PHONOLOGICAL BUT NOT SYNTACTIC CONTIGUITY IN L2 JAPANESE WH QUESTIONS

Dr. John Archibald, Department of Linguistics

Research Question: Do advanced L2 speakers have a phonological grammar with no prosodic boundaries between the WH word and the Question complementizer [(+Q)] to properly license WH *in situ* as would be the case if Richards' (2010) Contiguity Theory holds for IL grammars?

Languages have two strategies for forming WH questions:

English (Movement):	**Whom** should Bob call?
Japanese (*in situ*):	Mito ga **nani o** katta no?
	Mito-Nom what-Acc bought +Q
	'What did Mito buy?'

Richards (2010, 2016) argues that these are two strategies to achieve *contiguity*;
(a) **English**: linear adjacency of C (+Q) and WH
(b) **Japanese**: (i) phonetic boost on the WH element, and
(ii) lack of prosodic boundaries between WH and +Q in sentences like (1) compared with (2) where we compare **bolded** objects, and *italicized* minor phrases.

1) Naoya wa **nani** o *nomiya de nonda* no?
ナオヤは、何を飲み屋で飲んだの？
What did Naoya *drink at the bar*?

2) Naoya ga **nanika** o *nomiya de nonda*.
ナオヤが、何かを飲み屋で飲んだ。
Naoya *drank* **something** at the bar.

While other interfaces have been central to the field of SLA (White, 2011; Montrul, 2011; Sorace, 2012; Goad & White, 2004), the phonology/syntax interface has received less attention.

Operational Question: Will advanced non-native speakers of Japanese show (a) this phonetic boost of the WH words, and (b) the lack of prosodic boundaries between WH and C?

Subjects

Nine self-assessed Advanced L2 learners of Japanese (4 male; 5 female). Seven Intermediate (4 female; 3 male). 12 NS of English; 4 NS other languages.

The L1 factor did not affect pitch boost data (p=0.7634).

Task

Rehearse in advance, and read out-loud 19 Japanese sentences (WH; Y/N; declarative)

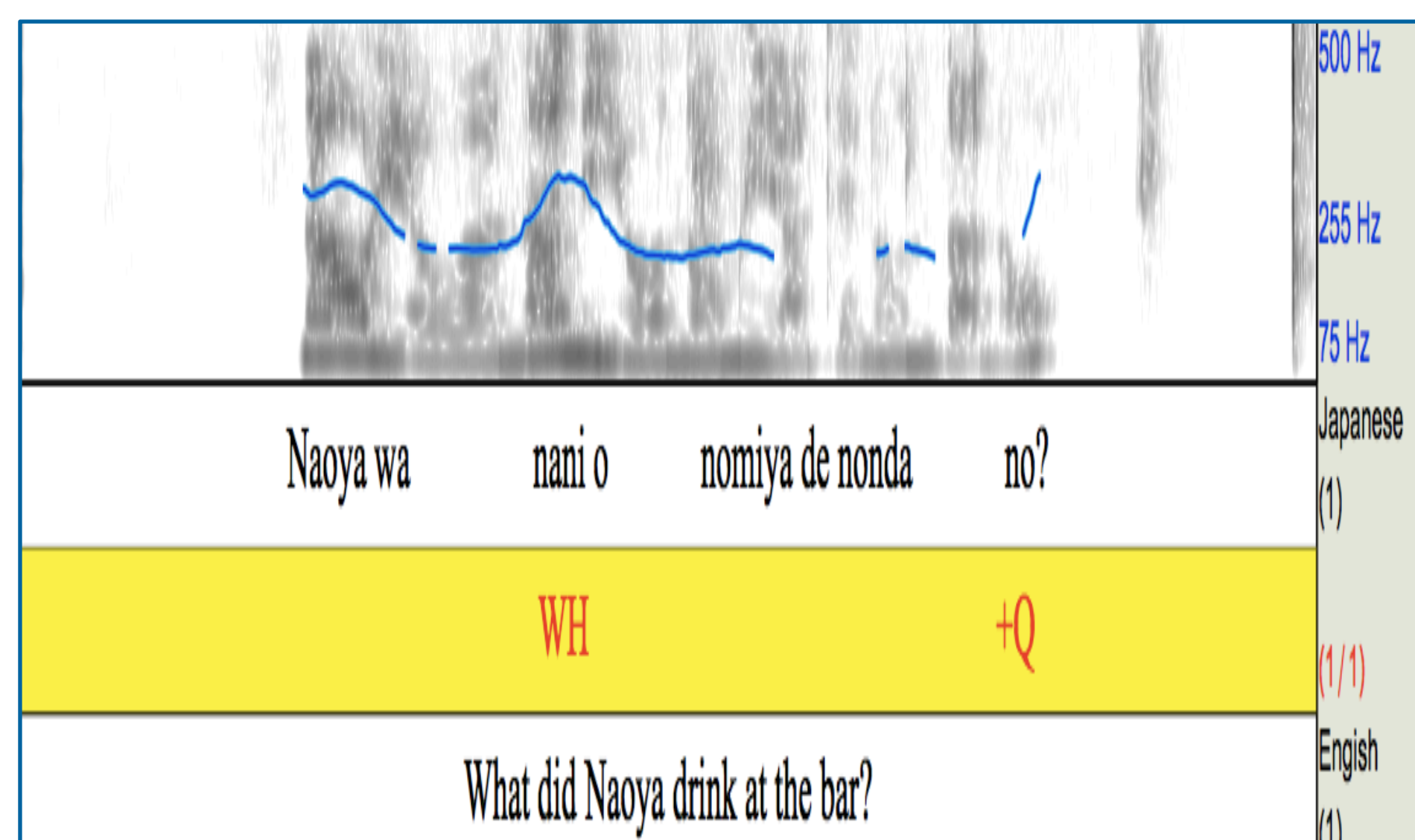Recorded on Audacity at 44KHz; Pitch tracking on Praat 6.0.09.

