Materials for a Website to accompany the publication by Cambridge University Press of

K.J. Kohler
Communicative Functions and Linguistic Forms
in Speech Interaction

The website provides additional text, graphic and, especially, audio materials for data presented and discussed in the book publication. The materials are ordered with reference to Chapters, Sub-sections and Figures.

Introduction

From Written Text to Visible Speech to Prosodic Annotation

The monograph title 'Communicative Functions and Linguistic Forms in Speech Interaction' captures the three basic concepts of the exposition: (1) *functions* related to *communication,* (2) *forms* related to *linguistic categories,* focussing on prosody, in combination with segmental phrase phonetics as well as lexical and syntactic form, and (3) *human interaction by speech*. Each concept is couched in an adjectival + noun construction. The first two are linked by the connective 'and', and inserted into the third by the preposition 'in'. The ordering of communicative functions and linguistic forms weights their postulated theoretical relationship. In written form, the semantic organisation and syntactic structure can be transmitted typographically by the use of upper and lower case characters, supported by line arrangement. In oral quotation, the topic structure may be rendered by three intonation phrases of very similar durations, with two accents each, with internal as well as trans-phrasal F0 declination, and with a prosodic boundary after the second syntactic unit, marked by final lengthening, a low pitch rise after the first-accent fall and a higher pitch reset at the following accent. Cutting through this semantic-syntactic-prosodic organisation of oral meaning transmission, there is the potential of a quite regular succession of six rhythmic beats in six accent feet. The prosodic and rhythmic oral patterning can create an aural memory trace assisting recall of the title in bibliographic reference to the monograph. Here is a Visible Speech display of the prosodic grouping and rhythmic regularity, in three syntactic-prosodic sections.

book-title.jpg

The title of the monograph in Visible Speech

Spectrograms displaying the segmental make-up with the pitch contours inserted, of the three successive syntactic phrases. Segmentation of the phrases into their syntactic subparts, their foot and syllable structures.

book-title.wav

contains the audio file of the whole title

book-title-a/b/c.wav

contain the audio files of the three sections

with the following **prosodic PROLAB annotations**
&2^Comm'unicative **&0. &2^**Functions
and **&1. &|2^**Lingu'istic **&0. &2[**Forms **&, &PG1**
in **&2^**Speech **&0. &2)**Interaction **&2. PG4**

For the list of PROLAB symbols see **PROLAB.pdf**.

Chapter 2 Prosody in a Functional Framework: The Kiel Intonation Model (KIM)

2.1 Prominence

Monotonic F0 rising, starting at a word and continuing to the end of the utterance, with only segment-induced microprosodic deflections, lends extra prominence to the first syllable of this rise, but all the prominences of the remaining syllables are determined by their articulatory complexities and durations. The first syllable is *accented*, the others *unaccented* (plain line in Figure 2.1a).

Figure2-1a_ hamburg-unacc_plain.wav
&2]Wie **&0**weit **&0**ist **&0**es **&0**bis **&0**H'amburg**&? &PG**

If the monototonic F0 rise is broken by a lowered restart extra prominence is added to the syllable at break-point, its degree depending on the size of the drop. This syllable is either *partially deaccented* or *default accented* (dashed and dotted lines in Figure 2.1a).

Figure2-1a_hamburg-deacc_dashed.wav
&2]Wie **&0**weit **&0**ist **&0**es **&0**bis **&, &1[**H'amburg **&? &PG**

Figure2-1a_hamburg-acc_dotted.wav
&2]Wie **&0**weit **&0**ist **&0**es **&0**bis **&, &2[**H'amburg **&? &PG**

An F0 *rise-fall*, followed by a monotonic low F0 tail lends extra prominence to the pitch peak, but all the prominences of the remaining syllables are again determined by their articulatory complexities and durations. The first syllable is *default accented*, the others *unaccented* (Figure 2.1b thick plain line).

Figure2-1b_ hamburg-unacc_thick-plain.wav
&2(Wie **&0**weit **&0**ist **&0**es **&0**bis **&0**H'amburg **&2. &PG**

If the low monototonic F0 tail is broken by a raised restart extra prominence is added to the syllable at break-point, its degree depending on the size of the upstep. This syllable is either *partially deaccented* or *default accented* (dashed and dotted lines following the thick plain line in Figure 2.1b).

Figure2-1b_hamburg-deacc_dashed.wav
&2(Wie **&0**weit **&0**ist **&0**es **&0**bis **&2. &1^**H'amburg **&2. &PG**

Figure2-1b_hamburg-acc_dotted.wav
&2(Wie **&0**weit **&0**ist **&0**es **&0**bis **&2. &2^**H'amburg **&2. &PG**

In the case of an *early-peak F0 fall* (thin plain line in Figure 2.1b) the prominence profiles stay the same as for the rise-fall; a distinctive change now occurs in the intonation.

