Talking about Sources

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1 Introduction

Adverbials like *according to X, given X, in view of X* are standardly considered guides to the intended flavor of modal expressions (Kratzer, 1981):

(1) a. In view of these policies, we **have to** pay the conference fee. deontic
b. In view of what we know, NELS **has to** be big this year. epistemic

When concerned with knowledge, belief, or inference, *X zufolge/according to X* and *given X* seem similar:

(2) Given the article in the Hampshire Gazette, Mary **must** have been re-elected.

(3) Dem Artikel in der HG zufolge, **soll** Mary wiedergewählt worden sein.
The article in the HG after Modal Mary re-elected been be
'According to the article in the HG, Mary was reportedly re-elected.' (German)

Kratzer (2012): distancing bad after (2), but fine after (3):

(4) But I wouldn't be surprised if she wasn't. The Gazette always reads too much into exit polls.

Thus (2) does, and (3) does not, commit the speaker to Mary having been re-elected.

- ***A-adverbials*** (AAs; *according to the HG*) (our terms)
  Kratzer: contribute ***informational*** backgrounds (feeding reportative evidentials)
- ***G-adverbials*** (GAs; *given the report*)
  Kratzer: contribute ***realistic*** backgrounds (feeding epistemic modals)

We call *X* in '*according to / given X*' the ***basis*** for the expression.

Goal for today:

- Show that GAs and AAs differ beyond how the basis feeds into a main clause modal
- Provide a compositional account that takes into consideration
  - the internal make-up of the adverbials
  - the interaction with the matrix sentence beyond epistemic/evidential modals
- Core idea:
  - GAs combine with facts that settle a question the main clause speech act depends on
  - AAs themselves are reportative evidentiality markers

2 Adverbial make-up and integration into the sentence

2.1 Fine-tuning commitment for GAs

Any aspect of the article (even its existence) can serve as evidence for the main clause.

➽ GAs complements referring to ROIs (***repositories of information***) don't commit the speaker to the ROI's content or the reliability of its source.[1]

- Speaker can take the article to be false:

  Context 1: We know that the Gazette's editorial board opposes Mary and that there was no voter fraud; the article claims that there was widespread voter fraud. We conclude: Mary was re-elected. – ✓ (2).

- Speaker can take the article to be silent about the election results.

  Context 2: We know that the Gazette's editorial board opposes Mary and would downplay a success of hers; the day after the election, their lead article is devoted to the annual meeting of the American Hydrangea Society. – ✓ (2).

- Speaker can reason from the mere existence of the article

  Context 3: We know that Mary would have gotten depressed if she hadn't been re-elected and would have stopped publishing. A few days after the elections, before learning of the results, we see some article of Mary's published in the Hampshire Gazette. – ✓ (2).

2.2 Internal make-up

2.2.1 AAs vs. GAs beyond ROI-denoting bases

AAs and GAs differ in what bases are available and what readings are generated from it.

- Proper noun as basis: ok with AAs but not GAs

  (5) a. according to John
  b. #given John

- Non-ROI definite descriptions as basis: ok with both, but different interpretation

  (6) a. given John's lawyer ≈ 'given who John's lawyer is', 'given that John has a lawyer', 'given what sort of lawyer John has'
  b. according to John's lawyer ≈ only: 'according to what John's lawyer said'

- *that*-clauses and *the fact that*-DPs as basis: ok with GAs but not AAs

  (7) a. Given (the fact) that *p*
  b. #According to (the fact) that *p*

- *Wh*-phrases as basis: ok for both, but different interpretation (see below).

  (8) a. Given who won the race
  b. According to who won the race

➽ The basis position of AAs is of type *e* and is interpreted as ROI; GAs are different.

[1] Kratzer (2012) at times suggests otherwise: "an assertion of (2) would commit [speaker] to the truth of what the article says" (p. 21), "[speaker] shouldn't assert (2) unless [they] believed the evidence for the Gazette report to be highly reliable" (p. 22). Elsewhere, Kratzer notes that a report can serve as evidence "even if it is packed with lies" (p. 34).

