

# The Interface between Phonology, Pragmatics and Syntax in Nuclear Stress Misplacement

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## 1. Introduction

The present article attempts to discuss and characterize a certain type of prosodic mis-production commonly observed in the interlanguage of Japanese learners of English. Unlike certain other aspects of prosodic problems, for example, the addition of epenthetic and/or paragogic vowels to make a sequence of CV syllables, or the so-called “flat” intonation typical of elementary learners, this mis-production has rarely, if ever, attracted research attention and thus very few studies have been conducted to shed light on its nature. Let us look at an example from Wells (2006).

(1) A: What job would you like to have?

B: I haven't thought about it.

While in B's response the proper nuclear stress falls on the word “thought,” a number of Japanese learners put the nucleus on “haven't.” Wells (2006) argues that this mis-accentuation takes place by phonological transfer from L1 Japanese, claiming that in the corresponding Japanese sentence the counterpart of “not” carries prominence. Thus, Wells (2006) assigns the reason to pure phonological transfer from L1. However, given the heterogeneous nature of learners' errors, this mis-accentuation is far more complex than it appears to be (Saito 2006, Ueda and Saito 2007).

Given this, the purpose of this article is to show that this nucleus misplacement is not simply related to phonology, but it is a result of, and therefore reflects, the interface of phonology, pragmatics and syntax. The overall argument is structured as follows. First, we define the mis-production precisely to explain why and in what respect it may cause a problem. Second, we discuss some previous studies and point out their shortcomings in the light of the narrow domain of their analysis. Third, based on a typology of the learners' (mis-)production which classifies it into four categories, according as their production is either correct or incorrect and their internal knowledge is either correct or incorrect, we argue that the mis-accentuation should be analyzed not only with respect to surface production, but also to the internal knowledge of the learner. We then go on to discuss how in this misplacement of the nuclear stress, some cases are phonologically-driven, some are due to pragmatics, and yet others are induced by syntax. We suggest that some of the mis-accentuated forms are cogently explained by referring to syntax, specifically the relative “depth” of embedding in the syntactic structure. Finally, we touch on what can be referred to as “hybrid tonicity,” and suggest that it could be an interesting case of the interface between phonology and syntax.

## 2. Nuclear stress misplacement in Japanese-accented English

In this section, we examine how the nuclear stress misplacement takes place and discuss what problems it may cause. In Japanese learners' English certain syntactic categories are produced with high pitch and a remarkable level of intensity with or without the proper nuclear stress. The mis-accentuated word is so prominent that it may mistakenly be perceived as the nucleus of the intonational phrase. Interestingly enough, not all syntactic categories are accented this way; they are mostly limited only to four, namely, interrogatives, attributive adjectives, negative particle and personal pronouns (Saito and Ueda 2007). Listed below are some examples in which (as elsewhere)

we capitalize the word which bears such prominence.

- (2) The syntactic categories bearing mis-accentuation<sup>1</sup>
1. WHAT class are you attending this afternoon? (Interrogative)
  2. I found his essay in the OLD book. (Attributive adjective)
  3. John HASN'T finished the work. (Negative particle)
  4. YOU should do the washing. (Personal pronoun)

Note that each of these examples is an utterance in an out-of-the-blue context, which involves no presupposition or contrast. Put differently, all the examples have "broad focus," not "narrow focus" (Wells 2006). For example, (2) 2. is not a part of (3) but of (4).

- (3) A: What book did you find your father's essay in?  
B: I found his essay in the OLD book.

- (4) A: What happened yesterday?  
B: I found his essay in the old BOOK.

While the word "old" is focused in B's response in (3) with the nucleus reasonably placed on it, it is the whole domain of the intonational phrase (or its proposition) which is brought into focus in (4). In the latter case, the nucleus should be put on the last content word or lexical item, which is "book" in this case.

So what is the problem with this nuclear stress mis-placement? Let us consider this by examining the first example in (2). It is indeed possible to place the nucleus on the interrogative "what" in (2) 1. However, this most likely happens when the addresser is still unclear as to what class the addressee will attend and wants him/her to be specific as in (5).<sup>2</sup>

- (5) A: What CLASS are you attending this afternoon?  
B: One class.  
A: WHAT class are you attending?

If A asks B a question as in (2) 1. with the nucleus on "what" but without any context as exemplified in (5), the question probably sounds at least very abrupt, or worse rude, and at worst even blaming B. Unlike segmental problems in Japanese-accented English, e.g. failure to distinguish between /r/ and /l/ or merger of mid-low vowels, this type of prosodic error is not contextually recoverable. On the contrary, it may damage the discourse itself, which may lead to a serious misunderstanding between the addresser and the addressee. Thus, it is a problem to be cleared up and resolved, notwithstanding that it might seem, at first impression, marginal or trivial. In the next section, we will review some major previous studies on this problem.

