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3 Analysis of English and Czech intonation

The present study of English and Czech intonation focuses on five areas: the length of the tone unit, the position of the nucleus in a tone unit, the word class functions of the nucleus bearers, the FSP functions of the nucleus bearers and the pitch patterns of the nuclei. These phenomena were examined in a corpus of four spoken texts. Selected parts of these texts, including their prosodic transcriptions and the interpretations of the examined phenomena, are presented in the Appendix.

3.1 Description of the research material

The corpus analyzed contains parallel English and Czech dialogues, one pair of scripted and one pair of non-scripted texts. The scripted texts are the original Czech version of the play *Protest* by Václav Havel (1992) and its English translation by Věra Blackwell (Havel 1990), as they were broadcast by Czech radio and by BBC radio. The non-scripted texts are one non-surreptitiously recorded dialogue (dialogue JP122) from the Corpus of Spoken Czech (a subcorpus of the Czech National Corpus compiled at Charles University), and one surreptitiously recorded dialogue (dialogue S.1.6.) from the London-Lund Corpus (the computerized version of *A Corpus of English Conversation*, Svartvik, J. Quirk, R., 1980), published in the ICAME Collection of English Language Corpora (ICAME 1991).

Of the four texts, only one – dialogue S.1.6. from the London-Lund Corpus – included prosodic transcription containing tonetic marks based on the system developed by Crystal (cf. section 1.1). The other three texts were given to the author by DILIA, the Jan Hus Educational Foundation, and the Institute of the Czech National Corpus of Charles University in the form of audio tape recordings, which had to be transcribed before any analysis could begin.[9] The focus of the prosodic transcription was the segmentation of the texts into tone units and the location of the nucleus as the most prominent accent in a tone unit. Less prominent accents were noted as well, but their occurrence was not studied in detail and will be discussed only marginally.[10] The transcription was carried out by the author of this study, aided by two consultants who helped to identify tone unit boundaries and nucleus position in dubious cases.

3.1.1 Scripted texts (Protest-Cz and Protest-En)

The choice of the text of *Protest* and its English translation was motivated by the need for a secure basis for comparison in the form of semantically equivalent (or nearly equivalent) texts. In order to achieve a high degree of parallelity, all sections of the

9 It was necessary to provide not only the prosodic, but also the orthographic transcription. The recordings of *Protest* in both language versions deviated from the published book versions considerably, and there were minor deviations from the script provided by the Institute of the Czech National Corpus in the case of dialogue JP122.

10 A number of problems concerning the occurrence of less prominent accents and stresses (cf. 3.2.1 (iii)) have to be solved before a detailed comparison of their occurrence in English and Czech can be carried out.

two texts that did not have an equivalent passage in the other text were excluded from analysis. The analysis covers the first half of the entire text of each version. Examples of the prosodic transcriptions of the texts and an explanation of the tonetic marks are presented in section 3.2.1 below. The Czech version of the text is referred to as *Protest-Cz*, the English version as *Protest-En*.

Protest-Cz (after the exclusion of sections that do not have a counterpart in *Protest-En*) consists of 2014 words in 505 tone units. *Protest-En* (after the exclusion of the sections that do not have a counterpart in *Protest-Cz*) consists of 2562 words in 540 tone units.

3.1.2 Non-scripted texts (Dialogue-Cz and Dialogue-En)

In order to obtain data from natural speech, two (non-equivalent)[11] natural English and Czech dialogues sharing important characteristics were selected for the analysis: the speakers in each dialogue are a male and a female academic and the topic of conversation is related to university study. Both dialogues are non-scripted. The texts differ in that the English dialogue S.1.6. from the London-Lund Corpus was recorded surreptitiously (in 1964), while the Czech dialogue JP122 (recorded in the early 1990s) is, like all the material in the Czech National Corpus, non-surreptitious. Surreptitious Czech dialogues are not available. The analysis covers the first half of each of the non-scripted texts. Examples of the transcription of dialogues S.1.6. and JP122 are given in sections 3.2.1 and 3.2.2 below. Dialogue S.1.6 is referred to as *Dialogue-En*, JP122 as *Dialogue-Cz*.