Figure 1. Pitch contour of non-native WH question.

Prosodic Structure

On 2 key sentences, **8/9** and **7/9** subjects respectively, showed no prosodic rises between the WH word and the Question particle.

Subject #	nani-o WH	nomiya -de	nonda	no +Q
S1	141 Hz	103 Hz	108 Hz	140 Hz
S15	327 Hz	242 Hz	242 Hz	280 Hz

Table 1. Non-native pitch contours in the WH domain.

Note the level pitch between WH and C ([+Q]). For these speakers, we posit the following structures (from Richards, 2010):

[DP wh [DP [VP]] C
(MinP) (MinP)
(MinP) ← Wh domain

The WH and the C are **not** separated by prosodic boundaries.

The advanced subjects clearly show a nativelike pattern:
High pitch **WH** > no phrase boundaries > high pitch **+Q**

Pitch Boost

But what of Richard's second prediction, that there should be Higher pitch on WH words compared to DPs?

17. Noboru wa **piza o** mottekitandesu ka?
ノボルは、ピザを持って来たんですか？
Did Noboru bring **pizza**?

19. Tarō wa **nani o** mottekitandesu ka?
タローは、何を持って来たんですか？
What did Taro bring?

Sentence #17	DP Direct Object	234 Hz Average
Sentence #19	WH Direct Object	228Hz Average

Table 2. Advanced non-native pitch averages: DP vs. WH Objects (#17 & #19).

There is clearly no significant difference.

All Subjects' DP Direct Objects Average	208 Hz
All Subjects' WH Objects Average	201Hz

Table 3. DP vs. WH object average pitch; Advanced subjects, all sentences.

Comforting But Not Significant

However, a range of statistical tests (Paired t-tests (p=0.475), GLMM, all showed that there was no significant difference between the pitch on WH words and the pitch on DPs. However, this confirms that we are not seeing English echo questions here ("Ponyo bought WHAT?"), but rather L2 Japanese WH questions.

Multiple WH Questions and Prosodic Structure

8. **Dare ga nani o** kaimasita ka?
誰が何を買いましたか？
Who bought what?

A sentence with multiple WH words also shows that the advanced subjects do not mark phonological phrases between the WH word and the Question particle. **8/9** advanced subjects showed a prosodic pattern with declining pitch from WH to C. This pattern is revealed in the averages below.

WH1 227	WH2 200 Hz	Verb 175 Hz	C 159 Hz

Table 4. Pitch contour of multiple WH question; averaged across Advanced subjects.

[wh[wh[V] C]]: no prosodic boundaries between **WH** and **C (+Q)**

Effects of Proficiency

There were no differences between proficiency level for pitch boost (p=0.3242).
However, there were differences for the prosodic boundaries. **23/27** Advanced subjects' sentences showed nativelike prosody, while on **7/27** Intermediate subjects' sentences did so. There is clearly phonological learning going on. A time series statistical analysis is in progress.

Phonetics & Phonology

Taken together, these data indicate that the *phonology* of the advanced L*X*ers is more nativelike than the *phonetics*.

Conclusion

Consistent with Elfner (2015), these L2 prosodic domains appear to be derived directly from the syntactic structure. Thus, these data suggest that IL grammars follow the premises of Match Theory (Selkirk, 2011). This is clearly not something that is taught. These phonological properties show that the L*X*ers are not transferring L1 structures but are actually acquiring targetlike Syntax.

References

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University of Victoria

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johnarch@uvic.ca