Figure2-1b_ hamburg-early-unacc_thin-plain.wav
&2) Wie **&0**weit **&0**ist **&0**es **&0**bis **&0**H'amburg **&2. &PG**

Figure2-1b_hamburg-early-deacc_thin-plain_dashed.wav
&2) Wie **&0**weit **&0**ist **&0**es **&0**bis **&2. &1^**H'amburg **&2. &PG**

Figure2-1b_hamburg-early-acc_thin-plain_dotted.wav
&2) Wie **&0**weit **&0**ist **&0**es **&0**bis **&2. &2^**H'amburg **&2. &PG**

Moving the F0 peak from 'wie' to 'weit' shifts the extra prominence and the accent (Figure 2.2a/b). Broadening the peak into a plateau creates a *hat pattern* with two extra prominences and two accents on 'wie' and 'weit' (Figure 2.2c). Two separate peaks on the two words focus them with two accents and intensify their meanings.

Figure 2-2_a-b-c-d.wav
2.2a **&2(**Wie **&0**weit **&0**ist **&0**es **&0**bi**s …&2. &PG**
2.2b **&0**Wie **&2(**weit **&0**ist **&0**es **&0**bis **…&2. &PG**
2.2c **&2(**Wie **&0.&2)**weit **&0**ist **&0**es **&0**bis **…&2. &PG**
2.2d **&2(**Wie **&2.&|2(**weit **&0**ist **&0**es **&0**bis **…&2. &PG**

2.2 Sentence accent

Based on the original utterance

Figure2-3.wav
&0Aber **&0**der **&2^**Leo **&0**säuft **&2. &PG**

a series of 19 F0 peak synchronisations were LPC synthesised from an *early* 'Leo' to a *late* 'säuft' position to test accent shift and intonation changes.

Figure2-4.wav

The series traverses *early, medial* and *late peaks* on *accented* 'Leo'
&0Aber **&0**der **&2)/^/)**Leo **&0**säuft **&2. &PG**
then turns into *medial/late + early hat patterns* on *double-accented* 'Leo' and 'säuft'
&0Aber **&0**der **&2^/(**Leo **&0.&2)**säuf**t &2. &PG**
and finally goes through *early, medial* and *late peaks* on *accented* 'säuft'
&0Aber **&0**der **&0**Leo **&2)/^/(**säuft **&2. &PG**
Figure 2.5 presents the perception results.

2.3 Sentence accents in syntagmatic prominence patterns

The F0 prominence-lending power in identical signal stretches is influenced by wider syntagmatic prominence patterns. This results in changes from **&2** to **&1** and in the oscillation between the two accent categories. Figure 2.6 illustrates this phenomenon in rising pitch patterns.

Figure2-6.wav
2.6a **&3^'**Anna **&0**kam **&0**mit **&2. &1[**M'enne **&, &PG**
2.6b **&2^'**Anna **&0**kam **&0**mit **&2. &2[**M'enne **&, &PG**
2.6c **&2^'**Anna **&0.&1**kam **&0**mit **&2. &2[**M'enn**e &, &PG**

2.6d **&3^'**Anna **&0**kam **&0**mit **&2. &2-1]**M'enne **&, &PG**
2.6d-dotted **&3^'**Anna **&0**kam **&0**mit **&2. &2-1]**M'enne **&, &PG**
2.6e **&2^'**Anna **&0**kam **&0**mit **&2. &2]**M'enne **&, &PG**
2.6f **&2^'**Anna **&0.&1**kam **&0**mit **&0. &2]**M'enn**e &, &PG**

Raising or lowering the F0 level in between two peak accents also influences the prominences of flanking signal stretches, thus changing their accent categories, by varying the F0 steps out of, and into, the two peak patterns. Figure 2.7 gives examples of this type of syntagmatic prominence patterning.

Figure2-7.wav
2.7a-plain **&2^'**Anne **&0**kam **&0**mit **&1. &1^**M'enne **&2. &PG**
2.7a-dotted **&2^'**Anne **&0.&1**kam **&0**mit **&0**. **&2^**M'enne **&2. &PG**
2.7a-dashed **&3^'**Anne **&0**kam **&0**mit **&2. &2^**M'enne **&2. &PG**
2.7b **&3^'**Anne **&0**kam **&0**mit &**2**. **&1^**M'enne **&2. &PG**

2.4 Declination, downstep and upstep

In a sequence of equally prominent peak accents, the F0 maxima form a declining pattern. This downtrend may continue across prosodic phrase boundaries by starting the decline after each boundary at a successively lower F0 than the preceding phrase-initial peaks. This is illustrated in the audio vesrion oft the monograph title. Downtrand has been conceptualised as time-based *declination*. Figure 2.8a demonstrates a downtrend of the same magnitude in two successive peak accents in the natural productions of

&0Die **&2^**W'äler(innen) **&1. &2^**w'ählen **&2. &PG**

The two peak maxima are at the same F0 values in ‘Wähler wählen’ and in ‘Wählerinnen wählen’, although they are more widely spaced in the longer utterance, but they are nevertheless perceived as equally prominent in both utterances.

