

Epistemic Parenthetical Verb Phrases: C-Command, Semantic Scope and Prosodic Phrasing¹

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1. Introduction.

Parenthetical phrases such as ‘I believe’ and ‘I think’ are among the most interesting parenthetical expressions in languages because they enable the epistemic force of an utterance to be expressed or modified midway through the production of a sentence. For example in (1), the information that the 9/11 terrorists had fake drivers’ licenses is presented as a fact, but the information that the licenses were from Florida is presented only as a belief.

- (1) The airport terrorists that you know were in control during nine eleven, they all had fake ah drivers licence from **i believe** Florida. [FE_03_05654]

In English, the synchronic syntactic derivation of such parenthetical phrases is controversial, and so is their diachronic development.

Synchronically, it is still not entirely clear whether such parenthetical phrases should be derived from underlying structures in which the surface parenthetical functions as a main clause, via a transformational rule that lifts the remaining material up and around the parenthetical phrase (c.f. the “slifting” rule of Ross 1973²) or whether they should be inserted directly as adjuncts inside a base-generated surface clause (as Potts 2002 claims, for example, for *as*-parentheticals). Other researchers propose that parenthetical phrases should be derived by means of a three-dimensional or multidominance syntactic structure (c.f., e.g. Espinal 1991, and de Vries 2007 on “b-Merge”).

Diachronically, Thompson and Mulac 1991a propose that such parenthetical uses originate by means of a grammaticalization or pragmaticalization process from main clause uses that become detached from the former subordinate clause and then migrate to different positions in the sentence. However, Brinton 1996 proposes that they originated in clause-final position as adjuncts to the main clause, e.g. ‘so I believe’. Brinton 2008 also explores the historical origins of this type of parenthetical in English and concludes that some started out as *as*-parentheticals that could occur in medial position, e.g. ‘as I find’ in Middle English.

There is even controversy as to how such parentheticals should be named: Some researchers use the term “comment clause” (following Quirk et al. 1972), and Schneider 2006

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² Ross proposes a second transformational rule, “niching”, to insert the parenthetical into the myriad positions internal to the sentence in which the parenthetical can appear on the surface.

uses the term “reduced parenthetical clause”. We use the term “parenthetical verb phrase” or “PVP” to relate back to Urmson 1952, who first described them systematically using the term “parenthetical verb”.

PVPs lack a surface object or clausal complement. We adopt a generative grammar analysis (Chomsky 1981, Chomsky and Lasnik 1995) and assume that they contain an empty category as their complement, which must be resolved through semantic interpretation at the level of Logical Form. The material that is understood to be mitigated by the PVP—its ‘semantic scope’—is expressed by (sometimes part of) the material to which the PVP attaches syntactically. We refer to that syntactic material as the ‘syntactic scope’ of the PVP. This element can be a full clause or can be a smaller constituent such as a DP³ or a PP. The empty category in the complement position of the PVP must thus be category neutral. We propose that a PVP is inserted into a sentence by means of adjunction to the syntactic constituent that expresses its semantic scope. The PVP thus c-commands the material in its syntactic and semantic scope.⁴ Syntactically, then, epistemic PVPs receive an analysis similar to that of epistemic adverbs such as ‘presumably’ or ‘supposedly’. The difference is that epistemic and evidential adverbs can have a third-person generic subject understood: e.g. ‘supposedly’ means ‘one supposes’ or ‘it is supposed’. However, ‘I suppose’ has a first-person subject actually expressed. Our claim will be that ‘I suppose’ is no more a discourse particle than ‘supposedly’. It is an epistemic or evidential modifier with full semantic force.

Our approach in studying PVPs is to focus on four common PVPs (‘I believe’, ‘I think’, ‘I guess’ and ‘I suppose’). We report on an ongoing corpus study of these four PVPs in spoken American English. We believe that concentrating on just four of the most common PVPs enables us to focus on a significantly large sample of each, and enables us to make comparisons between them to see if they all behave alike. Our aim is to show that there is a transparent relationship between the semantic scope of the PVP and the prosodic phrasing of the constituent to which the PVP is syntactically adjoined. PVPs c-command the constituent in their semantic scope and they tend to be prosodically phrased with that element. The scope element receives a pitch accent. Thus we can say that PVPs “associate with focus” (Jackendoff 1972, Rooth 1985). Sometimes the syntactic constituent that the PVP is adjoined to is bigger than the focus. In such cases the semantic scope of the PVP is the focused material.

In section 2 of this paper we describe the methodology of our corpus study. Section 3 discusses the background for our study, previewing our main claims and describing related corpus studies. Section 4 discusses the results of our corpus study and presents our syntactic and prosodic analysis of PVPs. Section 5 briefly presents our conclusions.

2. Methodology of the Corpus Study.

³ We assume the “DP hypothesis” of e.g. Abney 1987, which posits that the determiner is head of the nominal phrase, taking an NP as its complement.

⁴ We are assuming the classic version of c-command as in Reinhart 1976. A node A c-commands a node B if and only if the first branching node dominating A also dominates B and neither A nor B dominates the other.

Our data was collected from the Fisher corpus Part I (Cieri et al. 2004), obtained from the Linguistic Data Consortium. The corpus consists of speech files and transcripts of 5,850 American English telephone conversations of up to 10 minutes in length between people who do not know each other. Typically a computer told the participants what topic to talk about, e.g. Should the U.S. invade Iraq?, What do you look for in a life partner? How do you feel about reality TV shows? The conversations are transcribed in text files with time stamps in seconds at the beginning of each line, and recorded on two tracks.

We searched the transcripts exhaustively for the strings ‘I believe’, ‘I think’, ‘I guess’ and ‘I suppose’. These were determined in a pilot study as the most numerous epistemic PVPs in the corpus. We collected the tokens through use of a concordance program (Wordsmith), and we created a spreadsheet for each string with each token represented. The total number of tokens of each string in the complete corpus is shown in Table 1. For comparison, the table includes the number of tokens of each string found by Kärkkäinen 2010 in the unplanned everyday discourse transcripts from the Santa Barbara Corpus of Spoken American English (Du Bois et al. 2000-2005).⁵ The relative frequency of each form is the same in both corpora.

	Current study		Kärkkäinen 2010	
String	N	%	N	%
I believe	1,455	2.1	2	0.7
I think	47,456	68.0	214	81.4
I guess	19,945	28.6	44	16.7
I suppose	889	1.3	3	1.1
Total	69,745	100	263	99.9%

Table 1. Total number of token strings extracted from entire corpus and comparison with Kärkkäinen 2010.

We assigned a random number to each token and selected a random sample of 500 tokens of each string for further analysis.⁶

The two authors independently classified each of the 2000 tokens syntactically, classifying them into main clause uses and parenthetical uses. We annotated the complement structure of each main clause token, e.g. NP, PP, CP, *so/not*, bare, and noted in the case of CP complements whether or not there was an overt complementizer. For the parenthetical uses, we noted whether they were clause medial or clause final. We compared our annotations of each token in the full set of ten syntactic categories and calculated an agreement statistic. We averaged 85% agreement, as shown in Table 2. To supplement this measure, we calculated a

⁵ Citing the findings of van Bogaert 2006 and Kärkkäinen, 2007, Kärkkäinen (2010:208) states that ‘I guess’ is more frequent in American English than in British English and that ‘I believe’ and ‘I suppose’ are more frequent in British English.

⁶ The first part of the corpus study included the Callhome American English Corpus (Canavan, et al. 1997), which is also available from the LDC. This is also a corpus of telephone conversations, but between people who knew each other. We searched the transcripts, which provided 10 minutes each of 120 telephone conversations, for our four strings and these tokens are included in the statistics for the full corpus above. However, because this is a much smaller corpus than the Fisher Corpus Part I, we obtained very few examples from Callhome in our initial random sample of 2000 tokens. Due to their small number, we decided to omit these examples from the working corpus, and so we replaced them with tokens from the Fisher Corpus.

kappa agreement statistic⁷ and found that we had ‘very good’ agreement in one case, and ‘good agreement’ in the other three, which gave us an average of ‘good’ agreement. We resolved discrepancies through discussion, sometimes by establishing categories but more often by looking each token up in the full transcript instead of relying solely on the material provided in the concordance window.

String	% Agreement	Kappa
I believe	86	.811
I think	87.8	.692
I guess	85	.686
I suppose	79.8	.653
Average	84.65	.702

Table 2. Percent agreement and kappa score in initial syntactic coding of each string.

