The Syntactic Manifestation of the Nuclear Stress Rule in Cantonese

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1. Introduction

The Nuclear Stress Rule (NSR) was originally proposed to explain the relation between the placement of nuclear stress, the information structure and the phrasal structure observed across many languages such as English, German and Spanish (Chomsky & Halle 1971, Cinque 1993, Zubizarreta 1998 among others). A number of accounts of the phenomenon advocate that the location of nuclear stress (NS) is computed based on the *syntactic structure* (Cinque 1993, Zubizarreta 1998) as opposed to *metrical structure* (Halle and Vergnaud 1987). However, if the NSR is syntactic rule, why does it always feed NS assignment? This study investigates the syntactic manifestation (with no NS) of the NSR as a constraint on the Dislocation Focus Construction (DFC) in Cantonese. Although Cantonese lacks NS (Wong et al. 2005), the DFC constraints strongly pattern with the NSR in several important aspects that are difficult to be derived from other syntactic constraints. I argue that both the Cantonese DFC and the English NS placement are actually governed by the same underlying "Abstract NSR" (ANSR) in the PF component. The Cantonese DFC provides empirical support that ANSR can apply independently without feeding NS assignment operation. This paper will be organized as follows. Section 2 introduces the DFC and the associated Spine Constraint. Section 3 argues that both rules are located in the PF component. A conclusion will be given in Section 4.

2. Dislocation Focus Construction

2.1 Basics

The DFC, also known as "right dislocation" and "afterthought construction", is commonly found in informal register of Mandarin Chinese (Chao 1968, Lu 1980 among others), Cantonese (Siu 1986, Cheung 1997) and Classical Chinese (Chen 1995, Yang and Yang 2002). Below is an example in Cantonese. (1a) shows the canonical word order (CWO). (1b) is the counterpart version with the modal verb phrase dislocated to the front.

(1) a Keoi dou wui maai jat bou dinnou aa3. (CWO)
he also will buy one Cl computer SP
'He will also buy a computer.'

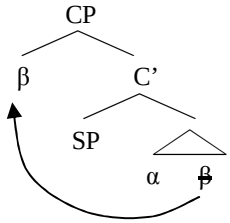
b *Pre-SP part (=β)* *SP* *Post-SP part (=α)*

Wui maai jat bou dinnou aa3, keoi dou.

will buy one Cl computer SP he also

In a DFC, a phrase β is dislocated to the sentence-initial position. As a result, β is normally a phrase; and α, the remnant of the sentence. In Cheung (2005, 2009), I defend that the DFC involves leftward XP movement, as in (2), instead of rightward movement or sentence fragments.

(2) Head-initial SP + leftward movement



The key argument is presented below. (Interested readers should refer to the cited papers for detailed discussion.) What is unusual about the construction is the word order in which the SP occurs in the middle of the sentence, i.e. between β and α. To the best of my knowledge, the DFC is the only construction in Chinese where the SP does not sit at the end of a sentence. Capitalizing on the distribution, Cheung (2005, 2009) argues that the SP is underlyingly the head of a head-initial CP in Chinese, as in (2). A phrase β below the SP moves to a position above the SP. Many diagnostic tests show that β is in the scope of α[1]. Here the *zinghai* 'only' test is presented.

Like English "only", the focus associated with Cantonese *zinghai* 'only' can only be an element in its c-command scope. For example, in the canonical word order (CWO) sentence (3), the focus of *zinghai* can be associated with the object, VP or V but not the subject which is outside the syntactic scope of *zinghai*.

(3) Zoengsaam zinghai ze-zo go bun siusyut lo1.

Zoengsaam only borrow-Perf Dem Cl novel SP

(a) *'ZOENGSAAM only borrowed the novel. (Nobody else did).' (focus=subject)

(b) 'Zoengsaam only borrowed THE NOVEL. (and nothing else).' (focus=object)

(c) 'Zoengsaam only BORROWED THE NOVEL. (He did nothing else.)' (focus = VP)

(d) 'Zoengsaam only BORROWED the novel. (She did not buy it.)' (focus = V)

Moreover, both English and Cantonese 'only' cannot be associated with a silent focused element (see Tancredi 1990, Beaver and Clark 2003 for this property in English). Interestingly, in the DFC, it is possible for *zinghai* in the α-part to associate with an element in the β-part, as in (4b).

