

Figure 7: The grid notation of ‘sekai’ (lyric from *Sekaini hiitsudakeno hana* sung by SMAP, 2003)

half notes	S:			x					x			
quarter notes	M:	x		x		x			x		x	
eighth notes	W:	x	x	x	x	x	x	x	x	x	x	x
sixteenth notes	EW:					x	x					
				se-	ka-	i						

Figure 8: The grid notation of ‘sekai’ (lyric from *Ano taiyoga, konosekaiwo terashi tsuzukeruyouni* sung by Kobukuro, 2011)

half notes	S:			x					x			
quarter notes	M:	x		x		x			x		x	
eighth notes	W:	x	x	x	x	x	x	x	x	x	x	x
				(ko-no)	se-	ka-	i		(wo)			

Figure 9: The grid notation of ‘sekai’ (lyric from *Ashita sekaiga owarunara* sung by Mika Nakajima, 2012)

half notes	S:			x					x			
quarter notes	M:	x		x		x			x		x	
eighth notes	W:	x	x	x	x	x	x	x	x	x	x	x
				se-	ka-						i	

Figure 10: The grid notation of ‘sekai’ (lyric from *Sugaono mamade* sung by Yuzu, 2014)

half notes	S:			x					x			
quarter notes	M:	x		x		x			x		x	
eighth notes	W:	x	x	x	x	x	x	x	x	x	x	x
sixteenth notes	EW:							x	x			
				se-	ka-						i	

4.2. LH pattern: sakura ‘cherry tree/ blossoms’

Here follow ten examples of the way the noun in question is set to musical beat in Japanese vocal music.

Figure 11: The grid notation of ‘sakura’ (lyric from a traditional song, *Sakura sakura*)

half notes	S:			x					x			
quarter notes	M:	x		x		x			x		x	
eighth notes	W:	x	x	x	x	x	x	x	x	x	x	x
				sa-		ku-			ra			

Figure 12: The grid notation of ‘sakura’ (lyric from *Sakurazaka* sung by Masaharu Fukuyama, 2000)

half notes	S:			x					x			
quarter notes	M:	x		x		x			x		x	
eighth notes	W:	x	x	x	x	x	x	x	x	x	x	x
				sa-	ku-				ra-		(za-ka)	

Figure 13: The grid notation of ‘sakura’ (lyric from *Sakura (solo)* sung by Naotaro Moriyama, 2003)

half notes	S:			x					x			
quarter notes	M:	x		x		x			x		x	
eighth notes	W:	x	x	x	x	x	x	x	x	x	x	x
sixteenth notes	EW:					x	x	x	x			
				sa-	ku-				ra			

Figure 14: The grid notation of ‘sakura’ (lyric from *Sakura (solo)* sung by Naotaro Moriyama, 2003)

half notes	S:			x					x			
quarter notes	M:	x		x		x			x		x	
eighth notes	W:	x	x	x	x	x	x	x	x	x	x	x
sixteenth notes	EW:					x	x	x	x			
				sa-	ku-				ra			

half notes	S:			x					x			
quarter notes	M:	x		x		x			x		x	
eighth notes	W:	x	x	x	x	x	x	x	x	x	x	x
sixteenth notes	EW:			x	x				x	x		
				sa-	ku-				ra			

Figure 15: The grid notation of ‘sakura’ (lyric from *Sakura* sung by Naotaro Moriyama, 2003)

half notes	S:			x					x			
quarter notes	M:	x		x		x			x		x	
eighth notes	W:	x	x	x	x	x	x	x	x	x	x	x
									sa-	ku-	ra	(triplet)

Figure 16: The grid notation of ‘sakura’ (lyric from *Sakura* sung by Kyogo Kawaguchi, 2003)

half notes	S:			x					x			
quarter notes	M:	x		x		x			x		x	
eighth notes	W:	x	x	x	x	x	x	x	x	x	x	x
				sa-	ku-				ra-			

Figure 17: The grid notation of ‘sakura’ (lyric from *Sangatsu Kokonoka* sung by Remioromen, 2004)

half notes	S:			x					x			
quarter notes	M:	x		x		x			x		x	
eighth notes	W:	x	x	x	x	x	x	x	x	x	x	x
sixteenth notes	EW:			x	x	x	x	x				
				sa-	ku-				ra	(no)		

Figure 18: The grid notation of ‘sakura’ (lyric from *Sakura* sung by Ketsumeishi, 2005)

half notes	S:			x					x			
quarter notes	M:	x		x		x			x		x	
eighth notes	W:	x	x	x	x	x	x	x	x	x	x	x
sixteenth notes	EW:			x	x							
				sa-	ku-				ra			

Figure 19: The grid notation of ‘sakura’ (lyric from *Sakura* sung by Ikimonogakari, 2006)

half notes	S:			x					x			
quarter notes	M:	x		x		x			x		x	
eighth notes	W:	x	x	x	x	x	x	x	x	x	x	x
sixteenth notes	EW:			x	x							
				sa-	ku-				ra	—		

Figure 20: The grid notation of ‘sakura’ (lyric from *Sakura* sung by Ikimonogakari, 2006)

half notes	S:			x					x			
quarter notes	M:	x		x		x			x		x	
eighth notes	W:	x	x	x	x	x	x	x	x	x	x	x
sixteenth notes	EW:			x	x	x	x					
				sa-	ku-				ra			