### 3. Previous Studies

As suggested above, this mis-accentuation has never been a serious subject matter of research, with few studies having been presented thus far. Among the few, the majority claim that the misplacement of the nucleus is induced by negative transfer from L1 Japanese. Watanabe (1994), Date (2003) and Wells (2006) point out that the Japanese counterparts of the syntactic categories do receive high-pitched prominence. Consider the next example in which this type of mis-production

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<sup>1</sup> Three additional examples are presented here which will be discussed later in the article:

1. WHERE do you live? (Interrogative)
2. GOOD wine is hard to find. (Attributive adjective)
3. There is a BIG box in the room. (Attributive adjective)

<sup>2</sup> The nucleus may alternatively fall on "attending" instead of "class" in some cases.

takes place.

(6) I know a GOOD man.

Notice that in the equivalent sentence in Japanese in (7) "ii (suitable)" bears the greatest prominence.

(7) *ii ningen-o shitteimasu.*

Suitable man-prt. I know

Thus, the learner interprets the most prominent lexical item as the nucleus of the sentence and transfers it to L2 English. Therefore, Watanabe (1994), Date (2003) and Wells (2006) claim that the mis-accentuation is caused by simple phonological transfer. However, their analysis is insufficient in that they fail to explain why, among the syntactic categories allowed to receive prominence, these four categories alone behave in this fashion. Mori (2005) claims that the sentence-initial position renders high pitch to the unit filling it. Based on her experiment in which only pronouns are produced with high-pitched prominence, she claims that this nuclear stress misplacement takes place due to this "positional effect." Mori (2005) also faces a challenge because of the four categories only pronouns should receive prominence according to her contention. Saito (2006) makes a more organized attempt to seek for the reason why interrogatives and negative particles, and pronouns in sentence-initial position are incorrectly pronounced with prominence. She also suggests that it is caused by negative transfer from Japanese, but shows precisely that the corresponding counterparts of the mis-accentuated words and particles are realized with high-pitched accentuation in standard Tokyo Japanese. She concludes that the accent pattern of L1 Japanese is mapped onto the corresponding lexical item in English. However, if this were true, then a speaker having a different L1 accentuation pattern should exhibit a different pattern, either correct or incorrect, in their L2 English. That is to say, speakers of a dialect where the accentuation pattern is different from that of Tokyo Japanese in terms of the syntactic categories in question may not (mis-)accentuate the corresponding English lexical items. To examine this point, Saito and Ueda (2007) conducted an experiment taking dialectal difference in prosody into consideration. They compared the production forms of Tokyo speakers and those of Osaka dialect speakers who do not render high pitch on some of the interrogatives and attributive adjectives which the Tokyo dialect speakers pronounce with high pitch; logically, their English should sound more natural in this respect than the English of those from Tokyo. While they found a tendency to support their hypothesis, they could not obtain a statistically significant result, and their claim remains open. To conclude this section, almost all previous studies claim that the nucleus misplacement is triggered by *some* type of phonological transfer from L1 Japanese.

#### 4. The heterogeneous nature of nucleus mis-placement

In this section we briefly review the result of Ueda and Saito (2008) and consider how nuclear stress misplacement is diverse in actual production and phonological knowledge. We first review representative examples of (mis-) production, and then observe that these examples can be classified into four typological categories. Based on this typology, we argue that some of the mis-accentuated forms are induced by phonology, some by pragmatics, and yet others by syntax. Ueda and Saito (2008) report the result of an experiment in which fifteen advanced-level learners served as subjects. The experiment comprised a production test and a written test. The subjects were asked to read and record fifteen test sentences containing interrogatives and attributive adjectives. After the sentences had been recorded, they were asked to mark in a questionnaire one word of each test sentence which they thought they should pronounce with the greatest prominence. The subjects were also asked to write, if possible, why they thought the selected word in each test sentence should be pronounced with prominence. The production test was intended to test precisely on which word in the sentence the nucleus was put and the written test was expected to uncover internal knowledge of where the nucleus should be placed. The results of the two tests were compared to see if there was any

discrepancy between production and internal knowledge. After a one year interval, exactly the same experiment was conducted again. Below are some examples of the test sentences. Note that the subjects were asked to read all the test sentences in the way in which they would utter them in an out-of-the-blue situation with no pragmatic presupposition.

