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Forked modality*

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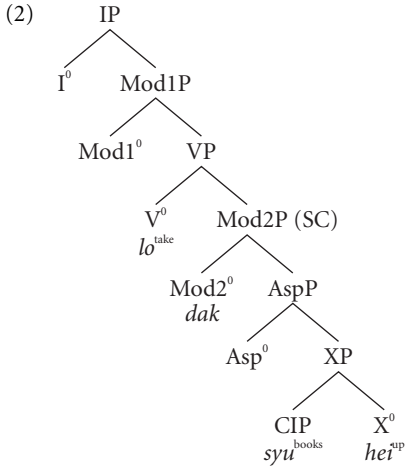
1. A modal element in the VP

Cantonese and Mandarin each have a postverbal element, the cognates *dak* and *de* respectively, which denotes root modality and is commonly glossed as ‘can’. More specifically, the interpretation associated with this modal element is generally called the “potential” reading. In essence, it focuses on whether or not the end point denoted in the predicate can be reached. A Cantonese example is given in (1).¹

- (1) keoi lo-dak-hei li seung syu
3s take-*dak*-up this box book
‘S/he can lift this box of books’

The syntactic analysis of the potential *dak/de* construction developed in Cheng and Sybesma (to appear) can be summarized as follows. The basic sentence structure we assume is given in (2) (with lexical items added from (1) for convenience). Potential *dak/de* is a modal element generated in the resultative small clause which is embedded in the VP. It occupies the head of a modal projection in the small clause (marked “Mod2P” in (2)). As part of the derivation of the sentence, the head of the small clause, e.g. *hei* ‘up’ in (1), raises to the head of AspP for reasons of licensing and interpretation. By way of what we call “phonological merger”, an instance of phasal spell-out, the whole complex [V-*de/dak*-result head] (*lo-dak-hei* ‘take-*dak*-up’ in (1)) forms a single, unsplittable unit.

It must be emphasized that *dak/de* is exceptional in occurring postverbally. All other modals in Cantonese and Mandarin precede the other verbs in the sentence; this is illustrated for Cantonese in (3). The head of the projection marked “Mod1P” in (2) is the position occupied by the regular modals.²



- (3) wufei wui/hoji/jinggoi zau
Wufei will/can /should leave

In this paper we investigate the unusual position of the Mod2P — unusual in the sense that modality, with its operator-like properties, is more generally associated with the functional, or semi-lexical, domain of the sentence and does not seem to be at home buried in the VP. Mod1P in (2) is a more likely modality projection than Mod2P.

The proposal we would like to make here is that postverbal *dak/de* is in fact intimately connected to the Mod1P. Concretely, despite the fact that it occupies Mod2⁰ at PF, it is interpreted, at LF, as if it occupies Mod1⁰. We are dealing with a case of what we would like to call “forked modality”. This proposal is suggested by the following two facts. First, although *dak/de* is placed postverbally, it takes matrix scope; this will be shown in Section 1.1 below. Secondly, *de* in Mandarin can be “doubled” by a modal element in Mod1⁰, as will be shown in Section 1.2. In the remaining sections, we present some supporting evidence (Section 3) and we consider, from a more general point of view, the nature of the relation between Mod1P and Mod2P, as well as the wider consequences of the analysis (Section 4).

1.1 Scope of *dak*

In the syntactic analysis of the potential *dak/de* construction summarized above, *dak/de* is in the small clause embedded in the VP. However, on the basis of Cantonese sentences involving Free Choice Items (henceforth, FCIs), it can be shown that the modality scope of *dak/de* is not limited to the small clause.

FCIs typically appear in nonveridical contexts, such as intensional, habitual, generic and modal sentences (Giannakidou 1998). Cheng (2002) shows that “definite” *wh*-phrases such as Cantonese *bin-CL*(assifier)-NP ‘which NP’ together with *du* ‘all’ are FCIs. Consider the following contrast:

- (4) a. **bin-go jan du jap-zo lei*
 which-CL person all enter-PERF come
 Intended: ‘All people came in/Anybody came in’
 b. *bin-go jan du hoji jap-lei*
 which-CL person all can enter-come
 ‘Anybody can come in’

In (4a), *bin-go jan* ‘which person’, in subject position, together with *du* ‘all’ cannot be interpreted as an FCI or a simple universal, while in (4b), which contains a modal, it can. This indicates that *bin-go jan* ‘which person’ plus *du* is an FCI. Now consider (5).

