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A Note on Aspiration in English  
and its Counterpart in Japanese\*

Masaki Sano

It is widely known that in English, the voiceless stops /p/, /t/, and /k/ are aspirated in certain environments. According to Kahn (1976=1980), who argues for syllable-based analyses of various phonological phenomena, syllable-initial voiceless stops are always aspirated in English. This means, inter alia, that a word-initial voiceless stop is aspirated regardless of what follows it. Thus we find word-initial aspiration in a monosyllabic word as in pan, tan and can, in a word-initial stressed syllable as in panel, tunnel, kennel, in a word-initial stressless syllable as in parade, tomato, commit (although aspiration in this last group is shorter than in the other groups). In Japanese, however, no aspiration comparable to that in English is systematically found; aspiration in Japanese, if any, is much weaker than in English, as is clear from comparing the manner of articulation of the initial stop of a word like pan in English, with that of a word like pan 'bread' in Japanese. It does seem, however, that Japanese has a phonological rule analogous to English word-initial aspiration, and this is the insertion of a glottal stop before a word-initial vowel, as is found in a word like ana [ʔana] 'hole'. Word-initial aspiration of a voiceless stop in English and word-initial insertion of a glottal stop in Japanese are similar in that the h sound, which is superimposed upon voiceless stops by aspiration, and the ʔ sound, are both laryngeal glides (cf. Chomsky and Halle 1968: esp. 307); the two differ only in their continuancy, the former being [+continuant] and the latter, [-continuant]. Furthermore, notice that a voiceless stop in word-initial position is

always followed by a vowel, preceded by an optional liquid (/l/ or /r/) or else a semi-vowel (/w/ or /y/). When a liquid or a semi-vowel in fact appears between the voiceless stop and the vowel, however, aspiration is "absorbed" by the following liquid or semi-vowel in the sense that aspiration results in devoicing the liquid or the semi-vowel, rather than in superimposing [h] on the stop. Thus, such words as please, cry, twice and queue are pronounced respectively as [p<sup>h</sup>liyz], [kraI], [twaIs] and [kjuw] (Imai 1980: 48).<sup>1</sup> Therefore, we can say that "pure" aspiration of a voiceless stop is only found immediately before a vowel. Similarly, the insertion of [ʔ] in Japanese is only found immediately before a vowel. If the glottal stop were inserted before any consonant, this would result in two adjacent consonants, which is ruled out by the general sequential constraint in Japanese that no two ("pure") consonants be adjacent to each other.

These similarities suggest that glottal stop insertion in Japanese is a counterpart of word-initial aspiration in English. One possible difference is that the glottal stop is inserted only word-initially in Japanese whereas word-initial aspiration in English is, according to Kahn (1976=1980), an instance of syllable-initial aspiration. Thus the glottal stop appears before a word-initial vowel but not before a non-initial one, as seen in ooame [ʔo:ame] (\*[(ʔ)o:ʔame]) 'heavy rain'.<sup>2</sup> In contrast, both of the two voiceless stops in a word like potential are aspirated, because they both appear syllable-initially. However, this difference does not seem to pose a significant problem, since a syllable-based generalization has yet to be found in Japanese. If the concept of the syllable plays a role in English phonology but not in Japanese, it should be abstracted away when we are to compare the two.

We noted earlier that Japanese lacks systematic aspiration as found in English. This does not mean, however, that it does not manifest aspiration of any kind at any level;

there is in fact what may be termed an emphatic aspiration at what is presumably a less abstract level than the level at which systematic aspiration in English or systematic insertion of the glottal stop in Japanese occurs. This kind of aspiration is realized as an extra burst of air coming out in pronouncing a stop (sometimes a fricative) followed by a vowel, whether it is voiced or voiceless, when one wants to "emphasize" (part of) the word in which it is contained. Thus, the degree of aspiration of Japanese pan 'bread' comes closer to that of English pan if the former pan is to be pronounced "emphatically", as, for example, when one repeats slowly what he has said:

- A: Boku-wa pan-ga tabe-tai.  
     I-Top bread-Nom eat-want  
     "I want to eat bread."  
 B: Nani-ga tabe-tai-tte?  
     what-Nom eat-want-Q  
     "What (did you say you) want to eat?"  
 A: Pan. ([p<sup>h</sup>an])  
     "Bread."

The emphatic aspiration is less abstract in that it is fed by the insertion of the glottal stop; when we get angry with someone, for instance, we say in Japanese "Ano yaroo!" 'That guy!' The pronunciation of ano is often something like [ʔhano], but never [hano]. (Note also that ame 'rain' in o<sup>o</sup>ame 'heavy rain' is never "emphasized" by the h sound, because of non-applicability of the glottal stop insertion.)

The emphatic aspiration, as functionally motivated, is not particular to Japanese and is found in English as well. This is most clearly found in words like prayed and please. Wojcik (1979: 278) notes that "an emphatic pronunciation of prayed and please is affected by epenthesis." Recall that (in normal speech) aspiration is "absorbed" by a liquid or

a semi-vowel that immediately follows the stop. Thus the normal pronunciation of prayed and please is [preyd] and [pliyz], respectively. Now we can see why epenthesis is required in an emphatic pronunciation of such words: When the speaker intentionally tries to aspirate the p sound to "emphasize" these words, a schwa is required to block the absorption of this aspiration by the following liquid. The resulting pronunciation, [p<sup>h</sup>æréyd] or [p<sup>h</sup>əlíyz], indicates to the hearer that this "unexpected" pronunciation with aspiration on the stop is due to emphasis.

## NOTES

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Any errors are of course my own responsibility.

<sup>1</sup> In fact, Ladefoged (1982: 47-8) regards "a moment of aspiration" as "a period of voicelessness after the stop articulation and before the start of the voicing for the vowel." (I am indebted to Wayne Lawrence for pointing this out to me.) According to this view, both [p<sup>h</sup>] in a word like peas [p<sup>h</sup>iyz] and [p<sup>l</sup>] in a word like please [pliyz] would be the same p sound followed by "a moment of aspiration".

<sup>2</sup> Note that this fact precludes a functional account of the insertion of the glottal stop to the effect that the insertion is required to avoid adjacent vowels.

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