The remainder of the project focused on parenthetical uses. We created spreadsheets for clause-medial and clause-final PVPs, which placed each PVP in its discourse context as extracted from the transcript. Using Praat (Boersma and Weenink 2013), we extracted from the speech files each PVP in its sentential context. We classified the semantic scope of each PVP (i.e. the material in the sentence included in the mitigating force of the PVP) by reading the transcript to determine the meaning. We provisionally assumed that the PVP is prosodically attached to a constituent containing its semantic scope, and that the semantic scope correlates with a prosodic focus. We then verified this assumption by listening to the sound file to make sure that the meaning corresponded to what we had assumed and whether the prosodic phrasing and focus structure corresponded to what we had predicted. We then classified each PVP with regard to whether it was left-adjoined or right-adjoined to its syntactic scope. Finally, we classified the syntactic category of the syntactic scope.

3. Background.

3.1. Claims

We propose that scope is determined by c-command and is reflected in prosody. Thus, the PVP has semantic scope over material that it c-commands syntactically. The PVP is left-adjoined or right-adjoined to the material in its syntactic scope. Prosodically, the PVP is phrased with the material in its syntactic scope. The PVP surfaces in the same ‘intermediate phrase’⁸ as the

⁷ Kappa statistics were calculated using the GraphPad QuickCalcs Web site: <http://graphpad.com/quickcalcs/kappa1.cfm> (accessed March 8, 2014).

⁸ We are in the process of annotating the present examples in detail using the Tone and Break Indices (ToBI) prosodic annotation system (Beckman and Ayers-Elam 1997), which is an Autosegmental-Metrical approach to the prosody of American English. ToBI annotations consist of a series of L (low) and H (high) tones. The theory assumes a prosodic hierarchy, whereby intonation phrases, which end in a boundary tone (e.g. L% or H%), are composed of one or more ‘intermediate phrases’ each of which has a final pitch accent (e.g. L* or H*) and a ‘phrase accent’ edge tone (e.g. L- or H-). Smaller constituents in the prosodic hierarchy are also possible as indicated by the Break Index portion of the system. British School intonation analyses, assumed in the works by Kaltenböck, Dehé and Wichmann discussed below, tend to divide an intonation phrase pitch contour globally into pre-

semantic scope, which in turn is marked through pitch accent as constituting the prosodic focus of that intermediate phrase. We hypothesize that PVPs associate with semantic focus, and that topics are outside the semantic scope of the PVP. Especially in the case of PVPs that occur between the subject and predicate of the sentence, the subject is often the topic and thus is excluded from the semantic scope of the PVP.

We innovate in the context of the literature by starting from meaning, i.e. semantic scope. This leads us to a syntactic analysis, and then finally we look at how prosody fits in. We assume that there can be restructuring for prosodic realization at the level of Phonetic Form (PF). Thus, the structure that is phonetically interpreted in prosody doesn't necessarily directly correspond to the structure that is semantically interpreted at Logical Form (LF).⁹

3.2. Related Corpus Studies.

Selkirk 2005 points out that classical analyses of the prosody of parenthetical phrases (e.g. Emonds 1976) postulate that parenthetical phrases should always form intonation phrases of their own. However, following Potts 2002, she analyzes sentence-medial parenthetical expressions (“supplementary relatives, appositives and parentheticals”) as corresponding in the prosodic hierarchy to “comma phrases.” She claims that comma phrases in English are integrated into utterance prosody asymmetrically, in that they are aligned on their right with an intonation phrase edge but can be incorporated into the preceding intonation phrase or smaller phrase on their left. Thus, parenthetical expressions can be prosodically integrated. She didn't discuss PVPs, but our findings, supported by other corpus studies, indicate that PVPs can also be incorporated into prosodic units to their right.

In this section, we report on and provisionally evaluate some recent corpus studies of PVPs in Hamburg German, British English, and American English. All of them focus on prosody, and the British English studies correlate the prosodic realization of PVPs with different categories of discourse function, emphasizing that prosodically less prominent uses are associated with the kind of “semantic bleaching” that is associated with grammaticalization or pragmaticalization.

3.2.1. Description of Related Corpus Studies.

Peters 2006 mentions PVPs in a short paper reporting on a corpus study of the prosody of parentheticals in Hamburg German spontaneous speech. He proposes that parentheticals in general can be prosodically integrated into the host sentence in four different ways, shown in (2).

(2) Prosodic parataxis {...} {...} {...}

head/head/nucleus/tail. See Ladd 2008 for discussion of the relation of Autosegmental-Metrical approaches such as ToBI to British School approaches.

⁹ We are assuming the inverted-Y model of generative grammar adopted in the Principles and Parameters approach of Chomsky 1981, Chomsky and Lasnik 1995. Transformational rules apply in mapping D-structure to S-structure, at which point the derivation diverges, mapping on the one hand to PF (Phonetic Form), which determines how the sentence is pronounced, and mapping on the other hand to LF (Logical Form), which determines how the sentence is interpreted.

Prosodic incorporation	{... ..}
Prosodic parenthesis	{... {...} ...}
Mixed type:	{... {...} {...}

The parenthetical forms its own intonation phrase (IP) in prosodic parataxis, and it is preceded and/or followed by separate IPs in the host clause. In prosodic incorporation, the parenthetical is included in the host IP. In prosodic parenthesis, it occurs stressed in its own intonation unit but the material of the host clause after the parenthetical continues the preceding IP of the host clause and does not start a new one. This structure indicates that IPs can be recursively embedded, as first proposed in Ladd 1986. In the mixed type, the parenthetical forms its own IP and is preceded by an incomplete IP but followed by a complete IP. Peters reports that shorter parentheticals, such as PVPs, tend to be prosodically incorporated more often than longer parentheticals.

Kaltenböck 2008 analyzed 830 instances of ‘comment clauses’ in the International Corpus of English, British component (c.f. Nelson et al. 2002).¹⁰ He did a syntactic and prosodic analysis of comment clauses, with a method similar to ours. Kaltenböck classifies the prosody of the comment clauses into four categories: prosodically independent, right bound, left bound, and left-right bound. With this typology, he classifies the direction in which the comment clause is prosodically bound to the host construction. He introduces the idea of the ‘scope’ of a comment clause, distinguishing between CCs with clausal vs. phrasal scope. The latter are restricted to left-bound and right-bound CCs. He defines ‘scope’ in semantic-pragmatic terms as “the topic to which the comment of the CC applies” (pp. 102-103).

Kaltenböck claims that comment clauses with clausal scope, as in (3), are epistemic mitigators: ‘epistemic shields’ or ‘hedges’, which “express a degree of speaker commitment with regard to the proposition expressed” (p. 106).

- (3) a. And the Labour Party *I believe* want sanctions to work (s1b-023-117) [Kaltenböck (25a)]
- b. Uhm it’s quite fast *I think* (s1a-029-69) [Kaltenböck (25b)]

CCs with phrasal scope, as in (4), are ‘approximators’, which “typically make the propositional content, a referring term or predicate less precise” (p. 109). Both of these categories derive from Prince et al. 1982.

- (4) Uh in the uhm <> *I think* [October issue] of Computation al uh Linguistics there’s an attempt to do something of this type (s1a- 024-105) [Kaltenböck (26a)]

A third category, which he says often corresponds to left-right binding and exhibits the greatest degree of prosodic integration, is that of a structural device, which does not clearly have scope. Such examples function as hesitation indicators like ‘um’ and are often accompanied by other

¹⁰ Unlike Dehé 2009, Dehé and Wichmann 2010a and the present study, Kaltenböck included in his class of comment clauses clause-initial strings that were followed by a pause, hesitation device such as ‘um’, or filler such as ‘I mean’.

filled and unfilled pauses. (5a) is an example of left-right-binding, and example (5b) is an example showing a CC that co-occurs with ‘uh’ and with hesitation-marking word repetition.

- (5) a. blinkered *I think* is a nice word if you’re describing someone that you don’t like (s1a-037-217) [Kaltenböck (9)]
- b. Took them uh *I think* some some something like ten to fifteen years to complete it (s1a-009-87) [Kaltenböck (28a)]

Finally, Kaltenböck posits a fourth category for CCs that are prosodically independent and receive a nuclear tone on the predicate. He says that such CCs often act as “pragmatic boosters”, which strengthen rather than weaken the epistemic force of the assertion. One of his examples is given in (6).

- (6) The re The reason for it is (*I think*) that when they’re walking round the school so are thousands of tourists (s1a-054-163) [Kaltenböck (25)]

Dehé 2009 and Dehé and Wichmann 2010 also analyze ‘comment clauses’ in the International Corpus of English, British component. They include a sophisticated analysis of the prosody. Dehé and Wichmann propose a typology of discourse functions similar to Kaltenböck’s. However, they rely on prosody to distinguish the pragmatic categories, whereas Kaltenböck relies primarily on scope while also positing correlations with prosodic categories.

