# Stress Location and the Acquisition of Morpho-Syntactic Parameters

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## 1. Introduction

In this paper, I argue that the canonical stress position determines the possibility of compounding and preposition stranding in a language. Based on an analysis of Stowel (1981), Snyder (2001) and Sugisaki and Snyder (2002) argue that it is the compounding parameter that decides compounding and preposition stranding. However, the nature of the parameter is not is not discussed in detail, and it is not clear how the parameter is set in language acquisition. I argue that the compounding parameter itself is not necessary in grammar by showing how the parameter is derived from the stress position in a language.*

In Section 2, I will argue that there is correlation between word-stress location and morpho-syntactic parameters, including the compounding parameter. Section 3 discusses the reason why stress location determines the effects of the compounding parameter. I argue that the correlation stems from the asymmetry between left-branching structure and right-branching structure in the syntax-phonology interface. In Section 4, I argue that children do not need to learn morpho-syntactic parameters such as the compounding parameter, the effects of which can be derived from the unmarked stress location in the language. Section 5 concludes the discussion.

## 2. Correlation between Stress Location and Morpho-Syntactic Parameters

### *2.1 Typology of preposition stranding*

The availability of preposition stranding is quite limited cross-linguistically. For example, it is available in English but not in French, as shown in (1) and (2).

(1) a. Who are you working with?
(2) b. *Avec qui travaillez-vous?*
with who work-you

Snyder (2001) and Sugisaki and Snyder (2002) propose the compounding parameter (3), which is specified as (4) in the case of preposition stranding.

(3) The grammar {disallows*, allows} formation of endocentric compounds during the syntactic derivation. [*unmarked value]
(4) There {is, is not} a word-formation rule in the lexicon which creates a complex verb of the following form: [$_V$ V-Particle].

The value of the compounding parameter (3) and the preposition stranding parameter (4) is plus in English as shown in (1a) and (5a) and minus in French as shown in (1b) and (5b).

(5) a. worm can

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b. *boite aux vers*
can for-the worms

English has N-N compounding as in (5a), while French does not, as in (5b). (5b) corresponds to (5a) and has phrasal structure including PP, i.e. [$_{NP}$ *boite* [$_{PP}$ *aux vers*]]. English also permits the verb-particle construction with the order verb + particle, as shown in (6), while French does not.

(6) John should pick up the book.

Snyder (2001) and Sugisaki and Snyder (2002) argue that the compounding parameter decides compounding, preposition stranding, verb-particle construction and so on. However, the nature of the compounding parameter has not been discussed. I will attempt to show how the effects of the compounding parameter can be derived from the word-stress location and the theory of complement-movement.I will derive the effects of the compounding parameter from the word-stress location and the theory of complement-movement.

*2.2 Typology of stress location*

It is interesting to note that compounding is correlated to stress position in a language. Goedemans and van der Hulst (2005) classify languages into a number of groups according to their stress locations. First, there are two types of stress locations: fixed stress and weight-sensitive stress. In fixed stress languages, stress is located on the same syllable in each word. The location is independent of the weight (usually quantity) of the syllables in the word and is determined with reference to a word edge only. In languages with weight-sensitive stress, heavy syllables (CV or CVC) attract stress, while light syllables (CV) only get stress if they are in the right location in the string of syllables. Stress types listed in Goedemans and van der Hulst (2005) are shown in (7) and (8), where the number shows the number of languages.

(7) Fixed stress location (Total 500)
- a. No fixed stress (mostly weight-sensitive stress) 219
- b. Initial: stress is on the first syllable 92
- c. Second: stress is on the second syllable 16
- d. Third: stress is on the third syllable 1
- e. Antepenultimate: stress is on the antepenultimate (third from the right) syllable 12
- f. Penultimate: stress is on the penultimate (second from the right) syllable 110
- g. Ultimate: stress is on the ultimate (last) syllable 50

