

On the plurality of verbs

Attitudes of knowledge and belief

Day 3: English come-to-know predicates

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► Knowledge:

- important but contested notion
- central in epistemology, reasoning systems, cognition, (rational) communication
- often viewed as Justified True Belief (JTB) [w/various refinements]
- recently argued to be primary (not derived from belief)

► Knowledge ascriptions:

- potentially useful in adjudicating between theories of knowledge
- analyzed as a species of belief ascriptions

- ▶ Underexplored verb classes in English: headway on lexical semantics of attitude predicates

- ▶ Case studies:

Day 3 **Come-to-know predicates**:
change-of-state cognitive factives
beyond presupposition projection

Day 4+5 **Subjective *find*** (novel distinctions)
+ brand-new class, **characterizing verbs**: *find, consider, deem, judge, regard ...*

- ▶ Overarching issues:

- ▶ Lexical aspect (aka aktionsart)
- ▶ Linguistic encoding of evidence
- ▶ Semantic underpinnings of complement selection



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Agenda for today

- ▶ Come-to-know predicates: *ascertain, discover, realize, find out*
- ▶ Prior work: puzzles on presupposition (non-)projection
- ▶ Our focus:
 - ▶ justification profile: same restrictions as found with grammatical evidentials
 - ▶ aspectual profile: progressive achievements
 - ▶ question embedding & goal-orientation [time permitting]
- ▶ More intro: justification & constraints on knowledge
- ▶ Handout with more data & detailed analysis
<https://natasha-korotkova.github.io/summerschools/2026esslli/ctk.pdf>

Prior work on cognitive factives

Factive predicates I

- **Factive predicates:** classic topic in clausal complementation (Kiparsky and Kiparsky 1970) but especially so as part of one of the most classic topics **presupposition projection** (starting with Karttunen 1973); more on this on Day 3

Factive predicates II

► Some central notions

- **Presupposition:** a backgrounded (not-at-issue), discourse-old entailment that is usually taken to be part of the common ground (start here <https://plato.stanford.edu/entries/presupposition/>)
- **Presupposition triggers:** expressions that give rise to presuppositions such as possessives (*her*), additives (*too*), focus particles (*only*); surprisingly stable across languages thus raising many questions about their nature & sources
- **Presupposition projection:** phenomenon whereby presupposition escapes entailment-cancelling operators like negation, questions, modals; mechanisms still debated (one approach: Simons et al. 2010; Tonhauser et al. 2013)
- **Presupposition holes, plugs, filters:** environments that interact with the presuppositions of their prejacent (terms from Karttunen 1973)

NB we will not go down the rabbit hole of current exciting research on presupposition, at-issueness or common ground!

Factive predicates III

- Two classes with distinct inferences (the distinction has a long history; see Djärv 2019; Djärv et al. 2019 for recent overviews)

1 **cognitive factives** *know, notice, realize ...*

- presuppose: truth
- assert: agent's belief

2 **emotive factives** *be amused, glad, mad, sad ...*

- presuppose: truth and agent's belief
- assert: agent's emotional state

The factive inference I

► Gauging presuppositions: the Family of Sentences (Chierchia and McConnell-Ginet 2000)

- (1) All cases entail proposition “Someone else is coming” (bad with negation independently)
- a. Mary is coming too. #I don’t know if anyone else is.
 - b. If Mary is coming too, we should bring more snacks. #I don’t know if anyone else is.
 - c. Is Mary coming, too? #I don’t know if anyone else is.

The factive inference II

- ▶ Already early work: some presuppositions disappear more easily than others
- ▶ Case in point: semi-factivity of *know* and other cognitive factives (Karttunen 1971 and vast body of later work, incl. Karttunen 2016)

- (2)
- a. I have no idea if Mary is cheating on John. But if he discovers that she is, he will be sad. (Abrusán 2016)
 - b. The police did not discover that any cars had been tampered with. (Karttunen 2016)

The factive inference III

- ▶ One common term: hard vs. soft triggers (distinction introduced by Abusch 2010, see extensive discussion in Abrusán 2011, 2016)
 - ▶ **hard triggers**: well-behaved presuppositions (additive particles like *too*)
 - ▶ **soft triggers**: presuppositions prone to cancellation/suspension, incl. cognitive factives (and with more effort, emotive factives)
- ▶ We don't want to give up the notion of presuppositionality!
- ▶ Key question: what drives the distinction and how can it be explained in a principled way? Maybe “factivity” isn't a useful category after all? (Degen and Tonhauser 2022)
- ▶ Large-scale investigation:
<https://megaattitude.io/projects/mega-veridicality/>

