Research Article

Evelien Keizer*

Modal Adverbs in FDG: Putting the Theory to the Test

Abstract: One of the distinctive features of the theory of Functional Discourse Grammar (FDG) is that it distinguishes various hierarchically organized layers of analysis, each of which is provided with a slot for modifiers relevant at the layer in question. Linear placement of these modifiers is determined by the layer to which they belong, with the ordering of elements taking place in a top-down, outward-inward manner. The model, in other words, makes predictions concerning the (relative) clausal position of different types of modifiers. In addition, the model places constraints on the occurrence of different types of modifiers in embedded environments (e.g. within the complement of certain types of verbs). Finally, the model places constraints on which modifiers can be expected to co-occur in coordinated constructions. The aim of the present paper is to test these predictions by examining the function, position and distribution of ten adverbs expressing various kinds of modality. Data from the British National Corpus (BYU-BNC) is used (i) to determine whether the predictions following from the overall organization of the FDG model are supported by empirical data; and (ii) to refine, where necessary, the classifications of modal adverbs proposed in the literature.

1 Introduction[1]

One of the distinctive features of Functional Discourse Grammar (FDG) is that it makes use of various hierarchically organized layers at four different levels of analysis. At two of these levels, the Interpersonal Level and the Representational Level, each of these layers is provided with a slot for modifiers relevant at the layer in question. Since linear placement of modifiers is determined by the level and layer to which they belong, with the ordering of elements taking place in a top-down, outside-in fashion (Hengeveld & Mackenzie 2008: 311, Hengeveld 2013), the model makes predictions concerning the (relative) clausal position of different types of modifiers. In addition, the model places constraints on the occurrence of different types of modifiers in embedded environments (*e.g.* within the complement of certain types of verbs), as well as on which modifiers can co-occur in coordinated constructions.

Corresponding author: Evelien Keizer, University of Vienna, Vienna, AUSTRIA, E-mail: evelien.keizer@univie.ac.at

The aim of the present paper is to test these predictions by examining the function, position and distribution of ten adverbs expressing various kinds of modality and modal-like meaning at different representational layers.[2] More specifically, this paper sets out to find out (i) whether the overall approach to modification advocated by the model is supported by empirical data; and (ii) whether the classification of modal adverbs proposed in Hengeveld & Mackenzie (2008) requires any modification.

The set of adverbs selected for investigation, given in (1), includes prototypical modal adverbs (epistemic adverbs like *possibly*, *certainly* and *maybe*), as well as more marginal members of the class of modal adverbs (such as *hopefully*, *actually* and *deliberately*). These adverbs may be expected to belong to different representational layers of analysis.

(1)   possibly, probably, certainly, maybe, perhaps, hopefully, actually, necessarily, inevitably, deliberately

The methodology used will be that of qualitative and quantitative corpus research, using written and spoken data from the British National Corpus (BYU-BNC; Davies 2004). In order to realize the two aims specified above, the corpus data will be used to answer the following research questions:
–   Which adverbs do the selected adverbs coordinate with (by means of *and*, *but* and *or*)?
–   In the complement of which verbs do the selected adverbs occur?
–   What are the preferred positions of these adverbs in the clause (in general and vis-à-vis other modal adverbs)?

The paper is organized as follows. Section 2 provides an overview of some of the characterizations and classifications of modal adverbs proposed in the literature. Section 3 briefly discusses the way in which (grammatically and lexically expressed) modality is dealt within FDG. Section 4 describes the methodology used in the current study and introduces the hypotheses to be tested. Section 5 presents the findings of the various searches conducted to test the hypotheses: Section 5.1 looks at the coordination of the selected adverbs (Hypothesis I), Section 5.2 at the occurrence of these adverbs in the complements of verbs (Hypothesis II) and Section 5.3 at the clausal position and co-occurrence patterns of the ten adverbs (Hypothesis III). Section 5.4 discusses two further issues (whether there is reason to assume that modal adverbs can express participant-oriented modality and deontic modality), and Section 5.5 offers a revised classification of the ten adverbs in FDG, based on the results of the various searches. Section 6 concludes the paper.

2 Classifications of modal adverbs

In most discussions of the meaning and/or syntactic behaviour of modal adverbs, these adverbs are treated as a relatively well-delineated group. Nevertheless, previous accounts differ rather widely when it comes to the question which adverbs are considered to be modal. This section provides a brief overview of the different classes and subclasses of modal adverbs that have been distinguished; more detailed information about the different functions of the various modal adverbs and the criteria used for classification will be provided in the relevant sections below.

Quirk et al. (1985: 485) distinguish a class of modal adverbials, used to enhance or diminish "the truth value or force of a sentence". Enhancing adverbials, such as *certainly* or *(not) at all*, emphasize the positive or negative poles of a statement, while diminishing adverbials function as approximation (indicating the middle ground), *e.g. probably*, *not exactly*. Quirk et al. (1985: 503, 613) further distinguish between adverbials functioning as adjuncts, subjuncts and disjuncts.[3] Adjuncts "closely resemble other sentence elements such as [subject, object or complement]; typical examples are adverbs indicating manner (*carefully*), time

---

2 Modal adjuncts may, of course, also take the form of phrases (*in all probability*, *in fact*) and clauses (*I assure you*). In addition, modality can be lexically expressed by means of adjectives (*it is possible/likely that*). An examination of all these various types is, however, clearly beyond the scope of a single paper.

3 They also distinguish a class of conjuncts (*e.g. nonetheless*, *therefore*), but these will not be discussed here (see Quirk et al. 1985, 631-647).

(*previously*) or frequency (*often*). Subjuncts, on the other hand, are characterized by Quirk et al. (1985: 567) as having "to a greater or lesser degree, a subordinate role ... in comparison with other elements"; examples are domain adverbs like *weatherwise* or *economically (speaking)*, subject-oriented adverbs such as *resentfully*, *frankly* and *bitterly*, and volitional adverbs like *deliberately*, *reluctantly*, *voluntarily* and *(un) willingly*. In addition, there is a group of modal subjuncts that serve as emphasizers, reinforcing the truth of a clause; common examples are *actually*, *certainly*, *clearly*, *really*, *etc.* (Quirk et al. 1985: 583, see also Hoye 1997, 161-162). Disjuncts, finally, differ from subjuncts in being "syntactically more detached and in some respects 'superordinate', in that they have scope over the sentence as a whole" (Quirk et al. 1885: 613). Disjuncts come in two main groups: style disjuncts like *truthfully*, *bluntly* and *personally*, and content disjuncts, which include modal adverbs like *certainly*, *possibly*, *perhaps* and *maybe*, as well as *actually* (asserting reality).

In their chapter on adjectives and adverbs in Huddleston & Pullum (2002), Pullum & Huddleston (2002: 576) make a distinction between VP-oriented adjuncts (*e.g.* adverbs of manner, degree, duration and frequency) and clause-oriented adjuncts (*e.g.* which include speech-act, evaluation and modal adverbs. Mittwoch et al. (2002: 767, also in Huddleston & Pullum 2002) observe that modal adjuncts "are predominantly used for epistemic modality" and "are not used to express deontic modality". Not all modal adjuncts, however, express epistemic modality; the adverb *necessarily*, for instance, can be used to express epistemic logical necessity (truth guaranteed) as well as non-epistemic dynamic necessity (unavoidability).[4]

Within the framework of Systemic Functional Grammar, Halliday & Matthiessen (2014, 183-191) present a very fine-grained classification of modal adjuncts,[5] which are divided into two major subclasses: the class of mood-modality adjuncts, which includes such typical epistemic adverbs as *certainly*, *probably*, *possibly*, *perhaps* and *maybe*, as well as the intensifying/counterexpectancy adverb *actually*; and the class of comment adjuncts, which is further subdivided into evidential adverbs (including not only *inevitably*, *predictably* and *evidently*, but also *hopefully*), subject-oriented adverbs (*e.g. wisely*, *rightly*) and speech-function adverbs (*e.g. frankly*, *generally* and *politically*, as well as the factuality adverb *actually*).

A different kind of distinction is proposed by Dik (1997, 240-242, see also Hengeveld 1988), who differentiates between subjective and objective epistemic modality. Objective epistemic modality serves to "express the speaker's evaluation of the likelihood of occurrence (the 'actuality') of the SoA" (Dik 1997: 242); in English this kind of modality is typically expressed by means of adjectival main predicates (*It is likely/ possible/certain that*) or modal auxiliaries (*will*, *may*/*might*). Subjective modalities, on the other hand, "signal the speaker's personal commitment to the truth of the proposition"; by using subjective modalities, the speaker indicates how certain, likely, probable or unlikely the truth of the proposition is (Dik 1997: 242). This kind of modality tends to be expressed by adverbs: modal adverbs like *certainly*, *probably* and evidential adverbs like *obviously* and *evidently* Hengeveld 1988, 239-240).[6]

Simon-Vandenbergen & Aijmer (2007), focussing on the expression of modal certainty, provide a detailed, corpus-based discussion of a range of modal adverbs, including the epistemic adverbs *certainly*, *necessarily* and *inevitably*, and evidential adverbs like *clearly*, *obviously* and *evidently*. They conclude that the adverb *certainly* is always used epistemically, but may also express additional meanings, such as concession or reassurance (Simon-Vandenbergen & Aijmer 2007: 88, 93, 95). The adverbs *necessarily* and *inevitably*, however, are characterized as adverbs of expectation (Simon-Vandenbergen & Aijmer 2007: 38, cf. Hoye 1997: 183), indicating "that a state of affairs is/was to be expected in the speaker's opinion"

4 Logical (epistemic) necessity is actually quite rare; an example would be *You're his uncle, so necessarily he's your nephew*. In most cases, *necessarily* expresses dynamic necessity, as in *Twice as many people turned up as we'd been told to expect, so necessarily things were a bit chaotic for a while* (where *necessarily* expresses unavoidability) (examples from Mittwoch et al. 2002: 767).

5 For a complete overview, see Halliday & Matthiessen (2014, 125-132, 146-150, Table 10-6).

6 Since modal auxiliaries and modal adverbs express two different kinds of modality, the two can be combined (even if the two expressions reflect different degrees of likelihood, as in *John may certainly have forgotten*; Hengeveld & Mackenzie 2008: 174, see also Hoye 1997). Note, however, that Nuyts (2001: 64) rejects the idea that modal adverbs are inherently subjective; he argues that if they do have a subjective (evidential) interpretation, this is triggered by the discourse context they occur in (Nuyts 2001, 65-66).

(Simon-Vandenbergen & Aijmer 2007: 311). These adverbs are regarded as marginally epistemic; *necessarily* in particular is regarded as expressing deontic rather than epistemic necessity (Simon-Vandenbergen & Aijmer 2007: 173, 188-189).

Generative studies have focussed mainly on the (relative) position of adverbs in the clause, taking as their point of departure Jackendoff's (1972) semantically based classification of adverbs into three groups: manner adverbs (*loudly*, *angrily*), subject-oriented adverbs (*cleverly*, *carefully*, *reluctantly*, *deliberately*) and speaker-oriented adverbs (*probably*, *certainly*, *perhaps*, *clearly*, *fortunately*, *amazingly*, *frankly*). An early refinement of this classification is offered by Bellert (1977), who argues that Jackendoff's class of speaker-oriented adverbs consists of five different subclasses, one of them being the class of modal adverbs, including *probably*, *possibly*, *certainly*, *surely* and *evidently*.

Cinque (1999) provides a further subdivision of the class of modal adverbs purely on the basis of their (cross-linguistically fixed) surface position (as determined by their position in the hierarchical structure of the clause; see also Cinque 2004, Laenzlinger 2004, Laenzlinger 2015):

(4)   Adverbs in the modality domain (Cinque 1999: 106):
    a.   epistemic: *probably*
    b.   (ir)realis: *maybe*
    c.   necessity: *necessarily*
    d.   possibility: *possibly*
    e.   volitional: *deliberately*
    f.   obligation: *inevitably*
    h.   ability/permission: *cleverly*

Note that Cinque's classification not only deviates from most other classifications in offering many subclasses of modal adverbs, but also in distinguishing a separate subcategory of 'possibility' adverbs for adverbs expressing alethic (logical) modality (i.e. necessary truths; Cinque 1999: 89).

Like Jackendoff (1972) and Bellert (1972), Ernst (2002) offers a scope-based analysis of the clausal position of adverbials, in which adverbs are assumed to adjoin to a particular projection within the clause on the basis of the semantic unit (proposition, event) they take in their scope (in combination with other factors, like morphological weight and directionality). Although Ernst (2002: 96) distinguishes a separate class of evidential adverbs, his class of epistemic (modal) adverbs is still quite broad (including *possibly*, *certainly*, *surely*, *perhaps*, *maybe*, *necessarily* and *definitely*). The same holds for Haumann (2007). Neither of these authors, however, includes mental-attitude (Ernst 2000) or agent-oriented (Haumann 2007) adverbs like *deliberately* and *reluctantly* in their category of modal adverbs.

2.1 Summary

It will be clear from the preceding discussion that, although linguists generally agree on the relevance of the notion of modality in the analysis of adverbs, there is clearly no consensus on the question of which adverbs exactly are modal and which subclasses need to be distinguished. This is partly due to the fact that some linguists tend to classify adverbs primarily on the basis of their meaning (or semantic scope) and/or their discourse-pragmatic function, while other linguists tend to rely on one or more formal features (primarily position). Ideally, there is a systematic link between the two, in the sense that the meaning of adverbs is related to (or triggers) a particular formal behaviour (see also Ernst 2002: 3, Haumann 2007: 10). What form such a semantics-syntax interface eventually takes, and which classification of adverbs it leads to, however, depends very much on the role of semantics in a particular theory, the kinds of semantic units it recognizes, and the aspects of formal behaviour taken into consideration.

