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A Phonetic Delineation of Pragmatic Features in Male Bedouin Narratives

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1a. Introduction

- Intonation was not a self-obvious topic in the study of Arabic dialects until relatively late (about the last quarter of the 20th century).
- Scholars of Arabic dialectology in the 20th century knew phonetics, but intonation was not a major interest for them: there was so much else to do "before" intonation (and there still is).
- During the 20th century the study of intonation as part of phonetics in general developed in many languages, and mainly in English, which is the current global "lingua franca."
- Therefore phonetics and intonation began to be pursued by younger scholars of Arabic, too, mainly such who studied in the "West"; thus relatively many new degree studies and journal papers began to be written in this field.

1b. Introduction

Intonation is now studied in many languages, including Arabic, for many linguistic theoretical and applied goals.

The fact that this IVA'09 conference is dedicated to Arabic intonation, reflects the great progress in this field.

It is important to note that intonation is considered within phonology and not only as a phonetic feature.

Various theoretical approaches and "schools" study intonation (summarized in Chahal, 2007, with special reference to Arabic).

1c. Introduction

These schools describe dynamic and acoustic-phonetic aspects of the fall and rise patterns as well as contours (as seen in works by Arnold, Ladd, Pierrehumbert, Beckmann, Gussenhoven, and many others).

The autosegmental-metrical model is an important current theory used in phonology and in the study of intonation. It has thus reached also some intonation studies of Arabic (e.g., Chahal, 2001, Hellmuth, 2006).

Next I will mention a few major points of intonation studies in Arabic acoustic phonetics, as an introduction to the specific study of intonation in male Bedouin narratives, which is the focus of this talk.

(I will not refer here to segmental phonetic studies.)

2.a. Background and literature

Studies of Arabic, including phonetics, are usually divided into two domains:
Literary Arabic and/or Colloquial Dialects
Within colloquial dialects, the studies distinguish:
1. Eastern vs. Western dialects
2. Sedentary vs. Bedouin dialects
3. Male vs. female Arabic speech
4. Various text genres (e.g., spontaneous speech, read aloud texts, conversations, artistic narratives)
The research can apply descriptive, analytical or comparative methods.
Arabic intonation studies can be surveyed within these classes.

A short survey of Arabic intonation literature along this classification follows:

1. Literary Arabic (LA) vs. colloquial dialects

Certain studies investigated LA intonation patterns; for example, Al-Ani (1970) studied statements and question patterns as read by native speakers of Iraqi Arabic. (Other studies are, e.g., Anber, 1970, Haydar and Mrayati, 1985; Fashal, 1991, Kharrat 1994.)

But

"the modern pronunciation of classical Arabic reflects the stress patterns of the dialect of the speaker" (Ferguson 1957: 474, quoted in Benkirane 1998).

Still, several recent studies of intonation examine LA for speech synthesis and other modern applications (e.g., El-Imam 2008, Biadsy et al, 2009) because LA is considered to be shared by Arabic speakers of the numerous Arab countries.

Phonetics & prosody, including intonation, is studied also in other works dealing only with colloquial Arabic dialects.

But

the number and variety of Arabic dialects, and the differences between them, including those of intonation, complicate the phonetic research.

2. Colloquial dialects

Researches of Eastern and Western prosody and intonation deal with questions & statements, word and phrase stress, back-channeling, pauses, distinction between Eastern and Western dialects, etc. Table 1 here notes a few studies of these dialects

Table 1. intonation studies in Eastern & Western dialects

Eastern dialects	Western dialects
Jordanian (De Jong & Zawaydeh, 1999, Rammuny, 1989)	Moroccan (Benkirane, 1998, Barkat et al., 1999)
Lebanese (Chahal, 2001)	Algerian (Guella, 1984)
Egyptian (Norlin, 1989, Rastegar-El-Zarka, 1997)	Tunisian (Ghazali et al., 2007)
Kuwaiti (El-Harbi, 1991), Saudi Arabian (in this meeting)	Libyan (Pereira, 2003).

