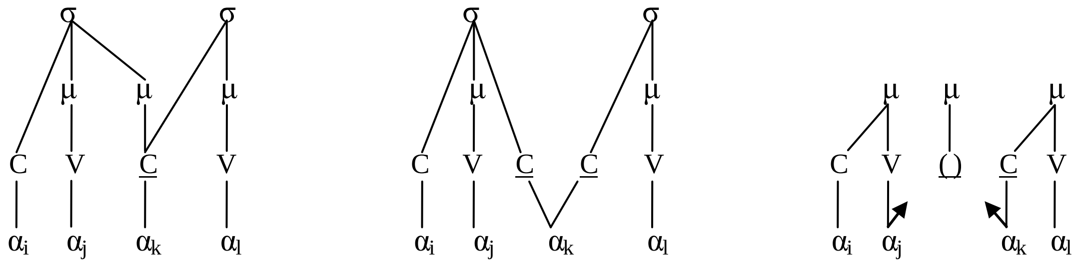
The Representation of Weight and Length of Geminates in Japanese: Evidence from a *Ludling* Savant with Williams Syndrome

For the representation of geminates, two separate views have been advocated. The *syllabic weight* analysis of Hyman (1985) and McCarthy and Prince (2001), among others, postulates that geminates are inherently heavy, having a single segmental node (C) that is associated with a mora (μ) on the weight tier, as in (1a); length then is encoded with respect to weight. In contrast, the *segmental length* analysis of Selkirk (1990) postulates that geminates are inherently long, having double nodes (C C), without inherent moraic affiliation, as in (1b). Most recently, Ringen and Vago (2011) presented arguments to motivate (1b) as an invariant, universal structure for geminates; to them pre- or post-vocalic geminates are heavy, if they are, via weight-by-position.

The purpose of this paper is to yet postulate the third view, to call it the *moraic weight* analysis as in (1c), in which inherent syllabic affiliation is entirely eliminated.

(1) a.The *syllabic weight* analysis b. The *segmental length* analysis c. The *moraic weight* analysis



Under (1c), the first part of geminates is inherently heavy, linked by itself to a mora node, but its associated segmental slot is left unspecified, represented as ( ). The unspecified empty slot will be filled in, perhaps post-lexically, by a left-ward spread of melodic materials (α_k) of the second part of the geminates, designated by (↖). Length then is encoded with respect to weight underlyingly, and length as having double nodes after the empty slot is filled in is a post-lexical phenomenon. Unlike (1a) or (1b), (1c) uniformly handles the second part of long vowels in the postulated manner, except that a right-ward spread of melodic materials (α_j) of the preceding V takes place as designated by (↗).

Evidence for the above postulation comes from superior performance in *ludling* (< Latin *ludus* 'game' + *lingua* 'language') demonstrated by the subject KT, a Japanese male born with Williams syndrome, which is a rare genetic disorder caused by microdeletion of 26-28 genes from chromosome #7 (7q11.23). KT instantly renders words (both real and unreal) backward as soon as he hears them. His response time averages 300ms, measured by praat. Data crucial to the present issue are given in (2) and (3) involving long vowels and geminates, respectively, which shows the operating unit is moraic.

(2)a. [te:pu] → [pu:te] b. [do:but^{s}u] → [t^{s}ubu:do] c. [tebagyo:za] → [za:gyobate]

(3)a. [kitte] → [tekki] b. [gakkou] → [ugokka] c. [yappari] → [ripa:ya]

In (2), melodic materials of long vowels, underlined, are not only altered, but the positions of their associated moraic units appear in a mirror image between the input and the output; the second position in the input changes into the penultimate in the output, and vice versa: [do.o.bu.t^{s}u](1.2.3.4)→[t^{s}u.bu.u.do](4.3.2.1); [te.ba.gyo.o.za](1.2.3.4.5)→[za.a.gyo.ba.te](5.4.3.2.1). The exact observation likewise applies to geminates. (3a) is straightforward: [ki.t.te](1.2.3)→[te.k.ki](3.2.1). (3b) is supposedly: [ga.k.ko.u] (1.2.3.4)→[u.ko.g.ga](4.3.2.1); KT, however, yielded [u.go.k.ka], having exchanged the [voice] feature value between [k] and [g], due to the constraint on *voiced obstruent geminates in Japanese. Finally, (3c) is supposedly: [ya.p.pa.ri](1.2.3.4)→[ri.pa.y.ya](4.3.2.1); KT, however, yielded [ripa:ya], having taken the right-ward spread of the preceding [a], rather than the left-ward spread of [y], mistakenly or simply to avoid gemination of the half-vowel. In any case, the structure which potentially allows for either of the long segments should receive recognition for the Japanese-based *ludling*, hence the Japanese language itself, which is (1c) rather than (1a) or (1b).