From corpus data to a theory of talk units in spoken English

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Abstract

In spoken English, language users produce linguistic structures which elude a merely syntactic description since, for example, intonational means may conjoin syntactic structures which are otherwise unrelated. This paper discusses a theoretical framework which establishes the level of parasyntax as an appropriate level of linguistic description. At the level of parasyntax, talk units represent linguistic units which are prosodically and syntactically defined. This theoretical framework is put to the test on authentic corpus data. By looking at large amounts of data in context, it is possible to identify an important principal function fulfilled by talk units: information structure in terms of information hierarchy and information packaging. The talk-unit model can also be fruitfully applied to other fields of research, e.g. pausology. In a wider setting, it seems possible that corpus-based methods may lead to new theoretical concepts of spoken language which are able to account for phenomena that have not been covered by existing descriptive frameworks.

1. Theoretical background: talk units in spoken English

In the spoken medium, language users produce linguistic structures which do not conform to the   predominantly written   ideal of a grammatically well-formed sentence. In example (1), we thus find in the first four tone units syntactic discontinuities typical of spoken language: false beginnings, syntactic structures broken off in mid-sentence, reformulations and hesitations.[1]

(1)   LLC 5.8
        194 b   I ^don`t th/ink#   /
        195 a   ^[@m] !n\o#   /
        196(b   [@:] ex^/actly#   /
        197 b   it she`s ^just [@ - m] ^w\ell#   /
        198 b   I ^just never _think of the _time or the {\age} .   /
        198 b   *!d\iff*erence# - -   /

In example (2), there is also a reformulation in tone unit 918. Additionally, the first two tone units, i.e. 916 and 917, are of interest here.

(2)   LLC 5.3
        916 n   we ^don`t know the o:p\/inion#   /
        917 n   there`s ^been 'no refer:endum of {:/\all}   /
        917 n   "!j/\udges#   /
        918 w   but there ^is an . we "^know that there`s a :strong   /
        918 w   division of o:p\inion among _judges *on _this#*   /

Note that each of the tone units 916 and 917 implies a self-contained syntagm. The two syntagms are not syntactically related by, say, a conjunction. However, it is obvious that some sort of conceptual link exists between them.

Examples (1) and (2) illustrate the fact that in spoken language we produce linguistic structures which cannot be exhaustively described by taking into account syntactic relations alone. Apart from different kinds of syntactic discontinuities, syntactically unrelated syntagms may be conjoined by other linguistic devices, namely by intonational means. Suffice it to say at this stage that it is the rising tone in tone unit 916 of example (2) that establishes a link to the subsequent syntagm. This role of intonational means leads Mulder (1989) to extend the traditional concept of sentence:

> It is clear that ... a sentence is not a mere string of words, or word-groups, but that other, mainly prosodic, features have to be taken into consideration when we are dealing with sentences as such.
>
> (Mulder 1989: 90)

Mulder (1989) is one of the most important proponents of the so-called axiomatic functionalist school of linguistics. Axiomatic functionalists define the sentence prosodically and syntactically. They also provide for a new linguistic level of description for this linguistic unit beyond syntax proper, which is the level of 'parasyntax' or – synonymously – the 'sentential level' (cf. Mukherjee 2001: 4-7). In axiomatic functionalist language theory, intonation and syntax are integrated at the level of parasyntax.

Halford (1996) applies this innovative theoretical framework to a spoken Canadian English corpus. She points out that the term 'sentence' has traditionally been too closely associated with written language. For this reason she introduces the notion of 'talk unit': "The talk unit is the maximal unit defined by syntax and intonation" (Halford 1996: 33). Halford's corpus-based analysis of talk units is discussed by Esser (1998) who visualises the general concept of talk unit as in Figure 1.[2]
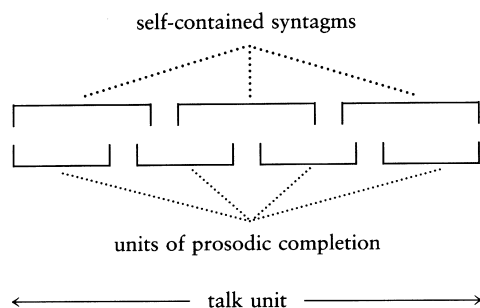

Figure 1. Staggered segmentation between self-contained syntagms and units of prosodic completion within talk units (Esser 1998: 480)

Figure 1 shows that, syntactically speaking, a talk unit consists of one to several self-contained syntagms. At the level of intonation, it comprises one to several units of prosodic completion. The talk unit ends whenever syntactic completion and prosodic completion coincide.