Here we focus on Eastern dialects only.

3. The sedentary - Bedouin dialects dichotomy

Already Cantineau (1937) mentioned in his large study of the semi-nomadic Bedouin dialects of the Syrian desert that Bedouin intonation differs from that of sedentary dialects.

Since then not much attention has been paid to the study of Bedouin speech prosody (but see, e.g., Al-Khalifa, 1992, Rosenhouse, 1994), although other sedentary vs. Bedouin linguistic differences have been described (recently by Henkin, 1996, 2000, 2001, and cf. Rosenhouse, 1984: ch. 3).

Our present study focuses on Bedouin dialects.

Bedouin Arabic dialects differ from sedentary dialects in many linguistic respects (Rosenhouse, 1984).

Bedouin narratives are marked as a special literary and linguistic genre (Palva, 1992; Sowayan, 1992; these authors do not discuss acoustic phonetics).

The Bedouin/sedentary differences are expressed in narrative topics, structures and rendering.

Male Bedouin speakers usually dramatize the stories, which indeed are dramatic due to their topics. The stories are usually rooted in reality, and reflect social and historical aspects and events in Bedouin life.

The "standard" structure of these stories includes, even leads to poetry which describes the narrated events.

4. Sex-based distinctions between Arabic speakers

Sex-dependent differences in Arabic dialects is a rather new research area, and relatively little researched. It has been developing in the last two-three decades (Rosenhouse, 1998, 2008).

Intonation differences between male and female speakers are even less researched, though various works mention them (e.g., Rosenhouse, 1995a, which compared intonation features of narratives of two Bedouin women and two Bedouin men, Fashal, 1991 on Egyptian broadcasters in LA)

Note: Bedouin women's stories are distinct from men's stories being more "fantastic", imaginative; also their intonation differs from that of men.

Here we focus only on male Bedouin speech.

2.h. Background and literature

5. Intonation patterns in discourse and text genres

Prosodic studies use many methods and linguistic materials (isolated segments, words, sentences read aloud, spontaneous isolated utterances, narratives, conversations, poetry, etc.)

Although there are linguistic studies of Arabic Bedouin discourse (e.g., Palva, 1992, Sowayan, 1992, Henkin, 1996) intonation in complete and long texts is hardly analyzed in Arabic dialects (but cf. Kulk & al., 2005, Ward and Bayyari, 2007, Rosenhouse, 1995a,b).

Thus, studies of Arabic discourse structures can be still considered "pioneering".

2.i. Background and literature

6. Pragmatics

This branch of linguistics (e.g., Mey,1993) developed world-wide in the 2nd half of the 20th century.

In principle, Pragmatics investigates language use from the users' point of view. "Pragmatics is the study of utterance meaning… we are interested not only in the words themselves but in everything the speaker intended to communicate in the context of utterance, whether this is explicitly expressed, or implicit, derived by making inferences based on adding what is explicitly expressed to background assumptions constituting the context."

(House, 2006: 1546)

Thus, any linguistic utterance is connected with its context, in the widest sense, including its prosodic structure and intonation.

2.j. Background and literature

Still, Prosodic Phonology (Nespor and Vogel, 1986) and the prosody-pragmatics Interface (Wichmann/ Blakemore, 2006, and other papers there) are not in the center of the field of pragmatics.

As to Arabic intonation, it is hardly researched within pragmatics (but see Ward & Al-Bayyari, 2007).

Since speakers (=users) use phonetic devices to achieve certain goals and transmit meaning to listeners (i.e., communicate with them), these devices relate to some pragmatic aspects or functions and to the general context of utterances.

Thus, our study of intonation aims at the pragmatic as well as the phonological-phonetic frameworks.

2.k. Background and literature

This background was intended to explain the title of our present study which deals with

a single phonetic aspect: F0

in

Phonetic Delineation

of

Pragmatic Features

in

Male Bedouin Narratives

3.a. The material

Content-wise, male Bedouins tend to narrate tribal history and socio-historical events rather than strictly personal stories (which are elsewhere sometimes called urban narratives).