This paper intends to make a contribution to this important theoretical debate by illustrating how the architecture of FDG in general, and the interaction between the Representational and Morphosyntactic Levels of analysis in particular, allows us to classify modal adverbs in a manner that is both semantically

plausible and syntactically justifiable. Before we embark on this enterprise, the next section will provide a brief sketch of how modality is dealt with in FDG.

3 Modal adverbs in Functional Discourse Grammar

As pointed out in the introduction, FDG has a top-down architecture in which the pragmatic and semantic aspects of a linguistic utterance determine (or constrain) its formal realization. The pragmatic aspects are taken care of at the Interpersonal Level, which reflects the strategic actions performed by a speaker in formulating his/her message (including the choice of an illocution, the acts of referring and ascribing, and the use of honorifics), while the semantic aspects (*i.e.* those aspects of a message that relate to the extra-linguistic world it describes) are taken care of at the Representational Level. These two levels together subsequently trigger a morphosyntactic and phonological form, represented at the Morphosyntactic and Phonological Levels, respectively.

FDG currently recognizes four types of grammatically expressed modality, all situated at the Representational Level (see Hengeveld, this issue). At the highest representational layer, the Propositional Content, we find operators expressing different kinds of subjective epistemic modality, indicating the kind or degree of speaker commitment to the Propositional Content (Hengeveld & Mackenzie 2008, 153-154, Hengeveld 1989: 151, 1997: 129, Dik 1997: 240). The next layer, that of the Episode, is the domain of objective epistemic modality, describing the degree of likeliness that an Episode takes place, as well as of subjective deontic modality, indicating a speaker's commitment to the desirability of the event(s) making up the Episode (Olbertz & Bastos 2013, 287-288).[7] At the layer of the SoA, we find several types of event-oriented modality (facultative, deontic, and volitive), while participant-oriented modality (facultative, deontic and volitive), which "concerns the relation between a participant in a State-of-Affairs and the potential realization of that State-of- Affairs", is expressed at the layer of the Configurational Property (Hengeveld & Mackenzie 2008: 212).

Event-oriented and participant-oriented modality may, at first sight, seem very similar, but they are not identical. In the case of facultative modality, for instance, event-oriented modality serves to indicate that "the possibility of the occurrence of the State-of-Affairs does not depend on the intrinsic capacities of a participant, but follows from the circumstances in which the State-of-Affairs takes place" (Hengeveld & Mackenzie 2008: 176), while facultative participant-oriented modality "describes the ability of a participant to engage in the State-of-Affairs type designated by the predicate" (Hengeveld & Mackenzie 2008: 213). Examples are given in (5a) and (5b), respectively:

(5)　a.　It can take three hours to get there.
　　　b.　John can swim.

Unlike many other theories, FDG also distinguishes between modality and evidentiality, with the latter relying on the presence of some kind of evidence, coding inference at the layer of the Propositional Content, deduction at the layer of the Episode, and event perception at the layer of the SoA (Hengeveld & Dall'Aglio Hattnher 2015, Hengeveld, this issue; for a discussion of evidential adverbs see also Kemp, this issue).

So far, however, much more attention has been paid in FDG to the (cross-linguistic) classification of the grammatical means available to express modality (see e.g. Hengeveld 1989, this issue, Boland 2006, Bastos et al. 2007, Dall'Aglio Hattnher & Hengeveld 2016, Olbertz & Bastos 2013) than to the classification of modal adverbs. Like other classifications, FDG distinguishes a class of prototypical modal adverbs, which (in English, at least) are the typical means of expressing subjective epistemic modality. This class of modal adverbs includes *certainly*, *probably*, *possibly* and *maybe*, all of which, together with the volitive (or boulomaic) adverb *hopefully* (Hengeveld 1988), are analysed as modifiers of the Propositional Content

---

7　Note that in Hengeveld & Mackenzie (2008: 174, 176), grammatically expressed objective epistemic modality and evaluative deontic modality were both situated at the layer of the SoA. This was adapted in Dall'Aglio Hattnher & Hengeveld (2016) and Olbertz & Bastos (2013), respectively.

(Hengeveld & Mackenzie 2008, 151-153). For the expression of objective epistemic modality, on the other hand, English is said to typically use adjectives (*it is possible/certain/doubtful that*), whereas in the case of event- and participant-oriented modality, English largely relies on modal auxiliaries (*must*, *can/could*, *may/might*, *be able to*, *etc*.). The only other modal adverbs belonging to any of the four relevant layers that Hengeveld & Mackenzie (2008: 171) mention is *actually* (indicating realis at the layer of the SoA).[8]

An overview of the various types of modality distinguished in FDG, the layer at which they occur and the adverbs used to express them is given in Table 1:

Table 1: Modal operators and modal(like) adverbs at four representational layers

RL-Layer	Operators	Modifiers (adverbs)
p	Proposition-oriented modality: • Subjective epistemic modality (indicating kind/degree of speaker commitment to the Propositional Content): – doxastic – dubitative – hypothetical	Propositional attitude: • Subjective epistemic modality: *certainly*, *probably*, *maybe*, *possibly* • Subjective volitive/boulomaic modality: *hopefully*
ep	Episode-oriented modality: • Objective epistemic modality (describing the degree of likeliness that an Episode takes place) – realis vs. irrealis • Evaluative deontic modality	
e	Event-oriented modality: – facultative – deontic – volitive	• Reality: *actually*
f^c	Participant-oriented modality: – facultative – deontic – volitive	

Although this focus on grammatical means for expressing modality is by no means exceptional (see *e.g.* Simon-Vandenbergen & Aijmer 2007: 2), the absence of a detailed discussion of different kinds of modal adverbs in FDG is unfortunate, given the wide range of lexical means available (cross-linguistically as well as in specific languages) to express different types of modality. This is particularly true for English, which strongly relies on lexical elements to express certain kinds of modality. As we have seen in Section 2, this is also (partly at least) recognized in work outside FDG, where more types of modal adverbs have been distinguished. In what follows, an attempt will be made to fill this gap by discussing the syntactic behaviour of a selection of ten modal adverbs.

4 The present study

4.1 Methodology

The aim of the present study is to test three specific hypotheses (see Section 4.2) based on a number of predictions made by FDG (and in some cases other theories as well). This will be done by means of a combination of quantitative and qualitative corpus research: using data from the British National Corpus, differences in frequency will be considered where relevant, while throughout the paper examples will be selected for detailed discussion and comparison.

---

8 Manner adverbs like *angrily* in *John angrily left the room* also modify the Configurational Property, but are not included here because they are clearly non-modal. Note that manner adverbs like *loudly* in *John was singing loudly* (*i.e.* "pure" manner adverbs) modify the Lexical Property (f) only (Hengeveld & Mackenzie 2008: 208, 230).

As will have become clear from the preceding sections, in investigating the semantic-syntactic interface (in the case of adverbs as well as other phenomena) one always runs the risk of circular reasoning, or, as Haumann (2007: 10) puts it, "[t]he syntax and the semantics of adverbs pose a chicken and egg problem at the syntax-semantics interface insofar as it is not clear whether the syntax of adverbs determines their semantics or vice versa". Naturally, in a top-down, function-to-form theory like FDG, the idea is to start from semantics and link these to syntactic differences. However, since FDG is also form-oriented (representing only those pragmatic and semantic phenomena that are reflected in morphosyntactic or phonological form; Hengeveld & Mackenzie 2008: 39), the formal behaviour of adverbs, as the only observable form of evidence, is, at the same time, taken as a basis for semantic classification. The present study thus takes a bi-directional approach. Ten adverbs were preliminarily classified according to the subtypes of modality distinguished in FDG (see Table 2). These adverbs were selected on the basis of (i) the degree of representativeness of the class they belong to (according to previous accounts), and (ii) their frequency (they needed be sufficiently frequent to address the questions this paper seeks to answer). The resulting classification was then used to test the three hypotheses given in Section 4.2, to see whether changes in the classification were required.

Table 2: A preliminary classification of modal(-like) adverbs in FDG[9]

Adverb	Type	RL-layer
possibly	subjective epistemic	Propositional Content
probably	subjective epistemic	Propositional Content
certainly	subjective epistemic	Propositional Content
maybe	subjective epistemic	Propositional Content
perhaps	subjective epistemic	Propositional Content
hopefully	subjective boulomaic/volitive modality	Propositional Content
actually	objective epistemic	Episode and/or SoA
necessarily	objective epistemic	Episode and/or SoA
inevitably	objective epistemic	Episode and/or SoA
deliberately	participant-oriented/volitive	Configurational Property

4.2 Three hypotheses

The three hypotheses tested in this study concern three formal features of adverbs: the possibility of coordination, their occurrence in the complement of verbs, and their clausal position.

Hypothesis I: Coordination
When it comes to coordination, the following hypothesis will be tested:

Hypothesis I:
Modal adverbs occurring at the same layer are more likely to be coordinated by means of *and*, *but* and *so* than adverbs occurring at different layers.

This hypothesis follows directly from the fact that FDG is a layered, scope-based model: for two (or more) elements to be coordinated, and as such to form a single syntactic unit, they must also semantically scope over the same representational entity. We would thus expect to find examples like (6a) (where both adverbs

---

9 Note that some of these adverbs also have other, non-modal uses (*e.g. hopefully* and *deliberately* can also be used as manner verbs). Although these uses will be commented upon in the discussion of the corpus data, they have not been included in this list.

modify the Propositional Content, but not the coordinated structure in (6b) (where *rightly* applies at the layer of the SoA, and *certainly* at the layer of the Propositional Content):

(6) a. Bull was always, first and foremost, a virtuoso both of technical invention and obviously of performance, even in compositions ***probably or certainly*** intended for the organ where he appears as the direct heir of Preston and Blitheman. (BYU-BNC, non-academic)
   b. ^{?*}... even in compositions ***rightly and certainly*** intended for the organ where he appears as the direct heir of Preston and Blitheman.

Hypothesis II: Embedding
The predictions made by FDG about the occurrence of modifiers in the complements of particular types of verbs lead to the following hypothesis:[10]

Hypothesis II:
Verbs taking a high layer as their complement (either the Propositional Content or an interpersonal layer) allow all types of representational modal adverbs to occur in their complement; verbs taking a lower layer as their complement (Episode, SoA or Configurational Property) only allow adverbs of the layer in question or of a lower layer to occur in their complement.
This means that we would expect to find instances of embedding such as (7a), but not (7b):

(7) a. I realized that, when push came to shove, not one of them really ***wanted*** to ***actually*** go to court and try cases to a jury. (COCA, academic)
   b. ...***wanted*** to ****probably***/****hopefully*** be there tonight.

Hypothesis III: Position
In their discussion of the placement of representational units, Hengeveld & Mackenzie (2008: 313) state that "[r]epresentational modifiers prefer to stay within the main Clause, and they too are positioned within the Clause in a centripetal manner, by starting from the left and the right edges, filling in absolute positions first and thereby creating new relative positions" (see also Hengeveld 1997: 134). This leads to the following hypotheses:

Hypothesis III:
(i)   modal adverbs from higher layers (*e.g. probably*) are more likely to occur in peripheral positions than lower-layer modal modifiers (*e.g. actually*)
(ii) when two modifiers from two different layers occur in the same clause, the higher-layer adverb is more likely to occur in a more peripheral (typically leftward) position than the lower-layer adverb.

As for the second part of Hypothesis III, we would expect more cases like (8a), with *probably* filling a more peripheral and *actually* a more central relative position, than (8b), where *actually* occupies the more peripheral position:

(8) a. And it's ***probably actually*** got an abscess in there, which is why it's so swollen on the top, sides and at the bottom. (BYU-BNC, consult)
   b. I think she got a bit of a shock you know she ***actually probably*** thought she was better than she was and a lot of people had been giving her a lot of pats on the back (BYU-BNC, meeting)

---

[10] For a study testing this prediction for the occurrence of modal operators in complements of different types of verbs in Brazilian Portuguese, see Bastos et al. (2007); for a corpus study of Engish modals in embedded contexts, see Hacquart & Wellwood (2012).

5 Findings and discussion

5.1 Hypothesis I: coordination

To test this hypothesis, all instances of coordination (by means of *and*, *or* or *but*) between one of the investigated adverbs and any other adverb (at both clausal and phrasal level) were retrieved from the BNC. For each coordination, it was decided which representational layer the two adverbs belonged to, and, in particular, whether the two adverbs modified the same representational layer or different ones. The results are given in Table 3.

Table 3: Coordination between the selected modal(like) adverbs and other (±modal) adverbs

	total # BNC	coordinated		same layer		different layers		??
		#	%	#	%	#	%	
possibly	6974	3	0.043	3 (p)	100	0	0	
probably	26239	9	0.034	4 (p)	44.44	5	55.56	
certainly	17964	9	0.051	8 (5 p, 4 m)	88.89	1	11.11	
hopefully	1824	2	0.11	2 (m)	100	0	0	
maybe	9883	0	0	0	0	0	0	
perhaps	33306	0	0	0	0	0	0	
actually*	25221	31	0.12	0	0	30	96.77	1 (3.23)
necessarily	5567	34	0.61	24 (e/ep)	70.59	10	29.41	
inevitably	3025	29	0.96	14 (e)	48.28	14	48.28	1 (3.45)
deliberately	2664	105	3.94	97 (f^c)	92.38	8	7.62	

p = Propositional Contents, ep = Episode, e = State-of-Affairs, f^c = Configurational Property, m = manner.