(8) Weight-sensitive stress (Total 500)
- a. Left-edge: stress is on the first or second syllable 37
  e.g. *ˈkutira, paʈˈʈaa[ak,kaaran* (Malayalam)
- b. Left-oriented: the third syllable is involved 2
  (Kashaya, Hokan; Laragia, Australian)
- c. Right-edge: stress on ultimate or penultimate syllable 65
  e.g. *ˈwarra, waˈraa* (Epena Pedee, Choco)
- d. Right-oriented: the antepenultimate is involved 27
  e.g. *doˈmesticus, reˈfeːcit* (Classical Latin)
- e. Unbounded: stress can be anywhere in the word 54
  e.g. *ˈnosogid, kɛmiŋˈgaːr* (Dongolese Nubian)
- f. Combined: both Right-edge and unbounded 8
  (Alamblak, Arabic (Negev), Carib, Danish, Iraqw, Mam, Mari (Hill), Sindhi)
- g. Not predictable 26
  (e.g. Abkhaz, Burushaski, Grebo, Hixkaryana, Mandarin, Nez Perce, Pashto, Slave)
- h. Fixed stress (no weight-sensitivity) 281

Based on this stress typology, I will consider the correlation of stress location and the compounding

parameter.

*2.3 Correlation between compounding and stress location*

Sugisaki and Snyder (2002) argue that preposition-stranding is possible only in those languages that have the V-Particle-NP construction. They give a list of languages with the possibility of the V-Particle-NP construction and preposition-stranding.[1] The list of languages in (9) shows the results of a survey by Sugisaki and Snyder (2002) combined with the word-stress position of each language from Goedemans and van der Hulst (2005).

(9) Results of cross-linguistic survey:

| | V-Particle | P-stranding under A'-movement | Stress position |
|---|---|---|---|
| Germanic: | | | |
| *North Germanic*: | | | |
| Icelandic: | V-Prt-NP | Preposition-stranding | Initial |
| Norwegian: | V-Prt-NP | Preposition-stranding | Right-oriented |
| Swedish: | V-Prt-NP | Preposition-stranding | Right-oriented |
| Danish: | V-Prt-NP | Preposition-stranding | Combined: Right-edge and unbounded |
| *West Germanic*: | | | |
| English: | V-Prt-NP | Preposition-stranding | Right-oriented |
| Greek: | NO | NO | Antepenult |
| Romance: | | | |
| French: | NO | NO | R-edge |
| Italian: | NO | NO | R-edge |
| Spanish: | NO | NO | R-edge |
| Slavic: | | | |
| Bulgarian: | NO | NO | n.d. |
| Russian: | NO | NO | Unbounded |
| Serbo-Croatian: | NO | NO | Unbounded |
| Austronesian: | | | |
| Indonesian: | ? | NO | Penultimate |

The list in (9) shows that preposition stranding is allowed only in languages with initial, right-oriented and combined stress, and not in languages with antepenult, ultimate, right-edge and unbounded stress. We want to know the reason why stress location determines the effects of the compounding parameter.

**3. Asymmetry of Juncture and Compounding**

*3.1 The asymmetry of juncture in left/right-branching structure*

The correlation between stress position and the availability of preposition stranding is explained by the asymmetry of juncture in left/right-branching structure. The juncture between constituents in left-branching structure is shorter than that in right-branching structure. This is seen in the blocking of phonological change in right-branching structure, such as Japanese *Rendaku* Voicing (Otsu 1980) and Korean *n*-Insertion (Han 1994), and in the occurrence of interfixes in Dutch (Krott et al. 2004). This junctural asymmetry makes left-branching structure a compound-like unit and right-branching structure a phrasal unit. I have discussed this matter in Tokizaki (2008), Tokizaki and Kuwana (in press, forthcoming). Here, I outline the discussion presented there.

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1 Sugisaki and Snyder (2002) also argue that 'postposition-stranding' is possible only in those languages that have the NP-Particle-V construction. In this paper, I will focus on preposition-stranding and leave the problem with 'post-position-stranding' for future research.

First, sequential voicing in Japanese applies to the constituents in left-branching structure but not to those in right-branching structure, as shown in (10a) and (10b).

