ZEITSCHRIFT FÜR SPRACHWISSENSCHAFT
Journal of the Linguistic Society of Germany

Volume 44, Issue 2, Article 5

https://doi.org/10.18148/zs/2025-2011

Martina Wiltschko, ICREA & Universitat Pompeu Fabra, martina.wiltschko@upf.edu

The grammar of knowledge

Above and Beyond

Abstract: The empirical goal of this paper is to establish a generalization about the expression of knowledge. Unmarked declaratives are used in context of certainty: uncertainty has to be marked, but certainty need not be and if it is different strategies have different interpretive effects. The analytical goal is to argue for a grammatical analysis of this generalization. It is argued that the interpretation of certainty comes about (covertly) marking declaratives as being part of the speaker's epistemic state. This grammatical analysis is compared to an alternative according to which the interpretation of certainty is a pragmatic effect, based on Gricean reasoning. Empirical evidence is provided that favors the grammatical analysis. The generalization about the expression of certainty as well as its grammatical analysis has far-reaching consequences for cross-linguistic comparison, for philosophical theories of assertion, as well as for human AI interaction.

Keywords: epistemicity, knowledge, declaratives, assertion, markedness, evidentials

This invited contribution is based on the plenary lecture given on **1 March 2024** at the Annual Conference of the Linguistic Society of Germany.

Cite as: Wiltschko, Martina. 2025. The grammar of knowledge: Above and beyond. *Zeitschrift für Sprachwissenschaft* 44(2). https://doi.org/10.18148/zs/2025-2011

1 A generalization about the expression of knowledge

1.1 A puzzle

The empirical goal of this paper revolves around a puzzle surrounding the interpretation of declarative sentences like (1).

(1) It's raining.

A speaker (S) may utter (1) in a context where they know that it is raining, for example, while walking in the rain. Note that an observer might describe this context as in (2).

(2) This person knows it's raining.

Interestingly, there is no explicit aspect of the sentence in (1) dedicated to the expression of knowledge or certainty. Yet, when describing the situation, we can invoke reference to knowledge. To be sure, it is certainly possible for S to explicitly state that they know something, as in (3).

(3) I know it's raining.

While (3) appears to encode more explicitly what (1) seems to express, its use-conditions are not identical. S might utter (3) in contexts when their epistemic state is at stake rather than the state of the world itself. This may be the case if S is in an argument with someone else about the state of the world and claims their epistemic authority by uttering (3). What is crucial, though, is that uttering a bare declarative as in (1) is normally sufficient to indicate that one knows that the proposition (p) is true. In contrast, when S is not certain about the truth of p (for example, if S has been inside a windowless room all day, without access to the outside world) uttering a bare declarative clause like (1) would be inappropriate. Rather, in this context S needs to explicitly mark their uncertainty, as in (4).

(4) It's probably raining.

The data discussed thus far leads to the generalization in (5).

(5) A grammatical generalization about the expression of knowledge (GrEK)
Bare declarative clauses are used to express knowledge: Uncertainty must be marked; certainty need not be.

In (5), the notion of *bare declarative* refers to declarative sentences that encode the proposition without any reference to or modification of S's epistemic state (i.e., sentences that do not contain explicit markers of (un)certainty). The generalization that certainty need not be specifically marked has not gone unnoticed — though it is not typically viewed as

a generalization about grammar. For example, Schiffrin (1987: 18) states that "the simplest display of commitment is through an assertion, i.e. a claim to the truth of a proposition. In more complex displays, speakers indicate their confidence in that truth, e.g. by hedging or intensifying what they say."

The main goal of this paper is to provide empirical evidence for GrEK and to discuss its theoretical significance. The fact that GrEK holds is not a logical necessity and thus not trivial. Why would a bare declarative clause be sufficient to express knowledge? Before we delve into the heart of the matter, it is essential to clarify what I mean by *knowledge*.

1.2 What is knowledge and who is entitled to claim it?

Intuitively, it appears quite clear what it means to *know* something. However, we cannot ignore the fact that there is a long-standing debate regarding the nature of knowledge, mostly in the philosophical and psychological literature (see Ichikawa and Steup 2024, Phillips & Norby 2019 for an overview). For the purpose of this discussion, I shall set aside theoretical controversies and adopt what I consider an ordinary-language sense of *know*, as in (6).

(6) S knows p iff they are certain that p is true.

Now, one can be certain that p is true but be wrong about it. For example, suppose I forget to change my clock to reflect daylight savings time. When I look at the clock and it shows 12:15, I will be certain that it is 12:15, even though it really is 13:15. In this context, I am entitled to think that I know that it is 12:15. However, an observer witnessing my error would likely describe this situation as in (7).

(7) Martina **thinks she knows** that it is 12:15. But she is wrong.

According to this observer, then, I cannot be said to *know* that it is 12:15, because it is in fact 13:15. What this means is that we must distinguish between a subjective and an objective sense of knowledge. The former is based on one's feeling of certainty (Burton 2008, Dokic 2014), the latter is based on an objectively verifiable truth. Arguably, as human beings we can never have access to objectively verifiable truths (which would lead us into the terrain of philosophers, from which I stay clear for now; but see section 5). If using bare declaratives were restricted to objectively verifiable truth, then they would virtually be impossible to utter. Instead, I assume that the use of bare declaratives is governed by subjective knowledge, i.e., the epistemic feeling of certainty.

Importantly, successful communication relies on a certain amount of trust: we assume that when S presents p as true, i.e., when they assert p, it lies within their *territory of information*, in

the sense of Kamio (1994). According to Kamio, one's territory of information (also known as *epistemic territory*, Bristol 2021) includes information obtained via direct experience including internal states (as in (8)) information about persons, facts, and things close to the speaker (as in (9)), and information that pertains to the speaker's professional expertise, as in (10), when uttered by a linguist who studies the acquisition of interactional language.

(8) I am tired.

(9) My son was sick last week.

(10) Children acquire interactional language early.

Note that the sentences in (8)–(10) are realized as bare declaratives (what Kamio 1994 refers to as *direct forms*). In contrast, information that lies outside the speaker's epistemic territory cannot be formulated in this way. This is most obvious in information that comes about through direct experience of internal states, which only the experiencer has privileged access to. Consequently, talking about someone else's (e.g., the addressee's (A's)) inner state or their personal experience using a bare declarative, as in (11)a and (12)a, is inappropriate (Kamio 1995). Instead, one has to mark the information as lying outside of one's epistemic territory (what Kamio 1994 refers to as an *indirect form*), as in (11)b and (12)b.

(11) a. ??You are tired.
b. I think you are tired.

(12) a. ??Your son was sick last week.
b. I heard your son was sick last week.

Note that I do not wish to suggest that these sentences are intrinsically ill-formed. Rather there are contexts in which it would be perfectly acceptable to utter them. For example, (11)a can be used by a father whose young child is cranky and due for a nap. Similarly, (12)a is well-formed if S has been taking care of A's dog and is informing A upon their return. What these contexts have in common is that information that appears to be about A does in fact fall within S's rather than A's epistemic territory. And it is precisely in such contexts when S can use a bare declarative, as expected (see Kamio 1995 for discussion).

As for cases that fall outside of personal experience, if someone without relevant expertise makes (unsupported) claims using bare declaratives, their interlocutor would be entitled to accuse them of bullshitting (in the sense of Frankfurt 2005, see Meibauer 2018). If the information lies within the interlocutor's epistemic territory and if the person making an unsupported claim is male, the interlocutor might accuse him of mansplaining.

1.3 Overview of the paper

The paper is organized as follows. In section 2, I provide detailed empirical evidence for GrEK across several empirical domains. For reasons of space, I restrict the discussion to English. I then proceed to discuss two hypotheses to account for GrEK, one pragmatic, the other grammatical. That is, the fact that bare declaratives are used for the expression of knowledge might be pragmatically implied (section 3) or it might be grammatically encoded (section 4). I argue in favour of the grammatical hypothesis. Specifically, I propose that GrEK derives from the assumption that the propositional structure of a sentence (i.e., CP) is (silently) marked as lying with the speaker's ground, utilizing Wiltschko's (2021) GroundP. In section 5, I discuss some implications of GrEK and its grammatical basis.

A note on the methodology and presentation of the data is in order. The data are based on native speaker intuitions collected through informal interviews. Since the expression of knowledge is highly context-sensitive as it depends on the epistemic territory of both interlocutors, the judgments I report, too, will be context-sensitive. Context-sensitive judgments are typically considered to be judgments about the felicity of a given utterance in context. However, on the assumption that aspects of linguistic interaction (and thus contextual information) are part of grammar (see section 4), the boundary between grammaticality and felicity is blurred. Thus, I adopt Wiltschko's (2021) terminological and notational convention. Specifically, I shall use the terms *acceptable* and *well-formed* vs. *unacceptable* or *ill-formed* interchangeably and refrain from using *(un)grammatical* or *(in)felicitous*. In this paper, well-formed sentences are marked with a checkmark (✓) if necessary, while ill-formed sentences are marked with an asterisk (*). To reflect the context-sensitive nature of the acceptability judgments, examples are either presented with the relevant context of use, or else they are indexed to a context previously introduced (cf. Thoma 2016).

