Chapter 6

Disentangling epistemic modality, neighbouring categories and pragmatic uses: the case of English epistemic modal adverbs

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Epistemic modality remains a slippery notion whose scope is not easy to delimit due to the manifold semantic and pragmatic factors that influence the use of epistemic modal expressions. This study reports on some problematic issues raised by epistemic modal adverbs in the design of an annotation scheme for epistemic modality in English: 1) the overlap between epistemic modality and the neighbouring categories of evidentiality, mirativity, sincerity, opinion and degree; 2) the fuzzy boundaries between epistemic and dynamic modality; and 3) the interaction between epistemic modality and speech acts, politeness and concession. We propose that the annotation scheme should ask the annotator to simply distinguish between basic, context-independent meanings of epistemic modal expressions. Less central meanings found in overlapping areas between two basic meanings, often arising from pragmatic interpretations, are not included in the annotation scheme.

1. INTRODUCTION: FRAMEWORK OF THE RESEARCH AND STRUCTURE OF THE ARTICLE

The contents of this study have come out as a result of part of the research activities currently carried out within the CONTRANOT

project[1], aimed at the creation and validation of contrastive functional descriptions through corpus analysis and annotation in English and Spanish, and at the production of an annotated bilingual corpus called CONTRASTES (ARÚS et al. 2013; LAVID et al., 2010). Modality is one of the categories to be annotated, together with appraisal, coherence relations and theme. The methodology consists of the steps specified in Figure 1, aimed at producing an annotation scheme that yields acceptable levels of inter-annotator agreement. The examples of English used in the experiments have been extracted from the British National Corpus.

    This study reports on part of the first step of the process, namely on some issues about the design of the annotation scheme raised by a subtype of epistemic modal expressions in English: epistemic modal adverbs. The position adopted in each case will be specified; however, this article does not only aim to provide solutions for the annotation of epistemic modality, but also, and more importantly, to give an overview of the factors that contribute to the fuzziness of the expression of epistemic modality in English by means of adverbs.
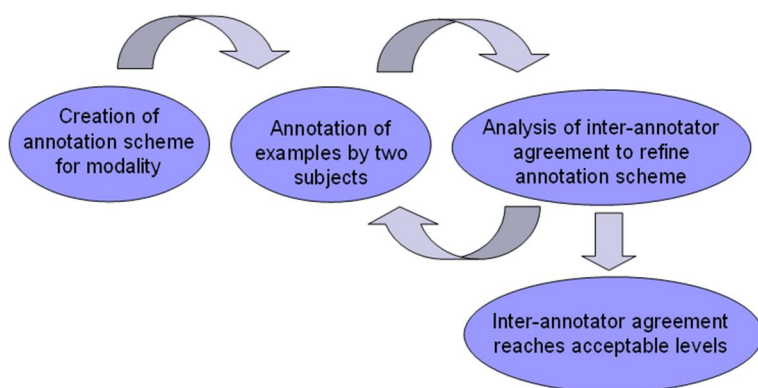

Figure 1. – Methodology: steps of the annotation system

The chapter is structured as follows: Section 2 presents an overview of epistemic modality: 2.1. concerns the concept and scope adopted, and 2.2. gives an overview of the kinds of problematic issues that the authors found for the design of an annotation scheme for epistemic modality, and anticipates the solutions to these problems. Section 3 describes how these kinds of problematic issues occur in the annotation of epistemic modal adverbs, and sets forth the solutions proposed in each case: the delimitation between epistemic modality and neighbouring linguistic categories (3.1.), the fuzzy boundaries between epistemic and dynamic modality (3.2.), and the interaction of epistemic modality with pragmatic and discourse factors (3.3.). Section 4 sums up the main conclusions and proposes suggestions for further research.

2. GENERAL ISSUES ON THE ANNOTATION OF EPISTEMIC MODALITY

2.1. The concept of epistemic modality: narrow and broad approaches

As is well known, many approaches have been proposed for the concept and scope of epistemic modality in linguistics. In the literature written on the expression of epistemic modality in English, the proposals may be grossly divided into two basic types. The more restricted type relies by and large on the categories of possibility and necessity: accordingly, epistemic modality is considered as the estimation of the chances for a proposition to be or become true (LYONS 1977, PALMER 1990, PERKINS 1983, LARREYA 1984, NUYTS 2001, WÄRNSBY 2006). According to this concept, the modal auxiliaries *may* and *might*, the adjective *possible* and the adverbs *maybe, perhaps* and *possibly*, among other expressions, have a meaning of low estimation of these chances (or, in other words, a meaning of possibility). Other expressions, such as the adjectives *sure* and *certain* and the adverbs *certainly* and *undoubtedly*, have a meaning of high estimation of these chances (that is, a meaning of certainty). Other expressions, like the adjectives *probable* and *likely* and the corresponding adverb *probably*, have a meaning of intermediate estimation of the chances (that is, a meaning of probability)[2].

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2. The categories of possibility and necessity are borrowed from modal logic, but the references cited above (and, in general, most references that use a concept of epistemic modality along these lines) consider that logic is insufficient for the study of epistemic modality in linguistics, since logic does not account for the diverse idiosyncratic semantic and pragmatic factors of the epistemic expressions in English and other languages.

Other references (STUBBS 1983, BIBER et al. 1999, KÄRKKÄINEN 2003) opt for a broader concept of epistemic modality, which includes other expressions that qualify the speaker/writer (sp/wr)'s commitment to the reliability of the information apart from those signalled above. Even though individual differences may be found among these approaches, they can be jointly referred to as instances of a broad approach to epistemic modality. That is to say, narrow and broad approaches agree about the epistemic modality of the expressions that clearly indicate a degree of probability, such as those mentioned above; however, both kinds of approaches disagree about some expressions that cannot be straightforwardly described in terms of probability. These expressions resemble prototypical epistemic modal expressions in that they qualify the sp/wr's commitment to what s/he states, either by emphasizing it (*absolute(ly), obvious(ly)*) or by downtoning it (*arguably, apparently, reportedly*; *seem, sort of*).