(10) a. [[*nise tanuki*] *shiru*] → *nise danuki jiru*
mock badger soup
'mock-badger soup'
b. [*nise* [ *tanuki shiru*]] → *nise tanuki jiru*
mock badger soup
'mock badger-soup'

A voiceless consonant *sh* changes into a voiced *j* in the left-branching structure (10a) while *t* does not change into *d* in the right-branching structure (10b). This asymmetry between left-branching and right-branching is also seen in Korean *n*-Insertion. These phonological phenomena show that the juncture between constituents in left-branching structure is shorter than that in right-branching structure.

The left/right-branching asymmetry is also seen in morphology. According to Krott et al. (2004), interfixation in Dutch three-word compounds shows the left/right-branching asymmetry. In Dutch, the occurrence of an interfix including *-s-* in tri-constituent compounds matches the major constituent boundary better in right-branching compounds than in left-branching compounds. In (11) and (12), the numbers of compounds with *-s-* and all interfixes are shown in parentheses after the examples.

(11) a. [*arbeid-s-*[*vraag stuk*]] (*-s-* 38; all 60)
employment+question-issue
b. [*hoofd* [*verkeer-s-weg*]] (*-s-* 3; all 11)
main+traffic-road
(12) a. [[*grond wet*]*-s-aartikel*] (*-s-* 25; all 39)
ground-law+article, constitution
b. [[*scheep-s-bouw*] *maatschappij*] (*-s-* 13; all 50)
ship-building+company

The ratio of the unmarked interfix position (11a) and (12a) to the marked interfix position (11b) and (12b) is higher in right-branching (11) (*-s-* 38÷3=12.7; all 60÷11=5.5) than in left-branching (12) (*-s-* 25÷13=1.9; all 39÷50=0.8). That is, interfixes occur at the constituent break more often in right-branching compounds than in left-branching compounds. This result is expected if we assume that the juncture between constituents in right-branching is stronger than that in left-branching structure.

Moreover, there is also syntactic evidence for the asymmetry between the left-branching structure and the right-branching structure. Wagner (2005) shows that there is a phrasing asymmetry between OV and VO orders: OV is pronounced as a prosodic phrase while VO is pronounced as two prosodic phrases. In (13), parentheses show prosodic phrases.

(13) a. (*Sie hát*) (*einen Tángo getanzt*)
she has a-Acc tango danced
'She has danced a tango.'
b. (*Sie tánzte*) (*einen Tángo*)
she danced a-Acc tango
'She danced a tango.'

The OV in (13a) [[*einen Tángo*] *getanzt*] is left-branching and is included in a prosodic phrase. The VO in (13b) [*tánzte* [*einen Tángo*]] is right-branching and is divided into different prosodic phrases.

All these arguments support the idea of left/right-branching asymmetry. In the next section, I argue that the shorter juncture in left-branching structure works as compounding words, which is constrained by the unmarked stress location in the language.

*3.2 Stress location in compounds*

For preposition stranding, a verb, which tends to have more than one syllable and a mono-syllable preposition can make a left-branching structure [[$_V$ σ σ] [$_P$ σ]]. We assume that this 'phonological compounding' is allowed only if the resulting 'compound' conforms to the unmarked stress position in a word in the language. For example, in English the stress falls on the first element in a compound, as shown in (14).

(14) a. lóok-ìn
b. lóok-òver

Then, 'phonological compounding' [[$_V$ σ̲ σ] [$_P$ σ]] (stress underscored) is possible in languages with right-oriented stress (Germanic), which allows antepenult stress as well as penult and ultimate stress, as shown in (16a).

(15) V [$_{PP}$ P NP] → [$_V$ V-P] NP
(16) a. ... [$_V$ wórking-with *t*] (σ̲ σ-σ) = (… σ̲ σ σ): unmarked
b. * ... [$_V$ traváillez-avec *t*] (σ̲ σ-σ) ≠ (… σ̲ σ): unmarked

However, 'phonological compounding' is not possible in languages that do not have antepenult stress as one of the unmarked stress positions, such as right-edge stress (penultimate and ultimate: Romance) and unbounded stress (Slavic). The antepenult stress in 'phonological compounds' [[$_V$ σ̲ σ] [$_P$ σ]] violates the canonical stress position in those languages, as shown in (16b). Greek has antepenult stress, but its stress location is fixed and not weight-sensitive like Germanic right-oriented stress.[2]

(17) *ˈarostos* 'sick', *ˈmaθima* 'lesson'

Greek has no dominant order of subject, object and verb (Dryer 2005). In *wh*-questions, the verb is separated from the preposition by the subject (Merchant 2001).