It will be clear that the results corroborate the hypothesis: in the large majority of cases the modal adverbs under investigation only coordinate with adverbs occurring at the same representational layer. Note, however, that this does not mean that coordination of adverbs always requires the adverbs to belong to the same semantic type: coordination is acceptable when two adverbs belong to the same representational layer (and are not semantically incompatible). Consider in this respect the following examples:

(9)   a.   To illustrate how the inequalities which underlie such possession afflictions are ***always and necessarily*** relative (rather than absolute), ... (BYU-BNC, academic)
      b.   Arthur Scargill had much the same idea, arguing that pits could only be saved by strike action and taking the battle to the streets. Support for the miners ***promptly and inevitably*** began to shrink, especially upon the Conservative back-benches, but he still believes that he is right. (BYU-BNC, newspaper)

In (9a) the adverbs *always* and *necessarily* represent two different semantic classes of adverbs (frequency and modality/necessity); however, since they take scope over the same semantic unit (SoA), coordination is possible. Similarly, in (9b) *promptly* is used to indicate time of occurrence (rather than manner: what is meant is that the event occurred after a short period of time, not in a prompt manner; cf. Ernst 2002: 85), while *inevitably* tells us something about the (objective) likelihood that the event occurred. Both, however, modify a property of the SoA and are therefore coordinable (see Section 5.4.1 for an explanation of the high number of unexpected uses of *necessarily* and *inevitably*).

     The data, however, also provide counterexamples to the hypothesis. One of most striking results is the lack of any coordinated expressions involving the epistemic adverbs *maybe* and *perhaps*. In the case of

maybe it could be argued that this is due to its "more overt verbal character", which according to Haumann (2007: 363) explains why *maybe* behaves differently from true epistemic modal adverbs like *possibly*, *probably* and *certainly* in terms of position (see Section 5.3.2) and modification (which is possible with the other adverbs but not with *maybe*). Note, however, that *perhaps* behaves identically to *maybe* in all these respects – yet *perhaps* does not have a verbal origin.[11] Nor would it help to weaken the claim by assuming that the impossibility of coordination and modification is caused simply by their non-prototypical origin, being derived from a verb and noun respectively, rather than through the productive process of adding *-ly* to an adjective. After all, other derived/lexicalized forms readily allow both coordination and modification (*e.g. very matter-of-fact*; *efficiently and matter-of-fact-ly*). Instead, it will be argued that the distinctive behaviour of *maybe* and *perhaps* should be taken to reflect specific semantic properties shared by the two adverbs; we will return to this issue in Section 5.3.

Returning to the findings presented in Table 2, we find that although in the large majority of cases coordination involves adverbs modifying the same representational layer, coordination of adverbs belonging to different layers does occur (*e.g.* Cinque 1999, 211-212, Ernst 2002, 135-137, Haumann 2007: 97). Two different explanations have been offered in the literature. The first, syntactically based, explanation is given by Cinque (1999, 211-212, see also Haumann 2007: 97). In his account, the placement of different types of adverbs is determined by the (fixed) position these types take in the hierarchical syntactic structure of the clause (*i.e.* in the specifier positions of a particular projection). In this approach, coordinated adverbs (forming a syntactic constituent) have to belong to the same projections (have to be licensed by the same functional heads). Exceptions are accounted for by assuming that in those cases we are not dealing with a coordination of adverbs, but of larger constituents, with part of the first conjunct "being deleted under identity" (Haumann 2007: 97). This is illustrated in examples (10) and (11):

(10) a. The king replied that she must keep her promise, so she **slowly and sadly** opened the castle
          door. (Haumann 2007: 97)
      b. ... she [slowly opened the door] and [sadly opened the door]

(11) a. The current owner has **recently and lovingly** restored it into a holiday home. (Haumann 2007:
          97)
      b. ... has [recently restored it] and [lovingly restored it]

Ernst (2002), offering a semantically-oriented, scope-based account of adverb ordering, rejects such an account, one of the reasons being that an example like (12) would actually require two simultaneous processes of deletion, in different directions (one process under identity with material from the first conjunct, the other deleting material under identity with material from the second conjunct; example adapted from Ernst 2002: 136):

(12) a. They had frequently but (only) briefly stopped to see her off.
      b. [They had frequently stopped to see her off] but [they had (only) briefly stopped to see her off].

According to Ernst (2002: 137), there is no need to assume the presence of deleted material; in his approach, such coordinated structures are unproblematic, since at the semantic level the two adverbs can be coordinated even if they take different denotations as their argument. By way of illustration consider example (13) (from Ernst 2002, 136-137):

(13) a. **Surprisingly and rather ungraciously**, Carol had told them to get lost.
      b. $[[_E \text{T(e)} \& \text{Agt(e,c)} \& \text{Th(e,gl)}] \& \text{UNGRACIOUS (e)} \& \text{SURPRISING } [_{FACT} \text{e}]]$

---

11 According to the OED Online, *perhaps* is "Partly a borrowing from French. Partly a borrowing from Latin, combined with an English element", *i.e.* a combination of *per* (Fr./La.) and *hap* (Anglo-Saxon 'good fortune, success').

The sentence in (13a) is represented in (13b) as an event (E) consisting of the action of telling (T(e)), the agent Carol (Agt(e,c)) and the theme "they get lost" (Th(e,gl)). This event is modified by the manner adverb *ungracious*, which is coordinated with the evaluative adverb *surprising*. Since evaluative adverbs take a fact as their argument, the event is converted into a fact (a process allowed by the calculus Ernst uses).

It will be clear that neither of these proposals is acceptable in FDG: the former because it employs only a single, syntactic level of analysis, where movement and deletion are allowed; the latter because, even if we were to accept the possibility of events being converted into facts and *vice versa*, the presence of only two semantic units (or denotations; event and fact) is not enough to account for all the possible kinds of coordination attested.

So how can the attested instances of coordination of adverbs belonging to different semantic layers be dealt with in FDG? There seem to be two possible ways of tackling the problem. The first of these seems to be required in those cases where coordination, though seemingly acceptable, is nevertheless logically speaking problematic. An example can be found in (14):

(14) a.   He was of course on first-name terms with everyone from the Prime Minister downwards whom he ***probably and inappropriately*** called 'man'. (BYU-BNC, fiction prose)
      b.   = "... whom he probably called 'man', and if he did so, this was inappropriate"

Note that in this example it is difficult to analyse the coordinated adverb as a single unit. The subjective epistemic adverb *probably* indicates a medium degree of commitment on the part of the speaker to the truth of the proposition "he called x 'man'". By means of the adverb *inappropriately*, on the other hand, the speaker modifies the Configurational Property, qualifying it as inappropriate. Most importantly, however, the latter modifier only applies in case the proposition is true – which, however, need not be the case. Note also that the fact that the applicability of the SoA modifier *inappropriately* depends on the truth of the proposition accounts for the fact that the propositional adverb precedes the manner adverb (**inappropriately and probably*).

In cases like these, it seems therefore reasonable to assume that the speaker is using a convenient shortcut to express an otherwise rather cumbersome formulation. In FDG this can be reflected by assuming that at the Representational Level (RL) we have two complete Propositional Contents, at least one of which contains parts that are not expressed at the Morphosyntactic Level (ML). Which elements remain unexpressed is not only determined by co-indexation (reflecting identical designation, in this case the same SoA, e_i), but also by the lack of Subacts corresponding to these elements at the Interpersonal Level (IL), where the properties corresponding to 'refuse' (T_1) and 'accept' (T_2), and the Actor (corresponding to R_1) and Undergoer (corresponding to R_2) are evoked only once.[12]

(15) he or she will probably and quite rightly refuse to accept it (see (15a)).
   IL: $(A_1: [(F_1: DECL (F_1)) (P_1)_S (P_1)_A (C_1: [(T_1) (T_2) \textbf{(T}_3\textbf{) (T}_4\textbf{)} (R_1) (R_2)] (C_1))] (A_1))$
   RL: $(p_1: (ep_1: (cert \; \textbf{e}_1\textbf{:} (f_1: [(f_2: refuse (f_2)) (1 \; x_1)_A (e_2: \text{-- to accept it} – (e_2)))_U] (f_1)) (e_1)) (ep_1)) (p_1): \textbf{(f}_3\textbf{:} \textbf{probable (f}_3\textbf{))} (p_1))$
         $\& if (p_2: (ep_2: (\textbf{e}_1\textbf{:} [\;] (e_1): \textbf{(f}_4\textbf{: -- quite right -- (f}_4\textbf{))} (e_1)) (ep_2)) (p_1))$
   ML: $(Cl_1: [(Np_1: he (Np_1)) (Vw_1: will (Vw_1)) \textbf{(Advp}_1\textbf{: probably (Advp}_1\textbf{))} (Gw_1 \; and (Gw_1)) \textbf{(Advp}_2\textbf{: quite rightly (Advp}_2\textbf{))} (Vp_1: \text{-- refuse to accept} – (Vp_1)) (Np_2: it (Np_2))] (Cl_1))$

In other words, FDG combines elements of the two proposals mentioned above, while at the same time adding some crucial new features. Thus, rather than relying on deletion of syntactic material (as suggested by Cinque (1999) and Haumann (2007)), the analysis proposed deals with non-expressed semantic information through an interplay between three levels of representation (IL, RL and ML). The analysis also fares better than Ernst (2002) when it comes to the semantic representation of coordinated adverbs in that it

---

12 The representations here are simplified, including only those details that are relevant to the present discussion.

offers a more fine-grained hierarchy of semantic layers, which not only interacts with a syntactic level, but also with a pragmatic level of analysis.

Cases like these, which are to some extent semantically non-transparent, are, however, quite rare, as they only occur when one of the coordinated modifiers is a subjective epistemic adverb. In most other cases, coordination of two adverbs from different layers seems to be readily interpretable and, indeed, fully acceptable, as shown by the following examples:

(16) a.   Then when you finally and deliberately ease up, you will find that the quality of your running improves (BYU-BNC, pop lore)
      b.   How many of these would actually and actively support an English attack on Scotland because Dunbar did, was the question. (BYU-BNC, non-academic)

In (16a) we find a combination of a temporal adverb (*finally*, e) and a manner adverb (*deliberately*, f^c), and in (16b) a realis adverb (*actually*, e/ep) and a manner adverb (*actively*, f^c). All of these could, of course, be analysed in the same way as the semantically somewhat problematic example in (14). Alternatively, we may prefer to reserve that particular kind of analysis for those instances where the meaning conveyed by (and inferable from) the coordinated structure is more than the sum of its separate parts (see paraphrase in (14b)), thus justifying the presence at the Representational Level of non-expressed material. To account for the far more numerous cases illustrated in example (16), a much simpler representation would suffice, namely one that allows us to coordinate semantically compatible adverbs from different layers.[13] This might result in a representation like the one given in (17b), which can be expressed either with an explicit coordinator (as in (17a)) or without (the result being the expected but slightly awkward *you finally deliberately ease up*):

(17) a.   you finally and deliberately ease up (see (17a))
      b.   (p$_1$: (pres ep$_1$: (e$_1$: (f$_1$: [(f$_2$: ease-up (f$_2$)) (1 x$_1$)$_A$] (f$_1$): **(f$_3$: deliberate (f$_3$))** (f$_1$))] (e$_1$): **(f$_4$: final (f$_4$))** (e$_1$)) (ep$_1$)) (p$_1$))

Furthermore, the data show that, apart from those cases where we need to posit two propositions, with a dependency relation between them (example (14)), the order in which the two adverbs appear is free (or at least not semantically determined), irrespective of whether the two adverbs belong to the same layer or not. Thus we find *certainly and probably* as well *as probably and certainly*, *always and necessarily* as well as *necessarily and always*, and *slowly and deliberately* as well as *deliberately and slowly*.

Finally, let us consider the only other adverb that clearly does not behave as expected: *actually*. Of the 30 instances of coordination of *actually* with some other adverb, 17 are part of more or less fixed phrases which typically occur in specialized (philosophical, legal, medical, *etc*.) contexts, and often repeatedly within one passage (*actually and/or potentially*, *actually or essentially*, *actually and/or inferentially*). In all these cases the other conjunct is an antonym (*virtually or actually*, *nominally or actually*, *theoretically and actually*, *etc*.) that is best regarded as functioning at the layer of the Configurational Property rather than the SoA or Episode, as it is not the occurrence of the SoA or Episode described that is presented as theoretical or potential, but rather the Property restricting (characterizing) the SoA, *i.e.* the relation between the participants and the action denoted by the verb. In other words, whereas an Episode or SoA presupposes the (past, present or future) (non-)occurrence of a state or event in some extra-linguistic reality, the adverbs *actually* (*potentially*, *theoretically*, *etc*.) comment on the situation described (as represented in the Configurational Property) in an (as yet) virtual reality. The same is true for the remaining cases, some examples of which can be found in (16b) and (18):

(18) a.   Also, the Euboian cleruchy may ***actually and ironically*** have accelerated the revolt it was designed to prevent -- because cleruchiea had a garrison function (BYU-BNC, academic)

---

13 And even from different levels, as in Unfortunately and unwittingly *Bernard angered her* (BNC, fiction); see also example (13).

b. The claim of a holy Gad that those who have fellowship with him should not only be acquitted and accounted righteous, but ***actually and progressively*** be made righteous in an ethical sense is strongly brought out in the Pauline letters. (BYU-BNC, religion)

Now, if we allow semantically compatible adverbs from different layers to coordinate, these examples are, of course, unproblematic. Yet, the fact that *actually* in all of its coordinated occurrences combines with a lower-layer adverb suggests that it does not modify an Episode or SoA (as previously assumed), but a Configurational Property, applying to the realis status of the relation between verb and particular participants involved, rather than to the status of the SoA characterized by this relation.