Figure2-8a.wav

This means that the downtrend is not on a time but on a functional-intentional basis to generate equal accent and intonation patterns independent of the time that elapses between peaks. Therefore the term *downstep* is used instead, and the downstep sequence can be interrupted by *upstep* at any structural point, as is again shown in the audio version of the monograph title. The stylisation of the perceptually identical patterns in the two utterances

Figure2-8b_styl-plain.wav

is the basis for adjusting the downtrend on a time basis, either by linearly lowering the peak maximum and the preceding dip minimum of ‘wählen’ in the longer utterance in relation to the shorter ‘wähler wählen’

Figure2-8b_styl-plain_styl-dashed.wav

or by linearly raising the peak maximum and the preceding dip minimum of ‘wählen’ in the shorter utterance in relation to the longer ‘wählerinnen wählen’.

Figure2-8b_styl-dashed_styl-plain.wav

In both modified stylised patterns there is no longer perceptual accent and intonation equality of the peak sequences in the shorter and the longer utterance. In **styl-plain_styl-dashed** the second peak in ‘Wählerinnen wählen’ is lower in relation to the one in ‘Wähler wählen’ and therefore sounds more terminal. In **styl-dashed_styl-plain** the second peak in ‘Wähler wählen’ is higher in relation to the one in ‘Wählerinnen wählen’ and therefore sounds less terminal.

The downtrend by *downstep* and its interruption by *upsetp* are illustrated in the longer utterance of

Figure2-9_downstep-upsted.wav and in two sections

Figure2-9_downstep-upsted_sec1.wav
&0Der **&2^-(**all'einlebende **&1. &2^-(**R'entner **&0**in &1. **&|2^**W'ohnung **&0. &1)**N'ummer **&2. &2^-(**neun **&0**ist **&2. &|2^**h'eute **&0**am **&0**frühen **&1. &2(**M'orgen **&0**im **&1.**

Figure2-9_downstep-upsted_sec2.wav
&2^'Alter **&0**von **&2. &|3^-('**einundneunzig **&1. &2(**J'ahren **&0**an **&0**einem **&2. &|2^**schw'eren **&0. &2)**H'erzinfarkt **&2. &2^**gest'orben**&2. &PG**

A *declination-like* monotone-sounding downtrend without frequent upsteps is illustrated in another natural production of the same long utterance

Figure2-10_declination.wav and in two sections

Figure2-10_declination_sec1.wav
&0Der **&2^-(**all'einlebende **&1. &2^-(**R'entner **&0**in **&1. &2^**W'ohnung **&0. &1)**N'ummer **&1. &2^-(**neun **&0**ist **&2. &2^**h'eute **&0**am **&0**frühen **&1. &2(**M'orgen **&0**im **&1.**

Figure2-10_declination_sec2.wav
&2^'Alter **&0**von **&2. &|2^**'einundneunzig **&1. &2(**J'ahren **&0**an **&0**einem **&2. &2^**schw'eren **&0. &2)**H'erzinfarkt **&2. &2^**gest'orben**&2. &PG**

2.6 Experiments in lexical stress perception in German

Lexical stress in German or English is a phonological marker of a position in syllable strings of lexical items where sentence accents dock when the lexical items are accented. In both languages, there are words that differ only by stress position in the same phonological syllable strings. It then becomes possible to investigate the contributions of F0 contour and syllable duration to the perception of the lexical stress position in the accented word.

Figure2-11a_prefix.wav
&0Er **&0**wird’s **&0**wohl **&2^-(**'umlagern **&2. &PG**
illustrates an original prefix stress

Figure2-11b_stem.wav
2.11b &0 Er **&0**wird’s **&0**wohl **&2**)uml'agern **&2. &PG**

an original stem stress

Figure2-11c_prefix-F0stem.wav
the LPC-synthesis exchange of the stem-stress F0 pattern in the original prefix stress

Figure2-11d_stem-F0prefix.wav
the LPC-synthesis exchange of the prefix-stress F0 pattern in the original stem stress.

Two 12-stimuli peak-shift series were generated by LPC synthesis from the prefix-stress stimuli **Figure2-11a_prefix.wav** and **Figure2-11c_prefix-F0stem.wav**, with sharply and slowly falling F0 peak contours, respectively: shift series **P1** ***and*** **P3**. Two 9-stimuli peak-shift series were generated from the stem-stress stimuli **Figure2-11b_stem.wav** and **Figure2-11d_stem-F0prefix.wav**, with slowly and sharply falling F0 peak contours, respectively: shift series **P2** and **P4**. These series formed the basis for perception tests, for which the results are presented in Figures 2.12 and 2.13.