[1] Interested readers can refer to Cheung (2009) for more tests.

(4)Q: Zoengsaam (zinghai) ze-zo matje aa3? (Cantonese / Question)

Zoengsaam only borrow-Perf what SP

'What is the thing *x* such that Zoengsaam only borrowed *x*?'

A: [$_{DP}$ Go bun siusyut] aa3, Zoengsaam zinghai ze-zo ___ .

Dem Cl novel SP Zoengsaam only borrow-Perf

'Zoengsaam only borrowed the novel (and nothing else).'

The well-formedness of (4A) shows that β must be in the scope of α at some syntactic level in order to license the focus. The analysis in (2) also explains naturally why the SP occurs in the middle of the sentence[2]. Section 3 will elaborate on why *zinghai* can focus an element not in its surface scope.

The above may look like a simple leftward movement analysis and has little to do with the NSR. However, the movement is subject to constraints that resemble the English NSR in three important ways, namely the Spine Constraint, metrical invisibility and focus interpretation.

2.2 The Spine Constraint

The set of phrases that can undergo movement in the DFC coincides remarkably with the set of phrases projected from the rightmost or most embedded word in the NSR (Cinque 1993, Reinhart 1995, Zubizarretta 1998). In English, with the default NS, a sentence can be ambiguous between multiple focus readings. Reinhart's examples in (5) illustrate the ambiguity when the NS falls on *desk*.

(5) a A: What's this noise?

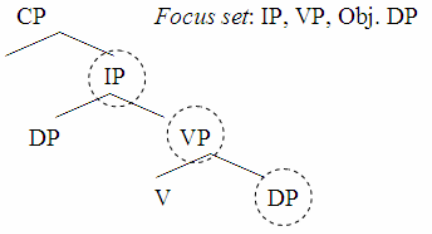
B: [$_{F}$ My neighbor is building a **desk**] (focus = IP)

b A: What's your neighbor doing these days?

B: My neighbor [$_{F}$ is building a **desk**] (focus = VP)

c A: What's your neighbor building?

B: My neighbor is building [$_{F}$ a **desk**] (focus = DP)



The phrase, β, must be a phrase on the "main path of embedding" (i.e. "spine") of the syntactic tree. Cinque (1993) characterizes this main path as the path on which all the nodes it connects are on the X-bar axis. Reinhart refers to the set of phrases associated with the NS as the "**focus set**." Notice that this set of phrase is remarkably similar to the set of phrases that can potentially be moved in the DFC, as in (8).

(6) Keoi wui hou faai gam se fung seon lo1. (CWO)

he will very quick Gam write Cl letter SP

'He will quickly write the letter.'

[2] The implication is that even CWO sentences have (2) as the underlying structure. The normal sentence-final position of SPs in CWO sentences is derived by moving the entire IP. See Cheung (2009) for details.

(7) a [$_{DP}$ jat fung seon] lo1, keoi wui houfaaigam se __.

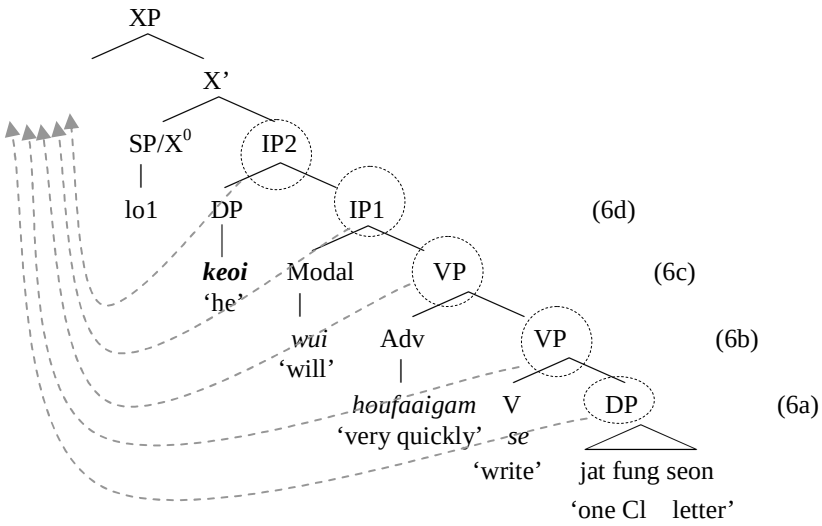
b [$_{VP}$ se jat fung seon] lo1, keoi wui houfaaigam __.