Dialogue-Cz and *Dialogue-En* each consist of 521 tone units; *Dialogue-Cz* contains 2216 words and *Dialogue-En* 2188 words.

3.2 Prosodic transcription

3.2.1. Transcription of Protest-Cz, Protest-En and Dialogue-Cz

The system of prosodic transcription applied in *Protest-Cz*, *Protest-En* and *Dialogue-Cz* indicates (i) tone unit boundaries, (ii) the position and pitch direction of the nucleus, (iii) the position of non-nuclear accented stresses, and (iv) the occurrence of hesitation pauses. In the examples below illustrating the notation, the nucleus bearing words are capitalized.

```
30900,S,jo ¦nedávno jsme /ČETLI#
31000,S,s /ŽENOU#
31100,S,¦to . ¦to z toho \PIVOVARU#
31200,S,\MOC jsme se ¦pobavili#
31300,V,to mě \TĚŠÍ#
31400,S,¦bohužel jsme ale měli ¦velice ¦špatnou \KOPII#
31500,V,to mě \MRZÍ#
31600,S,je to ¦skutečně . \BRILANTNÍ ¦\dílko#
31700,S,jenom ten ¦\konec se mi . ¦zdál být ¦trošku . \NEJASNÝ#
31800,S,¦chtělo by to . ¦dotáhnout k ¦nějaké . ¦jednoznačnější \POINTĚ#
31900,S,¦vy na to přece \MÁTE#
```

11 Semantically equivalent natural (non-scripted) spoken texts in two languages do not exist.

```
30911,S,my ¦wife and ¦I ¦read the ¦one about the \BREWERY the other ¦/day#
31200,S,we ¦thought it was \VERY amusing#
31300,V,oh I'm \GLAD#
31400,S,un¦fortunately we were ¦given a ¦rather ¦bad \COPY#
00000,S,but#
31500,V,oh I'm \SORRY#
31600,S,you know it's a it's a ¦really ¦\brilliant little \PIECE#
00000,S,I \MEAN it#
31700,S,but the ¦=ending ¦seemed . a bit UN\/CLEAR#
31800,S,the whole ¦thing ¦needs to be ¦brought to a more. ¦straight¦forward CON\CLUSION#
00000,S,\THAT'S ¦all#
31991,S,@ it is ¦no \PROBLEM#
31992,S,you can \DO it#
```

(i) tone unit boundaries
Tone unit boundaries are indicated by the symbol "#". Each tone unit has its own number and extends over one line. There is a tone unit boundary at the end of each line of the text.

(ii) the nucleus
The system of indicating nuclei is a simplified version of the system used by Cruttenden (1986) and O'Connor and Arnold (1973). A mark indicating the pitch direction of the nucleus is placed before the most prominent syllable in a tone unit. Since word stress in Czech is fixed on the first syllable of a word, the mark for the nucleus is always placed *before* the prosodically most prominent word (e.g. 311 *PIVOVARU*) while in English it often occurs *inside* the most prominent word (e.g. 31700 *UN\/CLEAR*). The text contains five different marks for pitch direction (the mark for the 'level' used by Cruttenden and O'Connor and Arnold is '>'; the mark used here (=) corresponds to the notation in the *London-Lund Corpus* and was chosen to make the transcription of *Protest-Cz*, *Protest-En* and *Dialogue-Cz* compatible with the transcription of *Dialogue-En*:

fall	\
rise	/
fall-rise	\/
rise-fall	/\
level	=

The nucleus is usually, but not invariably, the last accented stress of a tone unit. (Situations in which the nucleus is other than the last accented stress are described in sections 1.1.4 and 1.1.5.) A clear distinction between a nucleus and a non-nuclear accented stress is made by use of the "pipe" symbol (¦), which precedes all non-nuclear accented stresses (see (iii) below).

The transcription of *Protest-Cz*, *Protest-En* and *Dialogue-Cz* does not indicate pitch range, i.e. it does not distinguish between high falls and rises and low falls and rises. Pitch range, however, was taken into account in the process of locating the most prominent accent in a tone unit: narrower pitch range is one of the signals of lesser prominence.

