

Acceptability of Accenting and De-accenting 'NEW' and 'GIVEN' in Dutch

J.G. Kruyt and S.G. Nootboom
Leyden, the Netherlands

1. Introduction

Thanks to the work of 't Hart and Cohen (1973) and 't Hart and Collier (1975) we have at our disposal a 'grammar of Dutch intonation', a rule system that generates stylized pitch contours that are melodically equivalent to naturally occurring Dutch pitch contours. These rules can easily be implemented in a system for speech synthesis-by-rule, and then supply the synthetic speech with acceptably sounding pitch contours. Figure 1 shows some possible pitch contours for the sentence 'Het Concertgebouworkest speelt Mahler's negende symphonie' (The Concertgebouworchestra plays Mahler's ninth symphony). The contours differ - among other things - in number and location of the pitch accents (a pitch accent is an accent lending pitch movement on the lexically stressed syllable).

For example, in (a) the words *Concertgebouworkest*, *Mahler's*, *negende* and *symfonie* are accented, whereas in (b) the words *Concertgebouworkest* and *Mahler's* remain unaccented (or are de-accented). The grammar of Dutch intonation can generate these and other possible pitch contours, but at present it is still necessary to indicate by hand which words have to be marked with a pitch accent. In other words, rules that automatically and correctly determine pitch accent locations are still lacking.

Part of the research in our laboratory is concerned with the question which

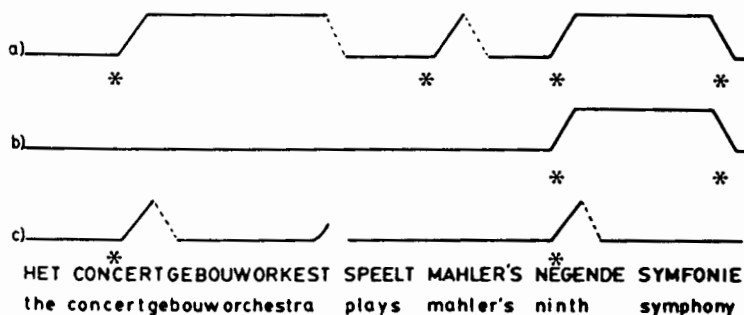


Figure 1. Some examples of stylized pitch contours. Accent lending pitch movements are marked with '*'.

factors systematically affect the accenting of words in read aloud texts. Central questions are (a) which factors influence the speaker's choice of the words to be marked with a pitch accent, and (b) how do accents affect the listener's perception and/or comprehension of an utterance. In this paper we are concerned with only one of the factors related to accentuation, viz. the 'newness' vs. 'givenness' of the information referred to (Chafe 1976; Firbas 1979; Halliday 1967). In an earlier production experiment, in which subjects had to read aloud newsbulletin-like items, we defined the terms NEW and GIVEN operationally as 'not mentioned' and 'mentioned in the immediately preceding utterance', respectively. A syntactic constituent could be repeated in the same form or in the form of a synonym. In accordance with the literature we found that NEW information was generally accented. However, rather unexpectedly, GIVEN information was very often accented, too. Only a few speakers de-accented the GIVEN information (Kruyt 1982). This raised the question whether or not context has much effect on accenting in this kind of newsbulletin-like language material. Or, more specifically, whether or not accenting of just mentioned information is acceptable to the listener, and if so, whether or not listeners have a preference for accenting or de-accenting. This question was addressed in the following perception experiment.