Our study is based on several stories narrated by male Bedouins, speakers of Eastern dialects.

Most of the recorded material is from the Heidelberg University Semitisches Tonarchiv (SemArch).

Four stories were analyzed in detail: Two narrated by Bedouins from Jordan (Palva, 1969, 2004), 1 from Israel (Rosenhouse, 1995a) and from Saudi Arabia.

The latter was recorded by B. Ingham who kindly gave me copies of several stories. He used this material in his work (e.g., Ingham, 1982) but not all has been published.

3.b. The material

The gist of the contents of the four analyzed stories on which this report is based is briefly as follows:

Palva, 2004 (recording from 1992): description of Atˤ-Tˤoːr battle between the Jordanian Ħwetˤaːt and Bani Sˤaxar tribes.

Palva, 1969: An "honor competition" between Ibn Axyar and Ibn Adʒwad by extraordinarily generous deeds.

Rosenhouse, 1995a (recording from 1978): described Bedouin wisdom in finding a boy's real father via his hereditary behavior and physiological features.

Ingham, 1982 (recording from 1978): A family quarrel which expands to a tribal feud.

3.c. The material

Such natural material poses several difficulties for research:

Firstly, it is varied in topics (vocabulary), story length, narrators' tribal dialects, ages, and their vocal quality.

These natural features of spontaneous speech, yielded (among others things) different numbers of sentences (utterances) per story; this affected the numbers of analyzable units.

Note: we did not examine in this research other phonetic-acoustic differences (e.g. segmental features).

These difficulties had to be resolved somehow.

3.d. The material

Following all the background described up to now, the main research question of this study was:

How do male Bedouin speakers mark different (pragmatic) functions in their stories?

To answer such a question the usual prosodic-phonetic-acoustic components are examined:

pitch (e.g., F0 in intonation patterns)

time (segment and pause durations, ms.), and

loudness (intensity features in dB)

Our report here is only about F0.

4.a. The features: Intonation units

To answer the research question and find the phonetic features which characterize male Bedouin stories, we chose features based on phonetic as well as syntactic and semantic criteria, i.e., much of their linguistic context.
This method is in line with the pragmatics approach.

We defined intonation units* (IUs) by pauses:
A pause always separated an IU from the next IU.
Thus, an IU may include from a single word up to a complex syntactic sentence, as is well known.

Note: Pauses tend to be long in Bedouin discourse.
*I prefer this term to "tone units".

4.b. The features: Intonation units

Based on the content and auditory rendition of the stories, the IUs were classified (manually) into the following groups:

Types:
Narrative and Modal
and
Sub-groups:
Comments, Exclamations, Commands

4.c. The features: Intonation units

1. The narrative IU
This IU was defined as a speech unit spoken with the "normal" (average) voice quality, used during narration, i.e., when narration goes on smoothly, without digressing from the main story-line.
This type could refer to any feature in the story, including emotional utterances (when uttered without emotional expressivity).

(It could be considered for "Long Term Average Pitch", but was not measured for this goal.)

Note: this type of IUs is parallel to "modal voice" in Laver 1980.

4.d. The features: Intonation units

2. Modal IUs
A modal IU was defined as that utterance which was not part of the body of the story.
Such utterances were directed at a researcher or other members of the audience. They could be, e.g., explanatory remarks or answer to questions.
This utterance type may occur at any part of the story - its beginning, middle or ending.
The name of this unit is related to "mood" and "modality".
We also use for it the name comment when the discussion is at the level of exclamations or commands, due to the nature of the IU.
(The names modal, narrative can be changed)

4.e. The features: Intonation units

3. Exclamations and Commands

These IUs express some emotional content. Excited/emotional IUs may be expressed in semantic and syntactic structures other than exclamations and commands.