2.2.2 Comparing GAs and Concealed Questions (CQs)

DPs as GA bases are similar to *Concealed Questions*. (Heim, 1979; Frana, 2017, i.a.)

- Both can be interpreted as ***specificational questions***

  (9) John told me the prime minister of Canada.
  ≈ John told me who the prime minister of Canada is.

  (10) Given the prime minister of Canada, . . .
  ≈ Given who the prime minister of Canada is, . . .

- Exchanging co-extensional expressions can give rise to differences in acceptability (and truth-conditions):

  (11) a. John told me { the prime minister of Canada / #Justin Trudeau }.
  b. Given { the prime minister of Canada / #Justin Trudeau }, . . .

But GAs and CQs differ in (at least) the following:

- *CQ*s are are limited to specificational questions, GAs are not:[2] (Heim, 1979; Nathan, 2006)

  (12) John told me the prime minister of Canada.
  a. 'John told me the identity of the prime minister of Canada' ✓ ***specificational***
  b. *'John told me that Canada has a prime minister' ✗ ***existential***
  c. *'John told me what sort of prime minister Canada has' ✗ ***predicational***

  (13) Given the prime minister of Canada,. . .
  a. 'Given the identity of the prime minister of Canada',. . . ✓ ***specificational***
  b. 'Given that Canada has a prime minister',. . . ✓ ***existential***
  c. 'Given what sort of prime minister Canada has',. . . ✓ ***predicational***

- Quantifiers can be CQs but not GA-bases:

  (14) a. John told me {a/every/three/most} president(s).
  b. *Given {a/every/three/most} president(s)

- Fact-denoting nominals cannot be CQs, but can be GA-bases:

  (15) a. John { told me / knows / . . . } the fact that. . . no CQ-reading
  b. Given the fact that . . .

- GA-bases patterns more closely with fact-denoting arguments: (Kiparsky and Kiparsky, 1970)

  (16) I'm glad { a. about the report, b. (about the fact) that the report exists}.
  a,b: 'that the report exists'
  a: 'the content of the report', 'that the report is the kind of report it is'

➽ GAs vs. CQs:

- *Given* combines with ***facts***; some (though not all) non-fact denoting DPs can be shifted to facts
- Various proposals for semantic type of CQs (and shifts to it) (following Heim, 1979; Frana, 2017, individual concepts; alternatively, sets of propositions, propositions, properties); ***not facts***
- CQs and GA-basis: intensional positions; suitable shifts for individual concepts available with both

[2] Example favoring the existential reading:
(i) Given his cat, he doesn't seem to be allergic. ≈ 'Given that he has a cat, he doesn't seem to be allergic.'

2.2.3 AAs and GAs with wh-complements

Both accept *wh*-complements:

(17) a. According to who won the race, the last mile { was / ?must have been } tough.
b. Given who won the race, the last mile { ?was / must have been } tough.

But there are differences.

- GAs do not take *wh-ever*; AAs do not take *which* without *-ever*. (Both accept *who* without *-ever*.)

  (18) a. Given { who(*ever) / which(*ever) contestant } won the race
  b. According to { who(ever) / which*(ever) contestant } won the race

- Different proforms in echo questions:

  (19) A: According to who was here yesterday, business is good.
  B: According to { WHO / #WHAT }?

  (20) A: Given who was here yesterday, business is good.
  B: Given { #WHO / WHAT }?

- Multiple *wh*-items ok in GAs but not in AAs:

  (21) a. #According to who said what. . .
  b. Given who said what. . .

- The *what was X doing Y* construction can only be interrogative; compatible with GAs:[3]

  (22) Given what John is doing making all those motions (namely slowing down the process), he really seems to be worried about the outcome.

➽ *Wh*-complements are ***free relatives*** in AAs and ***interrogatives*** in GAs.