2. Experiment

In the present experiment several instances of plus and minus accent on particular words were judged as to their relative acceptability, as a function of the 'newness' vs. 'givenness' of the referents of these words. NEW and GIVEN were again defined as 'not mentioned' and 'mentioned in the immediately preceding utterance', respectively. For this reason pairs of sentences were used, in which the grammatical subject of the second sentence was or was not mentioned in the first. Four 'first sentences of a news item' and two 'second sentences' were constructed. These are shown in Figure 2. The

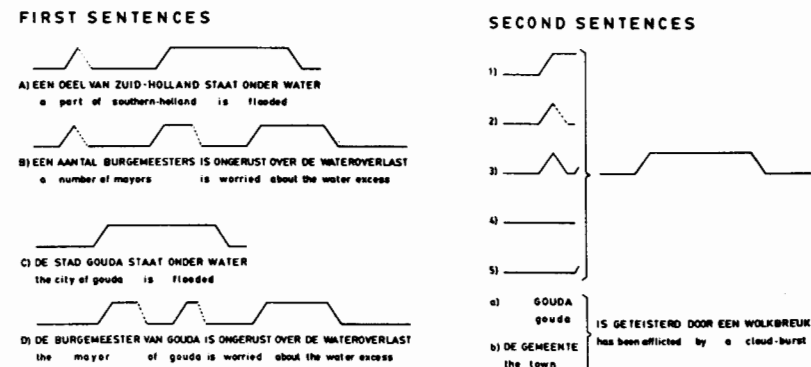


Figure 2. Survey of stimulus utterances and their stylized pitch contours, used in the experiment.

grammatical subject of the 'second sentence' is *Gouda* or *gemeente*. *Gouda* is NEW in the sentence pairs Aa and Ba, and GIVEN - in the form of a repetition of the name *Gouda* - in Ca and Da. *Gemeente* can only be GIVEN, viz. in the sentence pairs Cb and Db, in the form of a synonym of *Gouda* (Ab and Bb do not make sense). All these sentences were spoken by a speaker of standard Dutch, and, with the aid of an LPC-analysis-resynthesis system ('t Hart, Nootboom, Vogten and Willems 1982), provided with pitch contours as shown in Figure 2. In the second sentences the pitch contour on the words *Gouda* and *gemeente* was systematically varied: 1, 2 and 3 are accent lending movements, 4 and 5 are not. The predicate always had a 'hat pattern', consisting of an accent lending rise, a stretch of high declination line, followed by an accent lending fall. All these re-synthesized utterances were recorded onto Bell and Howell Language Master cards, so as to enable easy recombination of utterance pairs during experimental sessions.

Sixteen listeners had to fulfill two tasks. In a forced choice task they had to select the most appropriate first sentence (A, B, C or D) for each intonational variant of the utterance 'Gouda is geteisterd door een wolkbreuk' (Gouda has been afflicted by a cloud-burst) (a 1-5). In a scaling task they had to listen to each possible utterance pair (A, B, C and D combined with a 1-5, C and D combined with b 1-5) and indicate on a ten-point scale (1-10) how well the utterance pair sounded. The ten-point scale was chosen because of the familiarity of our subjects with this scale, as it is generally used in the Dutch educational system (10 means very good, 1 means very bad). Tasks and order of presentation of the utterance pairs were balanced over the listeners.

3. Results

Table I shows the results of the forced choice test. Rows show the two categories [+accent] (a 1-3) and [-accent] (a 4,5) on *Gouda*. Columns show how many times subjects responded with [*Gouda* NEW] (A or B selected) and [*Gouda* GIVEN] (C or D selected) (differences within the categories [+accent] and [-accent] were small). [-accent] is clearly associated with [*Gouda* GIVEN] (30 out of 32). [+accent], however, has been assigned to both categories, albeit with preference for [*Gouda* NEW] (30 out of 48).

In Figure 3 the results of the scaling test are presented. Panel A shows

Table I. Distribution of utterances intonationally marked with and without accent on *Gouda*, judged most suitable to introducing a new referent (NEW) or to repeating a previous mention (GIVEN). The effect of plus vs. minus accent is significant ($\chi^2 = 28$, $df = 1$, $p < .001$)

Type of pitch movement	GOUDA in 2nd sentence		Total
	NEW	GIVEN	
+accent	32	16	48
-accent	2	30	32