The factive inference IV

- ▶ Important factor: prosody and focus (also important in the literature on factivity alternations, Bondarenko 2023; Özyıldız 2017)
 - ▶ focus on the complement: presupposition can be suspended
 - ▶ focus on the predicate: presupposition in place
- (3) a. If the TA discovers that [your work is plagiarized]_F, I will be [forced to notify the Dean]_F.
- b. If the TA [discovers]_F that your work is plagiarized, I will be [forced to notify the Dean]_F
- ▶ “focusing some constituent of a sentence turns the content of this constituent into a secondary main point, and this in turn prevents the focused content from being presupposed” (Abrusán 2016)
- ▶ Intonational meaning: not be ignored over all (see gentle into in Prieto 2015)

The factive inference V

- ▶ Very lively strand of research: deriving the behavior of (cognitive) factives pragmatically
 - ▶ via semantic and pragmatic constraints on attention direction and causal chains (Abrusán 2011, 2016)
 - ▶ via interaction with the QUD (Simons et al. 2017)
 - ▶ via cognitive modelling (Scontras and Tonhauser 2025)
- ▶ Key takeaway
 - ▶ lexical semantics: simple entailment about truth
 - ▶ factivity/backgrounding: results of complex interactions between lexical semantics, syntactic and semantic environment, and agents' reasoning
- ▶ Related, difficult question: why do we have entailments we have in the first place?

The factive inference VI

- ▶ Bottom line: much research on factivity/projection
- ▶ Our point: there is more to the story

- ▶ It is widely believed that in order to know some proposition p one must be justified in believing p .
- ▶ Unlike knowledge, justification does not require truth. (I can be justified in believing a falsehood)
- ▶ As always: much discussion as to what exactly constitutes justification

Q Is **evidence** a more helpful notion?

- ▶ As with all these, there is much disagreement about what evidence is.
- ▶ One standard picture: *evidence is what makes beliefs justified*.
- ▶ **Sample linking principle:** α 's belief in p is (doxastically) justified iff p is supported by α 's **evidence**.
- ▶ If justification is required for knowledge, this forges a link between evidence and justification.

Evidential constraints on knowledge I

► Lottery cases

- (4) *There is a lottery with 10,000,000 tickets with equal probability of winning.*
Ticket number 372 won't win [sometimes called a 'lottery proposition']
- (5) (past-directed version: imagine you have not seen the lottery results)
Ticket number 372 did not win.
- This observation is usually used against reductions of (justified) belief to (justified) probabilistic credence.
- targeted claim: believing p is a matter of assigning high subjective probability to p .
- Note that it's totally fine to assert:
- (6) It's highly likely that ticket number 372 won't win.

Evidential constraints on knowledge II

► A standard explanation:

- You can't assert (4) because you don't know it.
- You don't know it in part because this kind of purely statistical evidence is not, by itself, enough for knowledge.
- If purely statistical evidence was enough for knowledge in lottery cases, it would be enough to know every proposition of the form:

(7) Ticket number n won't win

- But that's impossible: exactly one of the propositions of the form of (7) is false and so you can't know it.

NB statistical reasoning can be part of a general of reasoning that leads to knowledge, but isn't a driving force

Evidential constraints on knowledge III

- ▶ Bottom line: justified knowledge is constrained to certain types of justification
- ▶ Aspiration: exploit in our theories of epistemic language

► Empirical focus: English ‘coming-to-know’ predicates (CtKs)

(8) *discover, find out, figure out, learn, notice, realize ...* (and many more)

- a. DP complements (not all): *discover the rumor*
- b. declaratives: *discover that the glaciers are melting rapidly*
- c. interrogatives (including concealed questions DPs): *discover which planet has 95 moons/discover the price of milk*

► Goal: new outlook on CTKs as a natural class

- Evidentially: specific constraints on how knowledge is grounded
- Ontologically: change of doxastic state from agnosticism to belief
- Aspectually: ‘culmination’ achievements (also called: right boundary achievements; intuition: achievements with a preparatory process)

- ▶ Proposal: semantic decomposition via a complex eventuality of knowledge acquisition
 - ① initial state of unsettledness/uncertainty, followed by
 - ② event of evidence acquisition, which triggers
 - ③ process of deliberation, which culminates in
 - ④ punctual event of belief-change, which leads to
 - ⑤ new belief state
- ▶ The formal structure: reference to two kinds of sub-events of a CtK event
 - ▶ e_{ACQ} : event of evidence acquisition
 - ▶ e_{DELIB} : event of deliberation
- ▶ This structure: allows us to make progress in understanding two novel puzzles