Dehé 2009 selected 138 out of a total of 402 CCs originally retrieved from the corpus. 229 were discarded because they could have been derived by movement,¹¹ and 34 sound files were not usable. She finds that comment clauses can be integrated into the context in six different ways, as shown in (7):

- (7) *CC phrasing*
- (a) ... IP[...]IP IP[CC]IP IP[...]IP ...
- (b) ... IP[... IP[CC]IP ...]IP ...
- (c) ... IP[...]IP IP[... CC]IP IP[...]IP ...
- (d) ... IP[...]IP IP[CC ...]IP IP[...]IP ...
- (e) ... IP[...]IP IP[... CC ...]IP IP[...]IP ...

Pattern (a) corresponds to Peters’ prosodic parataxis, (b) corresponds to his prosodic parenthesis, and (c) corresponds to his prosodic incorporation. In patterns (a) and (b), the CC receives a nuclear accent. In patterns (c), the CC may bear nuclear accent or may be unaccented, and in patterns (d) and (e) the CC may bear nuclear or non-nuclear accent or may be unaccented. Dehé found that 74% of her 137 examples of comment clauses occurred in patterns (c)-(e), 19% occurred in pattern (a) and 6.5% occurred in pattern (b).

¹¹ Dehé only included comment clauses that were not exhaustively preceded by constituents because such structures are eligible to be analyzed as derived through a movement rule. These tokens are therefore not uncontroversially parenthetical. Thus, she didn’t include comment clauses that occurred immediately after the subject or in clause-final position.

Dehé and Wichmann 2010 look carefully at a subset of 36 clause-medial and clause-final examples of comment clauses¹² and correlate different prosodic types with discourse function. They find that comment clauses can occur accented in a separate intonation unit, unaccented in the prehead of the intonation unit, unaccented in the tail of the intonation unit, or can occur unaccented in any position as hesitation devices, i.e. filled pauses.

They claim that only the accented comment clauses in separate intonation units, such as (8), have the semantic force of epistemic mitigators. Here ‘I believe’ forms a separate intonation unit, with accent on ‘believe’.

- (8) Your argument *I believe* is that it’s died so to speak more in some realms than in others and crucially that there is something there left which is the basis for renovation <,> (ICE-GB: s1b-028#19) [Dehé and Wichmann (10)].

By contrast, the prosodically-integrated, unaccented tail comment clauses are claimed to be interactional in function and to have proceeded further on the grammaticalization or pragmaticalization path to discourse particles than prosodically separated comment clauses. An example is shown in (9).

- (9) The voters *I think* just have an opportunity to stick two fingers up to whoever seems to be on top at the moment (ICE-GB: s1b-029#92) [Dehé and Wichmann (14)]

Here, ‘I think’ occurs in the rising tail of a fall-rise contour with nuclear accent on ‘voters’, so the CC is prosodically integrated. The authors say: “*I think* in this context does not express speaker attitude, doubt or uncertainty. If anything, it tones down the force of the utterance, and thus has a mitigating function, or it may be interpreted as a politeness marker in the context of the broadcast discussion.” (p. 19). It also performs a discourse-structural function: “The voters form a contrast to the tourist trade and the journalists, which is similar to saying ‘the voters on the other hand’ or ‘returning to the voters’.” (p. 19).

Finally, comment clauses occurring as unaccented filled pauses, such as (10), are analyzed as hesitation devices and can basically be classified as discourse particles.

- (10) There’s no point in uhm <,> *I suppose* undertaking experiments if people can’t read them ... (ICE-GB: s1a-059#286) [Dehé and Wichmann (17, 21c)]

The authors say: “While it is assumed that some core meaning remains in all such grammaticalised items, which serves to motivate the choice of expression, the prime meaning is interpersonal. While these verbal fillers reflect mental planning. . . and word-searching phases, they also operate as a floor-holding device, and may also be a response to, or elicit, feedback.” (p. 20).

¹² These 36 were the only examples with sound files clear enough to undergo instrumental analysis. Out of a total of 312 corpus items, the recordings of 156 were clear enough to undergo auditory analysis. They report that the 36 examples that underwent instrumental analysis were representative of the patterns found in the larger auditory analysis.

Dehé and Wichmann reject Kaltenböck's prosodic analysis¹³ as ad hoc. In particular, they criticize his notion of 'binding' as not adding anything new to prosodic theory. They subsume Kaltenböck's right-bound comment clauses under the heading of a comment clause occurring in the prehead, and subsume Kaltenböck's left-bound comment clauses under the heading of comment clauses occurring in the tail. Finally, they subsume his left-right-bound comment clauses into their category of comment clauses occurring in the tail with additional material still to follow in the tail.

Finally, Kärkäinen 2010 analyzes the Santa Barbara Corpus of Spoken American English for items she calls 'epistemic phrases', which consist of first person subject and epistemic verbs. Her tokens include our four strings and subsume the tokens that we analyze as main clause uses as well as the ones that we analyze as parenthetical. She views all such items as essentially parenthetical even when they scope pragmatically over the entire following clause and are prosodically integrated with the following clausal material. That is, she follows Thompson and Mulac 1991a,b in viewing them as already having grammaticalized into "relatively fixed epistemic formulas" that are "used simply to provide a stance frame on what follows" (p. 213).

3.2.2. Evaluation of Related Corpus Studies

With regard to Kaltenböck 2008, we too found many PVPs with phrasal scope and we believe that the distinction between clausal and phrasal scope is important. He also includes a syntactic analysis that he correlates with prosody like we do. However, his syntactic analysis is purely linear and not hierarchical. Our hierarchy-based analysis relies on the notion of c-command in determining the scope of PVPs.

Also, his coding of prosodic structure is different from ours. He takes the perspective of the PVP and classifies them as independent, left-bound, right-bound or left-right-bound to material in the context. We take the perspective of the scope and classify PVPs as to whether they are left-adjoined to the scope or right-adjoined to it. Thus our 'left-adjoined' corresponds to Kaltenböck's 'right-bound' and our 'right-adjoined' corresponds to his 'left-bound.' That is, we analyze adjunction position, taking into consideration syntactic position of a PVP, and its prosodic attachment properties.

We agree with Kaltenböck about the importance of scope of the PVP, and that scope can be phrasal or clausal. We think that scope can be captured syntactically through the notion of c-command—a PVP has in its scope the material that it c-commands syntactically. One main aspect of our proposal is that the three factors of semantic scope, syntactic adjunction and prosodic attachment are strongly correlated. However PVPs also associate with focus and thus mitigate only the focused parts of their syntactic scope. Dehé 2009 and Dehé and Wichmann 2010 don't make any reference to scope—they only analyze the prosody and discourse function of PVPs.

¹³ Dehé and Wichmann actually criticize an earlier version of Kaltenböck's paper that was published in Vienna English Working Papers.

Finally, we don't fully agree with Kaltenböck's analysis of the function of PVPs. He analyzes left- and right-bound PVPs, i.e. those with phrasal scope as "approximators" instead of epistemic mitigators. On the contrary, we believe that most of our PVPs with phrasal scope have their full semantic value as epistemic mitigators—it's just that the mitigation is restricted to a phrase smaller than a full clause or sentence. In (1), for example, the PVP is unaccented and has phrasal scope over 'Florida'. We don't agree that the speaker is saying that the drivers' licenses were approximately from Florida. Rather, he is saying that he doesn't know that it was Florida for a fact, but only as a belief. His belief, however, is that it is precisely Florida. We also aren't certain that all examples of left-right binding function merely as discourse-structural or hesitation devices. Many of these too seem to function as full epistemic mitigators, although their scope may lie only to the right or to the left.

We agree with Dehe 2009 (and Peters 2006) that PVPs can occur in any of the prosodic patterns shown in (3). As for Dehé and Wichmann 2010, we don't believe that it is necessarily the case that all unaccented PVPs are interactional in function as opposed to epistemic. The PVPs with narrow, phrasal scope are often unaccented but have a full epistemic function, depending on the PVP, i.e. especially 'I believe', as in (1) again. Furthermore, we don't believe that all PVPs that are prosodically dependent are portions of the prehead or tail, as Dehé and Wichmann propose. Note that Dehé 2009 reports that she found accented and unaccented CCs in the head of the IP (Intonation Phrase).

We disagree with Kärkäinen's 2010 view that clause-initial tokens should be viewed as syntactically-detached fixed formulae that function merely as interpersonal stance markers. Instead, we view them as matrix clauses containing fully semantic verbs denoting propositional attitudes towards the content of their clausal complements. However, we do appreciate the way that Kärkäinen 2007 characterizes the meaning of 'I guess' as projecting a stance towards the utterance material in its scope that is specifically based on inference. That is, she still recognizes an element in that usage deriving from the literal meaning of the epistemic or evidential verb 'guess'.¹⁴

In general, we are interested in the vestiges of lexical meaning that Dehé and Wichmann as well as Kärkäinen admit are present even in the examples of PVPs or first-person main clauses which they view as the most grammaticalized or pragmaticalized. Those lexical meanings distinguish the different strings from each other. Thus, we emphasize the continuity of semantic content even when that content can be viewed as more or less bleached. We agree that the matrix clause uses often function pragmatically as stance markers, but at the same time they retain their usual semantic meaning as propositional attitude indicators, and their syntactic status as forms in which a first-person subject is followed by a verb that selects a structurally subordinate clausal complement.