5. DISCUSSION

First, let us examine the case where Japanese HL accent patterns are set to musical beat. If the predicted correspondence between English ‘Strong-Weak’ and Japanese ‘High-Low’ worked in terms of textsetting, then a ‘High’ (*se-*) should be associated with a stronger beat than ‘Low’ (*ka-*). Three examples shown in Figures 2, 4, and 7 do present

this kind of correspondence, while the five examples shown in Figures 3, 5, 6, 8 and 9 do not. That is, ‘High’s (*se-*) are associated with weaker beats than ‘Low’s (*ka-*). At a first glance the last example shown in Figure 10 seems to support the correspondence since *se-* (‘High’) is associated with a stronger beat than *ka-* (‘Low’). But *-i*, another ‘Low’, is associated with a stronger beat than *se-* (‘High’). Therefore, the correspondence did not work. Secondly, let us examine the case where Japanese LH accent patterns are set to musical beat. Only the two examples shown in Figures 13 and 17 present the hypothesized correspondence. That is, ‘High’s (*ku-*) are associated with stronger beats than ‘Low’s (*sa-*). The remaining eight shown in Figures 11, 12, 14, 15, 16, 18, 19 and 20 are examples in which ‘High’s (*ku-*) are associated with weaker beats than ‘Low’s (*sa-*). Again, therefore, the correspondence is not supported. Accordingly, the apparent correspondence of English stress and Japanese pitch works only in one direction; while English stress may be equivalent to Japanese pitch height in production, pitch height is not equivalent to English stress in terms of textsetting.

In this connection, it will be of interest to examine how non-native speakers of English set text to tunes when they compose a song in English. Some ‘English’ songs composed using a VOCALOID™ (vocal + oid ‘like’) suggest a different textsetting from what the SDA predicts. Let’s take an example of one phrase *the world of coming together*, from a demo song [12]. Figure 21 is a scansion by the SDA, while Figure 22 shows the actual alignment translated into a grid used here.

Figure 21: Scansion by the SDA

half notes	S:			x				x					x		
quarter notes	M:	x		x		x		x		x		x		x	
eighth notes	W:	x	x	x	x	x	x	x	x	x	x	x	x	x	x
		the	world	of	com-	ing	to-	ge-	ther						

Figure 22: Actual alignment found in a demo song

half notes	S:			x				x					x		
quarter notes	M:		x			x		x		x		x		x	
eighth notes	W:	x	x	x	x	x	x	x	x	x	x	x	x	x	x
		the	world	of											

(continued from the above grid)

half notes	S:		x			x				x					
quarter notes	M:		x		x		x		x		x		x		x
eighth notes	W:	x	x	x	x	x	x	x	x	x	x	x	x	x	x
			co-	ming	to-	ge-	ther								

Part of the actual alignment, especially *world* and *toge-*, indicate a mismatch between stress and musical beat. Artists, of course, do not always follow the ‘rules’, but the stress-to-beat constraint is so strong in English that songs which ignore it would be difficult to follow.

6. CONCLUSION

This study examined whether a surface similarity between English stress and Japanese high pitch would be retained in the domain of textsetting. The examination of vocal music showed that the apparent similarity does not hold there. It was shown that Japanese HL pattern does not necessarily behave like English trochee, nor does Japanese LH pattern behave like English iamb in textsetting. Different ways of associating syllables with musical beat will show up when native speakers of different language background are faced with the task of textsetting.

7. ACKNOWLEDGEMENTS

This work is supported by a Grant-in-Aid for Scientific Research (C) (2) (Japan Society for the Promotion of Science, Grant No. 24520540).

8. REFERENCES

- [1] Dell, F., Halle, J. 2009. Comparing musical textsetting in French and in English songs. In: Aroui, J.-L., and Arleo, A. (eds), *Towards a Typology of Poetic Forms: from Language to Metrics and beyond*. Amsterdam/Philadelphia: John Benjamins. 63-78.
- [2] Hayes, B. 2009. Textsetting as constraint conflict. In: Aroui, J.-L., and Arleo, A. (eds), *Towards a Typology of Poetic Forms: from Language to Metrics and beyond*. Amsterdam/Philadelphia: John Benjamins. 43-61.
- [3] Lerdahl, F., Jackendoff, R. 1983. *A Generative Theory of Tonal Music*. Cambridge, MA: MIT Press.
- [4] Liberman, M. 1975. *The Intonational System of English*. The Indiana University Linguistics Club, Bloomington.
- [5] Low, E., Grabe, E., Nolan, F. 2000. Quantitative characterization of speech rhythm: syllable-timing in Singapore English. *Language and Speech* 43, 377-401.
- [6] McCawley, J. D. 1977. Accent in Japanese. In: Hyman, L. (ed), *Studies in Stress and Accent*, 261-302.
- [7] Patel, A. 2008. *Music, Language, and the Brain*. Oxford/New York: Oxford University Press.
- [8] Patel, A., Daniele, J. R., 2003. An empirical comparison of rhythm in language and music. *Cognition* 87, B35-B45.
- [9] Patel, A., D. Iverson, J. R., Rosenberg, J. C. 2006. Comparing the rhythm and melody of speech and music: The case of British English and French. *J. Acoust. Soc. Am.* 119. 3034-3047.
- [10] Taylor, E. 1989. *The AB Guide to Music Theory*. Part 1. London: The Associated Board of the Royal Schools of Music.
- [11] <http://www.at-elise.com/> [Accessed 15 August 2014]
- [12] http://www.crypton.co.jp/mp/pages/prod/vocaloid/mikuv3_bundle.jsp [Accessed 5 January 2015]