(8) Some examples of the test sentences (Ueda and Saito 2008)

1. Why did you choose to study at this university?
2. How long have you been studying English?
3. A nice person is more easily fooled.
4. There was a large box in the middle of the room.

Although the goal of Ueda and Saito (2008) was to investigate any changes in production and knowledge in the course of development, our concern here is whether there was any discrepancy between production and knowledge. Let us take a look at the four types of examples. (The underlined words denote the ones the subject selected in the written test as being produced with the greatest prominence and the capitalized ones are those actually pronounced with the nucleus.)

(9) Subject 15

Production: How long have you been studying ENGLISH?

Knowledge: How long have you been studying English?

In this case, both production and knowledge were correct. This is what happens in the target English language. However, in the next case, even though the production may have been correct, the knowledge was incorrect. Hence, there *was* a discrepancy between them.

(10) Subject 5

Production: How long have you been studying ENGLISH?

Knowledge: How long have you been studying English?

The example in (11) demonstrates incorrect production despite the correct knowledge. It also indicates a discrepancy between the two, but in this case the other way round.

(11) Subject 8

Production: HOW long have you been studying English?

Knowledge: How long have you been studying English?

Finally, both production and knowledge can be incorrect as in the next example.

(12) Subject 14

Production: HOW long have you been studying English?

Knowledge: How long have you been studying English?

On the basis of these four possibilities, a typology of nuclear stress (mis-)placement is proposed in (13). This typology shows that production and knowledge can be asymmetrical; learners are not homogeneous and should not be treated as such.

(13) Typology of nuclear stress (mis-)placement

	Type A	Type B	Type C	Type D
Production	Correct	Incorrect	Correct	Incorrect
Knowledge	Correct	Correct	Incorrect	Incorrect

In addition, the analysis of the subjects' errors reveals some interesting points. It is quite likely that some errors are caused by phonological transfer as most of the studies outlined in Section 3 suggest. Consider in (14) the Japanese equivalent of the test sentence (9) – (12).

- (14) DOREKURAI-no-kikan eigo-o benkyooshiteimasu-ka?  
How- prt.-long English-prt. have been studying-prt.

If this accentuation of Japanese is transferred to L2 English, “how” is to be produced with prominence. A number of errors classified into Type D seem to be of this pattern. This does not necessarily mean that all Type D errors are driven phonologically. Recall that in the written test the subjects were asked to write, where possible, the reason why they selected the word in each test sentence which they thought should be pronounced with the greatest prominence. To this question, some of them did answer, and it is interesting that they unanimously thought the word they had selected contained the most important information in the sentence. If, then, the relative importance of lexical items in the sentence is what induced error, the reason is not phonological, but pragmatic. That is to say, the subject chooses a word thought to be brought into “narrow” focus and mistakenly places nuclear stress on it, resulting in an accentuation incompatible with that of the target language. Here we have an interesting case of the interface between phonology and pragmatics. It should be pointed out that, although the surface production appears to be the same, the error may be induced for different reasons. Types B and C also provide cases of an interface between phonology and pragmatics. So far as the subjects who selected the word based on the relative importance of information are concerned, their incorrect knowledge of accentuation of the word selected on pragmatic grounds was barred from production in Type C, while their phonologically correct knowledge of accentuation was overridden to be realized as incorrect accentuation in Type B. Thus, even the surface correct forms may be involved in this phonology/pragmatics interface. In this section we have discussed nucleus misplacement as diverse in two ways: a result of the interaction between production and knowledge, and also between phonology and pragmatics. So far we have not discussed anything related to syntax. A number of proposals have been presented as a “Nuclear Stress Rule” based on the syntactic structure of a given language (Halle and Vergnaud 1987). In the next section we consider the possible effects of syntax and its interface with phonology, that is, whether syntax can affect the nucleus mis-accentuation at all.

## 5. Possible effects of syntax

Let us start the argument by acknowledging that nuclear stress placement in natural language cannot be considered without referring to syntax (Halle and Vergnaud 1987). The way the nucleus is placed in a sentence, or even in a phrase, is sensitive to syntactic structure. In that case, what might an insight into syntax offer to this particular problem under discussion?<sup>3</sup> As the theory of syntax makes remarkable progress, an increasing number of models have been proposed. The rules governing nuclear stress placement heavily depend on which model we choose. Among the many proposals, we pay particular attention to Cinque (1993) who abandons accentuation sensitive to the branching direction of the syntactic constituents and postulates non-language-specific, and therefore independent, principles to assign the nuclear stress. The significant point of his claim is that nuclear stress placement is determined by the depth of embedding of the constituent in a given syntactic structure, whether left-branching or right-branching; it is the constituent most deeply embedded in the structure which bears the nucleus. Let us look at an example from Cinque (1993).