For our design of an annotation system of epistemic modality, we believe that a narrow approach is more manageable than a broad approach as point of departure. However, the expressions included in the broad approach give us a clue to important problems found in the annotation. These expressions belong to semantic categories such as opinion, evidentiality or degree, which we might consider as neighbouring categories with epistemic modality in the narrow sense. These neighbouring categories have posed problems for the annotation system: there are expressions that have semantic features of both epistemic modality and another category, as well as contexts in which the use of epistemic modal expressions resembles that of expressions belonging to neighbouring categories. Other problematic issues for the annotation system were the difficulty to distinguish epistemic modality from other modalities, as well as the use of epistemic modal expressions for pragmatic reasons or for reasons of information structure.

Section 2.2 offers an overall view of the problematic issues concerning the annotation of epistemic modality in general, while Section 3 presents a more detailed view of these issues in relation to the annotation of adverbs of epistemic modality.

2.2. The annotation of epistemic modality: problematic issues

As was stated above, the design of an annotation system for epistemic modality poses problems due to the difficulty to distinguish this category from A) neigbouring categories, which are even

considered as epistemic in the broad approaches; B) non-epistemic modalities, and C) pragmatics and information structure. These three kinds of problems will be illustrated in this section.

2.2.1. *Epistemic modality and neighbouring categories*

If the narrow scope of epistemic modality is adopted, this category is conceptually different from neighbouring categories such as evidentiality, degree or mirativity. Here we will show the analysis of the relationship between epistemic modality and one of these neighbouring categories, namely approximation, as a way of illustration.

The conceptual difference between both categories is clear: epistemic modality is the estimation of the chances for a proposition to be or become true, and approximation concerns the degree of accuracy to which the words chosen fit the state of affairs described in the sentence. Examples of expressions that indicate low degree of approximation are *about, kind of, sort of* or *loosely speaking*, while other expressions, such as *exactly, literally* or *strictly speaking* indicate high degree of approximation/accuracy. However, approximation is included in some broad approaches to epistemic modality (see, for example, BIBER et al.'s 1999: 557-558 description of epistemic stance adverbs). In spite of the clear conceptual difference, the difference between the actual use of expressions of weak epistemic modality and of weak degree of approximation is often blurred, especially when quantities or spans of time are mentioned: the fact that the sp/wr has a rough idea of a quantity but does not know the exact quantity can be expressed by an epistemic expression of doubt or by one of approximation. For example, *might be* in (1) can be paraphrased with *is about/approximately*: the issue is the average length of shots. Conversely, in (2) *about* could be paraphrased by *perhaps* or *probably*. However, this blurring does not occur systematically in all the cases in which quantities are involved: in (3), *might* expresses doubt about the span of time in which the sp/wr and his/her team are to administrate the state: in this case, the sp/wr does not even have a rough idea of the span (there is a remarkable difference between 5 and 10 years), and hence the modal is not paraphraseable by an expression of approximation.

(1) If you succeed in this, your cuts will be effectively invisible, and the images will flow smoothly. In general, long shots run for longer than close-ups because they contain more information for the eye to take in, and an average length **might** be ten to fifteen seconds. (BNC CBP)

(2) She has got a son, yeah, I don't think she sees him much now, he did come here to […] that she sees much of him, he's er **about** twenty or more now. (BNC KC2)

(3) He noted that 'we cannot say for how long we will be in charge of the state administration' but that 'it **might** be five years or 10'. (BNC HLB)

In Section 3 we discuss to what extent the blurring between epistemic modality and approximation is found in adverbs and the consequences it has for the annotation scheme.

2.2.2. *Epistemic modality and other modalities*

Monographs about expressions of modality, especially about the English modal auxiliaries and their equivalents in other languages (PALMER 1990, PERKINS 1983, COATES 1983, WESTNEY 1995 and COLLINS 2009, among many others), independently of their theoretical orientation, are unanimously met with the problem of distinguishing among different modal meanings (or modal uses, in monosemous accounts of modals). For reasons of space, we will only refer to the overlap between epistemic and dynamic modality. This modality may be defined as the set of meanings that belong to the possibility-necessity axis and are determined by natural circumstances, which may or may not be inherent to a person or another entity (ZAMORANO-MANSILLA & CARRETERO 2013: 284-289). The modal auxiliaries in (4-6) express dynamic modality. In (4), *must* means physical necessity due to the inherent characteristics of flesh and blood. In (5), *can* expresses physical possibility due to the inherent characteristics of Jones (this meaning is commonly described as ability); in (6), *can* expresses physical possibility that is not inherent to any entity, but due to circumstances (the dryness of the sand):

(4) Her heart was rioting madly, and her limbs were going weak, but a gleam entered her eye. "You might let me go just a little. I know you call me a ghost, but flesh and blood **must** breathe!" Laughing, he loosened his hold enough so that she could pull her arms free. (BNC HGV)

(5) Rives had everything, including immense strength, whereas Jones is hugely athletic and **can** jump as high as a guy six inches taller than himself. (BNC CKA)

(6) But you won't get in it easily now the tide's up. Wait until it goes down and you **can** walk in without getting your feet wet. (BNC H85)

A difficulty in determining whether the modality is epistemic or dynamic is posed by generic statements with modal expressions. These statements indicate that, whenever certain conditions are met, there is potential for the event to take place, i.e. nature does not prevent it from occurring (dynamic modality), and also probability for the event to occur in each individual case (epistemic modality). For example, *may* in (7) indicates that it is physically possible that sclerosing cholangitis is present with a normal cholangiogram (dynamic modality), and also that each time that a normal cholangiogram occurs there is a probability for sclerosing cholangitis to occur (epistemic modality). Consequently, these cases could be considered as merger between dynamic and epistemic modality (ZAMORANO-MANSILLA & CARRETERO 2013: 299-300): it must be noted that the modal may be paraphrased with an adverbial of frequency such as *sometimes* or *in certain cases*.

