisibility requirement of quantification of \textit{sai}\textsuperscript{3}. On the other hand, \textit{sai}\textsuperscript{3} can be associated with either the indirect object or the direct object in DOC, as shown in (19c). Assuming that \textit{sai}\textsuperscript{3} cannot be associated with indirect (prepositional) internal arguments (Tang 1996), these examples strongly suggest that DOC should go with PDC such that the indirect object in DOC is analyzed as a PP.\textsuperscript{20}

If the null dative marker approach is correct, the null dative marker in DOC is an empty category, which is required by the Empty Category Principle, the ECP, to be properly governed.\textsuperscript{21} Recall that DOC is unacceptable if the verb does not assign Goal to the indirect object. This seems to suggest that verbs that can assign Goal behave as a proper governor for an empty category in the dative marker position if proper government

\textsuperscript{17}This constraint could be some version of OCP discussed in McCarthy 1986, Yip 1988, among others.
\textsuperscript{18}Thanks to Moira Yip for drawing my attention to these examples.
\textsuperscript{19}Topicalization of the indirect object in other non-identical dative cases is possible. For example,

(i) \(Go\) \textsuperscript{2}-bun\textsuperscript{2} syu\textsuperscript{1}, \(Ngo\) wui\textsuperscript{5} sung\textsuperscript{1} e\textsuperscript{1} be\textsuperscript{2} kei\textsuperscript{5}.
that-Cl book I will give Dat 3sg
'As for that book, I will give it to him/her.'

\textsuperscript{20}I put aside the question how the effects of the ECP are derived, given that 'government' has been eliminated (Chomsky 1993 et seq), and continue to use the term 'ECP' informally in our discussion.
is defined in terms of subcategorization dependent upon thematic role assignment (Stowell 1981). The null dative marker has to be properly governed by a verb that subcategorizes for a Goal argument. If the null dative marker cannot be properly governed, IDOC is ungrammatical.

Suppose the above analysis is correct. Three related questions arise at this point. First, why is it only the verbs that subcategorize for a complement to which they assign Goal that can be a proper governor for the null dative marker? Second, how can we explain why some speakers may allow the IDOC pattern with the dative verbs other than the ‘give’ verbs? Third, suppose that the null dative marker is formed phonologically by deletion. How is dative marker deletion related to the semantic interpretation if it is merely a phonological operation?

To answer the first question, as a tentative solution, I would like to propose that the indirect objects that do not bear Goal are not actually assigned a thematic role in the conventional sense. Let us examine the dative verbs that allow the PDC pattern, namely the ‘give’, ‘send’, ‘fry’, and ‘pluck’ verbs. The grammaticality test in (20)-(23) clearly shows that in contrast with the rest of the verbs, only the ‘give’ verbs are genuine ditransitive verbs that subcategorize for an indirect object (20) in which the indirect object is missing sounds peculiar in an out-of-the-blue context. Contrary, (21), (22) and (23) where the indirect object is missing are perfectly grammatical even though they are given in isolation without any prior discourse.

(20) *Ngo3 bei2-zo2 jat1-bun2 syu1.
    I give-Perf one-Cl book (the ‘give’ type)
    ‘I gave a book.’

(21) Siu3-miing3 gei3-zo2 jat1-fung1 seon3
    Siu-Ming mail-Perf one-Cl letter (the ‘send’ type)
    ‘Siu-Ming mailed a letter.’

(22) Ling-ling2 caau2-zo2 jat1-dip6 coi1.
    Ling-Ling fry-Perf one-Cl vegetable (the ‘fry’ type)
    ‘Ling-Ling fried vegetable.’

(23) Ngo2 zaak6-zo2 sap/jat1-zi2 miu4-gwai2-haai1.
    I pluck-Perf eleven-Cl rose (the ‘pluck’ type)
    ‘I plucked eleven roses.’

Since the ditransitive verb bei2 ‘to give’ in (20) subcategorizes for two internal arguments, the omission of the indirect object prior context is ungrammatical. In fact, the ‘send’, ‘fry’, and ‘pluck’ verbs are transitive verbs that only subcategorize for one complement. Hence, (21), (22) and (23) are perfect. To derive the dative constructions.

Suppose second question is why some speakers may allow the IDOC pattern with non-‘give’ verbs. I suppose that Goal assignment and subcategorization for complements are subject to dialectal variation. For some of the dative verbs, the transfer of possession may result in change in location or some benefactive motions. Those speakers who have a liberal judgment may then have the possibility to allow some non-‘give’ verbs to subcategorize for two complements and to assign Goal to the indirect object. If the dative marker is null, the empty category can be properly governed and IDOC is allowed. This might explain the degree of marginality of IDOC which, as I have noted above, seems to be subject to some degree of variation.

Let us assume that the formation of the null dative marker in IDOC is merely a phonological operation. We may wonder why phonological operations affect the semantic interpretation and why they are subject to syntactic constraints such as the ECP if we assume that there are no interactions between PF and LF (Chomsky 1993). There seem to be some possible lines to solve this problem. One line of research is to assume that the ECP applies also at PF and that empty categories must be properly governed at PF (Aoun et al. 1987). Another possible solution is to assume that there is a link between some level within PF and LF (Chomsky 1995:fn.31). One may assume that dative marker deletion takes place in the overt syntax, but we have to explain how the outputs of this operation are subject to general conditions. An alternative possibility is that in the IDOC pattern, the null dative marker is a phonologically non-overt affix which undergoes incorporation or conflation in syntax. Under this approach, the ECP effects exhibited by the IDOC pattern may follow from conditions on movement, which seems to be a desirable approach to pursue, given that ‘government’ has been eliminated (Chomsky 1993 et seq). Due to limited space, I leave this possibility for my future research.