We separated Exclamations from Commands because they could be formally defined also by morphological and syntactic structures.

Moreover: Not all exclamations are commands (which use e.g. imperative verb forms), and commands need not be uttered as exclamations

Note: These IUs are usually distinct by loudness, but this was not measured.

4.f. The features: Intonation units

Let us illustrate these IUs by three examples:

The first two of these examples contain several IUs separated by pauses.

Ex. 1 demonstrates narrative utterances.

Note the clear and relatively long pauses between the IUs.

Ex. 2 represents modal/comment utterances.

Ex. 3 shows an exclamation + command (imperative verb form) linked in a single IU with the saying clause ("he said to them").

4.g. The features: an example of narrative IUs (Fig. 1)
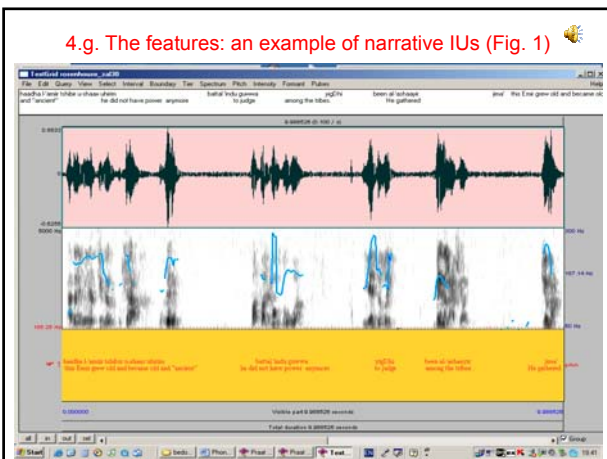
4.i. The features: an example of narrative IUs (Fig. 1)

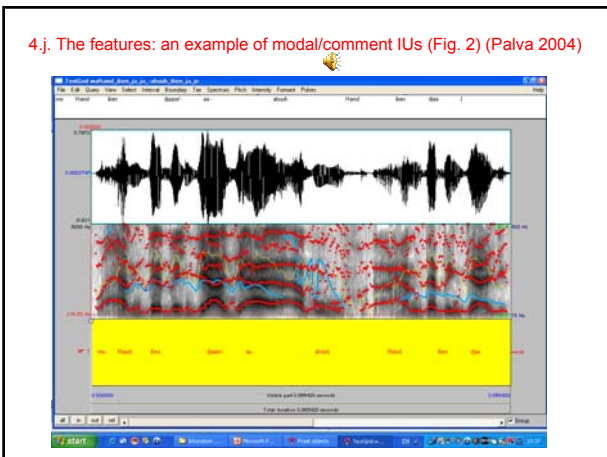The text of the figure and its translation are :

ha:ða l-'emi:r tʃibir u-ʃa:x u-hirim, batˤtˤal ʕindu guwwa yigðˤi be:n al-ʕaʃa:yir, dʒimaʕ…

"This Emir grew old and aged and "ancient" [pause] he did not have the power [pause] to judge [pause] between the tribes. [pause] He gathered"...

(Rosenhouse, 1995a: 63 translation: 66)

From the pragmatic aspect, this set of utterances presents an example of a "normal" (or "neutral") sequence of events, narrated in the tone of voice which is maintained along the story (except in the other "special" IUs).

4.j. The features: an example of modal/comment IUs (Fig. 2) (Palva 2004)

4.l. The features: an example of modal/comment IUs (Fig.2)