2 Uncertainty must be marked, certainty need not be

Languages have various ways to mark uncertainty. In what follows, I provide a brief overview of several grammatical strategies to mark uncertainty in English. In each case we shall see a similar pattern: in the absence of marking uncertainty, a sentence is interpreted as if S is certain about the truth of p. In addition, we observe that in each of the grammatical domains under discussion, there are also ways to express certainty, but they are never necessary. Thus, the generalization we observe is that uncertainty must be marked while certainty can be marked. Therefore, the marking of certainty has effects that go beyond simply encoding certainty, but in each of the domains, this effect plays out differently.

2.1 Using bare declaratives

As a methodological strategy, I shall use the following examples of bare declaratives in context as the base-line relative to which I shall test the effects of marking uncertainty. In all these cases, it is clear from the context provided that the propositional content of the declarative lies squarely within S's but not A's epistemic territory. Since the effects of epistemic territory on the form of an utterance depends on both interlocutors and what they know, it is essential to control for this aspect of the context (Bristol 2021). The examples in (13)–(15) differ in the ways epistemic territory is established. The declarative in (13) is about an objectively verifiable state of the world, which S (but not A) has visual evidence for; the one in (14) contains a predicate of personal taste, which may lead to faultless disagreement in case the interlocutors disagree about the truth of p (Kölbel 2004); and (15) is about an internal state, which by epistemological necessity is always under the purview of the person experiencing it. In all these examples, S (Jamil) can use a bare declarative. (In what follows, Cx is short for Context).

(13) $Cx_{(13)}$ Jamil is walking in the rain when his friend Wafa, who lives in a different city, calls him.
Wafa: How's the weather there?
Jamil: It's raining.

(14) $Cx_{(14)}$ Jamil and Wafa have been wondering about whether a mango Jamil grew in his backyard would taste good. Jamil takes his first bite.
Wafa: So, what's the verdict?
Jamil: This mango is delicious.

(15) $Cx_{(15)}$ Jamil has been fighting a flu when Wafa calls him.
Wafa: How are you feeling?
Jamil: I'm dizzy.

These examples establish that bare declaratives can be used when the speaker is certain about the truth of p, no matter how this certainty comes about. Now consider these same declaratives when uttered in contexts in which S cannot be certain about the truth of p and A knows as much, as in (16)–(18). In these cases, the use of a bare declarative is ill-formed.

(16) $Cx_{(16)}$ Jamil and Wafa have been in a windowless room all day without access to the outside world including weather apps.
Wafa: Let's go for a walk.
Jamil: *It's raining.

(17) $Cx_{(17)}$ Jamil and Wafa have been wondering whether a mango Jamil grew in his backyard will taste good. Neither of them has tasted the mango.
Wafa: Do you think your mango tastes good?
Jamil: *This mango is delicious.

(18) $Cx_{(18)}$ Wafa has been fighting a flu when she calls Jamil, who doesn´t know about this.
Wafa: Hold on for a second. I have to sit down.
Jamil: *You are dizzy.

I now turn to the strategies available to mark uncertainty, starting with propositional attitude verbs.

2.2 Propositional attitude verbs

As we have seen already, propositions may be embedded by verbs that encode the propositional attitude of the subject and if the subject denotes S (in the form of a 1st person pronoun), the sentence can be used to modify S's epistemic state. To see this, consider the examples in (19)–(21). Crucially, in contexts where p is in S's epistemic territory, the use of the propositional attitude verb is ill-formed; whereas in contexts where p is not in S's epistemic territory it is well-formed.[1]

(19) $^{<Cx(13)^*>, <Cx(16)^\checkmark>}$ I believe/suppose/assume it is raining.

(20) $^{<Cx(14)^*>, <Cx(17)^\checkmark>}$ I believe/suppose/assume this mango is delicious

(21) a. $^{<Cx(15)^*>}$ I believe/suppose/assume I am dizzy.
b. $^{<Cx(18)^\checkmark>}$ I believe/suppose/assume you are dizzy.

The propositional attitude verbs illustrated in (19)–(21) all indicate uncertainty: they weaken the epistemic state of S. Thus, this data set supports the generalization that uncertainty must be marked, and one way to do so is by means of a propositional attitude verb.

Now, consider the second half of GrEK, namely that certainty can be marked and if it is, it comes with restrictions on the context of use. As discussed in section 1, using the propositional attitude verb *know* is ill-formed in contexts where the bare declarative is acceptable, but also in contexts of uncertainty, as in (22). The same pattern holds for sentences containing predicates of personal taste (23), as well as descriptions of internal states (24).

(22) $^{<Cx(13)^*>, <Cx(16)^*>}$ I know it is raining.

(23) $^{<Cx(14)^*>, <Cx(17)^*>}$ I know this mango is delicious.

(24) a. $^{<Cx(15)^*>}$ I know I am dizzy.
b. $^{<Cx(18)^*>}$ I know you are dizzy.

[1] I assume that one typically has access to one's internal states and I set aside scenarios where one is not sure about how one feels, in which case it is possible to mark uncertainty.

The use of *I know p* is appropriate when S's certainty is at issue, which is the case when there is discrepancy regarding the assessment of the state of the world. This discrepancy can be relative to someone else's assessment, as in (25), where Jamil is claiming his epistemic territory through the use of I *know* p. Note that the propositional attitude verb is focussed, as indicated by capital letters. This type of focus marking is used to introduce a set of alternatives contrasting with what is asserted (Rooth 1992) and in this case the set of alternatives is propositional attitudes other than knowing, such as Ismail's thinking that it is raining.

(25) $Cx_{(25)}$ Jamil is walking in the rain when his friend Wafa calls him.
Wafa: How's the weather there?
Jamil: It's raining.
Wafa: Oh, Ismail thinks it's sunny there.
Jamil: Well, Ismail is wrong. I KNOW it's raining. I'm all wet.

As shown in (26), the discrepancy in propositional attitude may also be relative to S's own epistemic state, namely when they change their mind, as in (26). In this context, the utterance of *I know p* is introduced by the temporal adverbial *now* to indicate the change in Jamil's epistemic state.

(26) $Cx_{(26)}$ Jamil has been in a windowless room all day without access to the outside world including weather apps. Given that the sky was perfectly clear when he was last outside, he assumes it still is when Wafa calls him.
Wafa: Don't forget your umbrella. It's raining.
Jamil: I don't believe that. It cannot be raining here. But let me check.
Jamil goes outside to check the weather, and it is indeed raining
Wafa: So? Do you still not believe that it´s raining?
Jamil: Well, now I know it´s raining.

In sum, even though knowledge can be marked with a propositional attitude verb (*know*) it need not be so marked. Bare declaratives are used to express knowledge and not any other propositional attitude. And it is precisely for this reason that the use of *I know p* requires a special context of use, one where the epistemic state of the speaker is at issue rather than the state of the world. None of the other propositional verbs require this restriction on their context of use, they simply mark uncertainty.

2.3 Modality

Another strategy to mark uncertainty is via modality, "a grammatical strategy to say things about [...] situations which need not be real" (Portner 2009:1). According to its classic analysis, modality introduces possible worlds (Carnap 1947, Hintikka 1957, 1962, Kratzer 1981) and thus it is a way to mark assertions that depart from how the world is. Instead with modals we can

talk about how the world might be. Significantly, epistemic modals are used when p cannot be presented as a fact about the actual world. Thus, they are well-formed in contexts of uncertainty but not in contexts of certainty. This is shown in (27)–(29) for modal verbs and adverbs.

(27) a. $^{<Cx(13)^{*}>, <Cx(16)^{\checkmark}>}$ It may/might/could be raining.
b. $^{<Cx(13)^{*}>, <Cx(16)^{\checkmark}>}$ Maybe/probably it is raining.

(28) a. $^{<Cx(14)^{*}>, <Cx(17)^{\checkmark}>}$ This mango may/might/could be delicious
b. $^{<Cx(13)^{*}>, <Cx(16)^{\checkmark}>}$ Maybe/probably this mango is delicious.

(29) a. $^{<Cx(15)^{*}>}$ I may/might/could be dizzy.
b. $^{<Cx(15)^{*}>}$ Maybe/probably I am dizzy.
c. $^{<Cx(18)^{\checkmark}>}$ You may/might/could be dizzy.
d. $^{<Cx(18)^{\checkmark}>}$ Maybe/probably you are dizzy.

What about expressing certainty through modals? In this respect modal verbs differ from modal adverbs. We start by discussing adverbs. English has several adverbs that can be used to express certainty, some of which are illustrated in (30).

(30) a. $^{<Cx(13)??>, <Cx(16)^{*}>, <Cx(25)^{\checkmark}>, <Cx(26)^{\checkmark}>}$ It is definitely/certainly raining.
b. $^{<Cx(13)??>, <Cx(16)^{*}>, <Cx(25)^{\checkmark}>, <Cx(26)^{\checkmark}>}$ It is raining for sure.