c [$_{VP}$ houfaaigam se jat fung seon] lo1, keoi wui __.

d [$_{IP1}$ wui houfaaigam se jat fung seon] lo1, keoi __.

e *[$_{DP}$ keoi] lo1, __ wui houfaaigam se jat fung seon.

(8)



The pattern is not easily derivable from other syntactic constraints. For example, while the subject DP can be easily moved in topicalization or relativization in Cantonese, the subject DP, which is not on the spine, cannot be dislocated to the front. I will also use term "focus set" to the set of phrases that can be moved in the DFC, e.g. the set of phrases in dotted circles in (8).

2.3 Metrical Invisibility

Both the NSR and the DFC are sensitive to what Zubizarreta (1998) calls "metrical invisibility" (MI) in the computation of the focus set. Originally formulated to explain systematic exceptions to the assignment of NS, MI naturally accounts for a number of puzzling exceptions in the NSR (Ladd 1980, Gussenhoven 1984, Zubizarreta 1998). Descriptively, when the rightmost word is anaphoric to a discourse antecedent or is given information, it does not bear the NS. Here are two examples taken from Zubizarreta (1998). The NS falls on the capitalized word.

(9) Mary walked in. John KISSED *her*.

(10) Talking about the lid, did you take the lid OFF *it*?

In (9) and (10), the rightmost word is an anaphoric element, i.e. the pronouns *her* and *it*. The NS has to be assigned to the rightmost word (capitalized) before these anaphoric elements, though the words with NS are not the most embedded. Zubizarreta's claim is that in English and German, defocalized

constituents, anaphoric constituents and empty categories become “invisible” (or irrelevant) in the computation of the NS. As a result, the most embedded *visible* word gets the NS.

A similar pattern is found in the Cantonese DFC (Cheung 2005, 2009). Elided structures are irrelevant (“invisible”) to the computation of the focus set in a DFC. The application of ellipsis/deletion opens up possibilities of moving XPs that are not possible without the deletion. For example, the Spine Constraint disallows elements such as XPs inside an adjunct clause and preverbal coverb objects from being the target of movement because these phrases are not on the spine.

VP in Adjunct Clause (‘because’-clause in the preverbal position)

(11) Q: Keoi hai [janwai singkeijat jiu zou matje], soji mou jingsing lei aa3?
he be because Sunday need do what so have.not promise come SP
‘What is thing *x* such that he didn’t promise to come because he needs to do *x* on Sunday?’

A: a Keoi hai [janwai singkeijat jiu heoi gaauwui], soji mou jingsing lei lo1. (CWO)
he be because Sunday need go church so have.not promise come SP
‘He did not promise to come because he had to go to church on Sunday.’

b ??Heoi gaauwui lo1, keoi hai [janwai singkeijat jiu ____], soji mou jingsing lei.
go church SP he be because Sunday need so have.not promise come

c Heoi gaauwui lo1, keoi hai [janwai singkeijat jiu ____], ~~soji mou jingsing lei~~.
go church SP he be because Sunday need so have.not promise come

Preverbal Coverb/PP Object

(12) Q: Keoi hai geido dim lei-dou aa3?
he at how.many o’clock come-arrive Q
‘At what time did he arrive?’

A: a Keoi hai saam dim lei-dou lo1. (CWO)
he at three o’clock come-arrive SP
‘He arrived at three o’clock.’

b *Saam dim lo1, keoi hai ___ lei-dou.
three o’clock SP he at come-arrive

c Saam dim lo1, keoi hai ___ ~~lei-dou~~.
three o’clock SP he at come-arrive

These observations may initially seem puzzling because it is not clear why ellipsis licenses the dislocation. Zubizarreta’s MI condition provides an important clue to explaining the phenomenon. As the elided part is generally anaphoric, MI makes empty categories invisible to the computation of phrase projection. Some elements that are formerly *not* part of the focus set in the (b) sentences can become a member of the focus set on the adjusted spine. Given MI and VP deletion, the coverb object

becomes the most embedded part.