- (5) *bin-go jan du jap-dak-lei*
 which-CL person all enter-*dak*-come
 ‘Anybody can come in’

The example in (5), in particular its felicitousness in the FCI interpretation, shows that *dak*, which occupies a position in the small clause, can license *bin-go jan* ‘which person’ as an FCI in the matrix subject position, just like *hoji* ‘can’ in (4b). This makes it clear that structures involving *dak* do not have a bi-clausal structure; they have a mono-clausal structure and *dak* expresses matrix modality, as if it were in Mod1^{0,3}.

1.2 Mandarin *de*

So far, we have not given examples with Mandarin *de*. The reason is that, in contrast to Cantonese *dak*-sentences, *de*-sentences seem to be not fully productive in present day Mandarin. That this is the case is suggested by a number of facts. First, frequently used phrases with *de* are mainly fixed expressions (like *kan-de-jian* ‘look-*de*-perceive: can see’ based on *kan-jian* ‘look-perceive: see’; *zhao-de-dao* ‘seek-*de*-reach: can find’ based on *zhao-dao* ‘seek-reach: find’). Secondly, there is a big difference between the positive and the negative. Ma (1981, 66) reports that *V-de-R*(*result*) phrases are not very good in case *V* and/or *R* are bisyllabic.

- (6) a. ²*dasao-de-ganjing*
 sweep-*dak*-clean
 ‘can sweep clean’
 b. ³*huida-de-hao*
 answer-*dak*-good
 ‘can answer right’

The negative counterparts of these (with the form *V-bu-R*, *bu* being one of the Mandarin negation markers), however, are perfect:

- (7) a. dasao-bu-ganjing
sweep-NEG-clean
'cannot sweep clean'
b. huida-bu-hao
answer-NEG-good
'cannot answer right'

We found a similar picture with newly formed V-R combinations. Mandarin is very flexible with respect to the formation of V-R combinations. The corresponding positive potential form is generally not accepted by native speakers, while the negative form is judged much better. This is illustrated in (8).

- (8) a. ya-bian, ku-xing
press-flat, cry-awake
b. *ta ya-de-bian zhei-ge mantou
3s press-*dak*-flat this-CL steamed-bun
Intended: 'S/he can press this bun flat'
b.' (ta shengyin sui xiao, keshi) *ta ku-de-xing ta fumu
(his voice though small but) 3s cry-*dak*-awake his parents
intended: '(His voice is soft but), he can wake his parents up by crying'
c. ta ya-bu-bian zhei-ge mantou
3s press-NEG-flat this-CL steamed-bun
'S/he cannot press this bun flat'
c.' (ta shengyin xiao, suoyi) ?ta ku-bu-xing ta fumu
(his voice small hence) 3s cry-NEG-awake his parents
'(His voice is soft, so) he cannot wake his parents up by crying'

Liu (1989, 4) reports on a count, involving a corpus comprising several literary works totalling 1,145,000 characters. In this corpus, 42 instances of *V-de-R* were found, against 1,211 instances of the negative counterpart, *V-bu-R*. In Mandarin, then, we take it that positive *de*-sentences are not formed productively, though negative ones are. For reasons of space, we will not discuss the contrast between negative and positive potential sentences. What is important for our current purposes is that sentences with *de* are not productive, at least not fully.

Interestingly, in the positive, non-productive case, Mandarin *de* can, and in some cases, must, be "doubled" by the usual modal verb expressing 'can', *neng*, as the example in (9) shows.

- (9) ta kending neng chi-de-wan zhemou dian fan
3s surely can eat-*dak*-finished this bit rice
'S/he can for sure eat this little bit of rice'

We never find such doubling in negative sentences and we don't find it at all in Cantonese which does not have such a modal; it has *ho-ji* 'can' (see example (3)), but it does not co-occur with *dak*.