Figure2-12_P1-shift.wav
Figure2-12_P3-shift.wav
Figure2-13_P2-shift.wav
Figure2-13_P4-shift.wav

The LPC synthesis of long low F0 stretches in **P2** and **P4** produced poor audio quality, which, however, seems not ro have affected forced-choice 1-st or 2-nd syllable stress judgment.

In a later experiment (Kohler 2012), the effect of duration was examined in different F0 frames in the German utterances

Figure_Kaffee-Cafe_high-plateau.jpg
a Wir treffen uns **&2^**regelmäßig beim **&0. &1-**Kˈaffee dort an der **&0. &2)**Ecke **&2. &PG**
Kaffee_high-plateau.wav
b Wir treffen uns **&2^**regelmäßig beim **&0. &1-** Cafˈé dort an der **&0. &2)**Ecke **&2. &PG**
Cafe_high-plateau.wav

Figure_Kaffee-Cafe_low-tail.jpg
a Wir treffen uns **&2^**regelmäßig beim **&2. &1-**Kˈaffee dort an der **&0. &1)**Ecke **&2. &PG**
Kaffe_low-tail.wav
b Wir treffen uns **&2^**regelmäßig beim **&2. &1-** Cafˈé dort an der **&0. &1)**Ecke **&2. &PG**
Cafe_low-tail.wav

There is a default accent **&2** on ‘regelmäßig’; the test items ‘Kˈaffee/Cafˈé’, with lexical stress on the first or second syllable, respectively, are partially deaccented **&1**. They occur either in a low F0 tail, with partial deaccentuation also of the sentence-final word ‘Ecke’, or in a high F0 plateau, spanning ‘regelmäßig beim Kˈaffee/Cafˈé dort an der’, followed by an F0 fall for default accent **&2**Ecke. These prosodic frames exclude critical F0 change on the test items. Vowel duration was manipulated in a complementary fashion across the two syllables in 5 steps, spanning the continuum from initial to final stress in each word and in each frame.

The different spectral properties of the stressed and unstressed vowels in the original productions of ‘Kaffee’ [kˈafeˑ] and ‘Café’ [kafˈeː] were an additional variable besides vowel duration, and so was the duration of the intervocalic fricative, either long preceding the stressed syllable of original ‘Café’, or short preceding the unstressed syllable of original ‘Kaffee’.

Series of 5 voewl duration ratios (long2-short2, long1-short1, equal, short1-long1, short2-long2) were geenerated in the following 8 contexts:

Kaffee_high-plateau_short-frivative.wav
Kaffee_high-plateau_long-frivative.wav
Cafe_high-plateau_long-frivative.wav
Cafe_high-plateau_short-frivative.wav

Kaffee_low-tail_short-frivative.wav
Kaffee_low-tail_long-frivative.wav
Cafe_low-tail_long-frivative.wav
Cafe_low-tail_short-frivative.wav

The 8x5 stimuli were the database for a lexical-stress perception experiment. Vowel duration, intervocalic fricative duration and vowel quality turned out to be strong significant main effects in shaping the stress response profiles for German ‘Kaffee’ vs. ‘Café’ along the duration scale. As F0 on the test items is levelled in a high-plateau hat pattern or in a low tail, F0 itself is a minor cue in lexical stress perception. On the other hand, vowel quality becomes important, further enhanced by the duration of an intervocalic consonant. The combined cue force of these two parameters can even outweigh the effect of vowel duration. For further details see Kohler (2012).

2.8 Experiments in peak and valley synchronisation

2.8.1 Signal analysis of peak patterns

Figure 2.14 illustrates three *peak maximum* synchronisations in the German utterance

&0Sie **&0**hat &**0**ja &**2)**/^/**(**gel'ogen **&2. &PG**

a *early peak* **Figure2-14a_ ori-medial-peak.wav**

b *medial peak* **Figure2-14b_ori-early-peak.wav**

c *late peak* **Figure2-14c_ori-late-peak.wav**

In addition to *peak maximum* synchronisation, micro-timing in a narrow time window of about 60ms on either side of the accented-vowel onset determines *early* or *medial peak* perception for the functions of FINALITY or OPENNESS, respectively. Figure 2.15 illustrates this perceptual micro-timing feature together with the audio files

Figure2-15a_ori-plain_0ms-dashed.wav

clear *medial* vs. *early peak* synchrinisation

Figure2-15b_0ms-dashed_0ms-dashed-dotted_0ms-dotted.wav
the peak maxima of the three contours have the same *early* synchronisation as the *early peak* in Figure 2.15a, but raising F0 after the accented vowel onset and lowering it before this point in the 0ms-dotted pattern changes perception to *medial peak* whereas post-onset raising alone in 0ms-dashed_0ms-dotted produces a pattern that hangs in between the two categories