2.4 Focus Interpretation

The phrases in the focus set in both NSR and DFC receive focus interpretation. The focus interpretation can be demonstrated by question-answer contexts. Because of space, interested readers should refer to Cheung (2005, 2009).

3. Rethinking the Nuclear Stress Rule

3.1 A Unified Analysis

The parallelism between the Cantonese DFC and the English NSR reported in the previous section motivates a unified analysis. I propose that the mechanism designating the focus set in the NSR and in the DFC is the same. However, to make the proposal work, the mechanism originally thought to govern the English NSR must be decoupled from NS to capture the parallelism. The reason is that Cantonese is famous for being a strongly syllable-timed language and lacks NS (Wong et al. 2005). Whatever underlies the DFC (and consequently the English NSR) must not refer to NS. Cheung (2009: 222) proposes that the NSR should be recast as an abstract rule of focus assignment based on syntactic structure without reference to phonological property of NS. This rule is referred to as the "Abstract NSR" (ANSR). In this paper, I adopt a slightly modified version of Zubizarreta's (1998) NSR.

(13) ANSR: Given two sister categories C_i and C_j, the one lower in the asymmetric c-command ordering is more embedded.

(14) Projection Rule: The focused phrases in the focus set must contain the most embedded word in the sentence.

The ANSR and Projection Rule pick out the set of nodes on the spine but do not depend on NS. One of the focused phrases in the set can be selected for focus interpretation depending on the context.

Although the dissociation of the NSR from NS assignment has been advocated in various studies on the NSR (Cinque 1993, Zubizarreta 1998), the output from the syntax-based NSR must feed NS operation. The dissociation would be better supported if the syntax-based NSR (or ANSR in this paper) can occur without NS assignment. The findings from the DFC provide some unique evidence to this. The analysis in Section 2 requires that the ANSR (plus the projection rule) applies and selects one of the phrases from the focus set. Then an overt movement operation moves the phrase to the front. I will provide a fuller account of application of the ANSR in the grammatical model in the rest of the section.

3.2 The ANSR as a PF Rule

Let us begin with the ANSR in the Cantonese DFC. Since the phrase that gets moved in the DFC must be a member of the focus set, the ANSR must first apply to pick out the phrase before the movement

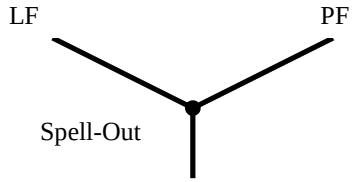
operation. In other words, the ANSR feeds the overt movement. Since the movement is overt, the movement (and also the ANSR) has to occur in either the pre-Spell-Out syntactic component or the post-Spell-Out PF component (but not the LF component). With the observations, there are three possibilities, as shown below.

(15)

(a) ANSR (syntactic rule) followed by movement (syntactic rule)

(b) ANSR (syntactic rule) followed by movement (PF rule)

(c) ANSR (PF rule) followed by movement (PF rule)



In the following, two pieces of evidence favoring (c) will be presented. First, I will show that the overt movement is a PF-movement on the basis of reconstruction facts in the DFC. Second, since there is evidence that the ANSR orders after ellipsis. As ellipsis is generally taken to be a PF-deletion rule, it entails that the ANSR is a rule in the PF branch as well.

The DFC displays robust reconstruction effects across many dependency relations (see Cheung (2005, 2009) for a comprehensive list). We have already seen one such example, *zinghai*, in (4b). Another example involving the *wh*-the-hell expression *doudai*[3] in Cantonese that has to be associated with a *wh*-phrase in its c-command domain (Huang and Ochi 2004).