Another interesting thing to note is that, although *neng* 'can' by itself can express different types of 'can'-modality, including potential, ability and permission, when it co-occurs with *de*, the only reading available is the potential.

2. The Forked Modality Hypothesis

Based on the facts from Cantonese and Mandarin laid out in the previous section, we formulate the following hypothesis:

(10) The Forked Modality Hypothesis

In Cantonese and Mandarin, postverbal *dak/de* is connected to an overt or covert preverbal modal in the canonical modal position in the functional (or semi-lexical) domain of the sentence as a whole. Together they form a single modality.

A connection with a preverbal modal (overt or covert) explains all of the above properties of *dak/de*: (a) that a modal would occupy the unusual position within the VP and still be a modal; (b) the matrix scope of the postverbal modal; and (c) the overt doubling in Mandarin potential constructions.

We claim that a ModP in the small clause in the VP will always be associated with a ModP in the matrix sentence. Together they form a single modal entity. In Mandarin, both Mod-head-positions can be filled: the lower one, Mod2⁰, by *de*, the higher one, Mod1⁰, by *neng*.

3. Supporting evidence: The interpretation of *dim* and *zenme*

Tsai (1999) shows that the interpretation of Mandarin *zenme* 'how' can have what he calls a *causal* reading or a *method* reading. The former corresponds to the interpretation of *why* and the latter to that of *how*. The examples in (11) illustrate this.

- (11) Akiu *zenme* taohao/xia Xiaodi?
 Akiu how please /scare Xiaodi
 BOTH: 'how does Akiu please/scare Xiaodi?'
 AND: 'why does Akiu please/scare Xiaodi?'

In (12) we provide sentences with *dim*, the Cantonese counterpart of *zenme*. The two sentences are the same except for the sentence final particle; the factual *ga* is incompatible with the rhetorical question reading. Ignoring the sentence final

particles, Cantonese *dim*, in a way similar to Mandarin *zenme*, is ambiguous: it is either interpreted with a method reading or with a more rhetorical reading, ‘how or why in the world would/could’.

- (12) a. keoi dim hak-dou A Can ga?
 3s HOW frighten-SUCCESS Ah Chan SFP
 Method: ‘By what means did he frighten Ah Chan?’
 b. keoi dim hak-dou A Can le?
 3s HOW frighten-SUCCESS Ah Chan SFP
 Rhetorical: ‘Why in the world could he frighten Ah Chan?’

Tsai argues that the two interpretations of Mandarin *zenme* correspond to two different attachment sites. When *zenme* is adjoined at the IP level (either I’ or IP), it has the causal reading, and when it is adjoined at the VP level, it has the method reading. This can be deduced from examples involving adverbs of quantification, (13) and (14), and modals, (15a,b).

- (13) Akiu zenme zongshi xi che? (adapted from Tsai 1999, ex. (8))
 Akiu how always wash car
 a. NOT: ‘By what means does Akiu always do car washing?’
 b. ‘Why does Akiu always do car washing?’
 (14) Akiu zongshi zenme xi che? (adapted from Tsai 1999, ex. (9))
 Akiu always how wash car
 a. ‘By what means does Akiu always do car washing?’
 b. NOT: ‘Why does Akiu always do car washing?’
 (15) a. Akiu zenme hui /bixu /neng/keyi /yinggai zou?
 Akiu HOW will/must/can /may/should leave
 ‘Why will/must/can/may/should Akiu leave?’
 NOT: ‘By what means will/must/can/may/should Akiu leave?’
 b. Akiu hui /bixu /neng/keyi /yinggai zenme zou?
 Akiu will/must/can /may/should HOW leave
 ‘By what means will/must/can/may/should Akiu leave?’
 NOT: ‘Why will/must/can/may/should Akiu leave?’

The examples in (13)–(15) show that when *zenme* precedes adverbs of quantification and modals (and thus attaches high), it has the causal reading and when it follows these elements (and thus attaches low), it has the method reading.

The Cantonese counterparts are provided in (16) and (17).