[Puzzle 1] Evidential restrictions between CtKs:
CtKs differ in their felicity with different kinds of evidential grounding for belief change

(9) **Visual perception**

Context: Seeing rain outside the window:

- a. ✓ Jane {discovered, learned, noticed} that it was raining.
- b. # Jane {figured out, realized} that it was raining.
(context adapted from von Fintel and Gillies 2010 on *must*)

[Puzzle 2] Aspectual distinctions between CtK complements:
CtKs differ on aspectual tests, depending on complement type

- (10) a. #I finished discovering he would keep his promise. PUNCTUAL
b. ✓ I finished discovering which promise he would keep. DURATIVE
(examples adapted from Joan Didion, *The White Album*)

- ▶ Important novel observation: CtKs show specific distinctions in justification
 - ▶ factives at large: no restrictions on how knowledge of the complement was acquired (to wit, *know* is good in all scenarios below)
 - ▶ CtKs: very specific requirements, akin to those found with evidential language (not limited to grammatical evidentiality)

- **Evidential grounding: distinctions from the literature on evidentiality**
(see overview in Korotkova forth.; taxonomy based on Willett 1988)

DIRECT	INDIRECT	
	INFERENCE	HEARSAY
• visual • auditory • other sensory	• assumption • observable results	• secondhand • thirdhand • narrative

- perceptual grounding: e.g., witnessing the event
- hearsay: testimony from a (reliable) source
- abductive inference: reasoning causally backwards, from an effect to a believed caused (e.g., water on ground $\rightsquigarrow$ rain; see Douven 2021)
- anti-abductive inference: inference not based on causal chains
- direction-of-reasoning contrasts: ubiquitous in language (*will* vs. *must*, Cariani 2022; Cumming and Winans 2021; *apparently*, Krawczyk 2012; question particle *razve* in Russian, Korotkova 2023, forth.)

(11) **Visual perception**

Context: Seeing rain outside the window:

Jane ✓discovered / # figured out / ✓/?found out / ✓learned / ✓noticed / # realized that it was raining.

(12) **Hearsay**

Context: At school, your son attends a talk on the devastating effects of extreme heat in Greece:

He ✓discovered / # figured out / ✓found out / ✓learned / # noticed / ✓realized that Greece was burning.

(13) **Abduction: reasoning from effect to cause**

Context: We're trying to find a way to hike on Crete using public transit. We see that there is a bus from Chania to Chora Sfakion. We know that there is only one road in that direction, so that bus must go by Imbros.

We ✓discovered / ✓figured out / ✓found out / ✓learned / # noticed/ ✓realized that there is a bus to Imbros.

(14) **Anti-abduction: reasoning based on stereotypical/general knowledge**

Context: Venice banned cruise ship passengers from disembarking on weekdays. Today is a Monday. Boarding a train in Verona, you claim:

I # discovered / ✓figured out / # found out / # learned / # noticed/ ✓realized
that there'd be no crowds today. (context adapted from Korotkova 2023)

(15) **Anti-abduction: Eliminative reasoning**

Context: You cannot find your car keys. You have looked everywhere in your house that you have been known to find them, and they are nowhere to be found. You've decided the last place they could be is in your car. Standing in your living room, you claim the following.

I # discovered / ✓figured out / # found out / # learned / # noticed/ ✓realized
that the keys are still in the car. (context from Krawczyk 2012)

CTk: evidence VI

	PERCEPTION	HEARSAY	ABDUCTION	ANTI-ABDUCTIVE
notice	✓	#	#	#
figure out	#	#	✓	✓
discover	✓	✓	✓	#
find out	✓/?	✓	✓	#
learn	✓	✓	✓	#
realize	#	✓	✓	✓

- ▶ *Notice, observe*: similar to “direct evidentials” (lexicalize sensory evidence)
- ▶ *discover, find out, learn*: similar to abductive evidentials, also *evidently, apparently* (lexicalize reasoning to the best explanation)
- ▶ *figure out, realize*: similar to inferential evidentials, *must, presumably* (lexicalize inference)

► *Notice*

- Additional diagnostic of “directness”: things it can embed (drawing on Korotkova and Anand 2021)

(16) *Mordecai always invites Pascal to his favorite Vietnamese café when he submits a paper. Pascal got an invitation earlier today.*

#Pascal noticed that ...