The text of Figure 2 and its translation are:

wa-ḥamd iben dʒa:za' – abu:h, iben dʒa:ze – ha:dalla arsalu kull el-ḥwetˤa:t

(ḥamd Iben Dja:za' – [he was] his father, ḥamd Iben Dja:ze – these sent all the ḥwetˤa:t) (Palva 2004: 200-202, Text A – *Ma'rakat Atˤ -Tˤo:r*)
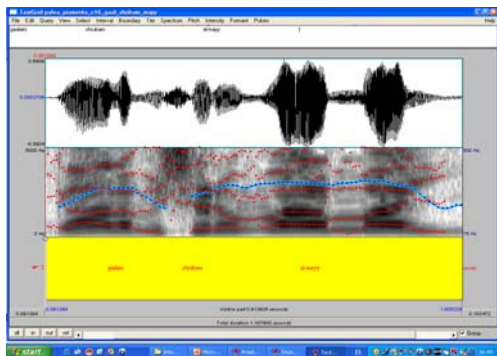
From the pragmatic aspect, this sequence digresses from the narrative. Acoustically, the average pitch in the digression differs from that in the rest of the narrative:

ḥamd iben dʒa:za - 223 Hz.

abu:h - 323, 296 Hz. *ḥamd iben dʒa:ze* - 171 Hz.

ha:dalla arsalu-232 *kull*-372 Hz. *el-ḥwetˤa:t*-227 Hz.

4.m. The features: An exclamation/command IU (Fig.3)

4.o. The features: an example of exclamation/command IUs

The text of the figure and its translation are as follows:

ga:l-ləm ʃrub(am) al-mayy

"He said to them, 'Drink water!' " (p. 206)

(Palva, 2004: 205-207, Text C)

From the pragmatic aspect, this utterance presents an example of an exclamation in the linguistic form of a command (an imperative verb), uttered in an excited tone of voice (revealed in higher pitch and loudness, faster speech rate, and without pauses between the saying sentence and the command).

5.a. Some findings

Some findings:

The following Table 2 (in two slides) presents raw average pitch (F0) data of the four stories (in Hz.)

This Table 2 demonstrates the variability of the utterances in each of the stories: among other things, only one story has all the IU types we defined.

This situation, of course, affected the options for statistical comparative analysis.

5.b. Some findings
Table 2. Summary of raw pitch data of four stories (Hz.)

median Pitch	Mean pitch	STD	min pitch	max pitch
Ingham				
Modal 197	189,00	34,00	101,00	258.00
Narrative 187	181.67	33.89	76.89	252.78
Rosenhouse				
Comments (modal) 148.16	147.74	86.34	91.16	200.23
Exclamations 180.25	172.00	28.50	95.25	229.00
Commands 167.91	165.50	26.33	106.41	209.00
Narrative 166.77	164.08	32.64	105.11	222.46

5.c. Some findings
Table 2. (cont.) Summary of raw pitch data of four stories (Hz.)

| median pitch	Mean pitch	STD	min pitch	max pitch
Palva 2004				
Comments (modal) 183.00	179.00	21.00	119.00	212.00
Narrative 205.00	199.00	27.00	121.00	246.00
Palva 1969				
Modal 218.00	212.00	36.00	102.00	273.00

5.d. Some findings

Next, Figure 4 compares narrative and modal IUs in two of the stories (Rosenhouse, 1995a, and Palva, 2004).

The analysis reveals both Inter-speaker and intra-speaker differences.

The narrative and modal IUs number in each of the two stories enabled a statistical comparison (though the IU numbers were not equal): 65 IUs in Palva's and 91 IUs Rosenhouse' story)

The mean pitch was 197 Hz. (Rosenhouse) and 160 Hz. (Palva) respectively.

comparison between modal and narrative IUs in two stories

Estimated Analysis of MeanPitch
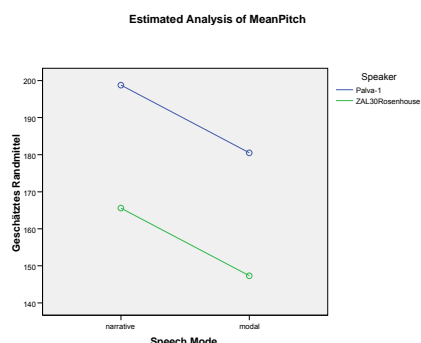
5.f. Some findings

Inter-speaker differences (e.g., average pitch) would be expected due to the speakers' physiological differences.