4. Results of the Corpus Study and Analysis.

4.1. Distributional Analysis

¹⁴ Kärkäinen suggests that 'I guess' is more evidential than epistemic in meaning because it marks the material in its scope as derived through inference. This would also be the case with 'I suppose.'

Table 3 shows our classification of the subcategorization properties of each parenthetical verb in the corpus. Only ‘I believe’ takes NP or PP complements (e.g. ‘I believe you/that’, ‘I believe in that’), ‘I think’ takes PP complements (‘I think of/about that’). ‘I guess’ and ‘I suppose’ only occur with CP complements, and also are the only strings that can productively occur bare (‘I guess’, ‘I suppose’). All four strings occur with ‘so’ or ‘not’ as in ‘I think so’, and ‘I guess not’. All can occur with a CP complement containing a complementizer ‘that’ or ‘like’, or can occur without a complementizer; and all can occur as clause-medial or clause-final PVPs.

	I believe	I think	I guess	I suppose	TOTAL
Bare	1		11	30	42
so	21	17	11	14	63
No/not			4		4
NP	57				57
PP	45	10			55
CP, Ø	216	397	359	296	1,268
CP, that	66	36	3	17	122
CP, like	4	8		3	15
PVP, clause-medial	34	22	51	43	150
PVP, clause-final	56	10	61	97	224
TOTAL	500	500	500	500	2000

Table 3. Number of complement type or parenthetical type of each string.

Several trends emerge from this data. The first trend is that ‘I believe’ is the string that occurs with a full complementizer most often, and ‘I guess’ occurs with a full complementizer least often, as shown in Table 4 ($\chi^2 = 107.44$, d.f. = 3, $p < .0001$).¹⁵ Post-hoc tests¹⁶ show the values in both these cells (marked with an asterisk) to respectively contribute 63.6% and 29.6% of the variance in the table, d.f. = 3, $p < .05$. The contributions of the other cells did not diverge significantly from chance.

	I believe	I think	I guess	I suppose	TOTAL
CP, Ø	216	397	359	296	1,268
CP, that/like	70*	44	3*	20	137
TOTAL	286	441	362	316	1,324
% Full complementizer	24.48%	9.98%	0.83%	6.33%	9.75%

Table 4. Percentage of each string taking a full vs. empty complementizer.

This finding perhaps indicates that ‘believe’ is more tightly integrated into its complement than the other verbs. Perhaps its more elaborate complement structure, i.e. including NP and PP complements supports this integration. Thompson and Mulac 1991b propose that object complement verbs that occur without a complementizer are already parenthetical in nature. If this

¹⁵ The chi-square tests in this paper were performed using the internet tool of Preacher 2001.

¹⁶ We used the `chisq.posthoc` function in R to perform post-hoc tests. This test determines the contribution of each cell to the overall chi-square value and determines which contributions diverge significantly from an overall hypothetical homogeneous distribution (i.e. chance).

is the case, then our data indicates that ‘I guess’ is furthest along the road to pragmaticalization, and ‘I believe’ is the least far along that path.

The second trend is that ‘I think’ occurs in main clause use more often and as a PVP less often than the other strings, as shown in table 5. ‘I suppose’ occurs as a PVP most often. This distribution is also significant according to the chi-square test. $\chi^2 = 82.865$, d.f. = 3, $p < .0001$. Post-hoc tests show the values in the cells marked by an asterisk to respectively contribute 9.3%, 40.5% and 23.1% of the variance in the table, d.f. = 3, $p < .05$. The contributions of the other cells did not diverge significantly from chance.

	I believe	I think	I guess	I suppose	TOTAL
Main clause use	410	468*	388	360	1626
PVP use	90	32*	112	140*	374
TOTAL	500	500	500	500	2000
% PVP	18.00%	6.40%	22.40%	28.00%	18.7%

Table 5. Percentage of PVP use compared to main clause use.

While it might be concluded that ‘I think’ occurs so marginally as a PVP that it is unworthy of study, it must be remembered that there are far more examples of the string ‘I think’ in the corpus than the others, especially ‘I believe’ and ‘I suppose’. Thus, the overall number of ‘I think’ PVPs is likely to be still greater than the total number of the others. To support this, we can extrapolate from the random sample to the total number of strings in the corpus, i.e. 47,456 for ‘I think’ and 1,455 for ‘I believe’. The prediction would be that there are 3,037 PVP uses of ‘I think’ in the corpus, but only 262 PVP uses of ‘I believe’.

The third trend is that ‘I think’ occurs as a clause-final PVP as compared to a clause-medial PVP the least often, as shown in Table 6. This distribution is significant according to the chi-square test. $\chi^2 = 17.648$, d.f. = 3, $p < .001$. Post-hoc tests show that the values in the clause-medial and clause-final PVP cell for ‘I think’ (marked by an asterisk) contributed 6.5% and 4.4% of the variance in the table, respectively, d.f. = 1, $p < .05$. The contributions of the other cells did not diverge significantly from chance.

	I believe	I think	I guess	I suppose	TOTAL
Clause-medial PVP	34	22*	51	43	150
Clause-final PVP	56	10*	61	97	224
TOTAL	90	32	112	140	374
% Clause-final	62.22%	31.25%	54.46%	69.29%	59.89%

Table 6. Percentage of clause-final compared to clause-medial PVP.

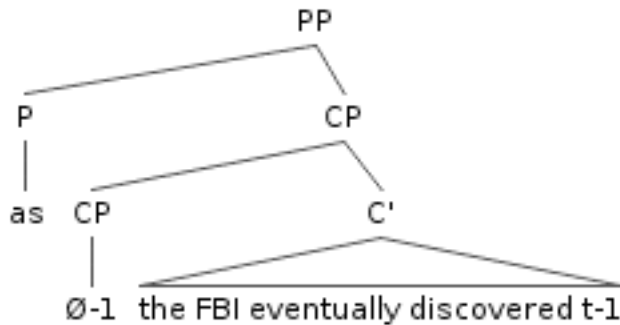
If Brinton 1996 is right that sentence-medial PVPs are pragmaticalized from sentence-final position, then the PVP uses of ‘I think’ reflect this origin least.

4.2. PVP Syntax

4.2.1. Syntactic Structure.

As a starting point, we assume the analysis of *as*-parentheticals proposed by Potts 2002. He proposes the internal syntactic structure in (11) for *as*-parentheticals (p. 637).

- (11) a. Ames was a spy, as the FBI eventually discovered.
 b.

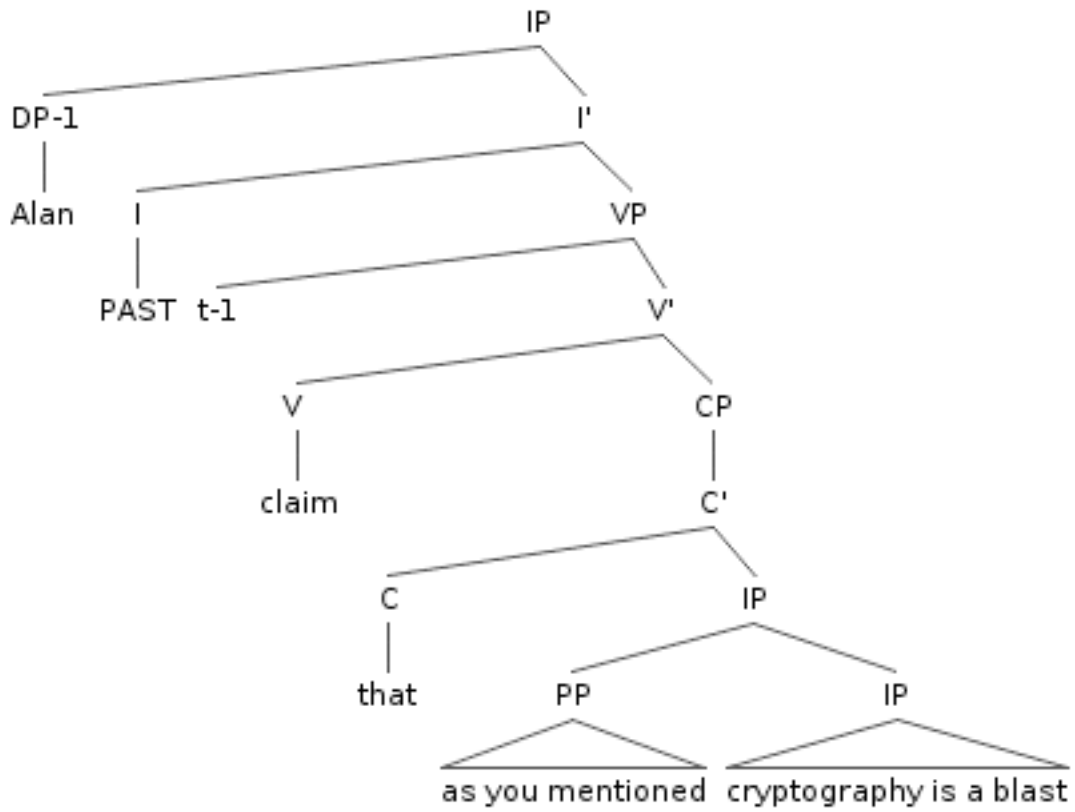


Potts 2002: 640 provides the descriptive generalization in (12) concerning how *as*-parenthetical are inserted into their host clauses:

- (12) *As*-clauses adjoin directly to the linguistic material from which they obtain their meaning.