Thus, the use of modal adverbs falls under GrEK. Uncertainty must be marked, whereas certainty can be marked and if it is, there is a requirement that S's epistemic state is at issue.

As for modal verbs, none of them are dedicated to encoding propositions that are factual in the actual world. In other words, English has no modal verbs of certainty. However, English has a modal verb of necessity (*must*), which is classically analysed as universally quantifying over possible worlds (Kratzer 1981). This might lead us to expect that *must* is used to express the strongest possible attitude towards the truth or actuality of the proposition. But this is not so. As observed by Karttunen (1972), the sentence in (31)a makes a weaker claim than the one in (31)b.

(31) a. John must have left.
b. John has left.

Karttunen (1972: 12) states that "one would use the epistemic *must* only in circumstances where it is not yet an established fact that John has left. […] A man who has actually seen John leave or has read about it in the newspaper would not ordinarily assert [(31)a], since he is in the position to make the stronger claim [(31)b]." That is, *must* marks that S does not have direct evidence for the truth of p; rather they come to believe p via indirect inference (Von Fintel & Gillies 2007). This is consistent with GrEK. When p is presented as a bare declarative, it is used to express

what is known by the speaker about the actual world. The use of a modal verb, even one of necessity, marks a departure from this and cannot be used to express knowledge.

The absence of an epistemic modal verb dedicated to encoding certainty about an actual fact is somewhat surprising given that there are modal adverbs to this effect, as we have seen. A grammatical strategy that comes close to what one might expect of a modal verb of certainty is the use of *verum focus* (Höhle 1992, see Jordanoska et al. 2023 for a recent overview). This is a common strategy whereby pitch accent on the verb or auxiliary is used to express certainty, as in (32). Verum focus is ill-formed in contexts where bare declaratives are used as well as in contexts of uncertainty. Rather, it can be used when the truth of the proposition is at issue, just as other dedicated expressions of certainty.

(32) <Cx(13)*>, <Cx(16)*>, <Cx(25)✓,<Cx(26)✓ > It IS raining.

The proper analysis of verum focus is tangential to the present discussion (see Goodhue 2018, 2022, Gutzmann, et al. 2020, and Bassel 2023 for recent discussion). What is crucial is that we have another empirical domain confirming the validity of GrEK: bare declaratives are used when speakers are certain; uncertainty must be marked, and English has various epistemic modal verbs and adverbs for this purpose. In contrast, certainty can but need not be marked and English has various modal adverbs for this purpose, whereas modal verbs of certainty are conspicuously absent. Instead, verum focus may be used to this effect.

2.4 Evidentiality

Another way to mark uncertainty is for S to indicate that they do not have direct evidence for the truth of p and hence that it does not fall squarely into their epistemic territory. English has a series of evidential adverbs (e.g., *apparently, evidently, visibly, reportedly, supposedly, presumably*). Given that different evidential adverbs mark how evidence for the truth of p has been obtained, they have different conditions of use than epistemic adverbs. Evidential adverbs mark uncertainty somewhat indirectly. When S indicates that they have only indirect evidence for the truth of p, it can be inferred that S is not certain. Evidential adverbs predictably have different use-conditions, depending on what source of evidence they imply. For reasons of space, I discuss only some.

First consider *supposedly*, which is used when the evidence for the truth of p depends on hearsay (Hoye 2008), more precisely that the hearsay it introduces is unreliable (Chafe 1986) or that the source of the information is untrustworthy (Glougie 2016). As expected, *supposedly* is ill-formed in contexts of direct evidence (in the contexts in (13), (14), (15)). In (33)–(35), I provide some contexts where *supposedly* is well-formed, while a bare declarative is not.

(33) $Cx_{(33)}$ Jamil has been in a windowless room all day. He just heard on the news that it is raining in his area. When he was last outside, there was no cloud in the sky and so he is doubtful about the accuracy of the weather report (which has been wrong in the past). So, he tells his office mate.

a. Supposedly it is raining.

b. *It is raining.

(34) $Cx_{(34)}$ Jamil is at the market. The vendor he usually buys his fruit from is not here, so he must go to another vendor. The vendor praises his mangos as being delicious. While Jamil is a bit skeptical, he buys one anyways. When he comes home, he tells his flatmate

a. Supposedly this mango is delicious.

b. *This mango is delicious.

(35) $Cx_{(35)}$ Jamil has had many falls recently. He thinks he has a brain tumor, but the doctor reassures him that there is no tumor and that he is just dizzy. Jamil is skeptical because he doesn't feel dizzy. So, he tells his friend.

a. Supposedly I am dizzy.

b. *I am dizzy.

Thus, again, we witness an empirical domain where GrEK can be observed: in the absence of an evidential adverb, the utterance is interpreted as being in S's epistemic territory and thus that S is certain. That is, in English, speakers need not mark a proposition when they have direct evidence; but when information is obtained via hearsay, p must be marked as lying outside of their epistemic territory. Again, we observe that it is possible to mark direct evidence, but this marking is associated with a particular context of use. To see this, consider *actually*, which has been classified as a marker of evidentiality (Chafe 1986, Glougie 2016). According to Davis (2015), *actually* is related to the phrase *in the actual world* and hence might be considered a way of marking actuality (and thus certainty). As expected, *actually* is not well-formed in contexts of uncertainty nor in contexts of hearsay, as shown in (36).[2]

(36) $^{<Cx(16)^*>, <Cx(33)^*>}$ It is actually raining.

Now consider what happens when S is certain because they have direct evidence, as in the context in (13). As shown below, in this case the use of *actually* is possible (unlike other markers of certainty). However, its use signals that the truth of the proposition is somewhat 'contrary to expectation' (Halliday & Hasan 1976), goes 'beyond what one might have expected' (Chafe 1986) or is 'unexpected' (Oh 2000). Thus, the use of *actually* is preferred in contexts where the

[2] For reasons of space, I only discuss the use of *actually* in sentence-medial position. As is well documented, the function of *actually* differs depending on its position in the sentence. It can also be found in sentence-initial and sentence-final position (see Aijmer 1986, Oh 2000).

truth of p is somewhat unexpected, as in (37). If the truth of the proposition is expected, then the use of *actually* is degraded, as in (38).[3]

(37) $Cx_{(37)}$ Jamil is walking in the rain when his friend Wafa, who lives in a different city, calls him. Since Jamil lives in Barcelona where it does not rain very much and which has been plagued by a drought, Wafa assumes it is sunny.
Wafa: How's the weather there? Is it hot and sunny as usual?
Jamil: No, it's (actually) raining.

(38) $Cx_{(38)}$ Jamil is walking in the rain when his friend Wafa, who lives in a different city, calls him. Since Jamil lives in Vancouver where it rains a lot, Wafa assumes it is raining.
Wafa: How's the weather there? Is it raining as usual?
Jamil: Yes, it's (??actually) raining.

In sum, the use of evidential adverbs in English falls in line with GrEK: when S is uncertain about the truth of p, because of a lack of direct evidence, S must mark their uncertainty and evidential adverbs are one way to do so. Conversely, certainty obtained via direct evidence need not be marked, and if it is, it comes with a particular effect, such as marking the proposition as somewhat unexpected.

In closing this section, it is worth pointing out that the fact that GrEK holds in the domain of evidentials might lead one to classify English as an evidential language, i.e., *en par* with languages where evidential marking is grammatically obligatory (see section 5.2 for discussion). However, while bare declaratives are indeed inappropriate when speakers lack direct evidence and are thus uncertain, it is not the case that speakers of English must use an evidential adverb to mark this. Rather, English has various strategies available to mark lack of evidence.

2.5 Questions

Being uncertain is a matter of degree and there are situations where S's uncertainty is so pronounced that they will ask a question, especially when S has reasons to assume that p falls within A's epistemic territory. Thus, the highest degree of uncertainty is encoded by means of interrogatives, as in (39)–(41).

(39) Wafa is curious about the weather in Barcelona, where her friend Jamil lives. She knows that they have been waiting for rain for weeks and the weather forecast had predicted rain. So, she calls Jamil:
Wafa: Is it raining?

[3] Using *actually* in this context is not ill-formed, however, there is a certain ironic effect about it. As in most cases discussed here, one can violate conditions of use to achieve effects that fall under the general umbrella of indirectness. It goes beyond the scope of this paper to address this issue.

(40) Jamil and Wafa have been wondering about whether a mango Jamil grew in his backyard would taste good. After Jamil took his first bite:
Wafa: Is this mango delicious?

(41) Jamil has had dizzy spells for a few days. His friend Wafa calls to check in on him.
Wafa: Are you dizzy?

Significantly, interrogatives are grammatically more marked than declaratives. That is, in English, interrogatives are formed by movement of the auxiliary verb to a position preceding the subject (known as subject-auxiliary-inversion). That this is a marked strategy can be gleaned from the fact that subject-auxiliary inversion makes the presence of an auxiliary necessary. That is, only in interrogatives, but not in (positive) declaratives, is an auxiliary required; and if there is none, *do* is inserted as a last-resort strategy. This is shown in (42).