Figure2-15c_30ms-dashed_30ms-dashed-dotted_30ms-dotted.wav
clear *medial peak* synchronisation, but lowering F0 after the accented vowel onset and raising it before this point in the 30ms-dotted pattern changes perception to *early peak* whereas post-onset lowering alone in 30ms-dashed_30ms-dotted produces a pattern that hangs in between the two categories

2.8.2 Discrimination and identification tests with peak patterns

A peak-shift series of 11 maximum-synchronisations from very *early* to very *late peak* was LPC synthesised in equal steps

Figure2-16_peakshift-series-left-right .wav

for perceptual identification and discrimination experiments, of which Figures 2.17 and 2.18 show the results.

The peak-shift series was later generated again with PSOLA sybthesis for A ppt presentation

German-peak-shift_gelogen_PSOLA-synth.ppt

2.8.3 Further peak shift experiments in German

Niebuhr (2003, 2007) added different pre- and post-maximum F0 timing to peak maximum synchronisation in a peak-shift through the utterance

&0Sie **&0**war **&0**mal **&2)/^/(**M'alerin **&2. &PG**

Figure 2.19 shows four micro-time windows (plain, dashed-plain, dashed, plain-dashed) for three different macro-time peak maximum synchronisations at accented-vowel onset (**a**), 60 ms before this point (**b**) and 60 ms after (**c**). Each of the corresponding three audio files contains the four pre- and post-maximum micro-time windows in the ordering narrow-narrow, broad-narrow, broad-broad, narrow-broad.

Figure2-19a.wav
Figure2-19a.wav
Figure2-19a.wav

2.8.4 Peak shift experiments in English

Kleber (2005, 2006) applied the peak-shift paradigm to the English utterance

&0She's **&0**gone **&0**to **&2)/^/(**Malaga **&2. &PG**

and obtained results that are conguent with the German 'gelogen' data. This is shown in the corresponding ppt presentation

English-peak-shift_malaga_PSOLA-synth.ppt

2.8.5 Discrimination and identification tests with valley patterns

Niebuhr and Kohler (2004) complemented another peak shift with a valley shift in 9 steps through the utterances

&0und **&0**wie **i&0st &0**dein **&2)/^/(**Name **&2. &PG**
peak-series_name.wav

&0und **&0**wie **i&0st &0**dein **&2]/[**Name **&2. &PG**
valley-series_name.wav

Each shift-series provided the stimulus set for a discrimination and an identification test. The results in Figures 2.21 and 2.22 show comparable identification curves for both sets but vastly different discrimination profiles. As in the previous peak discrimination experiments in German and English, the frequency of 2-step peak discrimination tops around the accented-vowel onset, whereas 2-step valley discrimination is not different from pairs of identical stimuli. This points to categorical perception in the former, but to category perception without a clear boundary in the latter.

2.9 Concatenation of pitch patterns

Figure 2.23 illustrates several peak and valley concatenations, for the audio files

Figure2-23a_hat.wav
Figure2-23b_2-peaks.wav
Figure2-23c_peak-PG-peak.wav
Figure2-23d_tub.wav
Figure2-23e_2-valleys.wav
Figure2-23f_valley-peak.wav

2.10 Contour-internal F0 timing in falls and rises

Figure 2.24 illustrates valley-internal F0 timing: fast-slow (convex) vs. slow-fast (concave) rise. Audio files from the Kiel Corpus of Spontaneous Speech.

Figure2-24a_fast-rises.wav
Figure2-24b_slow-rises.wav

Figure 2.25 compares 3 *early valleys* with fast-slow, neutral and slow-fast internal F0 timing: the F0 mid-point is raised (upper dotted) and lowered (lower dotted) from a linear rise (plain). A second lowering (dashed) changes the contour to a *late valley*, which is then shifted further

to the right. The 5 utterances are presented in the order fast-slow, neutral, slow-fast, late1, late2 in the following audio file.
Figure2-25_name_earl-val-fast_neutr_slow_late-val1_late-val2.wav

2.11 Prehead and register

Figure 2.26 compares peak and valley patterns in syllables containing only sonorants (**a1**, **b1**), or ending in voiceless obstruents (**a2**, **b2**) for the coding of STATEMENT (**a)** or QUESTION (**b**). The low prehead in the STATEMENT (**a2**) (plain) is also raised (dotted), and the high prehead in the QUESTION (**b2**) (plain) is also lowered (dotted). The following audio files compare the three STATEMENT – QUESTION combinations.