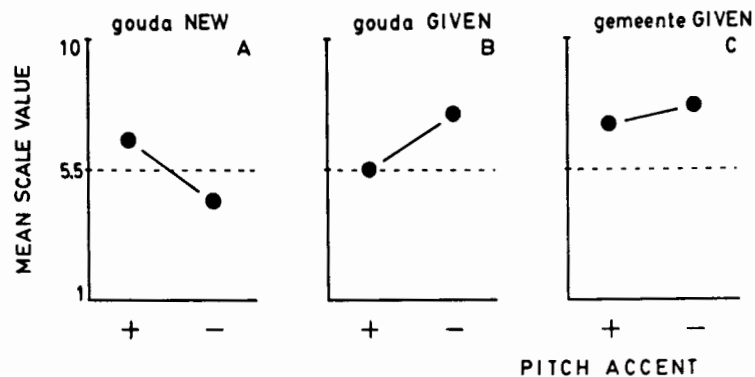


Figure 3. Mean acceptability of accenting or de-accenting a subject noun introducing a new referent (NEW) or repeating a previous mention (GIVEN), either by repetition (B) or by a synonym (C). All differences are significant (A: $t(158) = 8.1$, $p < .001$; B: $t(158) = -8.0$, $p < .001$; C: $t(158) = -3.5$, $p = .001$).

mean acceptability for [+accent] and [-accent] pitch movements on *Gouda* when introducing a NEW referent. [+accent] is preferred over [-accent] (6.5 vs. 4.4). In panels B and C mean acceptability for [+accent] and [-accent] are shown for *Gouda* and *gemeente*, respectively, both repeating a previously introduced referent either by repetition (B) or by a synonym (C). Now [-accent] is preferred over [+accent], both in the case of *Gouda* (7.4 vs. 5.5) and in that of *gemeente* (7.7 vs. 7.0). However, in the case of *gemeente* the difference (although significant) is so small that we may conclude that both [+accent] and [-accent] are acceptable.

4. Discussion

From these observations we can conclude that listeners prefer NEW referents to be mentioned in accented verbal expressions, as one would predict from the literature and from the earlier mentioned production experiment (Kruyt 1982). It would have been in line with the literature if GIVEN referents could not acceptably be referred to with accented verbal expressions. Here, however, - and this agrees with the production experiment - the data, although suggesting a preference for [-accent], also indicate that [+accent] is not entirely unacceptable. If we draw the line between acceptable and unacceptable in the middle of our ten-point scale, at 5.5, we see that accenting a constituent referring to what is GIVEN is never clearly unacceptable, and is even clearly acceptable if the constituent is a synonym of the referring expression used in the previous utterance.

If these results will be confirmed in other experiments, then this could be taken to mean that 'newness' and 'givenness', as defined here, are not necessarily important determinants in accent location rules for this kind of text.

Acknowledgements

We thank J. 't Hart for re-synthesizing the pitch contours of the utterances used in the experiment. The investigations were supported by a grant from the Foundation for Linguistic Research, funded by the Netherlands Organisation for the Advancement of Pure Research Z.W.O., under project number 17-21-14.

References

- Chafe, W.L. (1976). Givenness, contrastiveness, definiteness subjects, topics and point of view. C.N. Li (ed.), *Subject and Topic*. New York: Academic Press. pp. 25-55.
- Firbas, J. (1979). A functional view of 'ordo naturalis'. *Brno Studies in English* 13, 29-59.
- Halliday, M.A.K. (1967). Notes on transitivity and theme in English II. *Journal of Linguistics* 3, 199-244.
- Hart, J. 't and Cohen, A. (1973). Intonation by rule: a perceptual quest. *Journal of Phonetics* 1, 309-327.
- Hart, J. 't and Collier, R. (1975). Integrating different levels of intonation analysis. *Journal of Phonetics* 3, 235-255.
- Hart, J. 't, Nootboom S.G., Vogten, L.L.M. and Willems, L.F. (1982). Manipulation of speech sounds. *Philips tech. Rev.* 40, 134-145.
- Kruyt, J.G. (1982). The effect of 'given' and 'new' information on (de-)accentuation in Dutch. S. Daalder and M. Gerritsen (eds.) *Linguistics in the Netherlands 1982*. Amsterdam: North-Holland. pp. 167-171.