> (7) and it is possible that early AIDS-related sclerosing cholangitis **may** likewise be present with a normal cholangiogram (BNC HU4)

Similar cases are found with *can* (8): an inadequate diet has the physical potential to lead to craving (dynamic modality), so that whoever follows an inadequate diet has a probability to suffer from craving (epistemic modality).

> (8) An inadequate diet, as well as large amounts of sugar, **can** also lead to craving, which then results in some very unpleasant symptoms: nervousness and anxiety palpitations headaches dizziness and fainting weight gain. (BNC FEX)

Another problematic area for the distinction between epistemic and dynamic modality is impossibility. In certain cases, the impossibility is clearly dynamic, since the sp/wr knows that the proposition is not true, and consequently there is no epistemic qualification. This is the case of (9), where the sp/wr has no doubt at all that it is impossible for the simple spreadsheet to make use of that memory.

> (9) and this means that often a machine will have 4 or 8 MBytes of memory that a simple spreadsheet just **cannot** make use of. (BNC HAC)

In other cases, however, it may be interpreted that the sp/wr is not totally sure that the proposition is false, so that the impossibility is inferred and there is a component of epistemic modality; for instance, in (10) the sp/wr is not absolutely sure that Jekyll is not dead, but considers it to be almost impossible. However, these cases are similar

to the strictly dynamic cases in that they have a strong component of physical impossibility (it is unlikely that Jekyll is dead if he was seen the same day in good conditions).

(10) Jekyll was alive here today. He **can't** be dead. He has run away or is hiding somewhere. And if so, why? (BNC GV7)

In Section 3.2. we will consider how this indeterminacy between epistemic and dynamic modality is present in epistemic modal adverbs and specify the consequences of this indeterminacy for the annotation scheme.

2.2.3. *Pragmatic and discourse factors*

Another source of difficulty for the annotation lies in the occurrences in which the main reason for using the epistemic modal expressions is pragmatic rather than semantic. Epistemic modal expressions are often used with the main aim of strengthening or weakening the force of a given speech act and/or provoking certain effects on the addressee's processing of the information transmitted. An example of the use of epistemic modal expressions as downtoners is (11): in spite of the use of the combination of epistemic modal expressions *I suppose I must*, it may well be interpreted that the sp/wr has no doubt at all that s/he appeared untrustworthy, but uses these expressions in order to be less assertive and consequently save face, since the information is unfavourable to him/her. However, it may also be interpreted that the epistemic modal value of this combination is not totally lost, i.e. that the sp/wr is not totally certain about the truth of the statement. Consequently, given this double possibility of interpretation, we have decided to include epistemic modal expressions within the annotation even if they are used mainly with the pragmatic purpose of emphasizing or downtoning assertiveness.

(11) He understood, as well, why Fenella had been so chary of telling the entire truth. Because I suppose I **must** have appeared a bit untrustworthy, thought Caspar, what with working for the Gruagach and everything. I suppose I can't blame her or Floy for being wary, he thought, rather sadly. But he was a bit flummoxed at the reality of Nuadu, because nobody had ever told him how to address a bastard of the Ireland's Royal House. (BNC G1L)

In other cases, epistemic modal expressions are used mainly for reasons of information structure. For instance, in (12), the writer uses *might* in free indirect thought as a reinforcement of the concessive relationship between the clause with *might* and the second part of the coordinated sentence, even if the character April does not obviously have any doubt that she (herself) has four children:

> (12) Charlie teased. Their eyes met, and a look passed between them. Ach, away with you, you big pudding! April said gruffly. She knew what was going to happen later when they were in bed together. It was something to look forward to while the hours ticked by. She **might** have four children, but still thoroughly enjoyed that sort of thing. She was only thirty-six after all! (BNC AN7)

However, the existence of a concessive relationship does not always involve loss of epistemic modal meaning: in (13), the relationship between the sentence with *might* and the following sentence is also concessive, but *might* keeps its meaning of possibility:

> (13) Later, he began to wonder whether, with her brother dead, she might be prepared to tell the police how he had almost certainly murdered his aunt. If so, it would surely only be after a period of mourning. He would have to let her recover from the shock before contacting her. Even then, she **might** not respond well to the suggestion. But, for Colin's sake, he would have to put it to her. (BNC G0N)

That is to say, epistemic modal expressions are sometimes used in clauses that have a concessive relationship with the following clause; in some of these cases it is clear that the sp/wr has no doubt about the truth of the proposition and hence the epistemic meaning of the expression is lost, but in other cases this loss does not occur or is not clear. Therefore, concession will not be considered as a criterion for discarding cases of epistemic modal expressions from the annotation system.

3. THE ANNOTATION OF EPISTEMIC MODAL ADVERBS

This section concerns the ways in which the decisions explained above about the annotating system affect the annotation of epistemic modal adverbs. As a preliminary task, specific publications about epistemic adverbs were consulted (SIMON-VANDENBERGEN & AIJMER 2007, BYLOO et al. 2007, MAÍZ & ARÚS 2008, TUCKER 2001, HOYE 1997, SWAN 1988). The references made it obvious that the annotation of these adverbs also has to cope with the problems described above.

With this in mind, and in order to decide which adverbs could be considered as epistemic, or whether there were adverbs with epistemic and non-epistemic occurrences, a limited number of examples (20 or 50, depending on the cases) of some of these adverbs were extracted from the British National Corpus. Our observations concerning the more problematic cases, together with the decisions made about them, are described in Subsections 3.1., 3.2. and 3.3.

3.1. Overlap between epistemic modality and other semantic categories

As was stated in 2.1., the boundaries between epistemic modality and some other categories such as evidentiality, degree or mirativity are not always clear: even if these categories are conceptually different, there is overlap in their expression. In the remainder of 3.1., we will discuss the specific problems found while designing the annotation system for epistemic modal adverbs, and specify the decisions made in relation to the categories of degree, evidentiality, opinion, mirativity and sincerity.