Halford's (1996) theoretical framework, as visualised in Figure 1, is certainly innovative and plausible, but suffers from two shortcomings which make it difficult to operationalise. First, it is not clear what kind of prosodic unit it is that enters the talk unit. Second, she does not define the criterion for prosodic completeness so that it remains unclear when a prosodic unit – of whatever kind – is actually supposed to end. Taking up Esser's (cf. 1998: 481) suggestion that prosodic completeness is usually signalled by a falling tone, I thus redefine the talk unit in somewhat more concrete terms:

> The talk unit is a parasyntactic presentation structure in spoken English which ends at a tone unit boundary with syntactic completeness and a falling tone.

> (Mukherjee 2001: 30)

This definition implies that the talk unit is made up of contour-defined tone units. Also, talk units – as parasyntactic units – are regarded as 'presentation structures'. The notion of 'presentation' has been used by a number of linguists to denote stylistic variations at the level of syntax and/or at the level of intonation (cf. e.g. Aarts and Aarts 1982: 96; Cruttenden 1986: 88; Halford 1996: 33). Thus, the concept of presentation turns out to be a useful notion for the entirety of stylistic choices a speaker has at his/her disposal (cf. Esser 1999: 247). Within the framework of presentation, the talk unit provides one of the linguistic levels at which the speaker chooses specific syntactic and prosodic devices for stylistic reasons. That is to say, the talk unit is a parasyntactic linguistic structure by means of which the speaker presents his/her message to the hearer.

This model of talk units provides the descriptive framework for the corpus-based research to be outlined in the following sections. Generally speaking, the corpus analysis fulfils two main functions: (1) it reveals the viability of the theoretical premises in quantitative terms; (2) the results of the corpus analysis enable theoretical and descriptive conclusions to be drawn.[3]

2.   Corpus data and annotation

The model of talk units as outlined in section 1 was applied to a 50,000-word corpus. About 90% (c. 45,000 words) were obtained from the London-Lund Corpus of Spoken English (LLC). The remainder was taken from a corpus of monologues compiled by Esser (1984). In selecting the sample texts from the LLC, particular attention was paid to the issue of representativeness in the corpus design. That is to say, the admittedly small corpus still incorporates texts from a wide range of different communication situations (for details see Mukherjee 2001: 51-54).

Focusing on the interplay of prosody and syntax in spoken language, the

actual corpus analysis referred to the tone unit boundaries. At all tone boundaries, the so-called 'prosodic status' and the 'syntactic status' were determined. By prosodic status I mean the broad distinction between 'prosodically open', signalled by a rising tone, and 'prosodically closed', signalled by a falling tone. However, the prosodic transcription of the LLC distinguishes between seven nuclear tone types. They are listed in the left-hand column of Table 1.

Table 1. Prosodic status: nuclear tone types in the LLC and their functional interpretation (Mukherjee 2001: 22)

Nuclear tone types in the LLC	Code	Functional interpretation
rise, fall-rise, fall plus rise	↑	prosodically open status
level	=	
fall, rise-fall, rise plus fall	↓	prosodically closed status

At first sight, the functional interpretation of the seven tone types as indicating either a prosodically open or closed status may seem too drastic a simplification. However, it has been noted by many intonationists that only the fall-rise distinction is in fact functionally relevant (cf. e.g. Leech and Svartvik 1975: 38-39; Cruttenden 1986: 168; Esser 1988: 3; Nevalainen 1992: 412).[4] In neglecting finer distinctions of pitch contour, I thus interpret all nuclear tone types ending with a fall as falls and, by analogy, all nuclear tone types ending with a rise as rises. The level tone which, as it were, seems to elude the fall-rise distinction is regarded as a third formal option. Among others, however, Halliday (cf. 1994: 302) points out that virtually all level tones are, in fact, rises in miniature. Therefore, the level tone is also taken to signal a prosodically open status in a similar vein to the rising tone.

Proceeding from the level of intonation to syntax, Table 2 lists the categories for the syntactic analysis of the tone unit boundaries.