Figure2-26a1-b1.wav
Figure2-26a2-b2_plain.wav
Figure2-26a2-b2_dotted.wav

2.12 Prosodic phrasing

Two excerpts from the Kiel Corpus of Spontaneous Speech illustrate competent and less transparent semantic-syntactic structuring by prosodic phrasing

g212a007, male speaker ANL
Phrasing1_g212a007.wav

ja, **&PG2** gerne. **&PG2** ich habe also Zeit vom Donnerstag, den zweiten Juni **&PG2** bis Mittwoch, den achten, **&PG3** und von Samstag, dem achtzehnten, **&PG2** bis Donnerstag, **&PG1** den dreiundzwanzigsten, **&PG3** und dann wieder vom siebenundzwanzigsten bis zum dreißigsten. **&PG4**'

g072a015, male speaker TIS
Phrasing2_g072a015.wav

wo ich im Juni Zeit hätte, **&PG1** ich kann Ihnen das ja mal sagen, **&PG2** wäre **&PG3** Samstag den achtzehnten bis Donnerstag den dreiundzwanzisten, **&PG1** und dann wieder ab **&PG2** Montag den siebenundzwanzigsten bis Ende des Monats. **&PG2** Vielleicht haben Sie da irgendwann Zeit. **&PG4**

2.14 Stepping patterns

Besides continuous pitch movements there are stepping patterns, which are illustrated in Figure 2.27, with the following audio files.

Figure2-27a.wav
Figure2-27b.wav
Figure2-27c.wav
Figure2-27d.wav
Figure2-27e.wav

3.1.3 Prosodic phrasing

Prosodic phrasing in STATEMENTS changes REPRESENTATIONAL meaning, as in the following example of political electioneering, where 1 prosodic phrase as against 2 signals the opposite of the intended meaning.

2vs1_pros-phras_SPD-election.ppt

3.1.4 Look-ahead prosodic phrasing

James Alexander Gordon reading the Classified Football Resilts

Figure3-1_JAG-away.wav
Figure3-1_JAG-home.wav
Figure3-1_JAG-draw.wav

3.3 ARGUMENTATION

Distinctive peak-maximum synchronisations with vocal-tract articulation (2.8.1, 2.8.2) code different ARGUMENTATION functions.

early peak – FINALITY
mager_Finality_early-peak.wav

medial peak – OPENNESS
mager_Openness_medial-peak.wav

medial-to-late peak – CONTARST aa overlay on OPENNESS
mager_Contrast_medial-late-peak.wav

late peak – UNEXPECTEDNESS as overlay on CONTRAST and OPENNESS
mager_Unexpectedness_late-peak.wav

Chapter 4 The APPEAL function

4.2.2.1 Interogative structures and prosodies in POLARITY and INFORMATION QUESTIONS

The text books have maintained for some time that *word-order interrogatives* in English and German have rising, *lexical interrogatives* falling intonation. The Kiel Corpus of Spontaneous Speech does not support this rule as it provides many instances – among others, 4 examples by the same female speaker ANS – with rising (**a**) and falling(**b**) intonation in both *word-order interrogatives* (**A)** and *lexical interrogatives* (**B**), presented in Figure 4.1. The two structures code the functions of POLARITY and INFORMATION QUESTIONS, the intonation patterns add functional sub-categorisations.

Figure4-1_Aa_ANS.wav	*non-early valley*
Figure4-1_Aa_dipped-late-val_ANS.wav	*late-valley* dip transferred from **Ba**
Figure4-1_Ba_ANS.wav	*late valley*
Figure4-1_Ab_ANS.wav	*early peak*

Figure4-1_Bb_ANS.wav *medial peak*

Each of the 4 utterances is PSOLA synthesised with the valley and peak patterns of the other 3 and additionally with an early valley and a medial-to-late peak. The 2 word-order and the 2 lexical interrogatives are thus combined with the same set of 5 intonation patterns for functional evaluation: *early, late valleys* and *eayrly, medial, medial-to-late peaks*.

Aa is changed to *early valley*, and *eayrly, medial, medial-to-late peaks* (panel **Aa-s**)

Figure4-1_Aa-s_erly-val_ANS.wav *early valley*

Figure4-1_Aa-s_early-peak_ANS.wav *early peak*

Figure4-1_Aa-s_mid-peak_ANS.wav *meadial peak*

Figure4-1_Aa-s_mid-late-peak_ANS.wav *medial-to-late peak*

Ba is changed to *early valley*, and *eayrly, medial, medial-to-late peaks* (panel **Ba-s**)

Figure4-1_Ba-s_ealy-val_ANS.wav *early valley*

Figure4-1_Ba-s_early-peak_ANS.wav *early peak*

Figure4-1_Ba-s_mid-peak_ANS_.wav *medial peak*

Figure4-1_Ba-s_mid-late-peak_ANS.wav *medial-to-tate peak*

Ab is changed to *early, late valleys* and *medial, medial-to-late peaks* (panel **Ab-s**)