By way of summary, we can say that the data on coordination
– corroborates the hypothesis in that in the large majority of cases the modal adverbs under investigation only coordinated with adverbs occurring at the same representational layer (though not necessarily of the same semantic class);
– provides no examples of coordinated expressions with the epistemic adverbs *maybe* and *perhaps*;
– shows that coordination of adverbs belonging to different layers does occur, and comes in two types: semantically non-transparent and semantically transparent;
– suggests that *actually* functions at the layer of the Configurational Property.

5.2 Hypothesis II: embedding

The second hypothesis is based on the assumption that, since particular types of verbs (*e.g.* verbs of knowing or believing) take a particular layer as their complement (in this case the Propositional Content; see Hengeveld & Mackenzie 2008: 363), these complements can only contain adverbs modifying that particular layer or a lower layer.

To test the second hypothesis two searches were conducted. First the corpus was searched for all instances of any verb (in any inflected form) immediately followed by the element *that* and one of the selected adverbs (within a distance of nine words from the element *that*). In a next step, the relevant examples (*i.e.* those cases where the element *that* functioned as a complementizer and the adverb functioned as a clausal modifier within the complement) were selected for further investigation. For high-frequency adverbs like *possibly*, *probably*, *certainly*, *maybe*, *perhaps* and *actually*, the search was restricted to the first 200 hits.

In order to obtain a reliable set of data, the following constructions were excluded. First of all, those cases where the complement clause was a copular construction and the adverb occurred in post-copular position were not included, since it was often difficult to determine whether the adverb had wide (clausal) scope or narrow scope (over the non-verbal predicate only; see example (19a)). Also excluded were embedded quotations (see (19b)), other cases of ambiguous scope (main clause vs. complement clause or clausal vs. phrasal; see (19c)), and all cases where the adverb was separated from the main clause by means of punctuation (commas, brackets of dashes; see (19d)).[14]

(19) a. I ***believe*** that distribution possibilities are ***possibly*** better er for erm the south west and the north west (BYU-BNC, public debate)

b. The report ***admits*** that "there has ***probably*** been a persistent tendency within the world's energy industry to understate the technical potential for improvement and substitution". (BYU-BNC, miscellaneous)

---

14 Included were cases of *I think that* followed by a complement clause, despite the fact that according to some linguists (Thompson 2002) the sequence *I think*, even when followed by the complementizer *that*, no longer functions as a complement taking predicate, but rather as a comment clause (and more specifically as an epistemic marker). In the current analysis, however, I adopt the view that in those cases where the complementizer is present, clauses like *I think* or *I suppose* can still be regarded as matrix clauses (*e.g.* Kaltenböck 2008, Kaltenböck 2009).

    c.   At the actual meetings it was ***noted*** that Truman seemed ***deliberately*** impervious to Churchill's oratory. (BYU-BNC, academic)

    d.   but until then we enjoy the friendship and satisfaction of working together to secure a better deal for the elderly everywhere, and ***remember*** that, ***hopefully***, you will all be pensioners one day. (BYU-BNC, scripted speech)

What remained was a total of 1,059 relevant examples, involving 114 different (senses of) verbs. Of these verbs, the large majority (86.8%) were verbs taking a Propositional Content as their complement (*e.g. think*, *know*, *mean*, *believe*, *realize*, *feel* and *suggest*, as well as *see* in its inferential use; see example (20a)); a further 7.9% of the verbs took a higher (interpersonal) layer as their complement (*e.g. say*, *add*; example (20b)):

(20) a.   Eventually Angel came to ***believe*** that she ***probably*** had killed d'Urberville. (BYU-BNC, fiction)

      b.   He conceded there was less reading of 'non-purposeful' material, such as comics, but ***added*** that this did not ***necessarily*** mean there was less literacy. (BYU-BNC, newspaper)

Since the higher-layer complement-taking verbs are assumed to allow all of the adverbs investigated, we only need to focus on the 5.3% of verbs taking a lower-layer complement, *i.e.* Episodes or SoAs; an example is given in (21). Since complement clauses designating Configurational Contents are typically non-finite, and as such not introduced by the complementizer *that*, no examples of such complements were found (but see below).

(21)   It may, of course, ***happen*** *that he* ***deliberately*** *holds himself out as a partner for his own private benefit and not in the course of his work or in the interests of the firm*. (BYU-BNC, academic)

In the end, the search yielded only one interesting occurrence of a modal adverb in a complement clause, with the adverb *actually* (provisionally characterized as modifying an Episode or SoA) occurring in the complement of the direct perception verb *hear* (taking an SoA as its complement; note that the element *that* here is subject of the complement clause, not a complementizer):

(22)   Yeah, you'll, you'll ***hear*** *that* ***actually*** *come in*, if you disconnect one of those legs, if you disconnect that blue wire (pause) on there and then cease the intercom and put it back down again you know the relay clicking (pause) you'll hear it come in and go back out again, there you go (BYU-BNC, conversation)

Although we can hardly draw conclusions from one example, it is worth noting that such an occurrence would be entirely unproblematic if (as suggested by the coordination data) *actually* belongs to the layer of the Configurational Property.

    It will be clear that the first search confirmed Hypothesis II, since no instances were found of any of the subjective epistemic adverbs occurring in lower-layer embedded contexts. At the same time, these results are far from conclusive, since very few instances of adverbs occurring in the complement of a lower-layer complement-taking verb were retrieved from the corpus. A second search was therefore conducted targeting specific verbs followed by an adverb (within the next seven words). Since in this case the complementizer *that* was not part of the search, also non-finite complements (often expressing a Configurational Property) could be retrieved, as well as more cases of Episode and SoA designating complements. For this search, 17 verbs were selected; these verbs, classified according to subclass and to the representational layer they belong to, are given in (23) (classification based on Hengeveld & Mackenzie 2008, 363-365):

(23)   Episode (situating Episodes with respect to each other): *happen*
          SoA (direct perception): *see*, *perceive*, *hear*, *watch*, *observe*, *notice*
          SoA (volition): *want*, *intend*, *prefer*, *prevent*
          Configurational Property (aspect): *start*, *begin*, *finish*, *stop*, *continue*
          Configurational Property (participant-oriented modality): *be able*

There were no surprises in the use of the adverbs *probably*, *necessarily*, *inevitably* and *deliberately*. With all the other adverbs, however, unexpected occurrences were attested. The subjective epistemic *possibly*, for instance, was found to occur in the complement of the verbs *prevent* and *stop*, *i.e.* within a Configurational Property. The relevant examples are given in (24):

(24) a.   The Soviet bloc shifted its dollar deposits from US banks in New York to West European banks in London to **prevent** its deposits **possibly** being frozen by the US authorities during the 'cold war' era of the 1950s. (BYU-BNC, commerce)

       b.   Breaking the top of the bend will leave a jagged projection to gently chisel out, after plugging the soil pipe with paper or rag, to **prevent** particles going down the pipe and **possibly** blocking the drain. (BYU-BNC, instructional)

       c.   To **stop** the board from turning too much and **possibly** heading into wind, the turn can be stopped by swiftly moving forwards on the board (BYU-BNC, miscellaneous)

On closer inspection, however, all three examples are semantically somewhat odd. Although it makes sense to prevent an event from happening, it hardly makes sense to prevent an event from possibly happening. In fact, what the speaker is presumably trying to convey in (24a) is that the Soviet Union's shifting of its dollar deposits was done to prevent this deposit from being frozen by the US authorities, which otherwise might possibly have happened. The construction chosen is, in other words, a convenient blend of two separate semantic layers, the second of which, containing the adverb *possibly*, taking the form of a Propositional Content. A similar strategy is applied in examples (24b&c), which, as we will see, represent a frequently occurring pattern. Here, too, the adverb *possibly* unexpectedly occurs within an SoA, in both cases in the second conjunct of two coordinated clauses. Once again the speaker uses a shortcut: what is meant in (24b) is that particles must be prevented from going down the drain, since if they do, this may possibly block the drain. Similarly, (24c) only makes sense if we assume that the idea is to stop the board from turning too much, since this may possibly cause it to head into the wind. Just like the coordinated construction in (14) above, these embedded constructions involve the presence of unexpressed semantic material licensing the use of *possibly*.

The one example of *certainly* occurring in the complement of the direct perception verb turns out to be unproblematic. Thus, although the verb *see* in (25) definitely describes a process of direct, physical perception (speaker and addressee are looking at a photo), the depicted scene is not observed directly (notice the use of the past tense in *had*); instead the fact that "they had old gates there" is inferred from what is seen in the picture. This means that the complement of *see* is a Propositional Content, which explains the felicitous use of *certainly*.

(25)   And er to go back and you can see it here. (unclear) nice lamp and as I say, these er (unclear) the barge-boarding. Excellent erm brickwork as well, just just proud there. Now you can see here, again, we've still got er some gateposts. That actually is a a railway gate post unless they've changed it, which I don't think they have. On that one was taken a little bit earlier, you can **see** they **certainly** had one of the old er (-----) gates there. (BYU-BNC, unscripted speech)

The adverb *hopefully*, as a propositional attitude (boulomaic/volitive) adverb, was also found in the complement of verbs assumed to take an SoA-complement. In (26a), the result is again semantically somewhat odd – in this case *hopefully* seems to be used merely to strengthen the volitional aspect of *intend*, rather than expressing the speaker's subjective attitude towards a proposition. In (26b&c) we find the same pattern as in (24b&c), with the adverb *hopefully* occurring in the second conjunct of a coordinated embedded clause. Thus, (26b) can only be understood as meaning that the person referred to as William wants to win and, if he does so, can hope to look towards the world championship.

(26) a.   When negotiations with BR are complete and the Plc can be launched, it is basically ***intended*** to ***hopefully*** purchase land and trackwork etc. (BYU-BNC, pop lore)
      b.   she says's he's a good horse William says that he ***wants*** to win and then ***hopefully*** look towards the world championship and then the next Europeans... (BYU-BNC, scripted news)
      c.   For far too long now the motor retail business has been viewed as a male dominated world where women have little or no place. We ***intend*** to change all that tonight and ***hopefully*** answer many questions you may have about the purchase and maintenance of a motor car. (BYU-BNC, advert)

The next group of unexpected occurrences involves the epistemic adverbs *maybe* and *perhaps*. Some of these belong to the by now familiar pattern of coordinated embedded clauses:

(27) a.   She had tried hard not to fall in love with him, ***preferring*** to play the field and ***maybe*** trap a man whose heart was fancy free. (BYU-BNC, fiction prose)
      b.   When you've got exams you have to learn. You have to ***be able*** to hold it up there and ***perhaps*** put it down on paper or apply it. (BYU-BNC, lecture)

The examples in (28), however, cannot be accounted for in this way:

(28) a.   I'd like to take you back to one or two more aspects of your actual work on the railways. Erm from the war onwards. Er you were still a head shunter for I think about five years after after (SP:K6MPS000) Aye. Aye. (SP:PS5M1) the war. Er I ***wanted*** you to ***maybe*** describe some more of the responsibilities and duties you had in that job. (BYU-BNC, interview oral history)[15]
      b.   So when we say we ***want*** the laws of physics ***perhaps*** to stay constant in time, when we observe these objects a long way away we're observing the laws of physics as they were a long time ago. (BYU-BNC, broadcast discussion)

These examples can only be explained by assuming that the adverbs *maybe* and *perhaps* do not code subjective, but objective epistemic modality, *i.e.* they serve to evaluate the likelihood that a particular Episode or SoA occurs (cf. Cinque's (1999) category of (ir)realis). In addition, we may then have to posit that verbs of physical perception and volition, in English at least, take Episodical complements (which is perhaps not surprising, given the discussion in Mackenzie (2014) and Giomi (2014)).

The most surprising results concern once again the adverb *actually*, which was repeatedly found in the complements of the direct perception verbs *see* and *hear*, the volition verbs *want*, *intend* and *prevent*, and the aspect verbs *begin*, *stop* and *continue*. Some examples are given in (29)-(31):

(29) a.   Woodlice feed mainly at night, so to ***see*** them ***actually*** feeding you need to look at them during the evening. (BYU-BNC, meeting)
      b.   It was refreshing to ***hear*** the audience ***actually*** giggling at the humour and the NBT shows that ballet can be fun. (BYU-BNC, newspaper)

(30) a.   It seems to me that all of us in this chamber have at one time or another, ***wanted*** to ***actually*** spend money erm it comes (unclear) programme of committees, (BYU-BNC, meeting)

      b.   So the Act is not in itself going to do anything to ***prevent*** violence ***actually*** occurring. (BYU-BNC, broadcast discussion)

---

15 In this example it could be argued that *maybe* has a mitigating function (expressing politeness); for further dicsussion, see example (45).

(31) a. He poured the wine and Robyn gradually, inch by inch, moment by moment, found herself slowly ***beginning*** to relax, to ***actually*** feel comfortable in her surroundings (BYU-BNC, fiction prose)

  b. Because even in the absence of strategic guidance in the past it hasn't ***stopped*** local authorities ***actually*** bringing forward policies in their local plans. (BYU-BNC, meeting)

In all these examples *actually* can plausibly be regarded as emphasizing (often with an implied contrast) that the situation described really applies. However, the fact that *actually* readily occurs in the complement of physical perception, volition and aspect verbs, suggests that this kind of realis is not situated at the layer of the Episode or SoA, but at the layer of the Configurational Property – which is entirely in line with its behaviour in coordinated structures (see previous section).