3.1.1. *Degree*

Like epistemic modality, degree concerns the truth of the proposition, but in another way than probability. Degree may be divided into approximation, extent and intensity. As was stated in 2.1., approximation concerns the degree of accuracy to which the words chosen fit the state of affairs described in the sentence. For instance, *exactly* and *literally* express high approximation/accuracy, while *approximately* and *roughly* express low approximation. In spite of the semantic difference between epistemic modality and approximation, weak epistemic adverbs such as *probably* and *perhaps* are paraphraseable in some occurrences by expressions of approximation such as *about* or *approximately* in certain contexts, especially with quantities or spans of time (14-15). This overlap between probability and approximation is due to the little communicative importance of the distinction between the two meanings in this kind of contexts.

(14) The most I have played at one time is **probably** seven hours and it becomes agonising, it tightens your arm up terribly. (BNC K4T)

(15) Rightly or wrongly the patient expects little more than **perhaps** ten minutes of the doctor's time. (BNC B0N)

Extent concerns the degree of completeness with which a proposition is true. Adverbs of high extent are *absolutely, completely, thoroughly* or *totally*, while adverbs of lower extent are *partially* and, in another sense, *basically, essentially* or *fundamentally* (BUTLER 2008). Concerning epistemic modality and extent, the overlap occurs mainly between adverbs of high extent and those of certainty. Both enhance the sp/wr's assertiveness and commitment to what s/he is saying and this enhancement is the sp/wr's main reason for using the adverb, so that the difference between certainty and high extent becomes blurred (CARRETERO 2010: 218). For example, in (16) *certainly* and *absolutely* are used to highlight the affirmative polarity of the response, the difference being mainly that *absolutely* is a stronger emphasizer and for that reason is placed at the end of the turn.

(16) - But with all due respect is some of that not to do with the guidance their [sic] receiving from us as teachers?
     - **Certainly**, I I've told you **Absolutely**! (BNC F7F)

By 'intensity' we mean the strength of a quality or the strength with which a state of affairs occurs. For example, the expression in bold in (17) marks intensity applied to a quality, while that in (18) applies to a state of affairs. Concerning epistemic modality and intensity, *certainly* followed by an evaluative adjective, as in (19), is roughly paraphraseable with an intensifier such as *very*. A difference may be seen in that *certainly* lays emphasis on the truth that it was good to read the good news, while *very* in its place would have emphasized the strength of the goodness. However, this difference has very little communicative importance (if any), since emphasis on the truth of the goodness may well lead to the inference that the goodness was strong or, in other words, the intensity of the goodness leads to the certainty about it. This overlap is also connected with the non-verifiability of the utterance, in the sense that its truth or falsity is a matter of opinion (see 3.1.2.).

(17) I ate all that **terribly** salty dish.

(18) I love you **so much**!

(19) It was **certainly** good to read that so many people had never felt healthier or had more energy; and I was gratified to hear from those who had previously attempted to diet but without success that this diet had worked for them. (BNC BN5)

For the annotation process, the semantic meaning will be given priority. Consequently, the annotation will not take into account the occurrences in which the epistemic modal adverbs of weak probability are paraphraseable with adverbs of approximation, nor the cases of *certainly* in which it resembles an adverb of high extent or intensity. That is to say, the adverbs in these contexts will be annotated as epistemic.

3.1.2. *Opinion*

Statements may be verifiable or non-verifiable. Verifiable statements, such as (20), have an objective truth (as far as such a truth is available to humans). When verifiable statements are unmodalized, the implicature is that the sp/wr has total certainty. Likewise, the use of epistemic modality (21) implies that the sp/wr lacks total certainty. Verifiable statements cannot easily be qualified with adverbs of opinion such as *arguably*, unless the words are interpreted in a special sense (22). In contrast, non-verifiable statements such as (23) have no objective truth, but are a matter of opinion, and can be qualified by adverbs of opinion (24). Thus, the unmodalized and modalized versions of verifiable statements, such as (20) and (21), normally imply different states of knowledge, while the versions without and with expressions of opinion, such as (23) and (24), are conceivable as options between which language users may choose depending mainly on the deference or politeness that they want to display. The distinction between verifiable and non-verifiable statements is not only epistemic: it is recognized by language users and has some significance in most cultures (for example, in legal matters). In fact, most cultures promote truthfulness with regard to verifiable statements, but tolerance and respect of diverging opinions.

(20) John is a teacher.
(21) **Maybe** John is a teacher.
(22) ?John is **arguably** a teacher.
(23) John is the smartest student in the class.
(24) John is **arguably** the smartest student in the class.

However, in actual language use the distinction between verifiable and non-verifiable statements is not always clear: adverbs of opinion such as *arguably* occur in what might be considered as verifiable statements (25) and epistemic modal adverbs occur with non-verifiable statements

(26). In this last case, epistemic modal adverbs do not primarily indicate proper epistemic certainty on the part of the sp/wr. Instead, they mainly serve interpersonal functions, such as the expression of politeness: in (26), the sp/wr may well use *probably* for reasons of tact and consideration of other possible viewpoints. In (25) and (26), therefore, the adverbs *arguably* and *probably* seem to be interchangeable, with the only difference that *probably* sounds more polite than *arguably*.

> (25) Professor N. Ambraseys was **arguably** the first to recognise the full implications of the study of the history of earthquakes to the science of tectonics. (BNC B7C)
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> (26) I wished he'd had the same confidence in front of audiences because he was **probably** the most talented actor of us all. (BNC A2Y)

Taking into account the differences between opinions and verifiable statements, it is to be expected that languages will evolve various means to make opinions more or less polite. Many English adverbs referring to the disputable nature of an opinion are used in this way (*contestably, controversially, debatably* or *disputably*). Such adverbs specialize in the expression of interpersonal meanings relevant to the exchange of opinions. However, they are rarely used in our corpora in verifiable statements. In other words, they cannot express epistemic (un)certainty. Since they do not have an epistemic meaning in the narrow sense, we have decided to exclude adverbs of opinion from our annotation scheme.

