

Construction of the logatome list

Content: In this paper the criteria and rules are described upon which the logatome list was constructed.

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Construction of the logatome list for the recordings of the diphone corpus

- every German phoneme (I, E, a, O, U, Y, 9, i:, e:, E:, a:, o:, u:, y:, 2:, aI, aU, OY, @, 6, Q, p, b, t, d, k, g, pf, ts, tS, f, v, s, z, S, Z, C, j, x, h, m, n, N, l, R), plus seven English phonemes (EI, @U, T, D, r, L, w), plus three French phonemes (E~, a~, o~) were composed in every possible combination.
- to reduce the length of the list we established some rules to filter out the impossible combinations:
 - no combination of two equal phonemes – with or without elongation. But English and French phones were combined with the accordant German phones.
 - in front of /x/ only back vowels are allowed.
 - in front of diphthongs no vowels are allowed.
 - /N/ cannot stand in the beginning of a syllable.
 - /N/ cannot stand after consonants.
 - /h/ cannot stand in the end of a syllable or in front of consonants.
 - /@/ and /6/ can as a basic principle be combined with every phoneme (except themselves).
 - after the beginning of the recordings we saw that there are coarticulation effects with /C/ and /x/, i.e. if a consonant follows /C/ or /x/ we had only one version and the pendant was missing. e.g. „atapchadai“ ---> /x/ vs. „atepchadai“ ---> /C/. The missing logatomes were included in the list.
 - later another eleven missing logatomes were added to the list. The accordant diphones are: 6C, 9C, RC, aUC, IC, o:C, u:C, a:C, i:I, u:U, tsts. These were forgotten partly because of unknown reasons, partly because we didn't consider some rules. We compared the diphones of a subset of the “Phonolex” with all our diphones and constructed logatomes for the missing ones.
- for every diphone a logatome was constructed.
- the logatomes consist of four respectively five syllables with the diphone on the second or third syllable. The stress should be in the end of the logatome.
- all logatomes end on -au, -eu or -ai, except those with the diphone consisting of phoneme and pause in the end.
- the logatome list was checked regarding pronounceableness by four people (non-phoneticians).
- afterwards the list was corrected two more times by phoneticians.

- when all corrections were finished the list was permuted so that no adaption effects occur while reading.
- during the casting we noticed that the synthesis gets considerably worse when the diphone is separated by two syllables. But in German it is not possible that every diphone is on one syllable each. So we agreed to instruct the speakers to read the diphone fluently.
- Four professional speakers, two male and two female, read the logatomes one by one from a screen.