(iii) non-nuclear accented stresses
It was mentioned above that all non-nuclear accented stresses are marked with the pipe

(¦). In the case of pitch movement being involved, the pipe is followed by the pitch direction mark (\, /, \/, /\, =). The pipe has the function of a subordination mark, a mark denoting accented stresses of lesser prominence than the nuclear stress. The term non-nuclear accented stress (or just accented stress) will be used in this study to refer to (a) the accented stress referred to by O'Connor and Arnold and other scholars as the head stress, (b) the less prominent component of all types of the compound nucleus, and (c) a nucleus occurring in a subordinate tone unit (in the LLC transcription).[12]

This notation deliberately avoids making a distinction between accented (head) stresses, less prominent parts of compound nuclei, and nuclei in subordinate tone units. The situation in this area is indeed unclear. Some systems of prosodic transcription allow only one nucleus in a tone unit or a compound nucleus consisting of the only combination of a high fall followed by a (less prominent) low rise (O'Connor and Arnold and Cruttenden). Crystal allows the occurrence of a number of types of compound nuclei (cf. 1.1.4). The system used in the London-Lund Corpus contains notation of compound nuclei and nuclei in subordinate tone units. It was suggested in section 1.1.4 that what Crystal (and the LLC transcription) denotes as a compound nucleus consisting of rise+fall (where the rise is usually less prominent) might be classified by O'Connor and Arnold as the combination of a rising non-nuclear accent (rising head) and a high falling nucleus. The study of the differences between accented (head) stresses, less prominent parts of compound nuclei, and nuclei in subordinate tone units exceeds the scope of this analysis.

(iv) hesitation pause
Hesitation pauses are indicated by a full stop (e.g. 311 ¦*to* . ¦*to z toho* *PIVOVARU*). The relative length of the pause is not specified.
List of symbols in Protest-Cz, Protest-En and Dialogue-Cz:

\	fall
/	rise
\/	fall-rise
/\	rise-fall
=	level
¦	non-nuclear accented stress
.	pause
@	hesitation vowel [ɜ:]
#	end of tone unit
( )	incomprehensible words

3.2.2. Transcription of Dialogue-En

The prosodic transcription of *Dialogue-En* (dialogue S.1.6) is the original transcription applied in the London-Lund Corpus. The transcription was carried out by a team of transcribers over a number of years and is therefore much more refined than the transcription of *Protest-Cz*, *Protest-En* and *Dialogue-Cz*. The London-Lund Corpus is the electronic version of the book *A Corpus of English Conversation*. Below is a list of

12 For further information on (a), (b) and (c), see sections 1.1.2 – 1.1.5.

symbols occurring in the electronic version. The most relevant symbols are the prosodic marks denoting the nuclei. In the database sample in the Appendix, and in all examples in the text, words that carry the nucleus (i.e. the most prominent accented stress as specified in 3.2.1 (ii) and (iii)), will be capitalized for better orientation in the text. (The original electronic version does not use capitalization.)
List of symbols in *Dialogue-En*:

SPEAKER	A B	Speaker identity
TONE UNIT	#	End of tone unit (TU)
	^	Onset
	{yes}	Subordinate TU
NUCLEUS	y\es	Fall
	y/es	Rise
	y=es	Level
	y\/es	(Rise-) fall-rise
	y/\es	(Fall-) rise-fall
	y\es y/es	Fall+rise
	y/es y\es	Rise+fall
BOOSTER	_yes	Continuance
	:yes	Higher than preceding syllable
	!yes	Higher than preceding pitch-prominent syllable
	!!yes	Very high
STRESS	,yes	Normal
	„yes	Heavy
PAUSE	yes . yes	Brief pause (of one light syllable)
	yes – yes	Unit pause (of one stress unit or 'foot')
	– .	Combinations of pause
	– –	
	– – .	
	– – –	
PHONETIC SYMBOLS	[@]	hesitation vowel [ɜ:]
	[?]	glottal stop
OTHER SYMBOLS	*yes*	Simultaneous talk
	+yes+	
	(laughs)	Contextual comment
	((yes))	Incomprehensible words