With regard to epistemic modal adverbs, they are often found in opinions, but we believe that it is not convenient to consider this factor in the annotation system for two reasons. On the one hand, we believe that this use of epistemic modal adverbs in opinions as a politeness strategy is a pragmatic use, and that the semantic meaning of epistemic modality is still present in these uses. In fact, it is hard to argue that the latter is absent in any example, since showing insecurity or low assertiveness is regarded in itself as an act of politeness in most cultures, no matter if such insecurity is epistemically genuine or not. On the other hand, the distinction between verifiable and non-verifiable statements is not always clear. There are many statements that might be considered as verifiable but their verification is unlikely to take place. This is the case of (27), in which the truth of the statement that colossal waste is the real reason for Hollywood's dominance in the cinema industry is difficult to prove. Therefore, epistemic modal adverbs such

as *probably* will be considered in the annotation even if they are used in non-verifiable statements for reasons of politeness.

> (27) The cinema industry has always thrived, or survived, on colossal waste, the worst-kept secret of the American film industry, if not of the American economy in general, and **probably** the real reason for the continued and apparently unshakable worldwide dominance of Hollywood. (BNC FB8)

3.1.3. *Evidentiality*

Evidentiality is defined in NUYTS (2001: 27) as "the speaker's indication of the nature (the type and quality) of the evidence invoked for (assuming the existence of) the state of affairs expressed in the utterance". Evidentiality in itself need not involve any epistemic modal qualification: for example, in Tucano (a language spoken in northwest Amazonia), the suffixes *–ámi, -ásĩ, -ápĩ* and *–ápɨ* indicate that the statement is based on visual evidence, non-visual evidence, inference and information heard from someone else, respectively (AIKHENVALD 2004: 51-52). The relationship between epistemic modality and evidentiality in English, which does not have grammatical evidentials like those of Tucano, is a matter of controversy: some scholars argue for their treatment as totally different categories (DE HAAN 2001, CORNILLIE 2009) while others consider that there is a high degree of overlap between them. We hold the view, stated elsewhere by one of the authors (CARRETERO 2004) that epistemic modality and evidentiality are conceptually different, even if there is a high degree of overlap in their linguistic expression in English.

The relationship between epistemic modality and evidentiality in English is different from that between degree and epistemic modality: as was seen in 3.1.1., the overlap between epistemic modality and degree occurs in some contexts, in which the distinction between degree and epistemic modality is not of communicative importance. On the other hand, the overlap between epistemic modality and evidentiality occurs in the very meaning of the expressions involved. This overlap is context-independent and, therefore, does not affect only certain uses of epistemic modal or evidential expressions, but the expressions in their entirety.

In English, epistemic modality may be regarded as a more basic meaning than evidentiality, since the latter often implies the former while the former does not normally imply the latter. Epistemic modal adverbs such as *certainly, probably*, *maybe* or *perhaps* express

different degrees of certainty without adding any meaning of evidentiality; in contrast, evidential adverbs not only indicate that the proposition is based on evidence, but also an estimation of the chances for it to be or become true. For example, the evidential adverbs *evidently* and *clearly* mean strong (but not total) certainty, while *apparently* and *seemingly* mean a less strong degree of certainty. An exception could be *reportedly*, which specifies the source of evidence very clearly while it has a vague epistemic modal component of lack of commitment, but in any case it can only be used when the sp/wr's certainty is not total, so that an epistemic modal component is still there[3/4].

The considerations specified above have led us to treat epistemic modality and evidentiality as separate categories in our annotation system; we have decided to restrict epistemic modality in the annotation system to the adverbs that have no meaning of evidentiality, and to exclude those that contain a semantic component of evidentiality even if they also incorporate a semantic component of epistemic modality. This decision is also geared towards the design of a future annotation system of evidentiality.

3.1.4. *Mirativity*

According to DE LANCEY (2001: 369-370), "[t]he term 'mirativity' refers to the linguistic marking of an utterance as conveying information which is new or unexpected to the speaker". We consider mirativity as a two-sided category, which comprises the linguistic marking of both agreement and disagreement with expectations. Epistemic modality displays a similar relationship with mirativity as that with evidentiality, in that the overlap occurs in the semantics of the

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3. It may be argued that the epistemic meaning of these evidential adverbs is derived from the evidential meaning by implicature; nevertheless, it is context-independent, so that it may be considered as part of the semantics of the adverbs.

4. The English modal auxiliaries also provide evidence that epistemic modality is more basic than evidentiality in English. Although a full account of the use of the English epistemic modals cannot be included here for reasons of space, it may be stated, in a general sense, that *may, might* and *could* have an epistemic meaning of low probability without any meaning of evidentiality. However, English has no auxiliaries with a purely evidential meaning: the nearest auxiliary to evidentiality is *must*, which has an epistemic meaning of high probability combined with an evidential meaning of immediate evidence.

expressions concerned. As for epistemic modal adverbs, the overlap occurs in the area of certainty (strong epistemic modality): there are a number of adverbs and adverbials that have a semantic component of certainty and another of mirativity, which expresses either agreement with expectations (*of course, naturally*), or disagreement with expectations (*actually, in fact*). Once again, we considered it best to keep the category of mirativity apart from that of epistemic modality, so that the adverbs cited above are not included in our annotation of epistemic modality even if they lay emphasis on the certainty of the proposition.