(18) a. * *Pjon milouse i Anna me?*
who was.speaking the Anna with
b. *Me pjon milouse i Anna?*
with who was.speaking the Anna
(19) * *Pjon milise me?*
who spoke with
'Who did she speak with?'

Thus, we can correctly predict that languages with right-oriented stress and initial stress allow preposition stranding.

## 4. Deconstructing Morpho-Syntactic Parameters in Language Acquisition

### *4.1. Language acquisition*

As for language acquisition, this interface approach makes it possible to do away with the supposed compounding parameter. All children have to learn is the unmarked stress location in words in the language. Assuming the interface condition proposed by Chomsky (2000), it is theoretically desirable that this phonological parameter decides a number of morpho-syntactic properties. In

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2 This does not mean that Greek does not have stress locations other than antepenultimate. In fact, some Greek words have penultimate and ultimate stress, e.g. *poˈlitis* 'citizen', *laˈos* 'nation'. The database *StressTyp* describes the stress type of Greek as 'A;P;U (LEX)', which means that main stress is antepenultimate in most cases; in a few cases, stress occurs on the penultimate or the ultimate syllable. These penultimate and ultimate cases have to be specified lexically.

Tokizaki and Kuwana (forthcoming), it is argued that the unmarked stress location decides head-complement orders in a language, such as affix-stem, noun-genitive, adposition-DP, verb-object, and adverbial subordinator-clause. Since languages differ in allowing the complement-head order with each constituent, setting just one head parameter is not enough for children to learn the head-complement orders in the language. For example, English has a mixed head-complement order, in that stem-affix and genitive-noun affix are complement-head orders but P-DP, V-O and adverbial subordinator-clause are head-complement orders. It is implausible to assume that children have to decide each parameter value for all the head-complement pairs. Assuming Kayne's (1994) universal base hypothesis, it is argued that complement may overtly move to the specifier position of its head in order to get semantic interpretation at LF interface. This complement movement is possible as long as the resulting 'phonological compound' conforms to the unmarked word-stress pattern in the language.

### *4.2. Compounding without complement-movement*

What is peculiar about preposition-stranding is that it makes compounds without complement-movement. This is possible because prepositions generally do not have stress. In the case of compounds such as synthetic N-V compounds, the noun needs to have stress because of its semantic content: e.g. *bírd-watching*. Complement N moves to the specifier position of V. The most typical stress position in right-oriented stress languages is penultimate (cf. Kubozono 2006). If a mono-syllable preposition is stranded by movement of its object, the resulting verb phrase becomes V-P with stress on V (e.g. *wórk-with*), which is allowed as an unmarked stress pattern in these languages. Thus, compounding is possible without complement-movement in right-oriented stress languages.

Note that P-stranding makes phonological compounds and not morphological compounds. Movement of prepositions to the specifier position of V is not necessary and should be avoided according to the economy of derivation.

## 5. Conclusion

I have argued that word-stress location determines the possibility of compounding and preposition stranding in a language. We have seen that there is a correlation between word-stress location and the compounding parameter governing preposition-stranding. I argued that the correlation stems from the asymmetry between left-branching structure and right-branching structure in the syntax-phonology interface. If the effects of the compounding parameter can be derived from the unmarked stress location, as I have argued, the compounding parameter is not necessary in language acquisition. Children need to learn only word-stress location to acquire the grammar of the language. I argued that this line of argument is plausible as we can also derive the head parameter from the unmarked stress location. This is a welcome result if we want to achieve one of the goals of the minimalist program, that is, to explain the instantaneous nature of language acquisition. I hope that this study shows a possible route toward that goal.

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