In sum, the data presented in this section allows us to conclude that
– on the whole, the two searches conducted to test Hypothesis II confirm that the selected adverbs occur in the complement of verbs taking as their complement either the layer at which the adverb in question is analysed in FDG, or a lower layer;
– the unexpected occurrences of the epistemic adverbs *possibly*, *certainly* and *hopefully* are almost entirely confined to a particular type of construction, involving unexpressed semantic material licensing the use of the adverbs in question. The one or two remaining instances turn out to be semantically odd (as to be expected);
– the adverbs *maybe* and *perhaps* behave differently from the subjective epistemic adverbs *possibly*, *probably* and *possibly* in that they readily occur in Episode/SoA-complements; this can be taken as evidence that these adverbs do not express subjective but objective modality (and as such are closer in meaning to the modal verb *may*, analysed as expressing event-oriented modality in Hengeveld & Mackenzie (2008: 174) and objective epistemic modality in Dall'Aglio Hattnher & Hengeveld (2016: 10)).
– *actually* functions at the layer of the Configurational Property.

5.3 Hypothesis III: position

The third hypothesis concerns the clausal position of modal adverbs, including their relative order in those cases where two modal adverbs co-occur at the clausal level. The position of adverbs (in general) has been discussed extensively in both descriptive grammars of English (Quirk et al. 1985, Huddleston & Pullum 2002) and in theoretical approaches, especially in generative syntax (*e.g.* Cinque 1999, Cinque 2004, Ernst 2002, Laenzlinger 1996, Laenzlinger 2004, Laenzlinger 2015, Haumann 2007). Since a detailed discussion and comparison of these studies is clearly beyond the scope of this paper, Section 5.3.1 will briefly summarize the main findings. Sections 5.3.2 and 5.3.3 will then discuss the results of the two searches conducted to test the two parts of Hypothesis III. The section ends with a brief illustration of how FDG deals with the linear placement of adverbs (Section 5.3.4).

5.3.1 The position of modal adverbs

There is broad consensus in the literature that higher (clause-oriented, predicational) adverbs (or adverbial phrases) tend to occur in more peripheral positions in the clause (*i.e.* further away from the verb) than lower adverbs (in particular manner adverbs). For a VO language like English, this means that the default positions of higher adverbs are more towards the left of the VP, while lower adverbs tend to be part of the VP, occurring more towards the right of the clause (either immediately preceding the verb or in postverbal position). Moreover, higher adverbs in particular exhibit a rigid relative ordering. This leads to the following preferred ordering of adverbs in the clause (slightly adapted from Ernst 2002: 44):

(32) discourse-oriented > evaluative > modal > evidential > subject-oriented > manner
  briefly   surprisingly maybe   obviously stupidly   tightly

Cinque (1999), who distinguishes seven subclasses of modal adverbs concludes that these, too, are base-generated in fixed positions:

(33) Mod_{epist} > $Mod_{(ir)realis}$ > Mod_{nec}> Mod_{pos}> Mod_{vol}> Mod_{obl}> $Mod_{abil/perm}$
  probably maybe   necessarily possibly deliberately inevitably cleverly

Let us briefly consider some remarks made in the literature about the clausal position of some of these subclasses of modal verbs. There seems to be general agreement that epistemic modals do not occur in final position, unless preceded by a comma or in deaccented form (*e.g.* Quirk et al. 1985: 651, Pullum & Huddleston 2002: 578, 580, Laenzlinger 2015: 219, Ernst 2002: 73). The most natural position of these adverbs is the medial position, typically following the auxiliary if there is one, while initial position is also available. In addition, epistemic adverbs freely occur after the copula *be* (*e.g.* Swan 1988: 463, Mittwoch et al. 2002: 782).

(34) a. ***Probably*** John will bring some books.
      b. John ***probably*** will bring some books.
      c. John will ***probably*** bring some books.

(35) a. Sue ***probably*** is very tired.
      b. Sue is ***probably*** very tired.

Finally, Swan (1988: 454) observes that "[f]or some reason, [modal adverbs] denoting a high degree of certainty on the part of the speaker (as regards propositional content) are not frequently preposed", and are more likely to occur in postverbal position.

When it comes to position, very little has been said explicitly about the adverbs *maybe* and *perhaps*. According to Haumann (2007: 363), however, it is an empirical fact that, possibly due to its overt 'verbal' character (see Section 2), "*maybe*, as opposed to *probably* and *possibly*, preferably occurs in sentence-initial position and not in its base position within the inflectional layer".

As has been noted in several studies, some adverbs can fall either within or outside the scope of negation. The adverb *necessarily* is special in that it typically falls within the scope of negation, as in example (36a), where the combination *not necessarily* is the logical equivalent of *possibly not* (*e.g.* Mittwoch et al. 2002: 770, 782, see also Simon-Vandenbergen & Aijmer 2002: 61). Epistemic modals, on the other hand, typically fall outside the scope of negation. An exception is *possibly* when used as a minimizer, *i.e.* when used in combination with *can* or *could* in negated clauses, in which case it serves to "[lower] the force of the verb or predication" (Quirk et al. 1985: 597, 600; see example (37b)).

(36) a. He didn't ***necessarily*** want to leave.
      b. He can't ***possibly*** leave now.

The preceding discussion clearly shows that although there is broad consensus on the general principle underlying the clausal position and relative order of adverbs (*e.g.* higher adverbs occur in more peripheral, preverbal position, while lower adverbs often occur in postverbal position), there is less agreement on the preferred position of individual adverbs. We will now see to what extent the two corpus searches conducted to test the two parts of Hypothesis III provide not only clues as to which subclasses specific modal adverbs belong to, but also further information on the relative ordering of the modal adverbs in general.

5.3.2 SEARCH 1: clausal positions[16]

To test Hypothesis III(i), 200 examples of each adverb (or the total number of occurrences for the less frequent adverbs) were investigated to determine the preferred and dispreferred clausal positions for each adverb (see Appendix 1). For the coding of the positions, the following seven positions were used, whereby ADV1 is referred to as the front position, ADV2-4 as the medial position and ADV5-7 as the end position.

(37) ADV Subj. ADV Aux. ADV Aux. ADV Verb ADV Compl.   ADV Adjunct   ADV
    1   2   3   4   5   6   7

Excluded from the data set were all non-finite clauses and all prosodically non-integrated instances (as reflected in the use of punctuation commas, parentheses, dashes, *etc.*). In addition, although it is not always easy to determine the scope of an adverb, only those cases were included where the adverb could reasonably be assumed to have clausal scope. Instances such as (38a), where *possibly* has narrow scope over the verb *reject* only, as well as (38b), where it has scope over the adverbial *because*-clause (a frequent position for a number of the adverbs investigated) were excluded from the quantificational study.

(38) a.   I am confident that when he reaches his teens he will challenge and ***possibly*** reject religion as he will earlier have rejected his other fantasies. (BYU-BNC, newspaper)

    b.   This mechanism apparently exerts a lesser action on transcripts of the deleted genes ***possibly*** because they are present in lower concentrations. (BYU-BNC, academic)

Similarly, all those cases where an adverb occurs in postcopular position, as in (39a), have been excluded, since these are almost by definition ambiguous when it comes to the scope of the adverb (clausal scope vs. scope over the nonverbal predicate). The same holds for initial adverbs in reversed specificational sentences (Higgins 1976, Declerck 1988), as in (39b):

(39) a.   Robert Schuller is ***possibly*** the best known television minister in America. (BYU-BNC, pop lore)

    b.   But possibly the most satisfying task for the Hercules and its crew is to carry aid to the needy. (BYU-BNC, newspaper)

The search results show that, as expected, the three prototypical epistemic modal adverbs *possibly*, *probably* and *certainly* occurred almost exclusively in pre-main verb (front or central) position (98.49% in the case of *possibly*, 100% for *probably*, 99% for *certainly*).[17] In the case of *possibly*, there are only three exceptions, with *possibly* occurring in final position, where they can be assumed to be deaccented (*i.e.* following a (focal) nuclear pitch accent in the same intonational phrase):

(40) a.   It could go on for years ***possibly***. (BYU-BNC, interview oral history)

    b.   It's also the case that erm these, don't forget, are self-reports so what people were actually suffering um may be rather different ***possibly***. (BYU-BNC, lecture)

    c.   Solicitors well they will know something about your affairs ***possibly***, because of hav-- to dealing with houses, other difficulties you may have come across form time to time. (BYU-BNC, unscripted speech)

---

16 I would like to thank Sebastian Haas for his invaluable help in collecting and classifying all the data for this part of the study, as well as for useful discussions of the data.

17 This clearly shows that Swan's (1988) observation that modal adverbs of certainty prefer postverbal position is not borne out for the adverb *certainly* in this study.

In the case of *certainly*, two final uses were found:

(41) a.   Okay he should, he should have tapped us as a resource ***certainly***. (BYU-BNC, meeting)

b.   The Women For Socialism Conference was an attempt to build some kind of an alliance or unity between left Labour women and women outside organising in Women's groups across a fairly broad spectrum and it didn't succeed in the totality of its aims ***certainly***. (BYU-BNC, magazine)

Here it may be plausibly assumed that *certainly* is used emphatically, in which case its final position is triggered by an emphasis operator at the Interpersonal Level.

If we restrict ourselves to the preverbal domain, we find that the three adverbs differ with regard to which preverbal position they prefer, with *possibly* occurring more often in front position than *probably* and *certainly*; in all three cases, however, the medial positions are clearly preferred (*possibly*: 63.31%; *probably*: 87.44%; *certainly*: 78.5%).

Going to the other end of the scale, to the Configurational Property adverb *deliberately*, we again find that it behaves according to expectation, occurring in almost all positions, but with a clear preference for the position immediately preceding the verb. Unsurprisingly, *deliberately* is also fully acceptable in postverbal position (with 8.96% the second most frequent adverb in end position).

The adverbs *necessarily* and *inevitably* also offer few surprises. As mentioned in the literature, *necessarily* is used primarily within the scope of negation (71.5%), in which case it always occurs in medial position. When used in assertive contexts, *necessarily* also has a clear preference for medial position, although occasionally it can be found in front or end position:

(42) a.   ***Necessarily*** the letter makes painful reading. (BYU-BNC, biography)

b.   The problem with the AIDS vaccine might be that if you have a vaccine which would be able to suppress a particular virus strain er which would induce immunity against a particular virus strain, then ***necessarily*** you do not have a vaccine which can provide immunity against another virus strain. (BYU-BNC, broadcast news)

c.   Those born on a Friday are said to be marked out for special piety, which does not mean that they will be pious ***necessarily***; only that their natures are imbued with that proclivity. (BYU-BNC, miscellaneous)

Finally, it may be worthwhile to point out that even when not used within the immediate scope of negation, *necessarily* is often found within the scope of a higher negation (12 out of 57 instances):

(43) a.   So these are not based, they they are similar, they're not out of line but erm they I mean I ***don't*** think that you can ***necessarily*** pick up from past exam papers what'll be on the next. (BYU-BNC, lecture)

b.   ***None*** of these connections ***necessarily*** implies any reduction of competition between firms that produce similar goods... (BYU-BNC, non-academic)

The adverb *inevitably* behaves very much like *necessarily* in that it occurs in almost all positions, with a clear preference for medial position. The only difference is that *inevitably* occurs more often in front position (example (45)), which may be due partly to the fact that, unlike *necessarily*, *inevitably* is typically used in an assertive context. Note finally that when used in front position, neither *necessarily* nor *inevitably* seem to be particularly emphatic, suggesting that this is one of their basic positions.

(44) a.   ***Inevitably*** this meant a higher subscription. (BYU-BNC, magazine)

b.   ***Inevitably*** you recognise all the faces. (BYU-BNC, newspaper)

It will be clear that, on the whole, the adverbs discussed so far behave as expected, except perhaps that their placement is somewhat more flexible than generally assumed. The same cannot be said of the remaining

adverbs *maybe*, *perhaps*, *hopefully* and *actually*. Thus, unlike the prototypical epistemic adverbs *possibly*, *probably* and *certainly*, the adverbs *maybe* and *perhaps* turn out to have a very strong preference for front position (*maybe*: 85.5%; *perhaps*: 60.5%). As we have seen, Haumann (2007: 363) explains this unexpected feature of *maybe* by assuming that in medial position hearers may confuse the modal adverb for the sequence of auxiliary *may* + *be*. However, in more than half of medial occurrences *maybe* follows an auxiliary, in which case there is unlikely to be any confusion. Moreover, Haumann's explanation does not tell us why *perhaps* (which does not have a verbal origin) behaves in a very similar way. Given the evidence also from coordination and embedding, it is more plausible to assume that *maybe* and *perhaps* form a separate group, different from other epistemic adverbs, with their own preferred clausal position. This view is supported by the fact that *maybe* and *perhaps* often fulfil a very specific function when used in initial position, namely that of suggesting one or more reasons or possible scenarios (example (45)). This clearly suggest a more objective (detached) attitude of the speaker towards the potential truth of the proposition expressed. Note that at the same time *maybe* and *perhaps* on this use seem to have an additional mitigating function, possibly triggered by an operator at the Interpersonal Level;[18] this would then account for their occurrence in initial position.