Table 2. Syntactic status: categories, codes and functional interpretations (Mukherjee 2001: 28)

Grammatical predictions	Description of the category	Code	Functional interpretation
predictions are set up	syntactically incomplete; later completion	n	non-final syntactic status
	syntactically incomplete; no later completion	n$	
no further predictions	syntactically complete to the left; stranded elements to the right	f	potentially final syntactic status
	syntactically complete to the left; new syntactic beginning to the right introduced by coordinator	f&	final syntactic status
	syntactically complete to the left; new syntactic beginning to the right	f§	

In general, there may be syntactic incompleteness, coded by an 'n' for 'non-final', or syntactic completeness, coded by an 'f' for 'final', at any tone unit boundary. In other words (and now drawing on Sinclair's (cf. 1966: 74) terminology), the speaker sets up 'grammatical predictions' at a syntactically non-final tone unit boundary whereas there are no such predictions at a syntactically final tone unit boundary. Within the n-category, a special sub-category is established to account for false beginnings and broken-off syntactic structures: these are transcribed as 'n$', with the dollar-sign iconically symbolising the broken-off syntagm. In the f-category as well, some finer distinctions are made. If at a tone unit boundary, the syntactic structure is complete with stranded elements to the right (if, for example, a dependent clause is still to follow), the code 'f' is ascribed to that tone unit boundary. If there is a new syntactic beginning to the right introduced by one of the coordinators *and*, *or* or *but*, an ampersand is added to the code ('f&').[5] The ampersand symbolises the coordinating link between adjacent syntagms. Finally, if there is a genuinely new syntactic beginning to the right, the paragraph symbol is added ('f§').

The corpus analysis by means of the aforesaid prosodic and syntactic categories results in a corpus annotation as given in example (3):

(3)　　LLC 12.7
　　　143　^neverthel=ess# .　　　　　　　　　　　/ <=n
　　　144　one ^can`t ig"!n\/ore# .　　　　　　　/ ↑n
　　　145　^public o'pinion alto"g\ether# .　　　/ ↓f§>

For convenience, I will refer to the combination of prosodic and syntactic status at a given tone unit boundary as a 'parasyntactic configuration' from now on. Whenever the parasyntactic configuration is both prosodically closed and syntactically final (with a new syntactic beginning to the right), the talk unit ends. Talk unit boundaries are transcribed by means of angular brackets.

In general, the talk unit as a parasyntactic presentation structure is established by virtue of the parasyntactic configurations at tone unit boundaries in the stream of speech. In example (3), the parasyntactic presentation structure can thus be described as <...... =n ...... ↑n ...... ↓f§>: this is the way in which the speaker has decided to present the lexicogrammatical chain of elements to the hearer.

3.　　Quantitative analysis: correlations between stylistic variation and parasyntactic variation

The characterisation of the talk unit as a stylistic presentation unit leads us on to the quantitative analysis. If the talk unit is in fact a stylistically relevant linguistic structure, it is worthwhile to assume that correlations exist between the stylistic variation across the corpus on the one hand and differences in frequencies and distribution of parasyntactic configurations on the other. I call these differences between individual corpus texts concerning the frequency and distribution of parasyntactic configurations 'parasyntactic variation'. After annotating all tone

unit boundaries with parasyntactic configurations, I looked for – and found – such statistically feasible correlations between stylistic variation and parasyntactic variation across the corpus.

Table 3 gives one example of stylistic factors which turn out to have a bearing on the frequency and distribution of parasyntactic configurations, namely the difference between monologues and dialogues.

Table 3. Mean values of average talk unit lengths in monologues and dialogues (Mukherjee, 2001: 68)

	range of average talk unit lengths	mean value
monologues	5.0 – 15.1 tone units	7.71 tone units
dialogues	1.7 – 4.6 tone units	3.35 tone units

The average talk unit in monologues contains more than double the amount of tone units contained in the average talk unit in dialogues. The difference between monologues and dialogues is captured by the stylistic factor of 'participation in discourse'. I am following here the terminology introduced by Crystal and Davy (cf. 1969: 69-70) and taken up by Esser (cf. 1993: 21). Thus, from Table 3 the conclusion can be drawn that there is a clear correlation between parasyntactic variation (in the sense of average talk unit length) and stylistic variation (in the sense of participation in discourse) across the corpus.