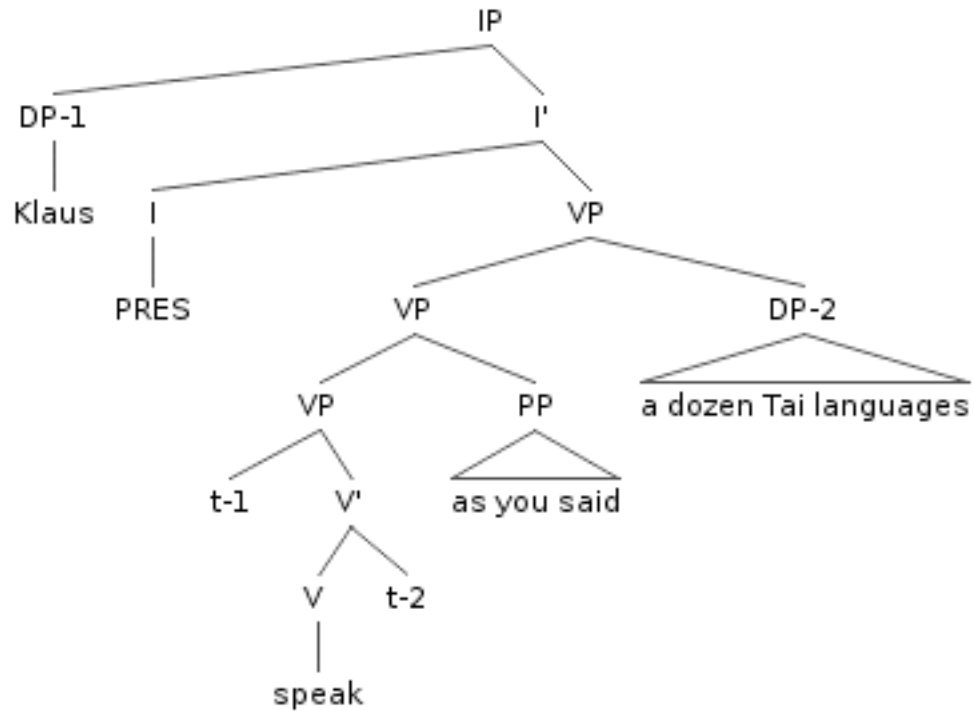
The scope of *as*-parentheticals is always clausal (never phrasal). The *as*-parenthetical can be adjoined to a main clause, or to an embedded clause (here annotated as IP, which stands for “inflection phrase”), as in (13). (p. 643).

- (13) a. Alan claimed that, as you mentioned, cryptography is a blast.
 b.



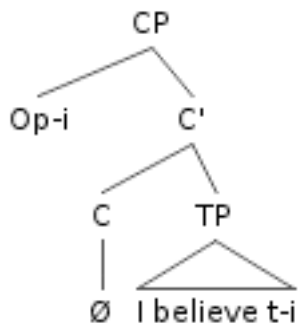
Sometimes other movement operations take place rendering the *as*-parenthetical linearly in a position that is not contiguous to the clause that is its scope. However, a deeper syntactic analysis reveals that the parenthetical is contiguous with and can be viewed as adjoined to the clausal material that constitutes its scope. For example, in (14) (p. 647), the VP-internal subject hypothesis (e.g. Koopman and Sportiche 1991) can be assumed, which moves the subject from the specifier of VP position to specifier of IP. Also an extraposition operation can be assumed to apply, which moves the object to a position at the end of the sentence, after the parenthetical. If these movement operations are acknowledged, the *as*-parenthetical still *c*-commands and thus has scope over the constituent—now a VP—that denotes the meaning of the CP empty category inside the parenthetical.

- (14) a. Klaus speaks, as you said, a dozen Tai languages.
 b.



We propose a syntactic account for PVPs that is directly analogous to Potts’ analysis of *as*-parentheticals, as shown in (15).¹⁷ PVPs have an internal structure with an empty operator in the specifier of CP binding a trace in complement position of the parenthetical verb. PVPs differ from *as*-parentheticals in that the complement is not necessarily a CP. In cases of phrasal scope, the complement can be a DP or a PP, for example.¹⁸

(15)



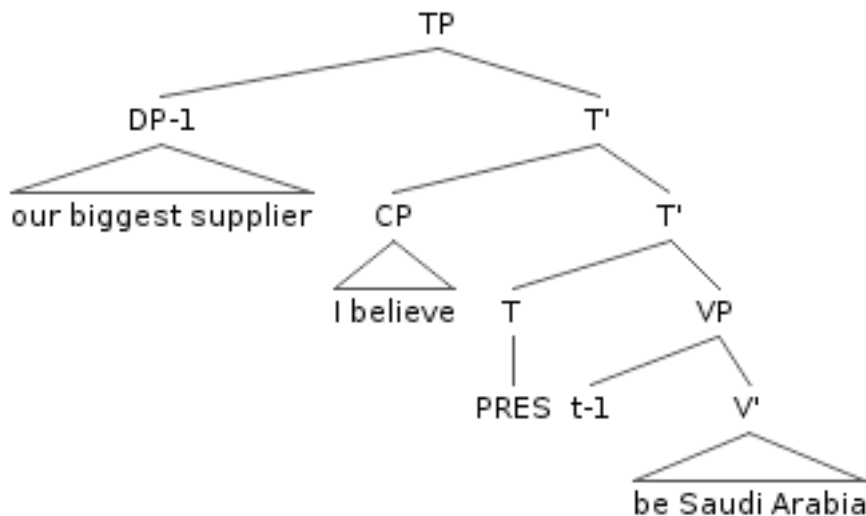
¹⁷ Potts 2002 provides a compositional semantic analysis of *as*-parentheticals that matches his proposed syntactic structure. We assume that an analogous compositional semantic analysis can be given for our syntactic analysis of PVPs, but it is beyond the scope of this paper to provide such an account. Such an account would require a treatment of focus, first person propositional attitudes, and evidentiality.

¹⁸ ‘TP’ stands for Tense Phrase, which corresponds to Potts’ IP.

We also follow Potts in assuming that PVPs, like *as*-parentheticals, are adjoined directly to the material in their scope, but again the category to which they are adjoined is not necessarily proposition-denoting because the scope can be phrasal. Like Potts found with *as*-parentheticals, we find cases of PVPs with clausal scope where the PVP does not appear contiguous on the surface with the material in its scope. This happens frequently when the PVP appears between subject and predicate, e.g. between the subject and a finite auxiliary (in the T node) or between a finite auxiliary and the VP. Like Potts we assume the VP-internal subject hypothesis and propose that the subject is generated and interpreted in the specifier of VP and is subsequently raised to the specifier of TP. This means that such PVPs can be adjoined to T' or VP and still c-command and thus have scope over the position where the subject is interpreted. An example is shown in (16).

- (16) a. 35.09 244.62 A: [mn] well i don't think iraq can supply nearly the amount that's required here in the states and i think that we rely (our biggest SUPPLIER) (i **BELIEVE**) (is ah you know saudi ARABIA)¹⁹ [FE_03_05685]

b.