3.3 Description of the database

Below is a sample of the database which was used for the comparison of intonation in Czech and English texts. The sample is a portion of the database for *Protest-Cz* and *Protest-En*. The text of the individual tone units represents one field of the database (column 16); the remaining fields (columns 1 – 15) contain specifications of the nucleus bearer and the tone unit in which it occurs. The structure of the database for *Dialogue-Cz* and *Dialogue-En* is identical. More extensive parts of the database, together with a full explanation of the symbols in the individual columns, are available in the Appendix.

Database structure:
Column 1: Correlation number of the tone unit (applied in examples)
Column 2: Serial number of the tone unit
Column 3: Length of the tone unit in terms of words
Column 4: Position of the nucleus (in terms of words) from the end of the tone unit
Column 5: Interpretative position of the nucleus in Czech prepositional phrases
Column 6: Pitch direction of the nucleus
Columns 7 and 8: Word class functions of the nucleus bearer
Column 9: FSP function of the nucleus bearer within the basic distributional field
Column 10: FSP function of the nucleus bearer within the distributional subfield of -1 level
Column 11: FSP function of the nucleus bearer within the distributional subfield of -2 or lower level
Column 12: Indication of the level of integration of the nucleus bearer within the basic distributional field to which it belongs
Column 13: Type of tone unit
Column 14: Indication of the completeness of the utterance
Column 15: Indication of the speaker
Column 16: The text of the tone unit containing prosodic transcription