(42) a. Jamil fed the dog.
b. *Fed Jamil the dog?
c. Did Jamil feed the dog?

Thus, it appears that even in the realm of clause-typing, GrEK emerges: interrogatives are marked. Note that this generalization even holds in languages that use intonation alone to mark interrogativity (e.g., Spanish). Specifically, the rising intonation of interrogatives is marked in contrast to the falling intonation of declaratives, which is a default not associated with meaning. This is because, unlike rising intonation, falling intonation arises naturally due to the fact that during an utterance, pitch declines automatically with the decrease in subglottal air pressure (Cohen and Collier 1982).

As mentioned above, being uncertain is a matter of degree. Consequently, the way a question is presented depends partly on S's degree of certainty, as well as S's assumption about if and how p falls within the epistemic territory of A.[4] A canonical question (as in (39)–(42)) is typically used when S is very uncertain and when they assume that A might be able to provide an answer (see Farkas 2022 for a detailed discussion of the default contextual assumptions accompanying question acts). There are, however, other means to be inquisitive. For example, if S believes that p is true, but is not quite certain, and if S assumes that p lies within the epistemic territory of A, then S may request confirmation from A via the use of a tag question, as in (43).

(43) Jamil's mother is arriving home late after a long day at work. She had asked Jamil to feed the dog, but she is always a bit worried that he would forget. When the dog looks at her with a certain look she asks her daughter:

[4] I here abstract away from non-canonical question contexts, such as questions in exams, quiz-shows or echo-questions.

a. Jamil fed the dog, didn't he?
b. Jamil fed the dog, right?
c. Jamil fed the dog, no?

Crucially, question tags are hosted by a declarative clause and hence we witness another instance of GrEK: bare declaratives are used to express knowledge, while uncertainty is marked. In this case, the marking is not part of the proposition encoded in the declarative itself. Rather, it is the question tag following the declarative which signals that the truth of p is not fully within S's epistemic territory.

2.6 Summary

We have now seen empirical evidence for GrEK based on English. Bare declaratives are used to express certainty, uncertainty must be marked, while certainty need not be. There are several ways to mark uncertainty, each with its own set of use-conditions, including propositional attitude verbs, modals, evidentials, and ways of asking questions. The intriguing question is why GrEK should hold. There is no obvious reason why human languages could not be different. For example, one might expect there to be a language where bare declaratives are used to express uncertainty, while the expression of knowledge must be explicitly marked. After all, uncertainty might be an epistemic state more frequent than certainty. If unmarked grammatical patterns reflect frequency, we would expect uncertainty to be expressed with unmarked forms. It is an empirical question if such a language exists, but to the best of my knowledge no language has to date been described in this way (see section 5.2 for some cross-linguistic considerations that suggest the cross-linguistic validity of GrEK). I thus take for granted that we are in need for an explanation for GrEK (if only for English).

3 The "knowledge is implied" hypothesis

One way to understand GrEK is to hypothesize that with the use of a bare declarative, S *implies* knowledge, either via conversational implicature or via pragmatic (conversationally triggered) presupposition. The key aspect of this hypothesis would be the assumption that there is nothing in the grammatical representation of a bare declarative that is responsible for encoding the fact that S *knows* p. In other words, its grammatical representation will not include a marker that relates the proposition to the speaker's epistemic state. Thus, the syntactic representation of the sentence in (1) would minimally be as in (44), assuming that the head of the clause is T(ense), as is widely assumed within the generative tradition (Pollock 1989, Chomsky 1995).

(44) $[_{TP}$ It $[_{T}$'s $[_{VP}$ raining]]]

What this sentence encodes is an event (encoded in the VP), which is anchored to the utterance situation via Tense (realized by the tensed copula) thus yielding a proposition with a truth value. Crucially, on this analysis, the representation of the bare declarative does not include an explicit marker of speaker knowledge. Rather, the fact that a bare declarative is interpreted as an expression of knowledge would have to be treated as a pragmatic generalization based on the way speakers *use* bare declaratives. Let me sketch one way in which this may be achieved.

The fact that interlocutors can recover meaning that is not encoded in the linguistic signal has been attributed to common assumptions about the way conversations work. For example, according to Grice's (1975) *Principle of cooperation*, interlocutors share the assumption that they are cooperative when they contribute to the ongoing conversation and that they abide by several maxims, including the maxim of quality (*Be truthful!*) and the maxim of quantity (*Be informative!*). GrEK might derive from these two maxims. If S is to be truthful, S must be certain about the truth of p. Consequently, if S is not certain they have to say so. This explains the data I set out to explain and which are repeated below.

(1) It's raining.
(2) This person knows it's raining.
(3) I know it's raining.

If S utters a bare declarative (1), their interlocutor will assume that it is a truthful statement and hence that S is certain that it is raining (cf. Krifka 2023). Thus, S comes across as knowing that it is raining simply by uttering the bare declarative. And hence an observer of S uttering (1) could describe the situation by uttering (2). Finally, we can also understand the strangeness of (3) in contexts where it is obvious that S is certain about the truth of p (e.g., when S is standing in the rain). This follows from the maxim of quantity according to which one should be as informative as possible but not more informative than necessary. Given that the use of the bare declarative is sufficient to convey that S knows that p, introducing p with *I know* is redundant and hence not informative. Hence, according to Gricean reasoning, there must be another reason for why S chooses to utter (3). It would have to be S's knowledge that p which is at issue. Note that GrEK is still valid for sentences like (3). It is just that S expresses that they are certain about their epistemic state of knowing that p. And this is precisely what is called for in the contexts where we have seen (3) to be well-formed ($Cx_{(25)}$ and $Cx_{(26)}$).

We now have a plausible explanation for GrEK according to which it is a matter of implied meaning. So, are we done? There are reasons to think that we are not. There are problems with the hypothesis that knowledge is implied rather than encoded in bare declaratives. To see this, consider the examples in (45).

(45) a. Elisabeth enjoyed last night's concert, since her brother told me so.
(Quirk et al. 1985: 1072)

b. Vanessa is your favorite aunt, because your parents told me so.
(Quirk et al. 1985: 1104)

c. Peter is drunk, because he had to support himself on a friend's arm.
(Romero & Soria 2010: 456 (2))

What these examples have in common is that a bare declarative is modified by an adverbial clause providing a reason. Significantly, the reason does not pertain to the situation described, but instead, it provides a reason for how the speaker knows about the truth of p encoded in the bare declarative. This suggests that S's knowledge regarding p is encoded rather than implied. That is, each of these examples may be paraphrased as involving an overt matrix clause explicitly introducing the knowledge state of the speaker. This is illustrated in (46) for the example in (45)a.

(46) I know that Elisabeth enjoyed last night's concert, since her brother told me so.
(Romero & Soria 2010: 460 (9b))

Note that Quirk et al. (1985: 1104) suggest that the adverbial clause provides a reason for the act of saying rather than for the speaker's knowledge, which would be paraphrased as in (47) (see also Ross 1970).

(47) I tell you that Elisabeth enjoyed last night concert, since her brother told me so
(Romero & Soria 2010: 460 (9a))

But this is not a valid paraphrase of (45)a: the brother telling the speaker that Elisabeth enjoyed the concert does not provide the reason for saying that she did (see Romero & Soria 2010 for discussion).

What is crucial for the present purpose is that it is possible to modify the expression of knowledge associated with a bare declarative. Since only encoded (but not implied) meaning can be directly modified, this suggests that the expression of knowledge is encoded rather than implied. This is the hypothesis I introduce in the next section.

4 The "knowledge is encoded" hypothesis

Suppose that GrEK derives from the fact that bare declaratives are in fact not bare. Rather, the expression of knowledge might be built into their grammatical representation. In this section, I discuss the potential locus of the expression of knowledge. I start with the possibility that the expression of knowledge is part of the CP structure, and I argue that this is not the most economical analysis. I then propose that GrEK can be accounted for on the assumption that the locus of the expression of knowledge is in the interactional structure in the sense of Wiltschko (2021).

4.1 It's not in the CP

In English, bare declaratives are minimally represented as TPs (as in (44)). If so, one possibility is to hypothesize that speaker knowledge is encoded in the category that is standardly assumed to dominate TP, namely CP. This is schematized in (48), where *EoK* is meant to indicate *that* the expression of knowledge is associated with CP but not how this might be achieved.

(48) $[_{CP}$ *EoK* $[_{TP}$ It $[_{T}$'s $[_{VP}$ raining]]]

To the best of my knowledge, it has not been proposed for English that the CP is a locus for encoding speaker knowledge, in the sense that its presence would correlate with the interpretation that the speaker knows p. However, proposals along these lines have been made for German, albeit somewhat implicitly. That is, the verb second (V2) property of German declarative clauses has been linked to the illocutionary force of assertion, which requires a commitment to the truth of p (Truckenbrodt 2006). Given that V2 is typically analysed as involving movement of the verb to C, it stands to reason that C is implicated in the encoding of assertional force and thus in the expression of knowledge.