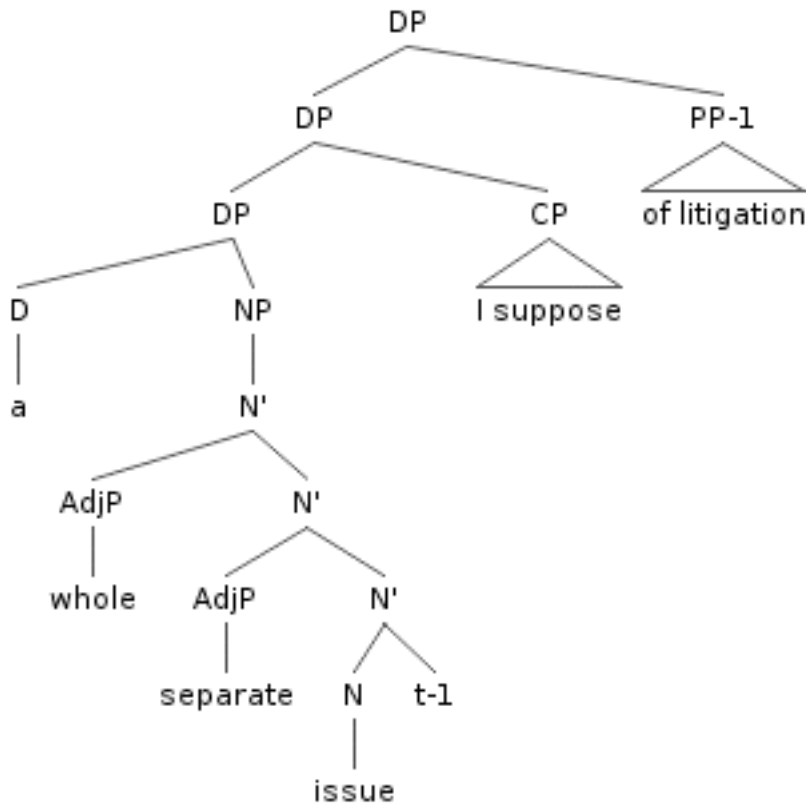


Extrapolation operations can also move a constituent in the scope of a PVP into a position where it is no longer contiguous with the rest of the scope. However, again we can say that such constituents are interpreted in their original position, which contains a trace, and thus they will be included in the semantic scope of the PVP. Such an example is shown in (17).

- (17) a. 440.87 447.81 B: i know [sigh] but (that would be a whole separate [laughter] ISSUE#i suppose) (of LITIGATION) [sigh] um but uh yeah i mean [FE_03_03515]

¹⁹ As discussed below, in our prosodic notation, we enclose intermediate phrases with parentheses, capitalize the nuclear accent of the intermediate phrase, underline pitch-accented words, and indicate prosodic attachment by hash marks ('#').

b.



In the next two subsections, we tabulate the distribution of clause-medial and clause-final PVPs syntactically, before turning to a discussion of prosody in section 4.3.

4.2.2. Scope of Clause-Medial PVPs.

We classified the scope of the clause-medial PVPs syntactically, and indicated whether the PVP attaches to the left of the scope or to the right of the scope, as shown in Table 7. It can be seen that both adjunction positions occur, with left adjunction more frequent than right adjunction.

	I believe	I think	I guess	I suppose	TOTAL
L-AdjP	1			1	2
L-CP			1	1	2
L-DP	10	7	14	8	39
L-NP			1		1
L-PP	3		5	5	13
L-T'	5	3	4	5	17
L-TP			1		1
L-VP	1	5	7	2	15
	<i>20 (59%)</i>	<i>15 (68%)</i>	<i>33 (65%)</i>	<i>22 (51%)</i>	<i>90 (60%)</i>
R-AdjP		2		2	4

R-AdvP				1	1
R-DP	12	4	13	14	43
R-PP				1	1
R-TP	1		3		4
R-VP		1	1	1	3
	<i>13 (38%)</i>	<i>7 (32%)</i>	<i>17 (33%)</i>	<i>19 (44%)</i>	56 (37%)
Fragmented ²⁰	1 (3%)		1 (2%)	2 (5%)	4 (3%)
TOTAL	34 (100%)	22 (100%)	51 (100%)	43 (100%)	150 (100%)

Table 7 Scope and adjunction position of clause-medial PVPs.

There is no statistical difference between the distribution of the four different PVPs in terms of left and right adjunction in medial position: $\chi^2 = 1.92$, d.f. = 3, $p = .5892$. We will discuss examples from this table in section 4.3.1 below.

4.2.3 Scope of Clause-Final PVPs.

Our syntactic analysis of clause-final PVPs is shown in Table 8. We classified almost three quarters of the examples as bearing clausal scope, i.e. TP. We noted in many examples, however, that scope seems to be ambiguous between clausal scope and phrasal scope over the last constituent in the sentence. We labeled such cases as e.g. ‘R-TP-DP’ to indicate that scope could be on the DP instead of the TP.

	I believe	I think	I guess	I suppose	TOTAL
<i>Phrasal scope</i>					
R-CP	3	1	2	5	11
R-DP	1		3	10	14
R-PP			1		1
R-VP			4	2	6
R-S.Frag. ²¹	6	2	10	10	28
	<i>10 (18%)</i>	<i>3 (30%)</i>	<i>20 (32%)</i>	<i>27 (28%)</i>	60 (26.8%)
<i>Clausal scope</i>					
R-TP	16	4	30	48	98
R-TP-AdvP	3			1	4
R-TP-CP	1	1	1	1	4
R-TP-DP	26	2	9	18	55
R-TP-PP			2	1	3

²⁰ We coded as fragmented those PVPs that occurred in fragments. Enough words were included to ascertain that the PVP had been intended as clause-medial, but not enough words were included to decide what the scope of the PVP was intended to be.

²¹ Sentence fragments are elliptical structures, where the utterance consists solely of a phrasal constituent, e.g. as an answer to a wh-question.

	46 (82%)	7 (70%)	42 (68%)	69 (72%)	164 (73.2%)
TOTAL	56 (100%)	10 (100%)	62 (100%)	96 (100%)	224 (100%)

Table 8 Scope and adjunction position of clause-final PVPs

The right-adjoined phrasal scope examples in Table 8 could be combined with the right-adjoined phrasal scope examples in Table 7 to give a complete picture of PVPs with clear phrasal scope. If we look at the data in this way, then PVPs are a bit more likely to adjoin to the right when they take phrasal scope (90 to the left, 56+60 = 116 to the right). This would seem to contradict the conclusion of Kärkkäinen 2010 that epistemic phrases are more likely to adjoin to the left of their scope in American English (although not in British English).

Finally, there is no statistical difference between the distribution of the four different PVPs in terms of phrasal and clausal scope in final position. $\chi^2 = 3.364$, d.f. = 3, p = .3388. We will present examples from this table and discuss interpretations of the findings in section 4.3.2 below.

4.3. PVP Prosody.

In this section, we turn to PVP prosody. As mentioned earlier, we are in the process of annotating our data according to the ToBI system of prosodic annotation for American English. In this paper, we mostly present a less detailed representation of the prosody. In the examples below, intermediate phrases are shown by parentheses, the nuclear accent of an intermediate phrase is shown in capital letters, and pitch-accented words are underlined. Hash marks (#) indicate prosodic attachment. The PVPs are bold-faced.

4.3.1 Prosody of Clause-Medial PVPs.

Many clause-medial PVPs attach to the left, or less often to the right of phrasal constituents within the sentence. Examples are shown in (18):

- (18) a. L-DP:
509.40 513.50 B: well no i take that back (i did like uh the guy that finally
513.37 527.14 B: (went to **i believe**#the Miami DOLPHINS) [FE_03_02786]
- b. L-VP:
62.60 65.47 A: that they're just getting overwhelmed (but you
66.64 67.11 A: CAN'T
67.72 76.25 A: (**i GUESS**)#(tell people to quit having CHILDREN they can't take
care of) and i have to tell you i think that's a majority of the problem but
[FE_03_00853]
- c. L-PP:
127.58 134.00 B: that's nice my daughter is ah my daughter played softball up
until a couple of years ago she played

134.04 137.76 B: (**i guess**#from the time she was six till she was FOURTEEN) [FE_03_01928]

- d. L-DP:
178.10 189.31 A: uh-huh in fact (it's really happening to (**i suppose**#all business owners EVERYWHERE) (being put out of business by well whatever WALMART and KMART) and you know [FE_03_04135}
- e. L-DP:
186.76 190.30 B: [noise] th- they're th-(they're studying **i think**#men's LANGUAGE or something) [noise] [FE_03_05712]
- f. R-DP:
175.20 181.12 A: however um i mean i you you know i (i caught the very end of
181.24 194.95 A: word PROCESSORS#**i suppose**) ah and typewriters and whatnot you know i my first papers were with computer and and um i they're just a tremendously helpful tool [FE_03_05132]

In all these cases, the semantic scope of the PVP corresponds to its syntactic scope. In more complex cases, such as (19), the syntactic scope that the PVP adjoins to—here an entire DP—is bigger than the semantic scope—here a nominal pre-modifying the head of the NP inside the DP. In this case, the semantic scope receives the prosodic focus of the intermediate phrase, so we can see that the PVP associates with focus for its semantic scope. See the pitch track in Figure 1.