- a. ...Mordecai apparently/presumably submitted a paper.
- b. ...Mordecai must have submitted a paper.

► *Realize*

- requires unconscious reasoning, mental process associated, e.g., with intuition (Johnson-Laird 2008); we will treat it as a cognitive primitive
- compatible with various types of inference (13,12,14,15), but not perception/hearsay
- difference from *figure out*: an aha moment that is not a result of an intentional mental process (Stuyck et al. 2021), which in turn explains its infelicity under intention verbs (I was trying to ✓find out/✓figure out/#realize ...)

Bottom line

- ▶ Our verbs: hard-wire constraints as to how knowledge was acquired (familiar from the literature on evidentiality and modality)
- ▶ Our claim: these constraints signal the presence an underlying evidential structure

Knowledge by acquaintance

- ▶ Recall Djärv (2023):
 - ▶ all factives predicted to exhibit KNOW-EPIST vs. KNOW-ACQ the polysemy
 - ▶ all factives have the same derivational structure
 - ▶ all factives predicted to take DPs
- ▶ Our observation: KNOW-ACQ only available to verbs compatible with perception
 - ▶ ✓noticed/learned/discovered the rumor
 - ▶ #realized/figure out/ascertained the rumor (those verbs: only concealed question DPs, see Frana 2020)
- ▶ Begging the questions:
 - ▶ How do we need to modify our theory to predict this?
 - ▶ What does it tell us about the ontological distinction between acquaintance knowledge and propositional knowledge? (we're still putting practical knowledge-how aside)

CtK: Aspectual restrictions I

- ▶ Aspectual class/aktionsart: bread and butter of lexical semantics, a window on the meaning of ordinary, non-attitude predicates (core distinctions go back to Vendler 1957, see overview in Filip 2020)
 - ▶ states: have duration, lack stages, lack endpoint
 - ▶ activities: have duration, have stages, lack endpoint
 - ▶ accomplishments: have duration, have stages, have endpoint
 - ▶ achievements: punctual events of change-of-state
- ▶ Aspect and attitude predicates: much less studied (though see Bondarenko et al. 2024; Özyıldız 2021 on the role of aktionsart in question embedding)
- ▶ Goal here: aktionsart reveals underlying event structure and should be studied in its own right (we'll come back to this on Day 4 and 5)

CtK: Aspectual restrictions II

- ▶ Well-known: *notice, realize, recognize* as textbook achievements
- ▶ Primary focus in previous literature: DP complements
recognize Deniz, notice the fly on the wall
- ▶ Less known: all CtK exhibits standard properties of achievements (Dowty 1979; Rothstein 2004); this is modulated by complement type
 - ▶ **Telicity**: tested by felicity with *in*-adverbials
 - ▶ **Non-durativity**: tested by infelicity with aspectual verbs *stop/finish*

CtK: Aspectual restrictions III

► Always telic, durativity varies with complement type

(17) CtKs + DECLARATIVES: PUNCTUAL

- a. ✓In a year, Emma discovered that Frank was coming to Highbury.
- b. (*That entire year) Emma was discovering that Frank was coming to Highbury.
- c. #Emma finished discovering that Frank was coming to Highbury.

(18) CtKs + INTERROGATIVES: DURATIVE

- a. ✓In a year, Emma discovered whether Frank was coming to Highbury.
- b. ✓That entire year Emma was discovering whether Frank was coming to Highbury.
- c. ✓Emma finished discovering whether Frank was coming to Highbury.
- d. ✓By the time I finished discovering what I wanted, it came down to simplicity with profound impact. (web)

CtK: Aspectual restrictions IV

- ▶ Novel observation: CtK + declarative complements are **progressive achievements** (contested issue in the semantics of aspect, this term is from Rothstein 2004, also called 'culmination achievements', 'right-boundary achievements')
- ▶ Achievements & the progressive: (see Gyarmathy 2015 for extensive overview)
 - ▶ Typically not compatible with the progressive in the 'ongoing process' interpretation (due to non-durativity; Dowty 1979; Vendler 1957)
 - ▶ Sometimes compatible with the progressive with other interpretations

CtK: Aspectual restrictions V

- ▶ The imminency reading (Bach 1986; Kearns 2003; Piñón 1997, a.o.)
 - ▶ **Hallmark of progressive achievements:** those with a preliminary/preparatory process
 - ▶ **Difference with accomplishments:** which parts of the event structure are at-issue (and thus available for semantic operators)
 - ▶ **Semantics:** equivalent to 'on the verge/cusp of V' or 'about to V', the process is in final stages, but hasn't culminated yet
 - ▶ **Diagnostic:** progressive + *just* (not available for accomplishments)

- (19) a. The flight is {now arriving, about to arrive} at Gate 10. ⇔
 b. John is {building, about to build} a garden shed right now. ⇔
 (Gyarmathy 2015:164)
- (20) a. I was just writing the chapter (when you called). $\not\approx$ I was about to finish the chapter (when you called).
 b. The flight was just arriving (when we came to the airport). $\approx$ The flight was about to arrive (when we came to the airport).