(45) a.   ***Perhaps*** she wasn't quite gentle enough. ***Perhaps*** some kind of spell was broken. Anyway Charles began to murmur a little foolishly (BYU-BNC, fiction)

b.   ***Maybe*** he doesn't even trust me. Or ***maybe*** he knows something that we don't know. (BYU-BNC, lecture)

The adverb *hopefully*, which like *possibly*, *probably* and *certainly* is assumed to modify the Propositional Content, behaves differently from these adverbs in having a strong preference for the front position (59.5%). This, however, is perhaps not altogether surprising, given that *hopefully* has a different function: it does not merely express (low) degree of commitment to the truth of the proposition, but in addition indicates volition on the part of the speaker. As such, it can be argued to be more subjective, taking the other epistemic adverbs in its scope (within the same layer).[19]

Finally, the corpus data show that the adverb *actually* behaves differently from all other adverbs in combining a preference for medial position (77%) with a frequent use in both front and end position (10.5% and 12.5%, respectively). One reason for this unusual pattern may be that *actually* performs different functions in different positions. As pointed out in Section 2, as a modal adverb, *actually* has two uses: as non-emphatic use, asserting reality, and an emphasizing use, reinforcing the speaker's commitment to the truth of the proposition (Hoye 1997, 161-162, cf. Quirk et al. 1985: 583). In both cases, however, *actually* seems to occur in medial position. In initial and final position, on the other hand, *actually* seems to perform a discourse-pragmatic function, indicating the speaker's disagreement with or rejection of a previously (explicitly or implicitly) evoked proposition, rather than realis/counterexpectancy.[20] In example (47a), for instance, *actually* clearly marks disagreement, while in (47b) it indicates surprise:

(46) a.   (SP:PS26Y) So I mean I I I am suggesting that this appears to be a ready made useful document that that forms part of a at the right time, we put this out to back up the the rest of the er the document. It maybe maybe might be appropriate Jayne to go to the next staff staff consultative committee as the the next er (SP:PS273) Unless I can manage to be off sick again. (SP:PS270) Yeah you managed that (unclear) (SP:PS26Y) Yeah it was quite pleasant. (SP:PS273) (laughing) Thank you very much. (laugh) (SP:PS26Y) It was quite a nice meeting ***actually***. (BYU-BNC, meeting)

---

18 This would not (yet) make the adverbs *perhaps* and *maybe* here interpersonal: the adverbs themselves still have a representational function, but are additionally specified by a mitigating operator (of the Ascriptive Subacts evoking the content of these adverbs) at the Interpersonal Level.

19 Note also that in the one case where *hopefully* combines with an epistemic modal adverb in the same clause, *hopefully* precedes *probably* (see Appendix 2).

20 Note that the frequent use of *actually* as an emphasizer or discourse marker follows directly from its original use as a realis marker: since the use of an assertive sentence by itself already implies realis, the addition of an explicit marker is likely to assume an additional, related meaning element (counterexpectancy or contrast); at a later stage, this may lead to *actually* being used to express disagreement with or rejection of a previously evoked or implied proposition.

b.   (SP:PS1SW) (unclear) okay it'll be that so you can eventually you can build up (pause) a few tricks that'll help you sort out a lot of the spelling. And I'm pretty sure you'll be getting a lot of spellings right soon. I don't suppose you could spell football could you? (SP:PS1SX) Yeah F double O T B A double L. (SP:PS1SW) And match? (SP:PS1SX) Match football match M A T C H. (SP:PS1SW) Very good. Excellent. Can you spell you can spell play cos we've done that can you spell ground? (SP:PS1SX) G R O U N D. ... (SP:PS1SW) I think you're very good at spelling ***actually***. I mean seriously. (BYU-BNC, classroom)

Moreover, combinations of the realis/emphasis and the discourse uses of *actually* are possible:

(47) a.   No, I was thinking it was shock you ***actually*** said it ***actually***. (BYU-BNC, conversation)
      b.   Er, have you been a bride? (SP:FLPPS003) Yes I have. I've actually (laughing) been a bride twice actually! (BYU-BNC, broadcast discussion)
      c.   and when Martin offered you for a drink I ***actually*** took it as a cup of tea ***actually*** (BYU-BNC, unscripted speech)

Further support for the idea that *actually* in these positions functions as a discourse marker is that it occurs more frequently in these positions in spoken (28%) than in written language (8%, with three out of the eight examples from fiction).

The results of this search can be summarized as follows:
–   On the whole Hypothesis III(i) is corroborated by the corpus data, although the placement of some adverbs (*possibly*, *certainly*, *necessarily*) seems to be more flexible than generally assumed.
–   The epistemic adverbs *maybe* and *perhaps* clearly differ from the prototypical epistemic adverbs *possibly*, *probably* and *certainly* in terms of preferred (absolute or relative) clausal position this seems to correspond to a more objective attitude of the speaker towards the proposition expressed.
–   The adverb *hopefully* occurs in a more peripheral position than *possibly*, *probably* and *certainly*, although all four belong to the same layer.
–   The adverb *actually* may be argued to have an additional use as a discourse marker, in which case it occurs in initial or final position. When used to assert (or emphasize) realis or to express counterexpectancy, *actually* occurs in medial position.

5.3.3 SEARCH 2: Co-occurring adverbs

The second search, conducted to test Hypothesis III(ii), concentrated on the co-occurrence patterns of modal adverbs in the clause, the assumption being that adverbs from higher levels occur in a more peripheral (typically more leftward) position than lower-layer adverbs. To test the hypothesis, the corpus was searched for any relevant combination of the selected adverbs within one clause (within a range of nine words from each other). Subsequently, it was decided for each example whether the order in which the two adverbs occurred was in accordance with the hypothesis, or whether the order was unexpected.

Once again a number of examples were excluded from the data set. First of all (and perhaps trivially), all those instances were excluded where the first adverb modified the second adverb, *i.e.* those cases where the first adverb has immediate scope over the second. An example can be found in (48), where *probably* modifies the adverb *deliberately* only (*i.e.* the quartz was added and this was probably done deliberately):

(48) The white or greyish grains embedded in the dark clay matrix are composed of the common mineral quartz. This was ***probably deliberately*** added by the potter as sand temper (BYU-BNC, non-academic)

Secondly, the results contained one example of *possibly* as a minimizer. Since in this case, the position of the adverb is determined by pragmatic (interactional) factors rather than scope, this example, given in (49), was not taken into consideration:

(49) The company of a dog or cat can mean more to an elderly person than **perhaps** we can **possibly** imagine. (BYU-BNC, miscellaneous)

Finally, examples with the adverb *actually* in initial or final position were excluded from the data set, as these were assumed to involve the use of *actually* as a discourse marker, indicating the speaker's disagreement with or rejection of a previous statement (see Section 5.3.2)

The final data set consisted of 112 instances of two co-occurring modal adverbs (see Appendix 2). In the large majority of cases the relative positions of the two adverbs were as expected, as in examples (50a) and (50b) where the propositional adverbs *probably* precedes the lower adverbs *deliberately* and *inevitably*:

(50) a. They seemed unconcerned by our presence, and the ranger said they were **probably deliberately** moving out of our way, (BYU-BNC, popular lore)
   b. it would **probably almost inevitably** be your own secretary of state (BYU-BNC, non-academic)

Since all unexpected orderings (17 out of 112) involved the adverb *actually*, it will be useful to have a closer look at the examples in question. Let us first consider those cases where *actually* immediately precedes *probably*, since this makes up the largest subset (10 occurrences). Despite the fact that the BNC only offers orthographic transcripts, it is clear from the context that in nine out the ten examples, *actually* functions as an emphasizer, "reinforcing effect on the truth value of the clause or part of the clause to which they apply" (Quirk et al. 1985: 583). In both examples in (51), for instance, *actually* is likely to be given emphatic or contrastive stress, reinforcing the realis/counterexpectancy function of the adverb:

(51) a. (SP:PS4BM) Water's gone under the bridge since then be fair (-----) did not perform well there's no question about it and we have worked with her in the field erm she wasn't she wasn't brilliant (SP:PS4BL) No she (SP:PS4BM) She got a, I think she got a bit of a shock you know she **actually probably** thought she was better than she was and a lot of people had been giving her a lot of pats on the back and I tell you where half of that emanated from was down the corridor. (BYU-BNC, meeting)
   b. Have a look at that, I mean, it would have been better if Jemma was here, because I don't want to criticise, I mean, I used Jemma's because it was **actually probably** the best one that was done by anyone in the group. (BYU-BNC, classroom)

The same turns out to be true for other instances of *actually* immediately preceding some other modal adverb (*certainly/maybe/perhaps*; see example (52a)), as well as for those cases where the two adverbs are not adjacent (see example (52b)):

(52) a. All three are very experienced advocates before the courts but all three of them have deliberately done one application wrong, so you can see the typical things that advocates do do that should not be done. And I think, if you look at that video, it will **actually perhaps** encourage you because it sh-- yes, those are experienced advocates, I'm not expecting you to refine your skills to that level, but I think if you see the, the erm the level of which experienced advocates advocate at it will **actually perhaps** make you relax a little, if you see the stand-- realize that the standard we're expecting you to go to is not, not anywhere near quite as high as that. (BYU-BNC, lecture)
   b. otherwise there will be at best confusion as to whether local plans comply with the structure plan, and at worst a game of of pass the parcel and everybody will be conforming, but nobody will **actually** be **possibly** meeting the figures, (BYU-BNC, public debate)

In these cases *actually* will either be assigned the pragmatic function of Contrast or be specified by an Emphasis operator at the Interpersonal level, which accounts both for its prosodic prominence and for its more peripheral position. (This will, of course, also have consequences for the order in which the adverbs will be assigned a position in the clause; we will return to this issue below.)

With regard to the second part of the third hypothesis, we can thus conclude that the data corroborate the sub-hypothesis, as in virtually all instances the adverbs occur in the expected order. The data also show that it is indeed important to distinguish between different functions of one and the same adverb (see Section 2), specifically in the case of *actually*.

5.3.4 Placement of adverbs in FDG

As we have seen in Section 2, it has mainly been generative accounts that have sought to account for the placement of clausal adverbs. All of these accounts rely (to a larger or smaller degree) on the possibility of movement (either of the adverb or of elements from the VP), in particular in those cases where an adverb may occur in more than one position. FDG, however, does not allow movement; instead the placement of adverbs at the Morphosyntactic Level proceeds in a functionally inspired, top-down, outside-in manner, with operators, modifiers and functions specified at the highest layer at the Interpersonal Level (that of the Move) being placed first, and those from the innermost level at the Representational Level being placed last. Core elements (*e.g.* the verb and its arguments) are placed afterwards. Pragmatic factors (such as contrast or emphasis) and complexity/weight also have their natural place in the system: since contrast and emphasis are analysed at the Interpersonal Level, elements with these functions will be placed prior to any representational elements, while complexity/weight may trigger a non-default position at the Morphosyntactic Level (see Hengeveld & Mackenzie 2008, 309-316, Keizer 2015, 186-190).

For the placement of clausal elements, English has three absolute positions: initial (P^I), medial (P^M), and final (P^F). As soon as one of these positions is filled, one or more relative positions become available (*e.g.* P^{I+1} or P^{M-1}); as soon as one of these relative positions is filled, another relative position is created (*e.g.* P^{I+2}). The placement of multiple modifiers takes place according to the principle that higher adverbs are placed in more peripheral (preverbal) positions, and lower adverbs in more central or postverbal positions. By way of illustration, consider example (53):

(53)   She will ***luckily probably*** meet him ***again next week***.

As the only interpersonal modifier, the evaluative adverb *luckily* is the first element to be placed in one of three absolute positions available positions, ending up in position P^M. The adverb *probably*, as the highest representational modifier, is the next element to be placed, going to the now available, more central position P^{M+1}. Subsequently, the modal auxiliary *will* (represented as an operator at the layer of the Episode) is placed in P^{M-1}, the Episode modifier *next week* in clause-final position and the frequency adverb *again* in the pre-final position. Finally, the subject, object and main verb are placed in positions P^I, P^{F-2} and P^{M+2}, respectively.

(53') | P^I | P^{M-1} | P^M | P^{M+1} | P^{M+2} | P^{F-2} | P^{F-1} | P^F |
|---|---|---|---|---|---|---|---|
| she | will | luckily | probably | meet | him | again | next week |

The order of the adverbs *actually* and *probably* in example (51a), the relevant part of which is repeated here as (51a'), also follows directly from the FDG ordering principles. Here the adverb *actually*, due to its being specified by an Emphasis operator at the Interpersonal Level, is placed first, going to the absolute position P^M, with the subjective epistemic adverb *probably* appearing in a more central position (P^{M+1}):

(51a') she ***actually probably*** thought she was better than she was (BYU-BNC, meeting)

P^I	P^M	P^{M+1}	P^{M+2}	P^F
she	actually	probably	thought	[she was better than she was]

An example of a clause with two non-adjacent adverbs is given in example (54). Here the adverb *certainly* is placed in the absolute position P^M. Next, the tense operator (situated at the layer of the Episode) is placed

in the relative position P^{M+1}. Subsequently, the SoA operator *not* is placed in position P^{M+2}, followed by the adverb *necessarily* in P^{M+3}:

(54) these certainly do not necessarily imply free trade (BYU-BNC, academic)

P^I	P^M	P^{M+1}	P^{M+2}	P^{M+3}	P^{M+4}	P^{M+5}
these	certainly	Pres	not	necessarily	imply	[free trade]

The FDG ordering principles are attractive for a number of reasons. First, the placement of elements is triggered by a combination of pragmatic and semantic properties of the adverbs themselves, interacting with other elements in the clause (*e.g.* tense or negation). Secondly, placement of adverbs is relatively flexible (without the need for movement), but at the same time not without constraints.

5.4 Two further issues

Before proposing a classification of the adverbs selected for investigation in this paper in FDG, this section will address two remaining issues. Section 5.4.1 will be concerned with the question of whether it is possible and/or useful to distinguish, in analogy with grammatical means of expressing modality, subclasses of participant-oriented adverbs. Section 5.4.2 briefly discusses the possibility of adverbs expressing deontic modality.

5.4.1 Participant-oriented modal adverbs

The possibility of adverbs expressing participant-oriented modality is not discussed in Hengeveld & Mackenzie (2008). The only example of a participant-oriented adverb provided is the manner adverb *angrily* in such examples as *John angrily left the room*, where the adverb, although characterizing the Configurational Property as a whole as 'angry', is at the same time participant-oriented in that it is the participant John (as the Agent) who is responsible for the angry nature of the action (cf. Hengeveld & Mackenzie 2008: 209, 213).