However, there are reasons to think that assuming C to be the locus of the EoK is not the most economical way to account for GrEK. First, it is not clear what happens to EoK in the presence of an epistemic or evidential adverbial of the type discussed in section 2. It was precisely in contexts of uncertainty that these adverbials are used, hence EoK, too, would have to be modified.

Second, embedded clauses of the same form do not entail that the subject of the matrix clause (which may be the speaker) knows that the proposition is true. This is shown in (49), where the speaker clearly does not express knowledge that p is true.

(49) a. I doubt it's raining.
b. I suspect this mango is delicious.
c. I never said I'm dizzy.

The data in (49) suggests that CP does not always encode knowledge. That is, embedded CPs can but need not encode knowledge and hence can be embedded under propositional attitude verbs expressing uncertainty. We might conclude that the generalization reported here is a root clause phenomenon. Thus, on this account CPs will differ as to whether they are embedded or not: as root clauses they include EoK and hence encode that S knows that p is true, whereas in embedded clauses EoK is not licensed.

This sensitivity to the distinction between root and embedded clauses is something that suggests that the expression of knowledge is encoded in a projection higher than CP.

4.2 It's in Ground$_{Spkr}$

Over the past decades there has been a growing consensus that the grammatical representation of a sentence includes not only a representation of the propositional content (i.e., the declarative clause) but also a representation of structure dedicated to aspects of language in use. I argue that it is this higher structure, which is responsible for GrEK. Specifically, I argue that bare declaratives are embedded by a higher (silent) head, namely Ground$_{Spkr}$ (Wiltschko 2021), which encodes that the propositional content is part of the speaker's epistemic state. In what follows I develop this analysis in more detail. I start by reviewing empirical and theoretical evidence for postulating Ground$_{Spkr}$.

4.2.1 What is Ground$_{Spkr}$?

The postulation of Ground$_{Spkr}$ P follows in the footsteps of Ross's (1970) proposal that a sentence is declarative because it is embedded within a higher structure that encodes its speech act, as in (50). This structure contains a representation for the speaker (*I*), for the addressee (*you*), and a verb of communication (*tell*). To account for the fact that there is no overt reflex of this structure, Ross proposes that this structure undergoes deletion (indicated by strikethrough in (50)).

(50) [$_S$ ~~I~~ [$_{VP}$ ~~tell you~~ [$_{S'}$ ~~that~~ [$_S$ It's [$_{VP}$ raining]]]

Ross's proposal was dismissed almost immediately after he proposed it (Anderson 1971, Fraser 1974, Leech 1976, Mittwoch 1976, 1977). However, the last two decades have seen a revival of the main idea that root clauses are embedded in structure that encodes aspects of language use. But rather than postulating structure that mirrors propositional structure ([$_S$ NP [$_{VP}$ V]]), as in (50), according to more recent proposals, this higher structure is qualitatively different reflecting the higher order of this content. This falls in line with assumptions regarding the functional architecture of clauses, which pervades contemporary syntactic theory since the late 1980s (see Wiltschko 2021 for a detailed overview). For example, Speas and Tenny (2003) propose that propositional sentence structure is embedded in an articulated speech act structure (saP), as in (51).

(51) [$_{saP}$ Spkr [sa] [$_{saP}$ p [$_{sa}$ [sa] Addr]]]

(adapted from Speas and Tenny 2003: 320)

Ross's core insight is preserved on this analysis, as the speech act structure in (51) encodes — according to Speas and Tenny — that the speaker is giving the utterance content to the addressee. Thus, the second order proposition encoded by the speech act structure à la Ross (1970) (and analyses that directly follow in its footsteps) is about telling p rather than knowing p. We have, however, already seen that there is evidence for the presence of a higher order proposition which encodes the speaker's knowledge. And this is precisely the type of content encoded in Wiltschko's (2021) Ground$_{Spkr}$P, originally introduced in Wiltschko & Heim (2016). Unlike proposals that are

inspired by speech-act theory, Wiltschko's proposal incorporates insights from frameworks that focus on language in interaction, including conversation analysis (Sacks et al., 1974), functional discourse grammar (Hengeveld, 2004), and interactional linguistics (Couper-Kuhlen & Selting, 2001). It seeks to model restrictions on the use of interactional units of language (UoL), such as discourse markers, which are used to regulate aspects of conversational interaction, including turn-taking and the construction of common ground, which is relevant in the present context. Specifically, Wiltschko (2021) argues that there are two grounding layers dominating the propositional structure. CP is dominated by $\text{Ground}_{\text{Spkr}}$, which hosts UoLs that mark the status of the propositional content relative to the speaker's epistemic state (i.e., the speaker's ground). $\text{Ground}_{\text{Adr}}$, which dominates $\text{Ground}_{\text{Spkr}}$, hosts UoL that mark the status of the propositional content relative to (the speaker's assumptions regarding) the addressee's epistemic state (i.e., the addressee's ground). As shown in in (52), the grounding heads, (like all functional heads of the clausal architecture), come with an unvalued coincidence feature [± coin] (Wiltschko 2014, 2021).

(52) $[_{\text{GroundAdr}}$ Ground-Adr [± coin] $[_{\text{GroundSpkr}}$ Ground-Spkr [± coin] $[_{\text{CP}}$ p]]]

Functional heads relate their complements to the argument in their specifier, which in the case of the grounding phrases is the Speaker's and the Addressee's ground, respectively. The abstract argument in SpecGround is the grammatical manifestation of the epistemic state of its holder.[5] Thus, the function of the grounding phrases is to anchor the propositional content to the interlocutor's epistemic territories.

4.2.2 Accounting for GrEK

According to the structure in (52), UoLs that associate with the head of $\text{Ground}_{\text{Spkr}}$ are those that are used to encode how the propositional content of the sentence relates to the speaker's epistemic territory. I argue that this is precisely what we need to account for GrEK. In particular, I propose that, in English, a bare declarative, can be analysed as a CP embedded in a $\text{Ground}_{\text{Spkr}}$P whose head is associated with a silent UoL that serves to positively value the coincidence feature. Thus, the grammatical representation of a bare declarative when used in interaction is as in (53).[6]

(53) $[_{\text{GroundSpkr}}$ Ground-Spkr [+ coin] $[_{\text{CP}}$ It´s raining]]

[5] This does not mean that the actual content of the epistemic states of the interlocutors is part of this grammatical representation, only that there is a placeholder for these knowledge states. The actual content (i.e., the set of all propositions that the interlocutors know) is a matter of real-world knowledge, not grammar (cf. Wiltschko 2024).

[6] See Wiltschko (2021) for detailed discussion of the contribution of the coincidence feature, including examples of UoLs that serve to negatively value [*u* coin] in $\text{Ground}_{\text{Spkr}}$. The resulting interpretation is one of surprise or incredulity as the proposition is marked as not being part of the speaker's knowledge state. In English this is marked through the incredulity contour, while in Mandarin this can be marked through sentence-final particles.

The silence of the UoL associated with $\text{Ground}_{\text{Spkr}}$ is one of the crucial ingredients of the observed markedness pattern. Note that $\text{Ground}_{\text{Spkr}}$ is not the only head in the clausal spine associated with a silent UoL in English. And in fact, if a silent UoL is associated with the head of a functional projection, the result is always positive valuation. For example, in English (as in many languages) negative polarity must be marked (through negation) while positive polarity is unmarked. In what follows, I show how this proposal accounts for GrEK.

The fact that bare declarative clauses encode knowledge follows from the assumption that they are only apparently bare. They are embedded in a structure dedicated to encoding the speaker's epistemic territory, which is not overtly spelled out, but silent. Consequently, when using a bare declarative in interaction it will always encode what S knows, as it is marked to be in S's ground. If a proposition is marked as being in S´s ground, then this amounts to saying that S is certain. Now, if S is uncertain, then p is not in S's ground, at least not in the form of a simple proposition representing a fact about the world. But this does not mean that p is absent from S's epistemic state altogether: uncertainty does not equal (unconscious) ignorance (Ayyub 2010). Instead, S's uncertainty will affect the way p is represented, which in turn is reflected in the way p is formulated, namely by marking uncertainty. If p is marked for uncertainty, then as per the analysis in (53), the marking of uncertainty is part of the propositional content, which is marked as being in the speaker's ground, as shown in (54).

(54) $[_{\text{GroundSpkr}}$ Ground-Spkr [+ coin] $[_{\text{CP}}$ I suppose it's raining]]

This allows us to understand why marking p for certainty has effects that require certain discourse conditions to hold. For example, if S says that they know p, then, as per the analysis in (53), what is marked as being in S's ground, is precisely that, as shown in (55).

(55) $[_{\text{GroundSpkr}}$ Ground-Spkr [+ coin] $[_{\text{CP}}$ I know it's raining]]

Accordingly, what S knows is not just that it is raining, but also that they know that it is raining. With the use of the propositional attitude verb *know*, S alludes to an objectively verifiable truth and hence S makes their knowledge of p the proposition at issue.