- (19) 297.29 303.96 B: against those who practice such things and one of those things is listed as homosexuality uh not only
304.01 317.32 B: uh practice these things but condone others that do it and that's what we're doing now in both our countries if you're from california uh (your supreme court just struck down#**i believe**#a TEXAS law) [FE_03_05459]

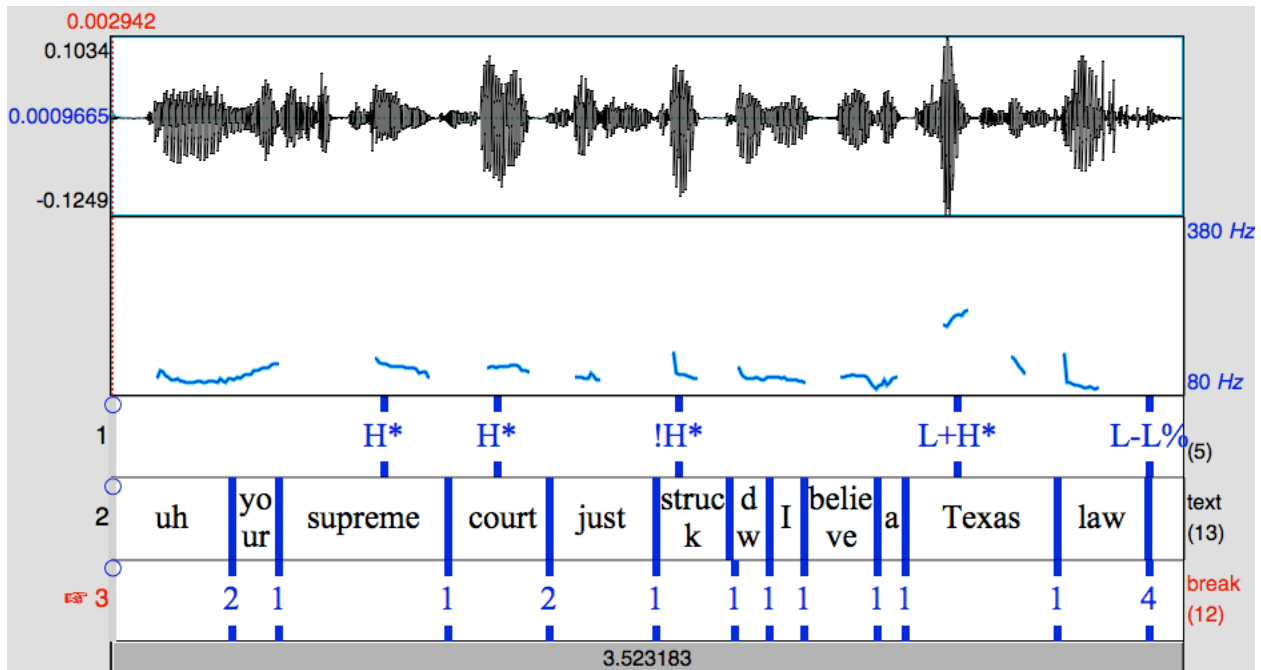


Figure 1. Wave form, pitch track, and ToBI analysis of (19).

The ToBI tones in the first tier of annotation in the figure show three different pitch accents: a high H*, a downstepped high !H* and a very salient, steeply rising high L+H*. The whole phrase makes up one intermediate phrase whose right edge receives a low phrase accent L-, and one intonation phrase whose right edge receives a low boundary tone L%. The ToBI break indices in the third tier of annotation indicate prosodic word boundaries (break index 1) and an intonation phrase boundary (break index 4). The subject is separated from the predicate by a break index 2, which indicates that subjectively we perceived a boundary between the two segments but could find no evidence in the tonal pattern for an intermediate phrase boundary (break index 3).

This is an example that Kaltenböck might have classified ‘left-right-bound’. However, it does not seem to function as a structural filler. Syntactically, we classified it as L-DP because the scope is ‘a Texas law’ although the focus is only ‘Texas’. Prosodically, there is no prosodic break before ‘I believe’, which is unaccented. The PVP is integrated into the middle of the intermediate phrase, which is also an intonational phrase. Dehé 2009 would presumably have classified this as an example of the [...CC...] pattern. The PVP is unaccented but occurs neither in the prehead nor the tail of its intonation group, as Dehé and Wichmann would have predicted for a left-right-bound example. For our purposes, what is important is that the speaker is not mitigating the proposition that the California supreme court struck down a law—what is expressed as uncertain is just that the law is a Texas law. We can see from this example how the PVP is prosodically attached to material to its left and right, is syntactically attached to the DP to its right, but only semantically mitigates the material that is focused, i.e. ‘Texas’.

We propose a generative syntax account of cases like this in which a PVP is prosodically attached to material that is not in its syntactic scope. A PVP adjoins to its syntactic scope at S-Structure. At LF, the PVP is assigned a semantic scope on the basis of the c-command-based

hierarchical structure inherited from S-Structure and focus structure. Moreover, at PF, the PVP and its host structure is assigned a prosodic structure. The actual prosodic phrasing of the PVP is determined only in this PF component. Thus the prosodic structure, which is controlled by phonological processes, can diverge from the structure that entered the LF component earlier in the derivation of the sentence. Prosodic phrasing is therefore highly suggestive of semantic scope but is not a completely reliable indicator of it.

Another example showing the divergence between prosodic phrasing and syntactic/semantic scope is given in (20):

- (20) 483.51 496.47 B: people are always going to want to do that whole roll out the red carpet and [sigh] the oscars and stuff so i mean they'll always be around but they you know (they're going to have to come up with#i **guess#cheaper PRICES**) (or i don't know what they're going to do to COMPETE with)
 492.62 493.19 A: (([noise]))
 496.39 497.83 A: ((mhm i))
 496.63 504.20 B: (um that at home ENTERTAINMENT system) because um you really don't need to like leave your house any more [laughter] [FE_03_04570]

Here, the PVP is left-adjoined to a DP which constitutes its syntactic/semantic scope, and is prosodically attached to that DP. However, it is also prosodically attached to the preceding preposition 'with',²² but that element is not in the scope of the PVP. We thus analyze the prosodic attachment to the preposition as a purely PF phenomenon.

PVPs that occur between subject and predicate often attach to the subject but have clausal scope, as in (21) and (22). We classified these as L-T' cases because we view the PVP as left-adjoined to the T' node from which it c-commands the trace of the subject inside the VP. Note that prosodic attachment takes place after movement of the subject to specifier of TP position, so that once again, prosody diverges from syntactic/semantic scope. In (21), the subject is included in the semantic scope of the PVP, but in (22), the subject escapes from the semantic scope. The subject here is topical because the sentence is about the minimum wage in San Francisco. Because we assume that the PVP associates with focus, the subject in (22) will escape the force of mitigation by 'I think'. Nonetheless, the PVP still prosodically attaches to the subject.

- (21) 292.88 293.95 B: go to
 294.61 296.53 B: i think it's u._p._e._n._n. dot com
 296.41 297.54 A: go to what
 297.07 298.72 B: u._p._e._n._n. dot com
 298.46 299.46 A: upenn
 299.25 301.29 B: upenn p. e. n. n.
 301.49 307.06 B: u. cap ah (capital u. capital p. e. n. n. dot com#i **BELIEVE**#is the name of it)
 306.44 307.36 A: okay [FE_03_04657]

²² We assume that the prosodic constituent indicated by this prosodic left and right attachment ('with I guess cheaper prices') is smaller than an intermediate phrase.

- (22) 24.96 28.40 B: well how much do you think the minimum minimum minimum wage should be
 28.62 31.60 A: i think it should be eight dollars an hour
 30.48 42.70 B: eight eight dollars yeah well and when i was living in san francisco um california um (the minimum wage#i think#was about that THAT amount) and that was sufficient
 42.51 43.51 A: yes
 43.14 50.50 B: barely to cover the cost of living in san francisco it's extremely expensive um [FE_03_03590]

4.3.2 Prosody of Clause-Final PVPs.

We analyzed PVPs in clause-final position as mostly bearing clausal scope. Only 27% of them were classified as bearing phrasal scope. That is, we assigned most of them the classification R-TP. However, we felt in many cases that such sentences could instead have been analyzed as exhibiting scope on the final constituent in the clause. To capture such apparent ambiguity, we modified the label to e.g. ‘R-TP-DP’ or ‘R-TP-PP’ in order to make a record of such apparent ambiguity. Some examples of clause-final PVPs are shown in (23). See the pitch track for (23) in Figure 2. The PVP occurs as part of unaccented material following the final, nuclear accented word ‘exponentially’.