- (16) a. keoi dim jat-jat du sai ce a?
 3s HOW daily all wash car SFP
 Rhetorical only: ‘How could he do daily car washing?’
 b. keoi jat-jat du dim sai ce ga?
 3s daily all HOW wash car SFP
 Method only: ‘By what means does he do car washing daily?’

- (17) a. keoi dim seoi-jiu jat-jat du sai ce le?
 3s HOW must daily all wash car SFP
 Rhetorical only: ‘Why must he do daily car washing?’
- b. keoi seoi-jiu jat-jat du dim sai ce ga?
 3s must daily all HOW wash car SFP
 Method only: ‘By what means does he have to do daily car washing?’

These examples show that *dim* is similar to *zenme* in that when it is attached higher (say, at the IP level), it has a different interpretation from when it is attached lower (say, at the VP level).

Let us now turn to the potential construction. First consider the following sentences with the resultative verb *lo-hei* ‘take-up: lift’.

- (18) a. keoi dim ho-ji lo-hei li seung syu le?
 3s HOW can take-up this box book SFP
 Rhetorical only: ‘How could s/he lift this box of books?’
- b. keoi ho-ji dim lo-hei li seung syu a?
 3s can HOW take-up this box book SFP
 Method only: ‘By what means could s/he lift this box of books?’
- (19) a. keoi dim lo-hei li seung syu le/a/*ga?
 3s HOW take-up this box books SFP
 Rhetorical only: ‘How could s/he lift this box of books?’
- b. keoi dim lo-hei li seung syu ga?
 3s HOW take-up this box books SFP
 Method only: ‘By what means could s/he lift this box of books?’

In these examples involving resultative verbs, *dim* behaves the same way as was described above in the context of sentences without resultative phrases. The examples in (19) have no modal, and the different interpretations are confirmed through the use of the different sentence final particles, *ga* only being compatible with the method reading, as was the case in (12). So it must be the case that *dim* is attached at the IP-level in (19a) and at the VP-level in (19b).

Now consider the co-occurrence of *dim* and *dak*:

- (20) keoi dim lo-dak-hei li seung syu le/a/*ga?
 3s HOW take-*dak*-up this box book SFP
 Rhetorical only: ‘How in the world could he lift this box of books?’

The sentence in (20) only has the rhetorical reading (and, as a consequence, *ga* cannot be part of the sentence). Considering (20) in view of (18), it is comparable to (18a), with *dim* attached at the IP level. If in a sentence with potential *dak*, we only have a modal phrase under VP (Mod2P in (2)), it is unclear why (20) is not ambiguous: attachment at both the VP and the IP-level should be possible. If, on the other hand, potential *dak* in Mod2⁰ is always connected to a higher modal

projection (Mod1P), the two forming a single modal entity, the obligatory high attachment falls out naturally.⁴

What this means is that we found, in Cantonese, a covert counterpart of “doubling” *neng* in Mandarin. We have two ModPs and when the lower one is present, the top one is necessarily present as well. These findings confirm the Forked Modality Hypothesis in (10).⁵

4. Forked modality

We have established that *dak/de* in Mod2⁰ is connected to a modal projection in the IP domain. We may also formulate the findings differently and say that the modal *dak/de* is split: it consists of two parts, a verbal part in the verbal domain and a non-verbal part in the functional, or semi-lexical, domain. In Cantonese the verbal part is realized at PF, and the non-verbal part is non-overt. In Mandarin, both parts are overt.

Looking at the relation between Mod1P and Mod2P, one of the questions that come up immediately is: What is the nature of the relation? Another, unrelated, question is: What are the implications of our proposal more generally? In this section, we provide preliminary answers to these two questions.

4.1 The nature of the relation

We have two modal positions but when both are filled, as is the case in Mandarin “doubling” sentences, we do not have a double modality reading, as is the case with double modals in certain varieties of English (Battistella 1995) or the following sentence from Dutch.

- (21) hij kan het kunnen
3s can it can
'It is possible that he can do it'

In the Chinese cases we are dealing with two modal positions, which constitute two parts of one single modal operator.