CtK: Aspectual restrictions VI

- The imminency reading with CtKs: plethora of naturalistic examples
(NB: often singular subjects/objects, not an iterative reading)

- (21)
- a. Putin is discovering that overwhelming military power can be a curse.
 - b. [Bondaroff] was figuring out that he had the option of becoming, in effect, a corporate muse.
 - c. We were learning that sometimes the only way to endure suffering is to transform it into art.
(Suleika Jaouad, *Between Two Kingdoms: A Memoir of a Life Interrupted*)
 - d. ...the crow was noticing that she had caught my attention.
 - e. I'm just noticing that an additional book was written nearly forty years after *Canticle* by Walter Miller and a co-author.
 - f. Murdoch is realizing that he's stuck with the monster he created.

- Not just imminency: other reading possible with adverbials like *gradually*, but imminency is the default (we thank Ashwini Deo for the pointer)

CtK: Aspectual restrictions VII

Bottom line

- ▶ Our verbs: associated with a process (diagnosed by aspect)
- ▶ Our claim: the process is that of gaining knowledge
- ▶ More generally: change-of-state eventualities have complex structures (Nadathur 2023; Nadathur and Siegal 2025)

CtK: Aspectual restrictions VIII

- The imminency reading: not forced for interrogative complements, including concealed questions (important: this shows that the contrast is due to the semantics of questions, and not the syntax of clausal complementation)

- (22)
- a. Emma was discovering whether Frank was coming to Highbury, but had a long way to go.
 - b. Emma was discovering that Frank was coming to Highbury, ??but had a long way to go.
 - c. Emma was discovering ✓the truth/#the rumor.

CtK: Aspectual restrictions IX

- ▶ Claim: imminency with declaratives diagnoses the presence of a preparatory process for the achievement
- ▶ Proposal: the process of gaining knowledge, via deliberation (i.e., e_{DELIB} is a process)
- ▶ Natural connection: incrementality (Fleisher 2023; Zuchewicz 2020)
CP complements influence the aspect of the resulting VP (just like with regular, non-attitude predicates; Dowty 1991; Krifka 1989)
- ▶ Main tension for all progressive achievements: they are not accomplishments with respect to other aspectual tests
- ▶ Caveat: the progressive can be undergoing semantic change in English, cf. Deo 2015, but it is still not compatible with just anything

Our verbs: recap

- ▶ They are factives:
 - ▶ talk about knowledge
- ▶ They lexicalize how knowledge was acquired
 - ▶ each verb hard-wires evidential restrictions
- ▶ They are achievements:
 - ▶ felicitous with *in*-adverbials
 - ▶ infelicitous with *for*-adverbials
 - ▶ incompatible with aspectual verbs
- ▶ They are special achievements w/process
 - ▶ compatible with the progressive

- ▶ Crux of the analysis:
 - ▶ Aspect as a window on the event structure of knowledge acquisition
- ▶ Progressive achievements, such as *reach the summit* (following vast literature on aspect, see overview in Gyarmathy 2015)
 - ▶ assert the punctual event of culmination, e.g., the moment of reaching the summit
 - ▶ presuppose a **cover event**: occurrences of other events that led to the culmination (incl. preliminary process diagnosed by the progressive, e.g., everything that led to reaching the summit)
 - ▶ the cover event serves to measure out the progress toward culmination in terms of the mereology of cover event (i.e., sub-events of movement correlating with distance from summit)
- ▶ Factivity:
 - ▶ Cognitive factives presuppose truth a higher world (=speaker belief in usual cases)

CtK: proposal II

- ▶ adapting to CtKs: CtKs associated with a preliminary process of gaining knowledge
 - ▶ gaining knowledge entails movement toward settledness, expressed here as credence

$$(23) \quad \text{SETTLED}(x, p, w, t) \leftrightarrow [Cr(x, p, w, t) = 1 \vee Cr(x, p, w, t) = 0]$$