It could, however, be argued that some of the modal adverbs discussed in this paper are also to be regarded as participant oriented. This is undoubtedly justified in the case of *deliberately*, which, like other adverbs from this class (*willingly*, *reluctantly*, *etc.*), is clearly oriented towards the agent and, in fact, requires the presence of an agent (Haumann 2007: 132). Arguably, the adverbs of necessity (*necessarily*, *inevitably*) can also be claimed to have a participant-oriented use, alongside the more common event-oriented use. Thus, one could argue that whereas in example (55) it is the SoA as a whole that is characterized as (logically or dynamically) necessary (or expected; see Section 2), in (56) the unavoidability of the SoA taking place depends on the speaker's expectations concerning the behaviour of the human participant functioning as the agent:[21]

(55) a.   These are offered on a 'first come, first served' basis and the offer can necessarily only last as long as there are available tickets for all events. (BYU-BNC, advert)
      b.   Clearly, quantity did not ***necessarily*** imply quality. (BYU-BNC, academic)

(56) a.   This does not necessarily mean that girls will necessarily choose subjects traditionally associated with boys and vice versa. (BYU-BNC, academic)
      b.   Erm (pause) he claims the battery ran out before he got to his (pause) presentation on the course but I don't ***necessarily*** believe him. (BYU-BNC, meeting)

---

21 It seems that *necessarily* and *inevitably*, when used as participant-oriented adverbs, can only have a dynamic use.

Assuming for the moment that the distinction between event-oriented and participant-oriented necessity is semantically plausible, the question arises whether we can also find syntactic evidence in the data collected for this study to justify the distinction. Remember that, as indicated in Table 3, the number of unexpected instances of coordination involving the adverbs *necessarily*/*inevitably* was relatively high. As it turns out, half of the unexpected instances of coordination involving *necessarily* can be accounted for by assuming that *necessary* in these cases functions at the layer of the Configurational Property. In (57a), for instance, *necessarily* could be argued to be participant-oriented, being directed at the human participant *the British*, which would explain its co-occurrence with the manner adverb *wholeheartedly*; the same would hold for the passive construction in example (57b), where the adverb is oriented towards the unexpressed human Actor (the person incurring the expenses).

(57) a.   Furthermore, neither Roosevelt nor the State Department was persuaded that the British would ***necessarily or at least wholeheartedly*** support the United States over the whole range of its postwar interests and aspirations. (BYU-BNC, academic)

b.   The attendance allowance, being payable as of right, must be declared as income for tax purposes, but any expenses ***wholly and necessarily*** incurred in the performance of the duty (and not otherwise reimbursed) may be set off against it. (BYU-BNC, academic)

In the case of *inevitably*, the evidence is even more convincing, since in all unexpected cases of coordination the adverb can be taken to be oriented towards either a human (or animate) participant (example (58a)) or a personified non-human participant (example (58b)):

(58) a.   The octopus came ***reluctantly but inevitably***, slow-whirling, flesh of drowned sailors, its suckered arms stretching, reaching, searching. (BYU-BNC, fiction)

b.   Given that macro-decisions ***inherently and inevitably*** condition micro-decisions, the principal focus of attention must be on the political decision-maker. (BYU-BNC, non-academic)

5.4.2 Deontic (uses of) modal adverbs

According to Simon-Vandenbergen & Aijmer (2007: 189), the adverb *necessarily* can be used both epistemically and deontically: when it falls within the scope of negation it is epistemic (*not necessarily* indicates lack of certainly), whereas "[i]n its positive form ... it conveys deontic rather than epistemic necessity, expressing that something is necessitated by circumstances." (Simon-Vandenbergen & Aijmer 2007: 188). An example would be (59), where *necessarily*, in combination with the deontic adverb *must*, "conveys a strong degree of necessity imposed by external factors" (Simon-Vandenbergen & Aijmer 2007: 189):

(59)   and in so doing I ***must necessarily*** be selective partial and personal given the heroic scale of the subject (ICE-GB:S2A-039/16)[22]

Mittwoch et al. (2002: 767), on the other hand, claim that modal adjuncts "are not used to express deontic modality (obligation, permission, etc.)". Modal adverbs can, however, be used in combination with deontic auxiliaries, in what Mittwoch et al. describe as "modal harmony"; an example is given in (60), where *possibly* co-occurs with deontic (permissive) *can* in a request:[23]

---

22 This example is from the British component of the International Corpus of English (ICE-GB). For a detailed description, see Nelson et al. (2002) and the ICE-website http://www.ucl.ac.uk/english-usage/projects/ice.htm.

23 It is often assumed that epistemic adverbs like *possibly*, *probably* and *certainly* cannot occur in questions (*e.g.* Bellert 1977: 344, Hengeveld 1988: 236). However, although the use of these adverbs in interrogative environments is certainly restricted, it is not entirely excluded. For further examples of epistemic modal adverbs used felicitously in questions, see Mittwoch et al. 2002: 771, Nuyts 2001, 56-59, Haumann 2007: 357).

(60) Could I **_possibly_** borrow your bicycle for half an hour? (Mittwoch et al. 2002: 770)

The fact that the modal adverb _possibly_ can occur in a deontic context does not, however, make it a deontic adverb, although its function may certainly change (note that in (60) _possibly_ seems to have neither an epistemic nor a deontic meaning, but rather seems to be used as a minimizer; see Section 5.3.1 above). The same could be argued for example (60), as well as for example (61), where the (indisputable) deontic interpretation of the sentence is due to the presence of the deontic auxiliary _should_, not to the use of the adverb _necessarily_. This impression is further strengthened by the fact that _necessarily_ (even in its positive use) cannot trigger a deontic meaning by itself, as shown in example (62), where _necessarily_ is clearly used epistemically.

(61) There is no a priori reasoning process which indicates that the courts' view on the meaning of one of the 'if X' issues should **_necessarily and always_** be preferred to that of the agency. (BYU-BNC, academic)

(62) a. As the June events in China showed, eyewitness accounts are **_necessarily_** very fallible. (BYU-BNC, newspaper)
      b. Many people with this disease are able to continue to work for a very long time and there is no evidence to suggest that her condition and the error are **_necessarily_** linked.

We may therefore tentatively conclude that there is no reason to assume that adverbs express deontic meaning. Due to the fact that an adverb like _necessarily_ indicates a high degree of certainty, it can be used to reinforce the deontic meaning expressed by a modal auxiliary.

5.5 Revised classification of modal adverbs

On the basis of the preceding discussion, we can conclude that the three hypotheses treated in this paper have been largely corroborated, although in terms of coordination and position, some of the ten investigated adverbs seem to be more flexible than predicted. In addition, it has become clear that the preliminary classification of the ten adverbs given in Table 2 needs to be adapted and extended, leading to the following revised classification (see also overview in Table 4):
– As in the preliminary classification, the adverbs _possibly_, _probably_, _certainly_ and _hopefully_ function as modifiers of the Propositional Content; _possibly_, _probably_ and _certainly_ function as doxastic subjective epistemic modal adverbs, falling within the scope of the boulomaic/volitive modal adverb _hopefully_.
– Given the specific behaviour of the adverbs _maybe_ and _perhaps_ in terms of coordination, embedding and clausal position, and the differences between these adverbs and the adverbs _possibly_, _probably_ and _certainly_, it seems justified to classify _maybe_ and _perhaps_ not as subjective epistemic adverbs at the layer of the Propositional Content, but rather as dubitative objective epistemic adverbs at the layer of the Episode, expressing the speaker's lack of certainty about the occurrence of the event(s) designated by the Episode. This would explain the persistent existence of _maybe_ and _perhaps_ alongside the subjective epistemic adverb _possibly_.
– The data further suggest that the adverbs _necessarily_ and _inevitably_ fulfil (at least) two functions: they either function as event-oriented modality doxastic modality at the layer of the SoA, expressing logical or dynamic necessity, or participant-oriented modality at the layer of the Configurational Property.
– As predicted, the adverb _deliberately_ expresses volitive participant-oriented (agent-oriented) modality at the layer of the Configurational Property
– Whereas originally classified as operating at the layer of the SoA, the data suggest that the adverb _actually_, in its representational use (indicating _(ir)realis)_), belongs to the layer of the Configurational Property. Given its in many ways unexpected behaviour, and given the fact that, unlike all of the other

adverbs dicsussed in this paper, it seems to be non-truth-conditional, an alternative analysis may be considered, in which it does not function as a modifier of a particular layer at the Representational Level, but rather as a separate Propositional Content (see Keizer (2018) for a similar treatment of the non-truth-conditional class of subject-oriented adverbs like *cleverly* and *foolishly*). Future research will be required to see to what extent such an analysis will be justified.

Table 4: Revised and extended classification of modal modifiers at four representational layers

RL-Layer	Operators	Modifiers/adverbs
p	Proposition-oriented modality (subjective epistemic modality)	doxastic: *certainly* dubitative: *probably, possibly* volitive: *hopefully*
ep	Episode-oriented modality (objective epistemic modality)	dubitative: *maybe, perhaps*
e	Event-oriented modality	doxastic: *necessarily, inevitably* (*unavoidably, inescapably*)
f^c	Participant-oriented modality	doxastic: *necessarily, inevitably* (*unavoidably, inescapably*) volitive: *deliberately (willingly, voluntarily)*
	Configurational Property-oriented modality	(ir)ealis: *actually (really, potentially)*

6 Conclusion

This paper set out to test a number of predictions made by the theory of FDG concerning the distribution and relative word order of ten modal adverbs. Careful examination of corpus data has shown that the overall approach to modification advocated by the model is indeed supported by the data. Thus, it has been demonstrated that the three hypotheses – concerning the coordination, embedding and clausal position of the ten selected adverbs – are largely corroborated, confirming the relevance of the four relevant representational layers (Propositional Content, Episode, SoA and Configurational Property) and their respective roles in the overall semantic organization of the clause. At the same time, however, it has become clear that the classification of modal adverbs proposed in FDG so far requires some modification, as for some adverbs the data – quite unequivocally – suggest that they belong to a different layer than originally assumed. This concerns in particular the adverbs *maybe* and *perhaps* (reanalysed as modifiers of the Episode) and the adverb *actually*, which also seems to belong to a lower layer than originally proposed (but which may require a different analysis altogether; see Section 5.5).

As for the important question of the relative importance of, and the relation between, form and function, it will be clear that the three hypotheses tested were all clearly form-oriented, whereas the original classification (Table 2) was largely (and in some cases intuitively) based on function. As pointed out in Section 4.1, such an approach runs the risk of being circular, since in those cases where the data do not support the original classification, one can simply conclude that the adverbs in question fulfil a different function than initially assumed. I would like to argue, however, that for the study described in this paper, this criticism is not justified. First of all, the existence of the different layers and the specific semantic unit they represent has not been challenged by the results of the study; these layers have indeed been shown to be relevant cross-linguistically on the basis of extensive research, and can, by now, be assumed to form a stable and reliable feature of the FDG model. Secondly, although necessarily limited in scope, the empirical study has yielded results that consistently place each of the ten adverbs at a particular layer of analysis. In those cases where the original assumptions were based on formal evidence (as in the case of the propositional adverbs), the tests performed in this study corroborated the original classification; in those cases where the initial classification was based on intuition (*i.e.* native-speaker knowledge of the meaning of an adverb), the result have, in some cases, forced us to reconsider our original ideas, and to come up with an explanation that is both functionally plausible and in accordance with the empirical data. This form-to-function approach on the part of the linguist is, therefore, fully compatible with a function-to-form

approach to language representing the perspective of the language user (his/her use of the language to communicate a particular intention), as well as the language itself (the way it has historically developed to fulfil these communicative intentions) (Hengeveld & Mackenzie 2008, 26-27, 38-39).

References

Bastos, Sandra D. G., Vânia C. C. Galvão, Sebastião C. L. Gonçalves, Marize Mattos Dall'Aglio Hattnher Kees Hengeveld, Gisele C. Sousa, Valéria Vendrame. 2007. The expressibility of modality in representational complement clauses in Brazilian Portuguese. In: Dall'Aglio Hattnher, Marize Mattos, Kees Hengeveld (eds.), *Advances in Functional Discourse Grammar*. Special issue of *Alfa – Revista de Lingüística* 51(2). 189-212.

Bellert, Irena. 1977. On semantic and distributional properties of sentential adverbs. *Linguistic Inquiry* 8 (2). 337-350.

Boland, Annerieke. 2006. *Aspect, Tense and Modality: Theory, Typology, Acquisition* (PhD dissertation, University of Amsterdam). Utrecht: LOT.

Cinque, Guglielmo. 1999. *Adverbs and Functional Heads: A Cross-linguistic Perspective*. Oxford: Oxford University Press.

Cinque, Guglielmo. 2004. Issues in adverbial syntax. *Lingua* 114. 683–710.

Dall'Aglio Hattnher, Marize Mattos, Kees Hengeveld. 2016. The grammaticalization of modal verbs in Brazilian Portuguese: A synchronic approach. *Journal of Portuguese Linguistics* 15 (1). 1-14. doi: http://dx.doi.org/10.5334/jpl.1.

Davies, Mark. 2004. BYU-BNC: The British National Corpus. Available online at http://corpus.byu.edu/bnc.

Declerck, Renaat. 1988. *Studies on copular sentences, clefts and pseudoclefts*. Leuven: Leuven University Press/Fortis Publications.

Dik, Simon C. 1997. *The Theory of Functional Grammar. Part I: The structure of the clause*. Edited by Kees Hengeveld. Berlin & New York: Mouton de Gruyter.

Ernst, Thomas. 2002. *The Syntax of Adjuncts*. Cambridge: Cambridge University Press.