Figure4-1_Ab-s_early-val_ANSl.wav *early valley*

Figure4-1_Ab-s_late-val_ANS.wav *late valley*

Figure4-1_Ab-s_mid-peak_ANS.wav *medial peak*

Figure4-1_Ab-s_mid-late-peak.wav *medial-to-laze peak*

Bb is changed to *early, late valleys* and *early, medial peaks* (panel **Bb-s**)

Figure4-1_Bb-s_early-val_ANS.wav *early valley*

Figure4-1_Bb-s_late-val_ANS.wav *late valley*

Figure4-1_Bb-s_early-peak_ANS.wav *early peak*

Figure4-1_Bb-s_mid-late-peak_ANS.wav *medial-to-late peak*

4.2.2.2 POLARITY QUESTIONS

In Figure 4.2, the German *word-order interrogatives*

Ist er in **&2)/**^/^**-(/)**Rom **&2. &PG**
Ist er in **&2]/[**Rom **&, &PG**
Ist er in **&2]/[**Rom **&? &PG**

are combined with different *peak* synchronisations **PQ-1**, **a** *eayrly* **b** *medial* **c** *medial-to-late* **d** *late*, or different *valley* synchronisations **PQ-2**, *low-rising* **a** *early* **b** *late*; *high-rising* **c** *early* **d** *late* for functional sub-categorisations within the POLARITY QUESTION function.

Figure4-2_PQ-1_a-b-c-d.wav **a** *eayrly* **b** *medial* **c** *medial-to-late* **d** *late*
Figure4-2_PQ-2_a-b-c-d.wav *low-rising* **a** *early* **b** *late*; *high-rising* **c** *early* **d** *late*

4.2.2.3 INFORMATION QUESTIONS

In Figure 4.3, the German *lexical interrogatives*

&2)/^/^-**(/)**Wo **&2. &PG**
&2]/[Wo **&, &PG**
&2]/[Wo **&? &PG**

are combined with different *peak* synchronisations **IQ-1**, **a** *eayrly* **b** *medial* **c** *medial-to-late* **d** *late*, or different *valley* synchronisations **IQ-2**, *low-rising* **a** *early* **b** *late* for functional sub-categorisations within the INFORMATION QUESTION function; *high-rising* **c** *early* **d** *late* are CONFIRMATION QUESTIONS, soliciting a repeat of INFORMATION that has already been given.

Figure4-3_IQ-1_a-b-c-d.wav **a** *eayrly* **b** *medial* **c** *medial-to-late* **d** *late*
Figure4-3_IQ-2_a-b-c-d.wav *low-rising* **a** *early* **b** *late*; *high-rising* **c** *early* **d** *lat*

In Figure 4.4, the English *lexical interrogative* 'where?' is set in the context

A: We'll meet in **&2^'**Auchterarder **&1. &2^**tom'orrow **&2. &PG**

B: **&2^**/^-**(**Where **&2. &PG**
Figure4-4_IQ-1_a.wav **IQ-1a** *medial peak*
Figure4-4_IQ-1_b.wav **IQ**-1**b** *medial-to-late peak*

B: **&2(**Where **&., &PG**
Figure4-4_IQ-2_b.wav **IQ-2b** *late low (falling-)rising valley*

B: **&2]**Where **&? &PG**
Figure4-4_IQ-2_c.wav **IQ-2c** *early high rising valley*

The formal (structural and prosodic) categories and their functional links are parallel to the German data; **IQ-2c** is again a CONFIRMATION QUESTION.

4.2.2.4 CONFIRMATION QUESTIONS

Figures 4.5 and 4.6 compare formal manifestations of CONFIRMATION QUESTIONS with the addition of NEGATIVE INTENSIFICATION in German and English.

CQ-1 *lexical interrogatives*, in *high-rising valleys*
Figure4-5_CQ-1_a-NIb_German.wav **a** *early*, **NIb** *late* + prosodic strengthening
Figure4-5_CQ-1_a-NIb_English.wav **a** *early*, **NIb** *late* + prosodic strengthening

CQ-2 *declarative or elliptic* syntax, also in *high-rising valleys*
Figure4-5_CQ-2_a-b-NIb-c_German.wav **a** *early*, **b** *late* **NIb** *late* + prosodic strengthening

Figure4-5_CQ-2_a-b-NIb_English.wav **a** *early*, **b** *late* **NIb** *late* + prosodic strengthening

The pitch patterns in the two languages and in the two syntactic types converge for the coding of the CONFIRMATION QUESTION function and of superimposed NEGATIVE INTENSIFICATION. The German **CG-2** series contains a fourth prosodic pattern **c** *high-register peak*. It exists in English as well, but I have had no access to a recording.