The analysis in (53) further predicts that UoLs that are themselves associated with the interactional structure will not be part of what is encoded to be known. This is indeed the case, as shown in (56). A sentence-final confirmational (like those discussed in section 2.5) is not part of what is asserted to be known. Since confirmationals are not part of what is being asserted to be known, they cannot be paraphrased as in (56)c.

(56) a. It's raining = I know that it's raining.
b. I believe that it's raining. = I know that I believe that it's raining.
c. It's raining, right? ≠ I know that you have a dog, right?

Because discourse markers are used to mark departure from the normal course of transmitting knowledge, they cannot be embedded under a propositional attitude verb, like *know*. The contribution of the discourse marker is not represented as part of our knowledge state along with the proposition it marks. Rather, discourse markers serve to mark the way a speaker's knowledge and their beliefs are integrated into their epistemic state, as well as how they assume it relates to their interlocutor's. They are inherently interactional; they regulate the synchronization of minds, as well as turn-taking.

In addition to accounting for GrEK, the analysis in (53) also accounts for the fact that adverbial clauses may provide a reason for how the speaker knows about the truth of the propositional content even when the host clause is a bare declarative (see section 3). According to (53) a bare declarative is not bare but is embedded within a larger structure ($\text{Ground}_{\text{Spkr}}$), which can serve as a host for the adverbial clause. Hence, the adverbial can be interpreted as providing a reason for why S knows that p (i.e., why p is in S's ground). The fact that these adverbials clauses provide a reason for knowing that p, rather than for telling that p, supports the view that the structure dominating CP is about epistemic territory (grounding) rather than telling (as in the original structure proposed by Ross 1970).[7]

5 Above and beyond

In this section I discuss implications of GrEK (and its grammatical basis) as well as some open questions and avenues for future research.

5.1 Beyond declaratives

Assuming that bare declaratives are embedded in a structure responsible for encoding the speaker's epistemic territory (i.e., $\text{Ground}_{\text{Spkr}}$) raises the question as to whether this projection is obligatory. In other words, is it possible for a bare CP to ever serve as a root clause? And if so, how can we tell? This is an empirical question.[8] Based on GrEK, I tentatively propose that a bare CP is only possible as a root clause when it serves as a *citation form* of a sentence but not when it is used in interaction. That is, just as there are citation forms for words (e.g., in English the citation form of a verb is the infinitive as in *to be*), a bare CP might simply serve as the citation form for a sentence, as in the example in (57). Here the bare declarative is not used

[7] For completeness note that Krifka's (2023) JudgeP is another approach that takes the structure above the proposition to be about the epistemic state of the speaker and hence is compatible with the adverbials providing a reason for knowing rather than telling (see also Hill and Miyagawa 2025). For reasons of space, I will not attempt to discuss how this approach might account for GrEK.

[8] Wiltschko (2021) assumes that interactional structure (including $\text{Ground}_{\text{Spkr}}$) is only projected to mark a departure from the normal course of a conversation. Given GrEK and the grammatical basis I have proposed here, this issue should be revisited.

as an assertion of the speaker's knowledge. Rather it is used to provide a translation and in this use S (Jamal) cannot be described as knowing that it's raining.

(57) Context: It's a sunny day.
Wafa: How do you say "Está lloviendo." in English.
Jamal: It's raining.

Given the logic of the analysis in (53), we are led to conclude that in (57) the bare declarative is indeed bare: it is not embedded in $\text{Ground}_{\text{Spkr}}$P and hence it does not encode certainty about the truth of p.

Another question raised by the grammatical representation that derives GrEK pertains to other clause-types. What is the representation of an interrogative when used as canonical question? One possibility is that it is represented as a bare CP, as in (58) (see Wiltschko (to appear) for a proposal along these lines).

(58) $[_{\text{CP}}$ Is it raining?]]

Another possibility is that canonical questions are represented as CPs embedded within a grounding structure with a silent UoL in $\text{Ground}_{\text{Spkr}}$. If so, the question is how the coincidence feature is valued. It may be valued positively as in (59)a, in which case the structure would be interpreted as placing the question in the speaker's ground. Alternatively, the coincidence feature might be valued negatively as in (59)b. If so, the question interpretation might arise due to the polarity value being marked as not being in the speaker's ground.

(59) a. $[_{\text{GroundSpkr}}$ Ground-Spkr [+ coin] $[_{\text{CP}}$ Is it raining?]]
b. $[_{\text{GroundSpkr}}$ Ground-Spkr [– coin]] $[_{\text{CP}}$ Is it raining?]]

It is an open question as to which of these representations best captures the empirical properties of interrogatives used as questions. It is plausible that languages differ in this respect providing a novel way to analyse universals and variation in the syntax of questions. There are some empirical and theoretical considerations that favor the assumption that all root clauses are characterized by the presence of GroundP.

First, assuming a head like $\text{Ground}_{\text{Spkr}}$, which anchors the proposition to the speaker's mind, makes for a novel account of the distribution of features that type the sentence (i.e., declarative, interrogative, and imperative, also referred to as *mood* or *force*). Specifically, these features can be analysed as being selected by $\text{Ground}_{\text{Spkr}}$. That is, it is generally acknowledged that in embedded clauses, declarative and interrogative features are selected (Grimshaw 1979). In contrast, without the presence of a head above CP in root clauses, these same features could not

be analysed as being selected. Thus, the presence of $\text{Ground}_{\text{Spkr}}$ allows for a unified analysis for the distribution of declarative and interrogative features in both root and embedded contexts.

Second, there is diachronic evidence for the assumption that the coincidence feature in interrogatives is valued negatively (as in (59)b). Specifically, Heine & Kuteva (2002) point out that negative markers as well as epistemic markers of uncertainty are a common source for question particles across unrelated languages (see Walkden et al. 2025 for a recent discussion). Given Wiltschko's (2014, 2021) assumption that the lexical content of UoLs is responsible for the valuation of the coincidence feature, it is not surprising that negative markers and markers of uncertainty could serve to mark interrogatives.

5.2 Beyond English

The goal of this paper was to introduce GrEK with data from English. There are reasons to believe that GrEK might be universally valid. It is always difficult, if not impossible, to demonstrate the universality of a linguistic phenomenon. Here I wish to briefly outline the kinds of questions one might ask based on the analysis I have developed to account for GrEK. For the sake of the discussion, assume that GrEK is a language universal and that the structure in (53) is its grammatical basis. If so, we predict that universally all root declaratives and interrogatives are embedded in $\text{Ground}_{\text{SpkrP}}$. We predict there to be no language where uncertainty is unmarked, but certainty **is**. As for the potential sources of variation, we predict that they should be restricted to the types of UoLs associated with $\text{Ground}_{\text{SpkrP}}$. Specifically, we expect that in some languages the head of $\text{Ground}_{\text{SpkrP}}$ will be associated with an overt UoL. If this is so, then declaratives will appear to be marked as such, without the effect of emphasizing certainty. One might analyse the distinction between indicative vs. subjunctive or realis vs. irrealis in this way. Crucially, there are languages where one can clearly identify a morphological paradigm associated with these distinctions. For example, Sheko (an Afro-Asiatic language) is reported to have final (ir)realis particles (Hellenthal 2007) and in Chalcatongo Mixtec (an Oto-Manguean language) the form of the verb differs depending on realis status (Macaulay 1996, see Mauri and Sansó 2012 for an overview). Significantly, in terms of markedness, it has been argued that in such languages it is the subjunctive and the irrealis which patterns as the more marked form, even in those languages where the indicative and realis are not realized as silent morphemes (Mauri and Sansó 2016).

Another relevant cross-linguistic generalization comes from languages characterized as having a grammaticalized evidential system, where it is obligatory to mark the nature and/or source of the evidence for p (Aikhenvald 2004, 2006). Evidential systems typically have a primary distinction between *direct* and *indirect* evidence with some languages having further distinctions between different types of indirect evidence (e.g., *inferential* and *reportative* evidentials) (Willett

1988). As discussed above, knowledge occurs in the face of direct evidence. Hence given GrEK we predict that it will be absence of direct evidence that has to be marked. This is indeed the case. According to DeLancey (2001: 379): "The unmarked form in an evidential system typically represents information which the speaker knows from first-hand, visual perception. Propositions conveying information obtained by other means (aural perception, hearsay, or inference) are marked for source of evidence." And according to Lazard (2001: 361–62.) "the ordinary, unmarked forms are said to indicate that the speaker's knowledge is acquired by personal perception". Thus, while some languages have overt markers for direct evidence (which is a potential candidate for an overt UoL in $\text{Ground}_{\text{Spkr}}$), the cross-linguistic pattern confirms the markedness pattern we expect based on GrEK: if the paradigm of evidential markers has a silent exponent, it is the one for direct evidence, which in turn corresponds to a marker of certainty.