3.1.5. *Sincerity*

Some adverbs, such as *frankly, honestly, sincerely* or *truthfully* may be adverbs of manner or adverbs of stance. The difference between these uses does not really lie in their semantics, since both uses share the semantic component of sincerity, but in their scope: in the manner sense, the scope applies to the way in which the state of affairs is performed (28), while in the stance sense it applies to the sp/wr's attitude while s/he is communicating the message (29):

(28) Other Whitehall insiders caution against the view that the Thatcher Cabinet is largely characterized by deferential staircase men: 'Ministers report to Cabinet pretty freely and **frankly**. She has a passion for knowing what is going on and will be extremely cross if she isn't told.' (BNC B0H)

(29) I tumbled out of the nest, where I'd been a cosseted only child, and into digs. They turned out to be very nice digs, but I was still faced, for the first time in my life, with the practicalities of keeping myself fed and clothed, and getting to lectures and passing exams. **Frankly**, I didn't have a clue. I didn't make any enquiries about how the laundry got done until the day I ran out of clean tights. (BNC AHC)

The stance use of these adverbs has an epistemic modal implicature: the sp/wr's sincerity implies that what s/he states is true (in 33, the sp/wr presents the fact that she did not have a clue as true). This epistemic modal value is context-dependent and lies outside the semantic meaning of these adverbs. For example, with verbs of mental processes followed by non-verifiable statements, as in (30), *frankly* is a resource for enhancing assertiveness, but it does not claim that the statement is true: what the sp/wr states about the role of the school is presented as a firm belief, not as an absolute truth.

(30) The task of parents is to mentor their children so that by example and instruction their children may capture a glimpse of the true values of life. The task of the school is to educate and to influence the growing mind of the child through knowledge. **Frankly**, I believe that it begins in an attitude to life which is almost mystical, if not religious, in its orientation and approach. I mean by this attitudes of wonder, reverence and awe, as we contemplate the beauty of the universe and note the fragility of its life-systems. (BNC ABV)

To sum up, adverbs of sincerity often communicate the epistemic modal implicature that the proposition is true, but this implicature lies outside their semantic meaning. Consequently, they will not be considered as epistemic modal expressions in the annotation system.

3.2. Fuzzy boundaries between epistemic and dynamic modality

Several adverbs of possibility, such as *possibly, maybe* and *perhaps*, are found with generic statements similar to those reported in 2.2.2. In these statements, the adverbs indicate, on the one hand, that there is potential for the state of affairs to take place whenever certain conditions are met, i.e. nature does not prevent it from occurring (dynamic modality); on the other hand, the adverbs also mean probability for the event to occur in each individual case (epistemic modality). For instance, *possibly* in (31) means that it is naturally possible for a younger sibling to die as a consequence of malnutrition due to his/her mother's giving the breast to an elder brother (dynamic modality), and also that whenever there is an ill-nurtured sibling for that reason, s/he has a probability to die (epistemic). Similarly, *perhaps* in (32) means that familiarity has the potential to breed contempt (dynamic) and that, whenever there is familiarity, there is a probability that it provokes contempt (epistemic). Therefore, these cases are considered as merger between epistemic and dynamic modality, and their treatment in the annotation system will be based on the overall semantics of the individual adverb. *Perhaps* and *maybe* cannot express pure dynamic modality, while *possibly* can: for example, in (33) it refers to the best way in which, by nature, everything can go for the sp/wr. In these purely dynamic cases, *possibly* cannot be replaced by *maybe* or *perhaps* (33a), while this replacement is possible in the generic cases (31a). Therefore, we have decided to consider the generic cases as epistemic when the adverb is *maybe* or *perhaps*, and as both epistemic and dynamic (i.e. as cases of merger) when it is *possibly*.

(31) Roheim's research in central Australia, for instance, shows that mothers will never refuse a child the breast, even if this means that a younger sibling is displaced by the elder one and suffers malnutrition – **possibly** to the point of death - as a result. (BNC HTP)

(32) **Perhaps** familiarity breeds contempt -- among teachers as well as children. (BNC G1F)

(33) In my guts I feel that, even if everything goes the best it **possibly** can for me, my life has changed completely and forever. (BNC FP6)

(33a) In my guts I feel that, even if everything goes the best it ***perhaps/maybe** can for me, my life has changed completely and forever.

(31a) Roheim's research in central Australia, for instance, shows that mothers will never refuse a child the breast, even if this means that a younger sibling is displaced by the elder one and suffers malnutrition – **perhaps/maybe** to the point of death - as a result.

Another difficulty was found in some cases of *possibly* combined with the modals *can* and *could* in negative sentences: the impossibility, as it occurred with the cases of impossibility expressed with negated *can* without the adverb (see 2.2.), is clearly dynamic when the sp/wr has no doubt about it (34); however, in other cases the impossibility is used by the sp/wr in order to make an inference about facts that are unknown to him/her (35). Evidence that the dynamic meaning of impossibility is more basic than the epistemic meaning in these examples is the fact that the former is always present, while the latter is obtained only when it becomes apparent that the sp/wr lacks total certainty about the events: in (35), the inference is derived from inherent properties of the referent of *he*. This persistence of the dynamic modal meaning has led us to consider all the cases of negated *can* and *could* combined with *possibly* as dynamic.

(34) A lot of people don't want to be in the best band in the world because they don't give a shit about themselves, he remarks flatly, still playing with his half empty bottle of water. I **can't possibly** understand that I want to be in the best band in the world, it's simple! (BNC C9L)

(35) His car was found with bloodstains on the steering-wheel. "He **couldn't possibly** do a thing like that," his best friend said. (BNC H7A)

3.3. Interaction of the epistemic modal meaning with pragmatic and discourse factors

In 2.2.3, we saw how, in some contexts, epistemic modal expressions are not primarily used to give an estimation of the chances for a proposition to be or become true, but with the more general aim of strengthening or weakening the force of a given speech act and/or of provoking certain effects on the addressee's processing of the information transmitted. In these cases the adverbs will still be annotated as epistemic, because of two reasons: on the one hand, we believe that these discourse functions are not incompatible with epistemic meaning, but rather an implicature derived from it; on the other, the consideration of these pragmatic factors would involve the need to decide in each case whether the epistemic meaning or the pragmatic use is more important. This decision is not always easy, and it would slow the annotation and lead to inter-annotator disagreement. Nevertheless, we will specify how some of these pragmatic effects are present in the use of epistemic modal adverbs.