In both stories, the modal (comment) type uses significantly lower pitch than the narrative type.

These intra-speaker differences in the two stories suggest controlled phonetic differences between at least these modal and narrative speech types.

Thus, there is a significant difference between these two main speech modes.

The results of this pitch data analysis explain about 34% of the differences between intra-speaker pitches.

6.a. Discussion and conclusions

The study of intonation in LA and Arabic dialects is now developing quickly, following developments in this field in other languages. Still, the variation in Arabic dialects requires much more research efforts.

We have shown here results of a study of IUs in some natural, long male Arabic Bedouin narratives.

The material was first classified into IUs. These were named narrative and modal (by pitch features), and then to semantic-syntactic groups which we named comments, exclamations and commands (by semantic-syntactic criteria).

6.b. Discussion and conclusions

Pitch was found to be a distinctive feature in the analysis of the IUs in stories narrated by two male Bedouin speakers.

Pitch averages (F0, in Hz) distinguished both between speakers (as expected) and also between speech modes (narrative vs. modal) within the same speaker.

Note:
Pitch is not the only feature that distinguishes these speech modes, but it is interesting to find the role of pitch and such a distinctive result in this specific domain.

6.c. Discussion and conclusions

We also suggest (based on the average F0 values) that exclamation and command IUs differ from narrative and comment IUs.
Exclamations and commands differ also between themselves.
Yet commands and exclamations are not frequent: In the analyzed stories there were between 0 – 10 per story. We therefore do not report quantitative analysis of these types of utterances.
Based on qualitative assessment of many stories located in the SemArch site, we suggest that commands and exclamations IUs are distinct also by other acoustic-phonetic features, in addition to pitch, related to their pragmatic roles.

6.d. Discussion and conclusions

Let us digress now briefly to the issue of emotional expression reflected mainly in exclamations and commands in the analyzed stories.

Genuine personal emotions of joy, sorrow, fear, etc. (as analyzed in many studies of emotional speech) are hardly found in male Bedouin stories, as they do not usually directly relate to the narrator.

Moreover: the stories may have been narrated by these narrators to other listeners on previous occasions, and are not entirely spontaneous in this sense (though the recordings do not reflect read material).

6.e. Discussion and conclusions

Still, a good narrator is also a good performer to his audience.

He then presents the contents in a personal fashion (partly self identifying with the plot and protagonists) and expresses the emotional utterances more emotionally than the neutral story line.

This could be considered attitudinal expressivity.

6.f. Discussion and conclusions

The acoustic features of emotional and attitudinal utterances in the examined material vary:

They may have louder (average) amplitudes, higher or lower pitch (F0) or faster speech rate than certain non-emotional (neutral) comments and narrative utterances.

In fact, these three characteristics generally reflect excited speech (e.g., Poyatos, 1993, Laver, 1994, Tatham and Morton, 2004).

These features deserve special research which would define the differences between their sub-groups

6.g. Discussion and conclusions

Finally:

We have seen an aspect of the way that male Bedouin speakers control two speech functions in their stories, as answer to the research question*. The acoustic-phonetic features of the IUs reflect prosodic-pragmatic use of vocal features.

Our classification of the IUs in the stories, i.e., spoken stretches, has been found to be distinctive and therefore justified.

*In another study of male Bedouin narratives we also referred to duration and some vocal features .

6.h. Discussion and conclusions

Each and all of these speech units and groups should be further explored with more material for further understanding of the structure and functioning of colloquial Arabic via intonation patterns.

Further studies may analyze other speech genres and compare them with these or other Bedouin texts for a clear indication of similarities and differences between different genres and dialects.

6.h. Discussion and conclusions

Additional (sub-)groups of IUs should be developed for finer and additional communicative functions.

Listeners' responses to our classification should also be sought to confirm (or not) our findings

The benefits of such further research could extend to applications far beyond theoretical interest.

The End (for now)
Thank you for your attention

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