Similarly, in Japanese, a language where sentence final particles (SFPs) can be used to mark evidentiality, bare declaratives are used when p is within S's epistemic territory, while the use of SFPs marks indirectness or unexpectedness (Kamio 1994).[9]

Finally, languages with a pervasive system of SFPs (e.g., Mandarin) can be analysed as having overt UoLs in $\text{Ground}_{\text{Spkr}}$ marking certainty without the effect of contrast. For example, Mandarin has a particle *le* which is used in contexts of certainty (where English would use a bare declarative). The assumption that bare declaratives are in fact dominated by $\text{Ground}_{\text{Spkr}}$P might also provide a novel way to understand the so-called sentence completion effect of Mandarin (see Luo 2022 for a recent overview).

In conclusion, the cross-linguistic patterns just reviewed provide support for the analysis of GrEK developed here. In languages with overt markers for the expression of knowledge (i.e., UoLs associated with $\text{Ground}_{\text{Spkr}}$) it is clearly the case that knowledge is encoded rather than implied.

5.3 Beyond grammar

According to the analysis to account for GrEK I have developed, the fact that bare declaratives are used to encode knowledge is built into the grammar of English and possibly universally. If so, then this has implications for considerations regarding the norms of assertion. It is commonly assumed in philosophical treatments of assertions that there are social rules that regulate their use. For example, according to Williamson (2000: 243) "Only knowledge

[9] SFPs are realized sentence-finally raising the question as to how they are linearized. In Wiltschko (2021), I assume that this linearization derives through movement of the embedded CP. For the purpose of this discussion, nothing hinges on this analysis and one could equally assume a head-final projection.

warrants assertion"; Stanley (2005: 10f) maintains that "one ought only to assert what one knows"; and Hawthorne (2004:23) argues that "[t]he practice of assertion is constituted by the rule/requirement that one assert something only if one knows it". If indeed the fact that bare declaratives encode knowledge, then socially regulated norms of assertion are not necessary. They would simply reduce to a grammatical fact of language. If these generalizations were a matter of social rules, then the cross-linguistic patterns we have discussed above would be coincidental.

5.4 Beyond humans

As a final note, I wish to remark on some possible implications of GrEK and its grammatical basis for the interaction between humans and AI. Specifically, according to the analysis I have developed, GrEK is part of our unconscious linguistic knowledge. We cannot help but interpret a bare declarative as indicating that p is in S's epistemic territory. In other words, grammar makes us assume that whoever utters a bare declarative *knows* that it is true (abstracting away from lies and bullshit). Significantly, most AI chatbots (e.g., ChatGPT) present information with the use of such bare declaratives. In fact, they are trained to assert to not have beliefs or consciousness. Hence AI will not say *I believe that* p or mark p with any other means to express uncertainty. This leaves us with a situation where our knowledge of language leads us to interpret AI output as if AI knows stuff, even though AI does not have an epistemic territory. Arguably, this fact about our linguistic knowledge contributes to our trust in AI. That is, it is well-known that AI frequently produces false information: output that appears plausible but is not factual (known as AI 'hallucinations' Ji et al. 2023). Yet, AI pervades our lives including in domains where one might hope that factuality matters, e.g., medicine, warfare, law, and education. Thus, we are faced with an updated version of what Chomsky (1987: XXV) has dubbed Orwell's problem (60), and which we may dub Orwell's problem in the age of AI, as in (61).

(60) Orwell's Problem
How can we know so little, given that we have so much evidence?
Chomsky (1987: XXV)

(61) Orwell's Problem in the age of AI
Why do we trust AI, given that we have evidence that it hallucinates?

And based on the grammatical pattern I have discussed in this paper, I assert that it is because of our unconscious knowledge of language. We cannot help but interpret its output as evidence for knowledge.

References

Aijmer, Karin. 1986. Discourse variation and hedging. In Jan Aarts & Willem Meijs (eds.), *Corpus linguistics II*, 1–18. Leiden: Brill. https://doi.org/10.1163/9789004490192_003.

Aikhenvald, Alexandra. 2004. *Evidentiality*. Oxford: Oxford University Press. https://doi.org/10.1093/oso/9780199263882.001.0001.

Aikhenvald, Alexandra. 2006. Evidentiality in grammar. In Keith Brown (ed.), *Encyclopedia of languages and linguistics*, 320–325. Oxford: Elsevier. https://doi.org/10.1016/B0-08-044854-2/00252-2.

Anderson, Stephen. 1971. *On the linguistic status of the performative/constative distinction*. Bloomington: Indiana University Linguistics Club.

Ayyub, Bilal. 2010. On uncertainty in information and ignorance in knowledge. *International Journal of General Systems* 39(4). 415–435. https://doi.org/10.1080/03081071003704381.

Bassel, Noa. 2023. Verum, focus, and certainty. *Semantics and Linguistic Theory*. 795–812. https://doi.org/10.3765/18cddt86.

Bristol, Rachel. 2021. Norms of knowledge: Navigating epistemic territory. San Diego: University of California dissertation.

Burton, Robert. 2008. *On being certain: Believing you are right even when you're not*. Macmillan.

Carnap, Rudolf. 1947. *Meaning and necessity*. Chicago: The University of Chicago Press.

Chafe, Wallace. 1986. Evidentiality in English conversation and academic writing. In Wallace Chafe & Johanna Nicols (eds.), *Evidentiality*, 262–272. New Jersey: Ablex Publishing Corporation.

Chomsky, Noam. 1987. *On power and ideology: The Managua lectures*. Chicago: Haymarket Books.

Chomsky, Noam. 1995. *The minimalist program*. Cambridge, MA: MIT Press.

Cohen, A., R. Collier & J. t Hart. 1982. Declination: Construct or intrinsic feature of speech pitch? *Phonetica* 39(4–5). 254–273. https://doi.org/10.1159/000261666.

Couper-Kuhlen Elizabeth & Margaret Selting (eds.). 2001. *Studies in interactional linguistics*. Amsterdam: John Benjamins. https://doi.org/10.1075/sidag.10.02cou.

Davis, Wayne. 2015. The semantics of actuality terms: Indexical vs. descriptive theories. *Noûs* 49. 470–503. https://doi.org/10.1111/nous.12046.

DeLancey, Scott. 2001. The mirative and evidentiality. *Journal of Pragmatics* 33(3). 369–382. https://doi.org/10.1016/S0378-2166(01)80001-1.

Dokic, Jérôme. 2014. Feelings of (un)certainty and margins for error. *Philosophical Inquiries* 2(1). 123–144.

Farkas, Donka F. 2022. Non-intrusive questions as a special type of non-canonical questions. *Journal of Semantics* 39(2). 295–337. https://doi.org/10.1093/jos/ffac001.

Frankfurt, Harry. 2005. *On bullshit*. Princeton, NJ: Princeton Univ. Press.

Fraser, Bruce. 1974. An examination of the performative analysis. *Research on Language and Social Interaction* 7(1–2). 1–40. https://doi.org/10.1080/08351817409370360.

Glougie, Jennifer. 2016. The semantics and pragmatics of English evidential expressions: The expression of evidentiality in police interviews. University of British Columbia dissertation.

Goodhue, Daniel. 2018. A minimal theory of verum focus and context dependent bias in questions. *Proceedings of the North East Linguistics Society* 48. 1–10.

Goodhue, Daniel. 2022. All focus is contrastive: On polarity (verum) focus, answer focus, contrastive focus and givenness. *Journal of Semantics* 39(1). 117–158. https://doi.org/10.1093/jos/ffab018.

Grice, Paul. 1975. Logic and conversation. In Peter Cole & Jerry L. Morgan (eds.), *Syntax and semantics 3: Speech acts*, 41–58. New York: Academic Press. https://doi.org/10.1163/9789004368811_003.

Grimshaw, Jane. 1979. Complement selection and the lexicon. *Linguistic Inquiry* 10. 279–326.

Gutzmann, Daniel, Katharina Hartmann & Lisa Matthewson. 2020. Verum focus is verum, not focus: Cross-linguistic evidence. *Glossa: a journal of general linguistics* 5(1). https://doi.org/10.5334/gjgl.347.

Halliday, M. A. K. & Ruqaiya Hasan. 1976. *Cohesion in English*. London: Longman.

Hawthorne, John. 2004. *Knowledge and lotteries*. New York: Oxford University Press. https://doi.org/10.1093/0199269556.001.0001.

Heine, Bernd & Tania Kuteva. 2002. *World lexicon of grammaticalization*. Cambridge: Cambridge University Press. https://doi.org/10.1017/CBO9780511613463.

Hellenthal, Anneke Christine, 2007. Modality properties of sentence type markers in Sheko. In P. Hendriks, F. Rau, R. Součková & J. van der Wal (eds.), *Leiden Papers in Linguistics* 4(2). 17–32.

Hengeveld, Kees. 2004. The architecture of a functional discourse grammar. In Lachlan Mackenzie & Maria Gomez Gonzalez (eds.), *A new architecture for functional grammar*, 1–21. Berlin: De Gruyter. https://doi.org/10.1515/9783110197112.1.

Hintikka, Jaakko, 1957. Modality as referential multiplicity. *Ajatus* 20. 49–64.