(16) a Doudai nei maai-zo matje aa3? (CWO)
DOUDAI you buy-Perf what Q
'What the hell did you buy?'

b [Maai-zo matje] aa3, doudai nei __? (DFC)
buy-Perf what Q DOUDAI you

Though *doudai* does not c-command 'what' in (16b), the sentence is grammatical. The sentence is interpreted as if the VP is below *doudai*. The reconstruction effect is not found in other overt syntactic movements such as topicalization and relativization. It can be explained if the movement is a PF movement. Since the focused phrase is moved in the PF branch after the Spell-Out, the focused phrase fed into the LF remains *in-situ* down in the IP. As a result, the connectivity relations are unaffected in the LF component, giving rise to the apparent effect of "reconstruction."

Not only the overt movement but also the ANSR is located in the PF component. A useful diagnostic is the interaction between the ANSR and ellipsis. As discussed in Section 2.3, the phrase that can be moved is sensitive to whether ellipsis has applied. Consequently, ellipsis must have fed the ANSR.[4] Since ellipsis is considered to be a PF deletion rule (e.g. Merchant 2001), that means both the

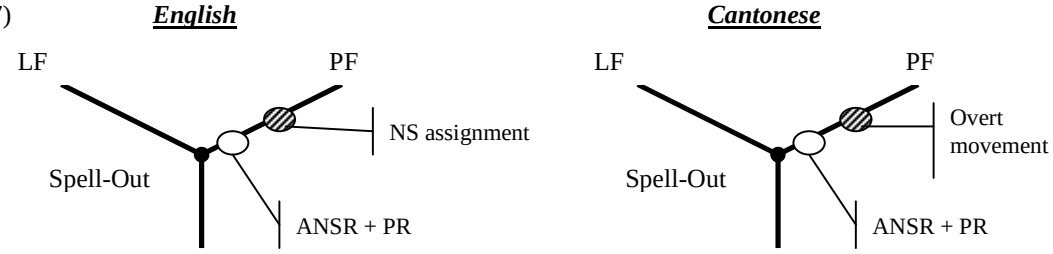
[3] The Mandarin equivalent, as discussed in Huang and Ochi (2004), is *daodi*.

[4] I want to thank Roger Liao and Anoop Mahajan who independently pointed out to me the potential implications of interaction between ellipsis and the ANSR. This has led me to rethink and revise the rule ordering.

ANSR and ellipsis are PF operations. The claim that the ANSR is a PF condition seems to be at odds with Zubizarreta's (1998) analysis. She suggests that the English NSR should be applied in the syntactic component, right before the Spell-Out. The argument is that the S-NSR, a component of the modularized NSR, is sensitive to selectional relations. Since no PF rule seems to depend on selectional relations, she proposes that the English NSR applies before the Spell-Out. The analysis largely hinges on the assumption that syntactic structure is unavailable throughout the PF branch after the Spell-Out. This is questionable. Undoubtedly, the output of the PF is the linearized form of the syntactic tree. However, before linearization takes place, it seems reasonable to assume that the tree structure is still accessible. The (A)NSR could take place between the Spell-Out and linearization, i.e. in the PF component. Furthermore, in Cantonese, there is no evidence that S-NSR holds.

Finally, let us briefly examine how the ANSR interacts with other rules to give rise to the Cantonese DFC and English NSR. In English, the ANSR first applies and selects a focused phrase. An NS assignment rule places the NS on the most embedded word word. In the Cantonese DFC, the ANSR first applies and selects a focused phrase. This is followed by an overt movement of the selected phrase.

(17)



In the analysis above, the English NSR and the Cantonese DFC become very similar. They differ in how the selected focused phrase is marked, i.e. by NS in English and by movement in Cantonese.

4. Conclusion

Because of the remarkable similarities with respect to the focus set and MI, I propose that the Cantonese DFC and the English NSR can be unified by positing the Abstract NSR. The ANSR is an adapted version of the conventional NSR with reference to syntactic structure only. While the English marks the selected focused phrase by NS, Cantonese, by movement. The significance of the DFC is that the ANSR can be applied without feeding the NS assignment rule. Instead, it feeds an overt movement operation, supporting the view that the ANSR is syntax-based. Furthermore, on the basis of the reconstruction facts, the overt movement is argued to occur in the PF component. Finally, as ellipsis which is often taken as a PF operation, the ANSR must also be a PF rule.

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