3.3.1. *Speech acts*

With regard to the use of epistemic modal expressions in order to modify the force of speech acts, the adverb *certainly* is a case in point, due to the wide range of speech acts in which its force as a strengthener is more important than the degree of certainty about the proposition. These speech acts are promises about the future (36) and positive responses to different kinds of speech acts, such as statements (37), questions (38), directives (39) or requests for permission (40):

(36) As for the safety of the Zairean, I was glad to see that, in his judgment, Mr. Justice Brown said: However, it is at least now clear that no irreversible damage has resulted from his removal on 1st/2nd May as he has been in touch with his solicitors both from Zaire and Nigeria since then. I **certainly** will not withdraw the Asylum Bill. (BNC HHX)

(37) I talked to her about the 1931 crisis and said that I was convinced the King had been a determinant influence on that occasion, -Yes **certainly**; he **certainly** was (BNC A6G)

(38) -And what about er Notts County's name in Italy because obviously it's th it's the first football club in the world and er if legend is correct then Juventus took their kit from Notts County strip being black and white stripe so had they heard of Notts County before? -Oh yes **certainly**. (BNC KN2)

(39) - I fear my pen wasn't fast enough to note down the paragraph number, perhaps you could remind me?
- Er, **certainly**, Senior Inspector, erm paragraphs six point four, and continuing into six point five.
- Thank you. (BNC HVK)

(40) - Could I have a copy of the letter, please, can I take it up?
-You **certainly** can, Anne, thank you. (BNC K51)

BYLOO et al. (2007: 47-48), in their study of *certainly* and its Dutch equivalent *zeker*, consider that these occurrences belong to the 'strengthening' use, which they characterize as "serv[ing] to reinforce an assessment of some kind (an opinion, attitude, evaluation – the notion has to be applied broadly) of a state of affairs, such as a moral, epistemic, aesthetic or quality judgement, expressed in the same or a preceding utterance". BYLOO et al. consider that this strengthening use is different from the epistemic use, but we believe that epistemic modality is maintained, and therefore all these cases will be included in the annotation system: *certainly* lays emphasis on the truth of the proposition, with the consequence that the speech act in which it occurs is reinforced. Due to pragmatic reasons, this reinforcement is more important than the meaning of certainty, but it cannot be said that the meaning of certainty is lost.

The coexistence of the meaning of certainty and the pragmatic effect of speech act reinforcement may be explained in (36-40) as follows: in (36), the sp/wr reinforces the promise by emphasizing the certainty that the action mentioned will not become true. In (37), the sp/wr reinforces his/her agreement with the addressee's statement by emphasizing that the proposition is true: this is made clear by *he certainly was*. In (38), *certainly* lays emphasis on the affirmative polarity of the answer to the question. (39) is a response to a directive, in which *certainly* emphasizes the agreement to comply with the directive by highlighting the sp/wr's certainty that the proposition will become true (this kind of responses may be considered as a kind of promises; in the case of (39), the promise is fulfilled immediately). In (40), *you certainly can* indicates that the granting of the permission is carried out by expressing certainty that the addressee can perform the state of affairs.

3.3.2. *Politeness strategies*

As was stated in 2.2.3., epistemic modal expressions are often used for reasons of facework rather than to express an estimation of the probability for a proposition to be or become true. Facework was shown

in Section 3.2.5. to be a strong motivation for the use of epistemic modal expressions in non-verifiable statements. However, the use of this kind of expressions for reasons of politeness can also occur in verifiable statements; in these cases, the degree of probability of the expression used is motivated by face-saving rather than by the estimation of the chances for the proposition to be true. For example, in (41), it may be interpreted that the sp/wr knows perfectly well that she was sulking and the use of *maybe* is entirely due to face-saving reasons (the quantifier *a little bit* also serves this purpose). Weak epistemic expressions are also frequently used for increasing the indirectness of directive speech acts; in particular, they are often used in combination with expressions of deontic modality (obligation, recommendability and permission). An example of this use is (42), in which *maybe* hedges a suggestion:

(41) I'm not sulking! she snapped. He laughed. Oh, yes, you are! Thoroughly incensed, she glared at his handsome face. But, when he turned and gave her a warm, infectious grin, she found it difficult not to smile back at him. Well well, **maybe** I was sulking just a little bit, she added quickly as he gave a low rumble of laughter. But, you must admit, I did have a lot to put up with today. (BNC JXX)

(42) We had a brilliant time and it's a pity you only get to do it once: **Maybe** we'll split up and reform under a different name — so we can have a crack at it next year. (BNC CK4)

Politeness accounts for many uses of epistemic modal expressions (for an extensive account, see CARRETERO 1995). It could be argued that epistemic expressions in cases such as (41-42) lose their meaning of probability. Nevertheless, these cases will still be considered as epistemic in our annotation scheme because, as was stated in 2.3., this loss of the epistemic meaning is to a high extent context-dependent and not always easy to detect: a sp/wr may well use the epistemic adverb in ***Maybe I made a mistake*** just for face-saving reasons or else when s/he is not sure about it. Due to this indeterminacy, the consideration of this factor would make the annotation process slower and would predictably lead to many cases of disagreement. In spite of this decision to exclude politeness as a criterion for annotating epistemic modality, we acknowledge its importance in the linguistic expression of epistemic modality. In fact, the consideration of politeness is a must in certain types of studies, such as analyses of concrete epistemic expressions in which pragmatics and discourse analysis are taken into account.