Hintikka, Jaakko. 1962. *Knowledge and belief: An introduction to the two notions*. Ithaca, N.Y.: Cornell University Press.

Höhle, Tilman. 1992. Über Verum-Fokus im Deutschen. In Joachim Jacobs (ed.), Infor-mationsstruktur und Grammatik, 112–141. Opladen: Westdeutscher Verlag. https://doi.org/10.1007/978-3-663-12176-3_5.

Hoye, Leo. 2008. Evidentiality in discourse: A pragmatic and empirical account. In Jesús Romero-Trillo (ed.), *Pragmatics and corpus linguistics*, 151–174. Berlin/Boston: De Gruyter Mouton. https://doi.org/10.1515/9783110199024.151.

Ichikawa, Jonathan & Matthias Steup. 2024. The analysis of knowledge. *The Stanford Encyclopedia of Philosophy*. https://plato.stanford.edu/entries/knowledge-analysis/.

Ji, Ziwei, Nayeon Lee, Rita Frieske, Tiezheng Yu, Dan Su, Yan Xu, Etsuko Ishii, Ye Jin Bang, Andrea Madotto & Pascale Fung. 2023. Survey of hallucination in natural language generation. *ACM Computing Surveys* 55. 1–38. https://doi.org/10.1145/3571730.

Jordanoska, Izabela, Anna Kocher & Raúl Bendezú-Araujo. 2023. Marking the truth: A cross-linguistic approach to verum. *Zeitschrift für Sprachwissenschaft* 42(3). https://doi.org/10.1515/zfs-2023-2012.

Kamio, Akio. 1994. The theory of territory of information: The case of Japanese. *Journal of Pragmatics* 21(1). 67–100. https://doi.org/10.1016/0378-2166(94)90047-7.

Kamio, Akio. 1995. Territory of information in English and Japanese and psychological utterances. *Journal of Pragmatics* 24(3). 235–264. https://doi.org/10.1016/0378-2166(94)00064-L.

Karttunen, Lauri. 1972. Possible and must. In John Kimball (ed.), *Syntax and semantics*, 1–20. New York: Academic Press. https://doi.org/10.1163/9789004372986_002.

Kölbel, Max. 2004. Faultless disagreement. *Proceedings of the Aristotelian Society* 104. 53–73. https://doi.org/10.1111/j.0066-7373.2004.00081.x.

Kratzer, Angelika. 1981. The notional category of modality. In Hans-Jürgen Eikmeyer & Hannes Rieser (eds.), *Worlds, words, and contexts*, 38–74. Berlin: de Gruyter.

Krifka, Manfred. 2023. Layers of assertive clauses: Propositions, judgements, commitments, acts. In Jutta Hartmann & Angelika Wöllstein (eds.), *Propositional arguments in cross-linguistic research: Theoretical and empirical issues*, 115–181. Narr.

Lazard, Gilbert. 2001. On the grammaticalization of evidentiality. *Journal of Pragmatics* 33(3). 359–367. https://doi.org/10.1016/S0378-2166(00)00008-4.

Leech, Geoffrey. 1976. Metalanguage, pragmatics and performatives. In Cleah Rameh (ed.), *Semantics: Theory and application* (Georgetown University Round Table on Languages and Linguistics), 81–98. Washington, DC: Georgetown University Press.

Luo, Qiongpeng. 2022. Universal functional spine and sentential (in)completeness effect in Chinese. *Foreign Language Teaching and Research* 5. 690–702.

Macaulay, Monica. 1996. *A grammar of Chalcatongo Mixtec*. Berkeley: University of California Press.

Mauri, Caterina & Andrea Sansò, 2012. What do languages encode when they encode reality status? *Language Sciences* 34(2). 99–106. https://doi.org/10.1016/j.langsci.2010.11.004.

Mauri, Caterina & Andrea Sansò. 2016. The linguistic marking of (ir)realis and subjunctive. In Jan Nuyts & Johan Van Der Auwera (eds.), *Handbook of modality and mood*, 166–195. Oxford University Press. https://doi.org/10.1093/oxfordhb/9780199591435.013.9.

Meibauer, Jörg. 2018. The linguistics of lying. *Annual Review of Linguistics* 4(1). 357–375. https://doi.org/10.1146/annurev-linguistics-011817-045634.

Mittwoch, Anita. 1976. Grammar and illocutionary force. *Lingua* 40(1). 21–42. https://doi.org/10.1016/0024-3841(76)90030-9.

Miyagawa, Shigeru & Virginia Hill. 2025. Commitment phrase: Linking proposition to illocutionary force. *Linguistic Inquiry* 56(3). 589–604. https://doi.org/10.1162/ling_a_00503.

Oh, Sun-Young, 2000. Actually and in fact in American English: A data-based analysis. *English Language & Linguistics* 4(2). 243–268. https://doi.org/10.1017/S1360674300000241.

Phillips, Jonathan & Aaron Norby. 2019. Factive theory of mind. *Mind & Language*, 1–24. https://doi.org/10.1111/mila.12267.

Pollock, Jean-Yves. 1989. Verb movement, universal grammar, and the structure of IP. *Linguistic inquiry* 20(3). 365–424.

Portner, Paul. 2009. *Modality*. Oxford University Press. https://doi.org/10.1093/oso/9780199292424.001.0001.

Quirk, Randolph, Sidney Greenbaum, Geoffrey Leech & Jan Svartvik. 1985. *A comprehensive grammar of the English language*. London: Longman.

Romero, Esther & Belén Soria. 2010. Disjuncts: Speech and adverbials. In Marta Falces Sierra, Encarnación Hidalgo Tenorio, Juan Santana Lario, et al. (eds.), *Para, por y sobre Luis Quereda*, 455–468. Universidad Granada.

Rooth, Matts, 1992. A theory of focus interpretation. *Natural Language Semantics* 1(1). 75–116. https://doi.org/10.1007/BF02342617.

Ross, John. 1970. On declarative sentences. In Roderick A. Jacobs & Peter S. Rosenbaum (eds.), *Readings in English transformational grammar*, 222–272. Waltham: Ginn.

Sacks, Harvey, Emanuel A. Schegloff & Gail Jefferson. 1974. A simplest systematics for the organization of turn-taking for conversation. *Language* 50. 696–735. https://doi.org/10.1353/lan.1974.0010.

Schiffrin, Deborah. 1987. *Discourse Markers*. Cambridge: Cambridge University Press. https://doi.org/10.1017/CBO9780511611841.

Speas, Peggy & Carol Tenny. 2003. Configurational properties of point of view roles. In Anna-Maria di Sciullio (ed.), *Asymmetry in grammar*, 315–345. Amsterdam: John Benjamins. https://doi.org/10.1075/la.57.15spe.

Stanley, Jason. 2005. *Knowledge and practical interests*. New York and Oxford: Oxford University Press. https://doi.org/10.1093/0199288038.001.0001.

Thoma, Sonja. 2016. Discourse particles and the syntax of discourse-evidence from Miesbach Bavarian. University of British Columbia dissertation.

Truckenbrodt, Hubert. 2006. On the semantic motivation of syntactic verb movement to C in German. *Theoretical Linguistics* 32(3). 257–306. https://doi.org/10.1515/TL.2006.018.

Von Fintel, Kai & Anthony Gillies. 2007. An opinionated guide to epistemic modality. In Tamar Szabo Gendler & John Hawthorne (eds.), *Oxford studies in epistemology, Volume 2*, 32–62. Oxford University Press. https://doi.org/10.1093/oso/9780199237067.003.0002.

Walkden, George, Tian Li & Laura Weisshaar. 2025. Sources for question particles. *Journal of Historical Syntax* 9(10). 1–39.

Willett, Thomas. 1988. A cross-linguistic survey of the grammaticization of evidentiality. *Studies in Language* 12. 51–97. https://doi.org/10.1075/sl.12.1.04wil.

Williamson, Timothy. 2000. *Knowledge and its limits*. Oxford: Oxford University Press.

Wiltschko, Martina. 2014. *The universal structure of categories: Towards a formal typology*. Cambridge: Cambridge University Press. https://doi.org/10.1017/CBO9781139833899.

Wiltschko, Martina. 2021. *The grammar of interactional language*. Cambridge: Cambridge University Press. https://doi.org/10.1017/9781108693707.

Wiltschko, Martina. 2024. The syntax of talking heads. *Journal of Pragmatics* 232. 182–192. https://doi.org/10.1016/j.pragma.2024.08.011.

Wiltschko, Martina. to appear. The syntax at the top and how it links to pragmatics. In Nicole Dehé, Regine Eckardt & George Walkden (eds.), *The Oxford handbook of non-canonical questions*. Oxford: Oxford University Press.

Wiltschko, Martina & Johannes Heim. 2016. The syntax of confirmationals: A neo-performative analysis. In Gunther Kaltenböck, Evelien Keizer & Arne Lohmann (eds.), *Outside the clause: Form and function of extra-clausal constituents*, 305–340. London: John Benjamins. https://doi.org/10.1075/slcs.178.11wil.