- ▶ during deliberative component of the cover event, the CtK subject moves towards settlement
- ▶ settlement obtains at culmination of cover event (CUL is a culmination point (Moens and Steedman 1988))

$$(24) \quad \text{SETTLED}(x, p, w, \tau(\text{CUL}(e_{\text{cov}}, w)))$$

- ▶ Useful parallel: degree achievements
- ▶ Full analysis: see handout

CtK: Q-complements I

- ▶ Puzzle:
CtK + interrogatives: much more freely available in the progressive
(shout-out to Cristina Buruiană for collecting sophisticated corpus data)
- ▶ Tempting move: durativity with interrogatives comes from the need to resolve sub-questions/pursuit of a strategy to resolve sub-questions
 - ▶ in moving toward settledness on *Who is coming to Highbury?*, one must answer *Is Frank coming to Highbury?*, *Is George coming to Highbury?*, ...
 - ▶ this yields a family of sub-questions to answer, creating a durative plan to answer
 - ▶ **problem**: this potentially predicts polar questions should be as punctual as declaratives, contrary to what we see (18) (depends on specific assumptions)

CtK: Q-complements II

- ▶ Instead: linking this problem to another declarative/interrogative contrast we discuss in Anand and Korotkova (2024): felicity under ‘deliberative environments’ (term from Cariani et al. 2013; Condoravdi and Lauer 2017)
- ▶ Proposal: durative uses of CtKs with interrogatives are actually tracking a deliberative interpretation (*Emma was trying to discover whether Frank was coming to Highbury*)
 - ▶ this is possible with interrogative complements, but not declaratives (see Anand and Korotkova 2024 for compositional details)
 - ▶ and so we get durative/non-imminent uses with interrogatives but not declarative complements
- ▶ Correct prediction: non-volitional CtKs *realize, notice* bad with the progressive + questions

- ▶ Main take-home message: ‘come-to-know’ verbs encode a complex eventuality of knowledge acquisition
 - ▶ Cover event: property of progressive achievements at large
 - ▶ One aspect: rooted in the evidential nature of CtKs
 - ▶ Another: connected to the nature of deliberation at the root of belief change
- ▶ Some distinctions we do not discuss (not formalized for now)
 - ▶ *discover* often conveys something unexpected and noteworthy (cf. Meyer 1997), likely sensitivity to the presence of a salient QUD
 - ▶ *find out* and *learn* are most natural with systematic inquiry (*discover* has this use in academic discourse)

- ▶ An interesting lexical gap, at least in English: no vanilla 'come-to-know' verb
 - ▶ Atelic factives: omnivorous wrt evidence (*know*)
 - ▶ Telic factives: always specify 'mode of acquisition'
- ▶ Is the gap accidental? Cross-linguistic research might be revealing
- ▶ Preliminary observation: same picture in Romanian (Buruiană 2026) and even languages where *learn* is derivationally related to *know* (Polish, Russian)

- ▶ Evidence in language: CtKs fit squarely into a morphosyntactically heterogeneous group of evidentials expressions in English (list adapted from Bary and Korotkova 2023)
 - ▶ epistemic modal auxiliaries, e.g., *must* (von Fintel and Gillies 2010, 2021; Lassiter 2016)
 - ▶ futurate markers, e.g., *will* (Cariani 2021; Winans 2016)
 - ▶ temporal adverbials with *by* phrases, e.g., *by now* (Altshuler and Michaelis 2020)
 - ▶ questions with contextual bias (Büring and Gunlogson 2000; Sudo 2013)
 - ▶ parenthetical constructions (Rooryck 2001; Simons 2007)
 - ▶ appearance claims, e.g., *looks red* (Rudolph 2020, 2023)
 - ▶ copy raising constructions, e.g., *seems like* (Asudeh and Toivonen 2012)
 - ▶ predicates of personal taste, e.g., *delicious* (Anand and Korotkova 2018; Ninan 2014)
 - ▶ ...

- ▶ Old question: what is the difference between knowledge and belief?
 - ▶ Factivity does not play a role in our analysis (with the exception of deliberative projection)
 - ▶ Could we apply our template for ‘coming-to-believe’ verbs: *conclude*, *infer*, *gather* ...
 - Non-factive telic doxastics: only inferential restrictions
 - No belief-via-perception or belief-via-hearsay
 - Those have a typological parallel in the category of revelative (Adelaar 2013; Martínez Vera 2022)

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