Protest-Cz

```
1    ,2  ,3 ,4,5,6 ,7  ,8  ,9   ,10  ,11  ,12,13,4,5,16
-----------------------------------------------------------------------------------------------------------
20800,208,09,1,., \,N  ,   ,RhPr,----,----,..,ni,.,V,v ¦jistém ¦ohledu to je vlastně ¦účel ¦vyšetřovací \VAZBY#
20900,209,02,1,., \,I+P,con,TrPr,----,----,[],ti,.,V,\ŽE ano#
21000,210,03,1,., =,N  ,   ,RhPr,RhPr,----,[.,ti,.,V,¦srazit ¦člověku =HŘEBÍNEK#
21100,211,07,1,., \,V  ,lex,RhPr,RhPr,----,..,ti,.,S,ano ano a ¦přimět ho aby \VYPOVÍDAl#
21200,212,01,1,., \,I+P,con,RhPr,----,----,..,ti,.,V,\@hm#
00000,000,00,0,0,00,000,000,0000,0000,0000,00,00,0,S,já vám něco \ŘEKNU#
21300,213,06,5,., \,Pro,per,DTh ,RhPr,----,..,ni,.,S,kdyby \MĚ někdy ¦pozvali ¦na výslech#
21400,214,06,1,.,/\,V  ,lex,DTh ,RhPr,----,[[,ni,.,S,¦což mě ¦dříve nebo později /\NEMINE#
21500,215,04,1,., /,V  ,lex,RhPr,RhPr,----,..,ty,.,S,¦víte co chci /UDĚLAT#
21600,216,01,1,., \,Wh-,   ,RhPr,----,----,..,tw,.,V,\CO#
21700,217,02,1,., \,V  ,lex,RhPr,----,----,..,ti,.,S,¦prostě . \NEVYPOVÍDAT#
```

```
21800,218,01,1,., \,V  ,lex,RhPr,----,----,[.,ti,.,S,\NEVYPOVÍDAT#
21900,219,06,1,., \,V  ,lex,RhPr,----,----,..,ti,.,S,¦vůbec se s ¦nimi nebudu \BAVIT#
22000,220,05,1,., \,Adj,   ,RhPr,----,----,..,ti,.,S,to je totiž to \NEJLEPŠÍ#
22100,221,04,1,., /,N  ,   ,Tr  ,----,----,..,ni,.,S,¦člověk má aspoň /JISTOTU#
22200,222,06,1,., \,V  ,nlx,RhPr,RhPr,RhPr,..,ti,.,S,že jim ¦neřekne něco co \NEMÁ#
00000,000,00,0,0,00,000,000,0000,0000,0000,00,00,0,V,mno#
22300,223,02,1,.,\/,Adv,sen,DTh ,----,----,[[,ni,.,S,ale \/STEJNĚ#
22400,224,05,1,., =,N  ,   ,RhPr,----,----,..,ti,.,S,¦stejně musíte mít ¦ohromné =NERVY#
22500,225,03,3,., /,V  ,lex,RhPr,----,----,..,ni,.,S,/VYDRŽET to všechno#
22600,226,05,1,.,/\,V  ,lex,RhPr,RhPr,----,..,ti,.,S,a . ještě ¦dělat co /\DĚLÁTE#
22700,227,02,1,., \,V  ,lex,RhPr,----,----,..,tw,.,V,co \MYSLÍTE#
22800,228,01,1,., \,I+P,con,TrPr,----,----,[],ni,.,S,\NO#
22900,229,03,1,., /,N  ,   ,RhPr,----,----,..,ni,.,S,¦všechny ty /PROTESTY#
23000,230,04,1,., =,N  ,   ,RhPr,----,----,[.,ni,.,S,ty . ty ty =PETICE#
23100,231,01,1,., =,N  ,   ,RhPr,----,----,[.,ni,.,S,=DOPISY#
23200,232,04,1,., =,N  ,   ,RhPr,----,----,[.,ni,.,S,¦=boj ¦za lidská =PRÁVA#
23300,233,05,1,., \,V  ,lex,RhPr,RhPr,----,[.,ti,.,S,prostě to ¦všechno co \DĚLÁTE#
23400,234,04,1,., \,N  ,   ,RhPr,----,----,[.,ti,.,S,¦vy a vaši \PŘÁTELÉ#
23500,235,04,1,., \,V  ,lex,RhPr,----,----,..,ti,.,V,¦tolik toho zas \NEDĚLÁM#
00000,000,00,0,0,00,000,000,0000,0000,0000,00,00,0,S,\FERDINANDE#
23600,236,01,1,., \,N  ,   ,DTh ,----,----,[[,ni,.,S,\FERDINANDE#
23700,237,04,1,., \,Adj,   ,RhPr,----,----,..,ti,.,S,jenom ¦\nebuďte ¦zbytečně \SKROMNÝ#
23800,238,03,1,., \,V  ,lex,RhPr,----,----,..,ti,.,S,¦já všechno \SLEDUJI#
23900,239,06,1,.,\/,Pro,per,DTh ,RhPr,RhPr,..,ni,.,S,kdyby dělal ¦každý ¦to co \/VY#
24000,240,05,1,., \,Adv,ptm,RhPr,----,----,..,ti,.,S,¦vypadaly by ¦poměry úplně \JINAK#
```