The monologue/dialogue distinction also correlates with the frequency of so-called 'minimal talk units', that is, talk units which consist of one tone unit only. Table 4 gives the frequencies of minimal talk units in relation to the sum total of all talk units in the corpus texts.

Table 4. Relative frequencies of minimal talk units (Mukherjee 2001: 77)

Text	mono-logues	dialogues						
		LLC 6.1a	LLC 5.3	LLC 6.4b	LLC 1.6	LLC 5.8	LLC 1.2b	LLC 7.2a-f
minimal talk units	max. 22 per	14	78	21	106	64	34	167
Σ talk units	589	57	274	67	299	180	68	309
percentage of min. talk units	≤ 3.7%	24.6%	28.5%	31.3%	35.5%	35.6%	50.0%	54.0%

In quantitative terms, minimal talk units are of marginal importance in monologues. Conversely, they make up a quarter to more than a half of all talk units in dialogues.

Looking more closely at the dialogues in Table 4, it becomes clear that the different frequencies of minimal talk units correlate with yet another stylistic factor, namely with the social distance between the participants involved. This is visualised in Table 5.

Table 5. Correlation between social distance and frequency of minimal talk units (Mukherjee 2001: 78)

LLC 6.1a	LLC 5.3	LLC 6.4b	LLC 1.6	LLC 5.8	LLC 1.2b	LLC 7.2a-f
increasing ←————————— social distance ————————→ decreasing						
strangers		acquaintances		friends (colleagues)		intimates
disparates	equals	disparates	equals			
decreasing ←——————— frequency of minimal talk units ——————→ increasing						

It turns out that with decreasing social distance, the frequency of minimal talk units increases.

The three examples of correlations between stylistic variation and parasyntactic variation across the corpus indicated in Tables 3 to 5 are meant to be suggestive rather than exhaustive. There are numerous other correlations, and the wealth of the statistical evidence vindicates the general assumption that the talk unit is a stylistically relevant unit of presentation (cf. Mukherjee 2001: 61-85).[6]

4.   Functional analysis: theory and sample analysis of talk units

The talk unit as an obviously relevant unit of stylistic presentation is made up of tone units. It is therefore reasonable to assume that both the tone unit and the tone unit boundary are linguistically relevant to a functional analysis of prosody-syntax interactions in spoken English. This is by no means a new idea. In fact, the contour-defined tone unit – or tone group – has often been described as an information-structural unit. Halliday (1994) in particular has coined the term 'information unit' in this context:

> The tone group ... is not only a phonological constituent; it also functions as the realization of something else, namely a quantum or unit of information in the discourse. Spoken discourse takes the form of a sequence of INFORMATION UNITS ...
>
> (Halliday 1994: 295)

In other words, the tone unit is not only a merely physiological unit of spoken realisation conditioned by the speaker's need to breathe after a certain period of time. Rather, speakers tend to pack their message into prosodic chunks of information so that a tone unit corresponds to an information unit. Secondly and additionally, the tone unit boundary has been shown to be relevant to information structure too. In analysing the reading intonation of different readers who read out the same text, Esser (1993) develops what we might call a 'window theory':

> At this level of analysis we only look at the transitions of the tone units, as it were through a window, i.e. we are interested in the course (Germ. 'Verlauf') of the tone units.
>
> (Esser 1993: 144)

From the analysis of the reading performances, he draws the conclusion that the tone unit boundary provides the hearer with an information-structural 'window'. It is a window onto the subsequent tone unit which allows for an assessment of the relative status of neighbouring tone units as information units. In this context, the window metaphor is intended to capture the fact that at a given tone unit boundary the speaker signals to the hearer the relative information weights of adjacent tone units.

Considering these two assumptions (i.e. the tone unit as an information unit and the tone unit boundary as an information-structural window), the parasyntactic configurations can be arranged in a hierarchical scale, depending on the relative importance that a specific configuration ascribes to the subsequent tone/information unit. Table 6 shows this hierarchical scale.

Table 6.   The information hierarchy of parasyntactic configurations

parasyntactic configuration	information weight of the subsequent tone unit
↑n	relatively high
↓n	↕
↑f / ↑f&	
↓f / ↓f&	relatively low
↓f§	(new talk unit)

Note that only seven parasyntactic configurations out of 15 theoretically possible configurations are taken into account in Table 6. These seven configurations are the ones that occur with significant frequencies in all corpus texts.[7] Table 6 is intended to show that the parasyntactic configurations differ with regard to the relative importance of the subsequent tone unit.