Giomi, Riccardo. 2014. Tense, time location and the Episode. A revised approach to temporal expression in FDG. Paper presented at the Third international Conference on Functional Discourse Grammar, 17-20 September 2014, University of Jaén, Spain.

Grice, H. Paul. 1975. Logic and Conversation. In: Cole, Peter, Jerry L. Morgan (eds.), *Speech Acts: Syntax and Semantics* 3, 41-58. New York: Academic Press.

Hacquard, Valentine & Alexis Wellwood, 2012. Embedding epistemic modals in English: a corpus-based study. *Semantics & Pragmatics* Volume 5, Article 4: 1-29.

Halliday, M.A.K., Christian M.I.M. Matthiessen. 2014. *An Introduction to Functional Grammar*. 4th edition, revised by Christian M.I.M. Matthiessen. London: Routledge.

Haumann, Dagmar. 2007. *Adverb Licensing and Clause Structure in English*. Amsterdam & Philadelphia: John Benjamins.

Hengeveld, Kees. 1988. Illocution, mood and modality in a functional grammar of Spanish. *Journal of Semantics* 6. 227-269.

Hengeveld, Kees. 1989. Layers and operators in Functional Discourse Grammar. *Journal of Linguistics* 25. 127-157.

Hengeveld, Kees. 1997. Adverbs in Functional Grammar. In: Wotjak, Gerd (ed.), *Toward a Functional Lexicology*, 126-136. Frankfurt: Peter Lang.

Hengeveld, Kees. 2013. A new approach to clausal constituent order. In: Mackenzie, J. Lachlan, Hella Olbertz (eds.), *Casebook in Functional Discourse Grammar*, 15:38 Amsterdam & Philadelphia: John Benjamins.

Hengeveld, Kees. This issue.

Hengeveld, Kees, J. Lachlan Mackenzie. 2008. *Functional Discourse Grammar. A typologically-based theory of language structure*. Oxford: Oxford University Press.

Hengeveld, Kees, Marize Mattos Dall'Aglio Hattnher. 2015. Four types of evidentiality in the native languages of Brazil. *Linguistics* 53(3). 479-524. doi: http://dx.doi.org/10.1515/ling-2015-0010.

Higgins, Francis R. 1979. *The Pseudo-cleft Construction in English*. New York: Garland Publishing.

Hoye, Leo. 1997. *Adverbs and Modality in English*. London & New York: Longman.

Huddleston, Rodney, Geoffrey Pullum (eds.). 2002. *The Cambridge Grammar of the English Language*. Cambridge: Cambridge University Press.

Jackendoff, Ray S. 1972. *Semantic Interpretation in Generative Grammar*. Cambridge, MA: The MIT Press.

Kaltenböck, Gunther. 2008. Prosody and function of English comment clauses. *Folia Linguistica* 42 (1). 83-134.

Kaltenböck, Gunther. 2009. English comment clauses: position, prosody, and scope. *Arbeiten aus Anglistik und Amerikanistik* 34 (1). 49-75.

Keizer, Evelien. 2015. *A Functional Discourse Grammar for English*. Oxford Textbooks in Linguistics. Oxford: Oxford University Press.

Keizer, Evelien. 2018. Truth-conditionality and non-restrictiveness in FDG. Paper presented at the Fifth International Conference on Functional Discourse Grammar, Salvador, Brazil, 26-28 September 2018.

Kemp, Lois. This issue.

Laenzlinger, Christopher. 1996. Adverb syntax and phrase structure. In: di Scullio, Anne-Marie (ed.), *Configurations: essays on structure and interpretation*, 99-127. Somerville MA: Cascadilla Press.

Laenzlinger, Christopher. 2004. The feature-based theory of adverb syntax. In: Austin, Jennifer R., Stefan Engelberg, Gisa Rauh (eds.), *Adverbials, The interaction between Meaning, Context and Syntactic Structure* [Linguistik Aktuel/Linguistics Today 70], 205-252. Amsterdam & Philadelphia: John Benjamins. doi: 10.1075/la.70.08lae

Laenzlinger, Christopher. 2015. Comparative adverb syntax. A cartographic approach. In: Pittner, Karin, Daniela Elsner, Fabian Barteld (eds.), *Adverbs: Functional and diachronic aspects* (Studies in Language Companion Series), 207-238. Amsterdam & Philadelphia: John Benjamins.

Mackenzie, J. Lachlan. 2014. Stacks and layers: horizontal and vertical scope and the distinction between episode and state-of-affairs. Paper presented at the Third International Conference on Functional Discourse Grammar, 17-20 September 2014, University of Jaén, Spain.

Mittwoch, Anita, Rodney Huddleston, Peter Collins. 2002. The clause: adjuncts. In: Huddleston, Rodney, Geoffrey Pullum (eds.), *The Cambridge Grammar of the English Language*, 663-784. Cambridge: Cambridge University Press.

Nelson, Gerald, Sean Wallis, Bas Aarts. 2002. *Working with the British Component of the International Corpus of English*. Amsterdam & Philadelphia: John Benjamins.

Nuyts, Jan. 2001. *Epistemic Modality, Language, and Conceptualization. A Cognitive-pragmatic perspective*. Amsterdam & Philadelphia: John Benjamins.

Olbertz, Hella, Sandra D. G. Bastos. 2013. Objective and subjective deontic neccesity in FDG – evidence from Spanish auxiliary expressions. In Mackenzie, J. Lachlan, Hella Olbertz (eds.), *Casebook in Functional Discourse Grammar*, 277-300. Amsterdam & Philadelphia: John Benjamins.

Pullum, Geoffrey K., Rodney Huddleston. 2002. Adjectives and adverbs. In: Huddleston, Rodney, Geoffrey Pullum (eds.), *The Cambridge Grammar of the English Language*, 525-595. Cambridge: Cambridge University Press.

Quirk, Randolph, Sidney Greenbaum, Geoffrey Leech, Jan Svartvik. 1985. *A Comprehensive Grammar of the English Language*. London: Longman.

Simon-Vandenbergen, Anne-Marie, Karin Aijmer. 2007. *The semantic field of modal certainty. A corpus-based study of English adverbs*. Berlin: Mouton de Gruyter.

Swan, Toril. 1988. *Sentence Adverbials in English: A Synchronic and Diachronic Investigation*. Oslo: Novus.

Thompson, Sandra A. 2002. 'Object complements' and conversation: towards a realistic account. *Studies in language* 26 (1). 125-163.

Vismans, Roel. 1994. *Modal patterns in Dutch directives: a study in Functional Grammar*. Studies in Language and Language Use 11. Amsterdam: IFOTT.

APPENDIX 1:

Results position SEARCH1: clausal position

Table A-1a: Clausal positions of the 15 modal adverbs (absolute numbers)

	ADV 1	ADV 2	ADV 3	ADV 4	ADV 5	ADV 6	ADV 7	Total
possibly	70	36	29	61	0	0	3	199
probably	25	75	12	87	1	0	0	200
certainly	43	91	9	55	0	0	2	200
hopefully	119	35	5	38	0	2	1	200
maybe	171	13	1	15	0	0	0	200
perhaps	121	27	11	40	1	0	0	200
actually	21	57	7	90	3	1	21	200
necessarily	2	27	9	161	0	0	1	200
inevitably	32	67	7	91	0	2	1	200
deliberately	7	70	2	104	0	2	16	201

Table A-1b: Clausal positions of the ten modal adverbs (percentages)

	ADV 1	ADV 2	ADV 3	ADV 4	ADV 5	ADV 6	ADV 7	Total
possibly	35.18%	18.09%	14.57%	30.65%	0.00%	0.00%	1.51%	100%
probably	12.56%	37.69%	6.03%	43.72%	0.00%	0.00%	0.00%	100%
certainly	21.50%	45.50%	4.50%	27.50%	0.00%	0.00%	1.00%	100%
hopefully	59.50%	17.50%	2.50%	19.00%	0.00%	1.00%	0.50%	100%
maybe	85.50%	6.50%	0.50%	7.50%	0.00%	0.00%	0.00%	100%
perhaps	60.50%	13.50%	5.50%	20.00%	0.50%	0.00%	0.00%	100%
actually	10.50%	28.50%	3.50%	45.00%	1.50%	0.50%	10.50%	100%
necessarily	1.00%	13.50%	4.50%	80.50%	0.00%	0.00%	0.50%	100%
inevitably	16.00%	33.50%	3.50%	45.50%	0.00%	1.00%	0.50%	100%
deliberately	3.48%	34.83%	1.00%	51.74%	0.00%	1.00%	7.96%	100%

APPENDIX 2

Results position SEARCH2: relative position of two co-occurring modal adverbs

POSSIBLY

	adjacent		non-adjacent		total
	possibly-[adv]	[adv]-possibly	possibly-[adv]	[adv]-possibly	
probably	--	--	--	--	--
certainly	--	--	--	--	--
hopefully	--	--	--	--	--
maybe	--	--	--	--	--
perhaps	--	--	--	--	--
actually	--	--	--	2	2
necessarily	--	--	--	--	--
inevitably	--	--	--	--	--
deliberately	--	--	--	--	--
total	--	--	--	2	2

PROBABLY

	adjacent		non-adjacent		total
	probably-[adv]	[adv]-probably	probably-[adv]	[adv]-probably	
possibly	--	--	--	--	--
certainly	--	--	--	--	--
hopefully	--	--	--	1	1
maybe	5	--	1	1	7
perhaps	--	1*	2	--	3
actually	4	10	8	--	22
necessarily	--	--	--	--	--
inevitably	--	--	--	--	--
deliberately	1	3	--	--	4
total	10	14	11	2	37

* subject missing

CERTAINLY

	adjacent		non-adjacent		total
	certainly-[adv]	[adv]-certainly	certainly-[adv]	[adv]-certainly	
possibly	--	--	--	--	--
probably	--	--	--	--	--
hopefully	--	--	--	--	--
maybe	--	--	--	--	--
perhaps	--	--	1	--	1
actually	--	1	1	--	2
necessarily	--	--	2	--	2
inevitably	--	--	--	--	--
deliberately	--	--	2	--	2
total	--	1	6	--	7

HOPEFULLY

	adjacent		non-adjacent		total
	hopefully-[adv]	[adv]-hopefully	hopefully-[adv]	[adv]-hopefully	
possibly	---	--	--	--	--
probably	--	--	1	--	1
certainly	--	--	--	--	--
maybe	--	--	--	--	--
perhaps	--	--	--	--	--
actually	--	--	3	--	3
necessarily	--	--	--	--	--
inevitably	--	--	--	--	--
deliberately	--	--	--	--	--
total	--	--	4	--	4

MAYBE

	adjacent		non-adjacent		total
	maybe-[adv]	[adv]-maybe	maybe-[adv]	[adv]-maybe	
possibly	--	--	--	--	--
probably	--	5	1	1	7
certainly	--	--	--	--	--
hopefully	--	--	--	--	--
perhaps	2	4	5	--	11
actually	1	2	8	1***	12
necessarily	--	--	--	--	--
inevitably	--	--	--	--	--
deliberately	--	--	1	--	1
total	3	11	15	2	31

***not unexpected: *maybe* in final position

PERHAPS

	adjacent		non-adjacent		total
	perhaps-[adv]	[adv]-perhaps	perhaps-[adv]	[adv]-perhaps	
possibly	--	--	--	--	--
probably	1*	--	--	2	3
certainly	--	--	--	1	1
hopefully	--	1	1	--	2
maybe	4	2	--	5	11
actually	--	2	24	--	26
necessarily	--	--	1	--	1
inevitably	--	--	--	--	--
deliberately	--	--	5	--	5
total	5	5	31	8	49

* subject missing

NECESSARILY

	adjacent		non-adjacent		total
	necess-[adv]	[adv]-necess	necess-[adv]	[adv]-necess	
possibly	--	--	--	--	--
probably	--	--	--	--	--
certainly	--	--	--	2	2
hopefully	--	--	--	--	--
maybe	--	--	--	--	--
perhaps	--	--	--	1	1
actually	--	--	--	1+1**	2
inevitably	--	--	--	1	1
deliberately	--	--	--	--	--
total	-	--	--	6	6

**1x participant-oriented (expected)

INEVITABLY

	adjacent		non-adjacent		total
	inevitably-[adv]	[adv]-inevitably	inevitably-[adv]	[adv]-inevitably	
possibly	--	--	--	--	--
probably	--	--	--	--	--
certainly	--	--	--	--	--
hopefully	--	--	--	--	--
maybe	--	--	--	--	--
perhaps	--	--	--	--	--
actually	--	--	--	--	--
necessarily	--	--	1	--	1
deliberately	--	--	--	--	--
total	--	--	1	--	1

DELIBERATELY

	adjacent		non-adjacent		total
	delib-[adv]	[adv]-delib	delib-[adv]	[adv]-delib	
possibly	--	--	--	--	--
probably	--	1	--	3	4
certainly	--	--	--	2	2
hopefully	--	--	--	--	--
maybe	--	--	--	1	1
perhaps	--	--	--	5	5
actually	--	2	--	1	3
necessarily	--	--	--	--	--
inevitably	--	--	--	--	--
total	--	3	--	12	15

ACTUALLY

	adjacent		non-adjacent		total
	actually-[adv]	[adv]-actually	actually-[adv]	[adv]-actually	
possibly	--	--	2	--	2
probably	10	4	--	8	22
certainly	1	--	--	1	2
hopefully	--	--	--	3	3
maybe	2	1	1***	8	12
perhaps	2	--	--	24	26
necessarily	--	--	1+1**	--	2
inevitably	--	--	--	--	--
deliberately	2	--	1	--	3
total	17	5	6	44	72

**1x participant-oriented (expected)

***not unexpected: *maybe* in final position