To sum up, I have argued that the proposal that IDOC is derived from PDC with a null dative marker is on the right track and presented empirical evidence in support of this assumption. I have also derived the constraints on the occurrence of the null dative marker from some general principles, such as the ECP and the thematic structure of the predicates. If that turns out to be the case, we need not stipulate any language particular operations to explain the ‘inverted’ dative structure in Cantonese and our analysis does not induce too much computational complexity. This should be a desirable move.

5. Typological variation: a perspective

I have argued that IDOC in Cantonese is derived from PDC with a null dative marker; further I have proposed that the null dative marker is subject to the ECP and that the empty dative marker should be properly governed by a verb that subcategorizes for a complement to which it assigns Goal. These properties would be of limited interest if they

21 According to Stowell (1981:§6), α properly governs β if and only if α governs β, and α is lexical, and α is co-indexed with β, in which co-indexing is defined by means of thematic role assignment.

22 The indirect object of the ‘teach’ verbs can be omitted, as noted by the anonymous reviewer.

(i) Ngo3 gaau3 Gwong-dung4-haai2.
    I teach Cantonese
    ‘I teach Cantonese.’

Since the ‘teach’ verbs do not allow IDOC, they will not be considered in the discussion.

23 I am indebted to Myriam Uribe-Etxebarria (personal communication) for this suggestion.
only applied to Cantonese. What is interesting from this phenomena is that, in fact, its scope seems to be larger than that. In what follows, I address the issue of the typological variation in the word order of double object constructions. The discussion here will be restricted to Chinese dialects.

The data discussed in the following table (24) are from Gan, Hakka, Hui, Jia, Mandarin, Min, Wu, Xiang, and Yue, the major Chinese language families.24 The words listed in the second column are the corresponding counterparts of the verb 'to give' in those dialects. The third column shows the acceptability of IDOC in those dialects. As the table shows, among the Chinese dialects, only Huizhou, Meixian, Leihua, Shanghainese, Changsha, and Cantonese allow IDOC.

(24) The verb give and IDOC in Chinese dialects25

<table>
<thead>
<tr>
<th>Dialect</th>
<th>IDOC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gan (An yi)</td>
<td>t'hau</td>
</tr>
<tr>
<td>Hakka (Huizhou)</td>
<td>pi</td>
</tr>
<tr>
<td>Hakka (Meixian)</td>
<td>pun</td>
</tr>
<tr>
<td>Hui (Xinning)</td>
<td>te</td>
</tr>
<tr>
<td>Jin (Taiyuan)</td>
<td>gei</td>
</tr>
<tr>
<td>Mandarin (Beijing)</td>
<td>gei</td>
</tr>
<tr>
<td>Min (Fuqing)</td>
<td>k'h?</td>
</tr>
<tr>
<td>Min (Leihua)</td>
<td>pun</td>
</tr>
<tr>
<td>Min (Taiwanese)</td>
<td>ho</td>
</tr>
<tr>
<td>Wu (Shanghainese)</td>
<td>bo?</td>
</tr>
<tr>
<td>Xiang (Changsha)</td>
<td>pa</td>
</tr>
<tr>
<td>Yue (Cantonese)</td>
<td>bei</td>
</tr>
</tbody>
</table>

If we study the verb 'to give' in those dialects carefully, the verb 'to give' can be classified in two different groups with respect to the grammaticality of IDOC. In particular, in those dialects that allow IDOC, the verb 'to give' is a 'real' ditransitive verb diachronically. For example, the history of bei (bei) in Cantonese can be traced back to the 14th-11th century BC (Qu 1980), where this lexical item was used as a ditransitive verb. The verb pi in Huizhou dialect can be represented by the same character used in Cantonese (Liu 1991). It is thus highly possible that pi and bei are cognate morphemes. As for the Shanghainese verb bo?, its origin is not clear, but it might be cognate with the Cantonese bei (bei) since the rhyme of this word ended in a dental-alveolar stop, *-t, in the Archaic Chinese (Guo 1986:86) and the diachronic sound change from a dental-alveolar stop to a glottal stop, *-t>-, in Shanghainese can be supported by other examples.26 If the hypothesis that Shanghainese bo? and Cantonese bei are cognate is correct, then

25For example, bo? 'nose' follows the sound change rule (*-t>-.)
26The origin of bo in Changsha dialect is not clear. It could be cognate with Cantonese bei and Shanghainese bo?. Due to insufficient data, I leave this question open here.
6. Concluding remarks
We have seen that in Cantonese, the dative verbs that permit IDOC are those verbs that subcategorize for a complement to which they assign the thematic role Goal. This suggests that there is a close relationship between the grammaticality of IDOC and the thematic properties of the dative verbs.

I have also proposed that Cantonese IDOC is derived from PDC by using a null dative marker. The dative marker will be null to satisfy PF interface conditions, such as the avoidance of phonological identity. The occurrence of the null dative marker is subject to the ECP: the null dative marker has to be properly governed by the verb that subcategorizes for a Goal argument. This analysis accounts for a number of properties displayed by IDOC.

As research proceeds, it becomes clear that with regard to the word order of the double object constructions, the dialects/languages differ in the contents of their lexical items. Dialectal/typological variation can be reducible to lexical variation. If this is correct, language variation is reduced to variation in the properties of lexical items. Though my research project here is far from conclusive, there seems to be a promising prospect of studying cross-dialectal/typological variation in terms of syntax-morphology interaction along the lines of a minimalist approach.

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