The hierarchical scale in Table 6 is based on a two-channel model where the prosodic status and the syntactic status form the two channels. If incompleteness is signalled on both channels (i.e. the configuration ↑n), the subsequent tone unit is marked as a comparatively important information unit. If, on the other hand, both channels indicate completeness (i.e. the configurations ↓f and ↓f&), the subsequent tone unit is ascribed a relatively low information weight. This interpretation is an operationalisation of the basic assumption that the tone unit boundary functions as a kind of window onto the next tone unit in that prosodic and syntactic incompleteness at a given tone unit boundary evoke a strong sense of anticipation on the part of the hearer. If only one channel signals incompleteness to the hearer, his or her sense of anticipation is somewhat lower because the subsequent tone unit is ascribed a middle-ranking importance by the speaker. This level applies to the configurations ↓n, ↑f and ↑f&. After carefully screening the corpus data, it seems as though syntactic incompleteness wins out over prosodic incompleteness. If the configurations ↓n and ↑f, for example, occur in one and the same talk unit, the tone unit following ↓n is usually relatively more important than the tone unit that follows the configuration ↑f. Note also that in Table 6 no distinction is made either between ↑f and ↑f& or between ↓f and ↓f&.

Such distinctions are not possible because the coordinator which follows to the right (in ↑f& and ↓f&) is not available to the hearer at the preceding tone unit boundary itself. Thus, the hearer is not able to distinguish between configurations with and without a coordinator in real time. Finally, the configuration ↓f§ indicates the end of the talk unit. Therefore, this configuration cannot mark the information weight of a talk-unit internal tone unit to the right. For that reason, this configuration is inserted at the bottom of the hierarchical scale.

     This information-structure theory of talk units in general and parasyntactic configurations in particular provides a descriptive framework by means of which actual spoken data can be explained in terms of functionally relevant interactions between prosody and syntax. Consider example (4).

(4)   LLC 11.3d
       502 d I ^hadn`t the ":f\aintest idea#   / <↓f&
       503 aud *(laughter and applause)*   / ==
       504 d *. (. coughs)* but I didn`t "^l\ike this w/oman# - / ↑f
       505 d I ^s/aid# -   / ↑n
       506 d [@] ^very l/oudly#   / ↑n
       507 d 4well of "^course there`s such a 'word as "t\ulp# . /f§>

It is quite clear that at the parasyntactic level the speaker marks tone units 506 and 507, which follow the configuration ↑n, as most important (needless to say, there is no word as *tulp* in English). The other information units are less important. Note also that he uses the configuration ↑n twice before the final and most important tone unit. This is a frequently used strategy which I would like to call the 'principle of reinforcement': the hearer's strong sense of anticipation caused by prosodic and syntactic incompleteness is even enhanced by using the configuration ↑n twice (cf. Mukherjee 2001: 98).

     Example (5) makes it clear that the information hierarchy of parasyntactic configurations given in Table 6 is relative.

(5)   LLC 11.3a
       104 a ^so I I* [b@] ^thought I`m ^I`m going to !l\ose   /
       104 a him#   / <↓f§>
       105 a he`s ^getting !th\inner he ^looked no "^longer   /
       105 a looked like Di:\/aghilev# -   / <↑f
       106 a he ^looked like the !last . half :\inch#   / ↓n
       107 a of a ^used !p\ipe 'cleaner#   / ↓f§>

Here, the configuration ↑n is not used. In the second talk unit, the tone unit 107 is marked as most important since it follows the configuration ↓n. Of all configurations used in this talk unit, ↓n ranks highest on the hierarchical scale in Table 6. Thus, it is now the configuration ↓n that is used to mark the most important information unit. Therefore, the hierarchical scale given in Table 6

should be regarded as a relative scale which only applies to the configurations used in one and the same talk unit. The hierarchy is, as it were, locally calibrated.