How are the two parts related? Since the two modal parts yield one modality operator at the LF interface, they are “merged”. One way of doing this without resorting to covert movement is to follow, in spirit, Cormack and Smith (2002). Under their “Split Sign Hypothesis” (Cormack and Smith 1999), Cormack and Smith (2002) reconsider the interaction between modals and negation in English and they propose that a “merged” PF sign is not necessarily a “merged” LF element. Thus *can't* may be interpreted at LF as split, that is, as two items. The interpretation of lexical items (including *can't*) is included in the lexicon. In the case of *can't*, it is listed as a split element with a modal part *can* and negation.

The situation we find in Cantonese and Mandarin is the reverse: the PF sign is split while the LF part is joined (merged). We see this clearly in Mandarin: at PF, we see both *neng* and *de*. In Cantonese, one part of the PF sign is null (not pronounced). With respect to the interpretation, at LF, the upper part is in a position where the modality is interpreted (recall the facts discussed in Section 3). What this means is that, as far as LF interpretation is concerned, the lower modal position is defective, it is without modality interpretation. This may actually be the reason why we have forked modality to start with: the lower modal position is defective in the sense that it is only realized at PF but not interpreted (or interpretable) at LF. As such, it cannot express modality fully. To that end — express full modality — it needs the upper part in the canonical modality position.

4.2 Wider consequences: Dynamic root modals

The two different modal positions postulated in this paper are reminiscent of the controversy concerning dynamic root modals.⁶ Some consider them to be generated in V^0 (e.g., Thráinsson and Vikner 1995, Barbiers 1995, Picallo 1990) while others posit them in I^0 (e.g., Wurmbrand 1998). Erb (2001) makes a clear distinction between deontic root modals and dynamic root modals in terms of their position. In particular, deontic root modals are generated in the so-called semi-lexical functional domain (between the functional domain, e.g. IP, and the VP), while dynamic root modals can be generated either as verbs, or as semi-lexical heads. Aside from the mono-placement of modals, there are also proposals which provide split or dual positions for modals (a.o. Ernst 1992).

To put the matter simply, for those who put the modal in the verbal domain, something has to be arranged to allow the modality operator to take the whole proposition in its scope. For those who put the modal in the functional domain, something extra has to be assumed concerning the selectional relationship between such modals and the subject. If we extend our analysis of Chinese *dak/de* to dynamic root modals, we may be able to account for the properties of these modals. That is, they are generated as verbs, and they have a modal part in the functional domain, which is phonetically null. The two modality parts form one operator and are interpreted as a single modal operator at LF. This way, the selectional (perhaps thematic) relation between such modal verbs and the subject is accounted for. This also accounts for the fact that root modals and epistemic modals do not usually differ in terms of scope (see Wurmbrand 1998).

Notes

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1. Potential *dak* and *de* are associated with resultative constructions. There are other *dak*'s and *de*'s which are not associated with resultatives and behave differently in other respects as well. See Cheng and Sybesma, to appear, and references cited there.
2. We use these labels for convenience only, and do not necessarily want to claim that there is such a thing as "ModP". What we mean is: Mod is the position where modal verbs are generated if a sentence has any. "CIP" in (2) stands for "Classifier Phrase", for our purposes equivalent to DP; see Cheng and Sybesma 1999.
3. See Erb (2001) for discussion of mono-clausal vs. bi-clausal structure of modal verbs.
4. The entity formed by the two Mod-projections is semantic rather than purely syntactic. Non-question adverbials (instrumentals, etc.) can be attached at the VP-level. When both parts are overt, as is the case in Mandarin when *neng* and *de* both appear, *wh*-adverbials can also not be attached between the two ModPs. We think this may be due to the fact that Mod1 and Mod2 together form the potential modality, i.e., an operator, and *dim* cannot intervene because it is itself an operator.
5. For reasons of space, we do not discuss the difference between Cantonese and Mandarin, why the top modality position is phonetically filled in Mandarin and phonetically null in Cantonese.
6. "Modals that express internal conditions or dispositions of the subject are called dynamic modals" (Erb 2001, 76).

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