- (23) a. R-TP-AdvP:
 159.86 165.92 B: as well as as well as the um you know more definitely more research because that sars
 166.05 169.09 B: (it's it's mutating EXPONENTIALLY#i believe) [FE_03_02722]
- b. R-TP:
 60.75 73.45 A: they they they took them i could have i didn't really need them because you can just go to the dollar store and buy other ones but they took them i didn't have a problem with that (because they just didn't want it on the PLANE#i guess) [FE_03_00694]
- c. R-S.Frag.-PP:
 290.04 295.98 B: do you think that would cause a problem in the workplace maybe work place relationships i don't know
 296.06 298.15 A: (to SOME extent#i think)
 297.53 298.75 B: yeah [FE_03_04372]

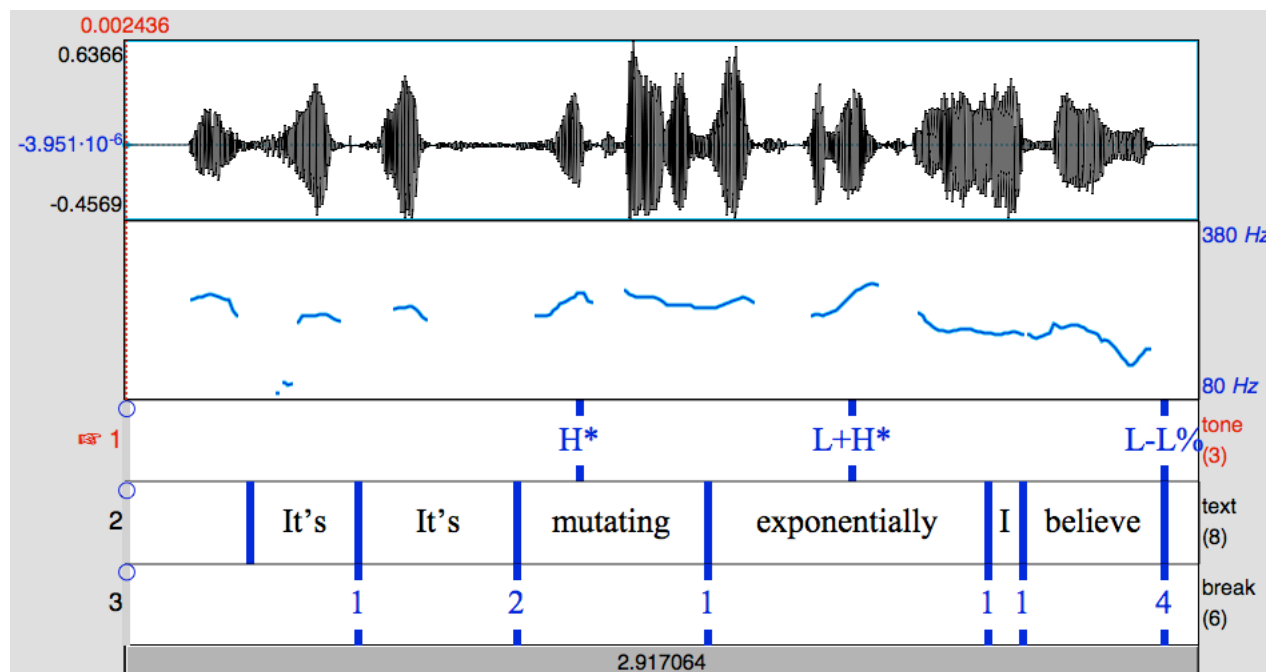


Figure 2. Waveform, pitch track, and ToBI analysis of (23a).

Another example with ambiguous scope, which we labeled ‘R-TP-DP’, is shown in (24).

- (24) 83.60 92.81 A: [laughter] well i i completely agree with that so i guess the real question lies in how you decide which books to be you know are not appropriate
 92.80 95.39 B: (that would be the difficult DECISION#i suppose)
 95.10 96.52 A: yeah how would you [FE_03_01359]

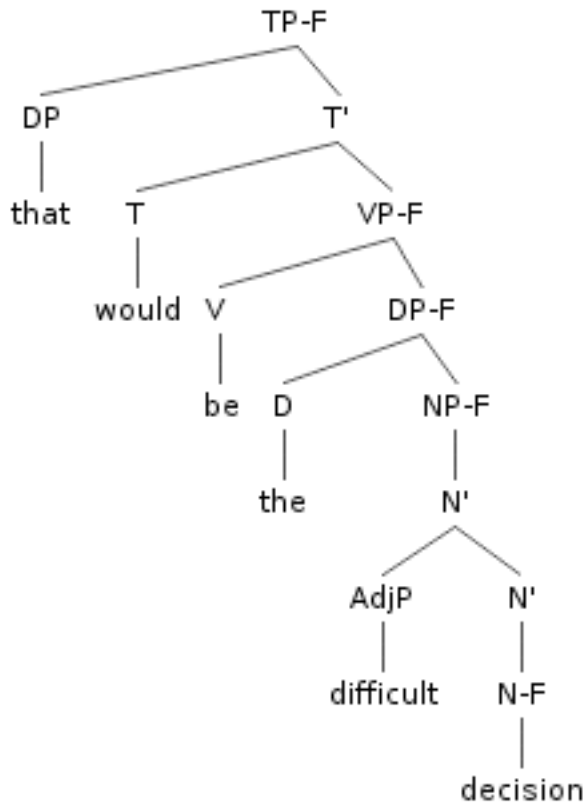
Kaltenböck 2008 mentions that he found the same type of ambiguity (p. 104). He chose to classify such examples as exhibiting clausal scope unless there was clear prosodic evidence to the contrary. We too may find in our ongoing detailed prosodic study of our data that some such PVPs actually bear phrasal scope, but for now we labeled them as ambiguous.

We believe that such cases of ambiguous scope in final position are due to the focused element tending to appear phrase- and clause-finally in English. In that position, focus tends to be ambiguous. This can be accounted for theoretically as the result of focus projection. In the analysis, for example, of Selkirk 1995, the semantic category of focus, which is determined at LF, and the phonetic expression of focus in terms of pitch accent, which is determined at PF, is mediated at S-Structure by a syntactic F feature. The element to receive prosodic focus is F-marked but then F-marking is optionally projected up the tree, in accordance with certain rules, in order to determine the constituent that ends up being interpreted as the semantic focus.

In (24), for example, the noun is F-marked, which allows its NP projection to be F-marked and also the DP projection of the D head of which it is complement. Then, because the DP is complement of V, the latter’s maximal projection, VP, can be F-marked. The TP can also be F-marked because the F-marked VP is complement to its head. Any of DP, VP or TP can thus

be selected as the semantic focus and thus, the semantic scope of the PVP. An S-Structure tree for the clause in (24), illustrating clausal focus and thus clausal syntactic scope for the PVP, is shown in (25).²³ F-marking could stop at the DP level, thus resulting in phrasal focus and phrasal syntactic and semantic scope for the PVP. The sentence-final PVP would be adjoined to the phrase that is actually chosen to be its semantic scope.

(25)



5. Conclusion.

Perhaps all four of our PVPs are on the way to grammaticalizing or pragmaticalizing to discourse particles like ‘you know’ and ‘I mean’, but at the moment we think that the four PVPs that we have studied have a synchronic existence as parenthetical expressions that are adjoined to their scope in the syntax and function like other epistemic adjuncts, such as epistemic adverbs. They mitigate the epistemic force of an utterance or part of an utterance. We favor a synchronic syntactic treatment that analyzes them as base-generated adjuncts, c-commanding the phrase or clause that constitutes their scope. They are prosodically phrased with the material in their scope, and the resulting phrase is typically expressed as an intermediate phrase in the prosodic hierarchy of the sentence. PVPs occurring between subject and predicate, however, may be phrased with

²³ We abstract away from representing movement resulting from the VP-internal subject hypothesis in this tree.

either the subject or the predicate but can have scope over the entire clause, which may be expressed as a complex intonation phrase with two intermediate phrases. The intermediate phrase or intonation phrase has a focus-background structure semantically. The PVP associates with the focus of the relevant phrase. The background/topic material in such intermediate or intonation phrase escapes the force of the PVP.

PVPs reveal aspects of the nature of language production. Sometimes speakers have a full sentence in mind when they begin to utter it. However, they listen to themselves produce the sentence, and in the course of utterance evaluate what they have said and what they plan to say. They then choose to mitigate all of or part of their sentence in the course of uttering it by producing a PVP at a relevant point. They are often very deliberate with regard to this mitigation, especially when uttering 'I believe'. Thus, as well as revealing how syntax, semantics, pragmatics, and prosody are interrelated, the study of PVPs in context can contribute to the study of how speakers articulate their messages in real time.

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