The placement of tone unit (and talk unit) boundaries as such is another option for an effective and efficient parasyntactic presentation. It is quite obvious that the packaging of information into tone units can directly affect the hierarchy of information units since the syntactic status depends on the position of the tone unit boundary. Consider example (6) and its hypothetical variant (6'):

(6)   LLC 11.2
       846   ^now a :very vo!ciferous 'criticism was m/ade# .   / <↑f
       847   ^by Lord !St\okes the 'other 'day#   / ↓f
       848   of ^univ\ersities#   / ↓f§>

(6')   846   ^now a :very vo!ciferous 'criticism was m/ade# .   / <↑f
       847   ^by Lord !St\okes the 'other 'day of#   / ↓n
       848   ^univ\ersities#   / ↓f§>

In example (6), the tone unit 847 is marked as most important since it follows the configuration ↑f which ranks highest on the hierarchical scale in Table 6. In (6') the second tone unit boundary has been slightly moved to the right. In this hypothetical (but possible) variant, it would be the very last tone unit 848 which would be ascribed the highest information weight. This is due to the fact that the preceding tone unit boundary signals syntactic incompleteness now, and it is the configuration ↓n, of all configurations used in (6'), which now ranks highest on the hierarchical scale.

Example (7) also provides ample testimony of the fact that speakers make use of specific parasyntactic presentation structures for rhetorical reasons.

(7)   LLC 11.3d
       570   we were ^on the [l] !very 'last :kn\ockings of the   /
       570   g/ame#   / <↑f
       571   there were ^seven 'letters :l\eft in the b/ox# .   / ↑f
       572   ^I 'picked them /out#   / ↑f
       573   I ^found they were the :letters !Y 'V :A I :C \L# -   / ↓f§>

This example is taken from an anecdote delivered on radio. The most important information in this talk unit is in the last tone unit 573. It is here that the speaker mentions the letters he has at his disposal in a game of Scrabble, but quite obviously, a naturally occurring English word cannot be formed with those letters.[8] Therefore, the most important information unit must not be placed at the beginning of a talk unit. The first tone unit in a talk unit has no preceding talk-unit internal tone unit boundary at which its high relative importance could be indicated. Therefore, the speaker uses rising tones throughout the first three tone units so that a sense of anticipation on the part of the hearer is evoked with regard to what is to follow. The speaker further enhances this sense of anticipation by drawing on the afore-mentioned principle of reinforcement: note that he uses the

prosodically open configuration ↑f three times. It is obvious that the presentation of the four self-contained syntagms as one talk unit works to the rhetorical advantage of the story-teller.

5.   Conclusions and prospects for future research

The key findings of the quantitative and functional analysis of the corpus data together reveal that speakers structure information at the parasyntactic level in a highly efficient way. In doing so, they basically draw on two formal devices: (1) the placement of tone unit boundaries; (2) the choice of parasyntactic configurations. Whereas the placement of tone unit boundaries serves the purpose of 'information packaging', the choice of parasyntactic configurations leads to an adequate hierarchy of information units ('information hierarchy').

This paper is informed by the belief that the careful observation of large amounts of spoken data in quantitative terms may open up new perspectives for qualitative research and theory-building. Aarts's (cf. 2000: 8) general and highly convincing plea for more 'qualitative research' is certainly an important guideline for future corpus-based research into English intonation. For quite some time and in particular since the advent of modern corpus linguistics, intonationists have been hypothesising systematic and linguistically relevant interactions between prosody and syntax in authentic spoken English. Despite the fact that speakers' freedom of choice is presumably much greater in intonation than at other linguistic levels, I hope to have shown that the theory of talk units as parasyntactic presentation structures lays an important foundation for the analysis of such interactions, as envisaged by Svartvik (1990) some ten years ago:

> ... while a speaker is of course a free agent in his choice of linguistic behaviour, there is still enough evidence of a connection between grammar and prosody to make it worthwhile to explore more fully in which areas such patterning exists.
>
>   (Svartvik 1990: 69)

By drawing on the talk-unit model, it is possible to a considerable extent to gain access to 'such patterning'.[9]

Apart from what it can tell us about information structure, the talk-unit model proves useful for the analysis of other aspects of spoken language as well (cf. Mukherjee 2001: 120-143). For example, it turns out to be of direct relevance in pausological research. By drawing on the talk-unit model, it is possible to identify two, fundamentally different kinds of pauses. In existing pausological frameworks, the focus has almost exclusively been put on the demarcating function of intended pauses, that is 'segmentation pauses' (cf. Mukherjee 2000: 571-573). If, however, pauses are only regarded as demarcators of syntactic, textual or other units, a second important function of pauses is left out of consideration. If, for example, a speaker uses a pause at a tone unit boundary which is prosodically open and syntactically incomplete, he or she certainly does not want to stress any kind of linguistic boundaries. Rather, the pause enhances

