

COMPARISON OF WORD ACCENT FEATURES IN ENGLISH AND JAPANESE

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The word accent in various languages displays both universal and language-specific characteristics. While it is known that the voice fundamental frequency is the primary feature both in English and in Japanese, the duration and vowel color are also known to be important in English. This paper presents a comparison of these features between disyllabic words of English ("permit", "record", "object", etc.) and those of Japanese ("ame") of the *Osaka* dialect.

Fundamental frequency contours (F_0 -contours)

It has been shown that the characteristics of F_0 -contours of Japanese words can be well represented by the onset and offset of the accent command, extracted from the F_0 -contour on the basis of a functional model proposed by Fujisaki and Sudō (1971). The same model was applied here to the analysis of English words and proved to be equally valid. While a marked similarity can be observed between F_0 -contour characteristics of English and Japanese in cases of both first-syllable accented and second-syllable accented, individual differences are much greater in the onset of the accent command for English words with an accented first syllable.

Segmental and syllabic durations

Segmental durations were measured on the speech waveform, and were used to analyze the effect of accent position on the syllabic duration. It was found that accentual changes in duration occur mainly in the second syllable in Japanese, while in English they tend to be complementary in the first and second syllables.

Formant frequencies of syllabic nuclei

Formant frequencies of syllabic nuclei were extracted from the frequency spectrum by the method of Analysis-by-Synthesis developed by Fujisaki et al. (1970). It was found that accentual changes in formant frequencies are much greater in some English words (e.g. "record") than in others (e.g. "permit"), while they are invariably quite small in Japanese words.

References

- Fujisaki, H. and H. Sudō (1971): "Synthesis by rule of prosodic features of connected Japanese," Proc. Acoust. 7 3, 133-136.
- Fujisaki, H. et al. (1970): "Analysis, normalization, and recognition of sustained Japanese vowels," JASJ 26, 152-154.