3.3.3. *Concession*

As was stated in 2.2.3., epistemic modal expressions may be used to indicate the relationship between the information transmitted by the clause and the following information. A clear case of this discourse function was the use of epistemic expressions to indicate concessive relationships between clauses. The possibility to express concession is shared by many epistemic modal adverbs, as attested by SIMON-VANDENBERGEN and AIJMER (2007) for the area of certainty. We agree with BYLOO et al. (2007: 48) that concession is a different meaning from the epistemic meaning, but "is entirely due to interaction with the context". However, we believe that the meaning of concession is not completely detached from that of certainty in these examples. In (43), for instance, *certainly* expresses certainty that the clause in which it occurs is true, precisely with the aim of highlighting that the truth of this clause does not prevent the following clause from being true. In other words, the sp/wr's certainty about the first clause serves to signal that s/he does not intend to question its veracity, but this veracity, in contrast to what might be expected, is compatible with the truth of the second clause. Therefore, the occurrences in which adverbs of certainty express concession will be included as epistemic in the annotation system.

> (43) It **certainly** was a challenge to have to teach people stuff by Steve Vai or Yngwie Malmsteen, <u>but</u> the most difficult was Allan Holdsworth. (BNC C9K)

Less clear is the consideration that weak epistemic modal expressions maintain their epistemic meaning when they express concession, since there are cases in which the sp/wr clearly does not have any doubt at all. In these cases, the strategy used to highlight the epistemic meaning is the backgrounding of the truth of the utterance. In (44), the sp/wr qualifies a proposition with *maybe* and in the next clause he states that he knows that it is true:

> (44) When asked to sum up how he sees himself as a manager, Miller replies: As a player, **maybe** I wasn't the best. <u>I know that</u>. But the managers I played for all said I was the best professional. (BNC K5J)

However, in other contexts it is less clear whether weak epistemic expressions expressing concession maintain the epistemic meaning or not: in (45), it is not easy to decide whether the sp/wr knows or just

entertains as a possibility that the referent of *she* has not been personally intimidated by Faye. This is because the main function of the epistemic expression is not to indicate weak probability, but to show that the truth of the proposition of the *perhaps* clause is not incompatible with the proposition of the next clause (i.e. the clause beginning with *but*).

> (45) Hating to eavesdrop, Belinda struggled to her feet again as Tom spoke. "You know she's far too intimidated by you to do that!" "Intimidated? By me? She's not!" Faye protested. "All right, **perhaps** not by you personally, but by your status as an artist, she certainly is." (BNC H9H)

In view of this indeterminacy about the maintenance or loss of the epistemic meaning of weak epistemic modal adverbs in concessive contexts, the occurrences of these adverbs in these contexts will be included as epistemic in our annotation system.

4. CONCLUSIONS AND SUGGESTIONS FOR FURTHER RESEARCH

The delimitation of the scope of the expressions of epistemic modality in human languages, and in English in particular, is a complex issue, due to the great number of semantic and pragmatic factors that have to be considered in the linguistic description of this kind of modality. This article has presented some specific problems brought about by English epistemic modal adverbs, as well as the solutions proposed to these problems for the design of an annotation scheme of epistemic modality in English. The proposed key criteria for the solutions consist in giving priority to the semantics of the epistemic modal adverbs over contextual uses, pragmatic and discourse factors. The problems tackled and their solutions may be summarized as follows:

- Overlap between epistemic and dynamic modality in generic statements and impossibility. As for the use of modal adverbs in generic statements, the key factor considered for the annotation is the main meaning of the adverb in question. In this way, when epistemic and dynamic modality overlap in generic statements, *maybe* and *perhaps* are considered as epistemic, while *possibly* is considered to express merger between epistemic and dynamic modality. Concerning the expression of impossibility with *possibly* combined with negated *can* or *could*, the modality is to be annotated as dynamic.

- Overlap between epistemic modality and the neighbouring categories of degree, opinion, evidentiality, mirativity and sincerity. The conceptual distinction between these categories and epistemic modality is clear: the overlap was found in their linguistic realizations. With the categories of degree and opinion, the overlap was not found in the semantics of the adverbs, but in certain contexts in which the distinction between the epistemic meaning and the meaning of degree or opinion is not necessary from the point of view of communication. The solution proposed is to consider these cases of overlap as epistemic, so the annotation is entirely based on the semantics of the expressions. In contrast, the overlap between adverbs of epistemic modality and those of evidentiality and mirativity is of a semantic nature, since there are adverbs that have both an epistemic modal semantic feature and an evidential or mirative feature. In these cases, the adverbs with an evidential and mirative feature have been discarded from the annotation, thus restricting epistemic modality to the adverbs with no semantic features of these kinds. Adverbs of sincerity were shown to have a pragmatic context-dependent implicature of certainty in their stance uses, which is not to be considered in the annotation system.

- Occurrences of epistemic modal adverbs in which the main motivation for their use is not to express an estimation of probability, but to achieve pragmatic effects such as agreement or face-saving, or to signal discourse relations among clauses such as concession. Since the (non-)persistence of the epistemic modal meaning was not clear in many of these cases, and in order to simplify the annotation scheme, these factors are not to be considered.

We acknowledge that the factors discarded in the annotation system are important for understanding the linguistic expression of epistemic modality in English and other languages: their exclusion is entirely due to the need to have an annotation process of limited complexity, in which a high rate of inter-annotator agreement is guaranteed. In fact, these factors cannot be ignored in other kinds of studies of the linguistic expression of epistemic modality. In this respect, we hope that this chapter has made it clear that the approach to epistemic modality has to be different when the main aim of the research is to devise an annotation scheme applicable to large corpora or else to carry out detailed studies about different epistemic modal expressions, such as

in-depth studies on individual expressions or a concrete sub-area of epistemic modality.

Concerning further research, the annotation system based on the criterion has to be tested with different adverbs, in order to prove its efficiency and the degree of inter-annotator agreement. The delimitation criteria proposed here between epistemic modality and neighbouring categories might also be applied for the design of annotation systems for these categories in the future. And, last but not least, a more detailed annotation system might well be designed, taking into account the pragmatic and discourse factors which have not been considered as criterial in the present annotation system.

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