the hearer's attention which has already been evoked by the incompleteness on the two channels. I propose subsuming such pauses under the notion of 'anticipation pauses'. It is by looking at the parasyntactic configuration at the tone unit boundary that the actual function of a pause can be clarified, as summarised in Figure 2.
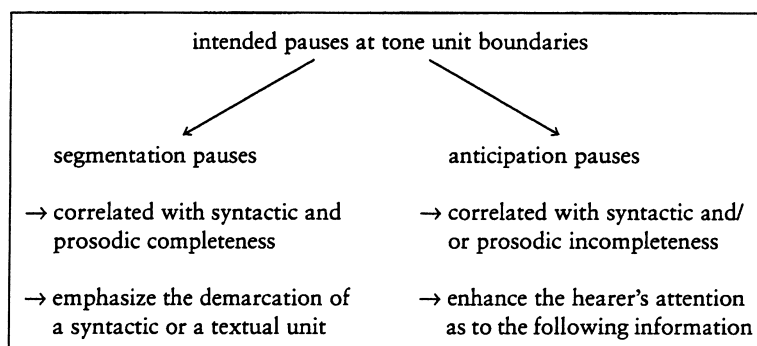

Figure 2. Two types of pauses: segmentation pauses and anticipation pauses
          (Mukherjee 2000: 582)

It should not go unmentioned that the talk-unit model is also relevant to discourse analysis, for example in assessing the politeness of turn-takings in conversation.

There will of course be many other research topics which the talk unit model will illuminate. It goes without saying that the model should be applied to larger corpora, ideally hand-in-hand with the development of a fully-fledged automatic procedure for the analysis. Large-scale corpus analysis may well reveal the need for new descriptive categories and will certainly allow for a much more detailed analysis of correlations between parasyntactic variation and stylistic variation. It would also be interesting to compare spoken and written presentation, in particular, addressing the question of how the talk unit maps onto punctuation in the graphic medium. Finally, I would like to suggest that parasyntactic presentation structures be included in information-structure theories which have so far concentrated on lexicogrammar and isolated prosodic features.

Notes

1   All examples in this paper are taken from the London-Lund Corpus of Spoken English (LLC). The annotation system includes, among others, the following symbols: # (end of tone unit); ^ (onset); {word} (subordinate tone unit); w\ord (fall); w/ord (rise); w=ord (level); w\/ord (fall-rise); w\ord w/ord (fall plus rise); w/\ord (rise-fall); w/ord w\ord (rise plus fall); [@m] (incomprehensible word); *word* +word+ (simultaneous talk); !word (booster); ' (normal stress); " (heavy stress); . (brief pause); - (unit pause); - . - (combination of pauses).

2   The article by Esser (1998) goes back to a talk he gave at the 19th ICAME Conference in 1998.

3   Note that major aspects of theory, methodology and corpus analysis that are presented only summarily in this paper are discussed in detail elsewhere (cf. Mukherjee 2001).

4   However, more delicate distinctions are certainly necessary when it comes to the analysis of expressive or attitudinal functions of intonation.

5   Disregarding borderline cases (e.g. *for* as a coordinator), I follow here Quirk *et al.* (1985: 920): "We regard three conjunctions as clearly coordinators: *and*, *or*, and *but*."

6   In particular, it should not go unmentioned that the quantitative analysis not only unveiled strong and, at times, surprising correlations between stylistic variation and parasyntactic variation but also correlations between the text-typological variation and parasyntactic variation in the corpus.

7   In applying the widely used 'five percent level' in linguistics and other socially oriented sciences (cf. e.g. Butler 1985: 71), I consider relative frequencies of $\geq 5\%$ (in relation to the sum total of all parasyntactic configurations in a given text) as significant.

8   It should be noted in passing that he forgets to list the letter 'r' in tone unit 573 which he, however, mentions a few tone units later.

9   Note also that the corpus-based approach to prosody-syntax interactions outlined in the present paper makes it clear that not only the raw material of corpus data but also the annotation of corpus data may shed new light on actual language use. In his keynote lecture at the 22nd ICAME Conference, Charles Fillmore pointed out that the in-depth analysis of the semantic annotation of corpus data can be very illuminating; I would argue that the same holds true for the parasyntactic annotation of spoken data.

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