4.2.2.5 Communicative function and linguistic form in context of situation

In the context

Speaker A: Er ist nach Rom gefahren.
Speaker B: Er ist in Rom?

Speaker B asks a CONFIRMATION QUESTION following a STATEMENT. In the context

Speaker A: Wo ist er denn eigentlich?
Speaker B: Er ist in Rom.

Speaker B makes a STATEMENT following an INFORMATION QUESTION. The two communicative speech actions by Speaker B can be prosodically identical in their functions as SURPRISE CONFIRMATION QUESTION or EXCLAMATORY EXPRESSIVE STATEMENT, in two versions

either **&HR** Er ist in **&2^**Rom **&2. &PG**
or Er ist in **&2[**Rom **&? &PG**

In this identical prosodic exponency both the CONFIRMATION QUESTION and the STATEMENT express SURPRISE, or even IRRITATION, for instance at the other person asking about something commonly known. But irrespective of phonetic coalescence, the speech action is unequivocally either an expressively coloured CONFIRMATION QUESTION in the vontext after a STATEMENT, or an expressively coloured STATEMENT in the context of an INFORMATION QUESTION. This is demonstrated by the following constructed dialogues, where Speaker B's

high-register peak pattern
HR-peak_meaning-in-context.wav

or *high-rising late valley* pattern
Hgih-lateval_meaning-in-context.wav

is interpreted as either the one or the other communicative act in the respective context.

Chapter 5 The EXPRESSION Function

The Functions and Forms of LOW and HIGH KEY – ARGUMENATIVE HIGH KEY for ARGUMENATIVE REINFORCEMENT and EMOTIVE HIGH KEY for EMOTIVE INTENSIFICATION – are illustrated in

Low-High-Key.ppt

6.1.1 ARGUMENTATION

Figure 6.1 Illustrates *early peak* FINALITY, *medial peak* OPENNESS and *late oeak* CONTRAST in English 'yes' and 'no' from the film *The Queen* (Aa and Ab)

Figure6-1_A-queen_a-yes2x.wav **Figure6-1_A-queen_b-no3x.wav**

and compares them with *lowered-F0* FINALITY versus *raised-F0* OPENNESS in Mandarin Chinese *hao-3* and *xing-2* 'OK' by a female speaker (Ba and Bb)

Figure6-1_B-f_a-hao2x.wav **Figure6-1_B-f_b-xing2x.wav**

and by a male speaker (Ca and Cb)

Figure6-1_B-m_a-hao2x.wav **Figure6-1_B-m_b-xing2x.wav**

6.1.2 QUESTION vs. STATEMENT

Figure 6.2a illustrates Mandarin Chginese *dòngwùyuán* 'zoo' (_d_) and *hăitān* 'beach' (**_h_**) in corresponding utterances with various functions by a male speaker:

POLARITY QUESTION
Figure6-2a_GG-m_d_A_Polarity.wav
Figure6-2a_GG-m_h_A_Polarity.wav

STATEMENT with OPENNESS
Figure6-2a_GG-m_d_B_Statement.wav
Figure6-2a_GG-m_h_B_Statement.wav

CONFIRMATION QUESTION MATTER-OF-FACT
Figure6-2a_GG-m_d_C_Confirmation.wav
Figure6-2a_GG-m_h_C_Confirmation.wav

CONFIRMATION with EXPRESSION OF SURPRISE
Figure6-2a_GG-m_d_D_Confirmation-Surprise.wav
Figure6-2a_GG-m_h_D_Confirmation-Surprise.wav

STATEMENT with FINALITY
Figure6-2a_GG-m_d_E_Statement-Finality.wav
Figure6-2a_GG-m_h_E_Statement-Finality.wav

Figure 6.2b does the same for a female speaker:

POLARITY QUESTION
Figure6-2a_GG-m_d_A_Polarity.wav
Figure6-2a_GG-m_h_A_Polarity.wav

STATEMENT with OPENNESS
Figure6-2b_GG-f_d_B_Statement.wav
Figure6-2b_GG-f_h_B_Statement.wav

CONFIRMATION QUESTION MATTER-OF-FACT

Figure6-2b_GG-f_d_C_Confirmation.wav
Figure6-2b_GG-f_h_C_Confirmation.wav

CONFIRMATION with EXPRESSION OF SURPRISE

Figure6-2b_GG-f_d_D_Confirmation-Surprise.wav
Figure6-2b_GG-f_h_D_Confirmation-Surprise.wav

STATEMENT with FINALITY

Figure6-2b_GG-f_d_E_Statement-Finality.wav
Figure6-2b_GG-f_h_E_Statement-Finality.wav

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Further information on phonetic and prosodic research at IPdS Kiel can be obtained from http://www.ipds.uni-kiel.de/kjk