- (15) [[Jesus] [preached [to the people [of Judea]]]]

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<sup>3</sup> In the argument here we focus only on interrogatives and attributive adjectives simply because it is these two categories that are discussed in Ueda and Saito (2008); we want to keep “parallelism” in the discussion. Needless to say, the other two categories should be discussed and analyzed elsewhere.

In (15) it is “Judea” which is assigned the nuclear stress because it is the innermost, the most deeply embedded constituent in the structure. This claim facilitates a comparison between English and Japanese to the extent that we do not need to refer to the direction of branching. Bearing this in mind, let us apply the same principle to structures in Japanese containing an interrogative or attributive adjective.

(16) Syntactic structures with interrogatives and attributive adjectives in Japanese<sup>4</sup>

1. [[DOKO-ni] sunnde iru-no]  
Where-prt (you) live-prt (Where do you live?)
2. [[[II] wain-wa] mitsuke nikui]  
Good wine-prt find hard (Good wine is hard to find.)
3. [[[OOKINA] hako-ga] heya-ni aru]  
Big box-prt room-prt be (There is a big box in the room.)

The capitalized words receive the sentence nucleus because they are the most deeply embedded in each structure. If the learner transfers this to the corresponding English sentences, the predicted forms are mis-accentuated as shown in (17).

(17) Nucleus mis-placement caused by syntactic transfer from the corresponding Japanese structures

1. [[WHERE] do you live]?
2. [[[GOOD] wine ] is hard to find].
3. (There was a) [[[BIG] box] in the room].

The resulting incorrect accentuation is exactly what happens in Japanese-accented English as we saw in Section 2. Therefore, it is possible that the misplacement of the sentence nucleus is induced by syntactic transfer from L1 Japanese. Whether a specific error is caused by syntactic transfer or by phonological transfer should be decided case by case, through checking the constituent structure and the accentuation of the corresponding Japanese.

Finally, we briefly touch on what we call “hybrid” cases of mis-accentuation. Earlier in this article, we pointed out that nuclear mis-accentuation can take place with or without proper nucleus placement. This means that some forms can be realized with a proper nucleus on a word plus an incorrect nucleus on another word as in (18).

(18) “Hybrid” type of accentuation

1. WHERE do you LIVE?
2. GOOD wine is hard to FIND.

One possible explanation for this phenomenon is that while the learner exhibits syntactic transfer from the native language, he/she also has correct phonological knowledge of the target language. We leave open any further explanation of this “hybrid” case, but it should be suggested that this type also reflects the interface between phonology and syntax.

To conclude, we have proposed that the nuclear stress misplacement observed in Japanese-accented English is induced not only for phonological reasons, but also for pragmatic, and possibly syntactic reasons. Evidently, this is an interesting instance of interface exhibiting itself in language acquisition.

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<sup>4</sup> Bracketing is simplified where appropriate.

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## References

- Cinque, Guglielmo. (1993). A null theory of phrase and compound stress. *Linguistic Inquiry*, 24, 239-297.
- Date, Tamikazu. (2003). Japanese learners' L1 transfer in English: Word focus. *TESOL Speech/Pronunciation Section Newsletter*.
- Halle, Morris and Vergnaud, Jean-Roger. (1987). *An Essay on Stress*. Cambridge, Mass. MIT Press.
- Mori, Yukiko. (2005). The initial high pitch in English sentences produced by Japanese speakers. *English Linguistics*, 22, 23-55.
- Saito, Hiroko. (2006). Nuclear-stress placement by Japanese learners of English: Transfer from Japanese. In Kawaguchi et al.eds: *Prosody and Syntax*. pp.125-139. Amsterdam: John Benjamins.
- Saito, Hiroko. and Ueda, Isao. (2007). Does accentuation of L1 transfer to L2 prosody?--A preliminary study on Osaka and Tokyo dialect speakers' pronunciation of English. *Proceedings of the 2nd Phonetics Teaching and Learning Conference* pp. 1-4. University College London.
- Ueda, Isao and Saito, Hiroko. (2008). The phonology of tonic misplacement. Presented at The 12<sup>th</sup> International Clinical Phonetics and Linguistics Meeting. Istanbul, Turkey.
- Watanabe, Kazuyuki. (1994). *Eigo no rizumu intoneeshon no shidoo* [Teaching English rhythm and intonation]. Tokyo: Taishukan Shoten.
- Wells, John. C. (2006). *English Intonation: An introduction*. Cambridge: Cambridge University Press.

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