Protest-En

```
1    ,2  ,3 ,4,5,6 ,7  ,8  ,9   ,10  ,11  ,12,13,4,5,16
-----------------------------------------------------------------------------------------------------------
20881,220,01,1,., \,V  ,lex,TrPr,----,----,[],ni,.,V,\LOOK#
20882,221,07,1,., \,N  ,   ,RhPr,----,----,..,ni,.,V,¦that's the whole ¦\point of ¦pre-¦trial INTERRO\GATION#
20900,222,02,2,., \,V  ,nlx,TrPr,----,----,[],ti,.,V,\isn't it#
21000,223,08,5,., \,V  ,adv,RhPr,RhPr,----,[.,ti,.,V,to ¦take you \DOWN a ¦peg or two#
21100,224,04,1,., \,V  ,lex,RhPr,----,----,..,ti,.,S,and ¦make you \TALK#
```

```
21200,225,02,1,., \,I+P,pol,RhPr,----,----,..,ti,.,V,@ \YES#
21331,226,05,2,.,\/,Pro,per,DTh ,RhPr,----,..,ni,.,S,when they ¦haul \/ME in#
21332,227,02,1,., /,N  ,   ,----,DTh ,----,..,ni,.,S,for /QUESTIONING#
21441,228,05,1,./\,V  ,lex,DTh ,RhPr,----,[[,ni,.,S,which is ¦bound to /\HAPPEN#
21442,229,03,1,.,\/,Adv,ptm,----,DTh ,----,[[,ni,.,S,¦sooner or \/LATER#
21500,230,07,1,., /,V  ,lex,RhPr,RhPr,----,..,ty,.,S,you ¦know what I'm ¦going to /DO#
21600,231,01,1,., \,I+P,pol,RhPr,----,----,..,ti,.,V,\NO#
21781,232,08,1,., \,N  ,   ,RhPr,----,----,..,ti,.,S,I just ¦won't ¦answer ¦any of their \QUESTIONS#
21900,233,06,3,., \,V  ,lex,RhPr,RhPr,----,..,ti,.,S,I'll re¦/fuse to \TALK to them#
22000,234,06,3,., \,N  ,   ,RhPr,RhPr,----,..,ti,.,S,¦that's the ¦best \THING to do#
22100,235,04,1,., =,Adj,   ,Tr  ,----,----,..,ni,.,S,at ¦least you're =SURE#
22200,236,06,1,., /,V  ,nlx,RhPr,RhPr,RhPr,..,ti,.,S,you ¦haven't said ¦anything you /SHOULDN'T#
22000,234,06,3,., \,N  ,   ,RhPr,RhPr,----,..,ti,.,S,¦that's the ¦best \THING to do#
00000,000,00,0,0,00,000,000,0000,0000,0000,00,00,0,V,mmn#
22300,237,01,1,., \,Adv,sen,DTh ,----,----,[[,ni,.,S,\ANYWAY#
22400,238,06,1,., =,N  ,   ,Rh  ,----,----,..,ni,.,S,you ¦must have ¦nerves of =STEEL#
22500,239,09,4,., \,V  ,adv,RhPr,RhPr,----,..,ti,.,S,to be ¦able to . ¦put \UP with it all#
22661,240,06,1,./\,Pro,dem,DTh ,----,----,[[,ni,.,S,and and on ¦top of /\THAT#
22662,241,08,1,./\,V  ,lex,RhPr,RhPr,----,[.,ti,.,S,to . to ¦keep on ¦doing what you /\DO#
22700,242,02,1,., /,Wh-,   ,RhPr,----,----,..,tw,.,V,like /WHAT#
22800,243,01,1,., \,I+P,con,TrPr,----,----,[],ni,.,S,\WELL#
22900,244,05,1,., \,N  ,   ,RhPr,----,----,..,ni,.,S,I mean all the \PROTESTS#
23000,245,01,1,., \,N  ,   ,RhPr,----,----,[.,ni,.,S,PE\TITIONS#
23100,246,01,1,., \,N  ,   ,RhPr,----,----,[.,ni,.,S,\LETTERS#
23200,247,06,1,., \,N  ,   ,RhPr,----,----,[.,ti,.,S,the whole . ¦\fight for ¦\human \RIGHTS#
23341,248,02,1,., =,V  ,lex,TrPr,----,----,[],ni,.,S,I =MEAN#
23342,249,09,1,., \,V  ,lex,RhPr,RhPr,----,..,ti,.,S,the ¦\things ¦you and your ¦\friends ¦keep on \DOING#
23500,250,05,3,., \,V  ,lex,RhPr,----,----,..,ti,.,V,I'm not \DOING so much#
23671,251,06,2,., \,Adj,   ,RhPr,----,----,..,ti,.,S,now ¦don't be too \MODEST ¦Ferdinand#
23800,252,02,1,.,\/,V  ,lex,RhPr,----,----,..,ti,.,S,¦\/I \/KNOW#
23900,253,06,1,., /,V  ,lex,DTh ,RhPr,RhPr,..,ni,.,S,if ¦everybody ¦did what you /DO#
24000,254,06,1,., \,Adj,   ,RhPr,RhPr,----,..,ti,.,S,the situ¦ation would be ¦quite \DIFFERENT#
```