2.3 Integrating the adverbials into the host sentence

- AAs and GAs can introduce conversational backgrounds for (epistemic or evidential) modals.
(cf. (2), (3) above; Kratzer, 1981, 2012)

- Both AAs and GAs can occur without epistemic or evidential modals:

  (23) a. According to Bill, you **have to** sign here. ***✓ root modal***
  b. According the article, I **suggest** that we get started. ***✗ explicit performative***
  (irrelevant: 'The articles says that I suggest. . . ')
  c. According to Mary, John is home already. ***✓ plain declarative***
  d. According to your sister, who will show up? ***✓ non-declarative***
  (scopes under *wh*: 'Who does your sister say will show up?')

  (24) a. Given her income, Mary's son **has to** pay the highest tuition. ***✓ root modal***
  b. Given that we're all here, **I suggest** that we get started. ***✓ explicit performative***
  c. (?)Given the content of her article, she has lost her mind. ***✓ plain declarative***
  d. Given the precautions she took [. . .], which STD is she most likely to have contracted? (Google) ***✓ non-declarative***

[3]This test shows that GAs accept interrogative *wh*-complements; it cannot be used to show AAs do not take interrogative because *what X was doing Y* cannot (readily) be construed as ROI-denoting.

3 Analysis

Main idea

- 'according to [INDIVIDUAL] [(EVIDENTIAL) PROPOSITION]'
  - defined only if INDIVIDUAL is a repository of information (ROI – humans, reports, records, . . .)
  - if defined, true iff the content associated with INDIVIDUAL entails PROPOSITION.
- '[given FACT] SPEECH ACT'
  - presents FACT as the speaker's *(epistemic) justification* for SPEECH ACT.

3.1 AAs

(25) $[\![\textit{according to}\,]\!](x_e)(p_{\langle s,t\rangle})(w)$
- defined only if $\textsc{Content}_w(x)$ is defined.
- if defined, it is true iff $\textsc{Content}_w(x) \subseteq p$

- AAs express the main clause's dependence on the content of the basis x
- Overt reportative modals in the main clause are optional and can receive *harmonic* interpretations, similar to speech reports. (Schenner, 2008; Kratzer, 2006; Moltmann, t.a., i.a.)

(26) a. Peter zufolge { ist Maria im Büro / **soll** Maria im Büro sein }.
Peter according-to is Mary in.the office MODAL Mary in.the office be
'According to Peter, Mary is in the office.' ✓ for both

b. Peter behauptet, dass Maria im Büro { ist / sein **soll** }.
Peter claims that Mary in.the office be MODAL
'Peter claims that Mary is in the office.' ✓ for both

3.2 GAs

3.2.1 The facts in GAs

Facts correspond to true propositions, but are not (necessarily) the same thing.[4]

- Deep distinctions between schools of thought; specifically:
  - Facts *are* true propositions
  - Facts *make* propositions true
  - Facts *exemplify* true propositions (Kratzer, 2002)
- We stop short of taking a stance on these issues. We do assume the following:
  - For every proposition p and world w, if p is true at w then there is a unique object $\textsc{Fact}_w(p)$, *the fact that p (at w)*.
  - We remain agnostic as to what exactly $\textsc{Fact}_w(p)$ is (e.g., Kratzer-style situation, Veltman-style fact; Fine-style truthmaker; something else).
  - Note that $\lambda w[\textsc{Fact}_w(p)]$ is a partial "factual concept", i.e., a partial function from worlds to facts, defined only for worlds at which p is true and, where defined, returning the fact that p is true.
- GAs refer to a *fact* that crucially motivates the associated speech act. . .
  - directly: *given (the fact) that*

[4] "I know of two areas in semantics where we seem to need a notion of 'fact' that cannot simply be identified with 'true proposition'. One is the semantics of the verb *to know*. The other is the semantics of counterfactuals." (Kratzer, 2002) We concur and note that GAs are neither.

– indirectly: shift from definite descriptions or interrogatives – *given Sally's lawyer, given who Sally's lawyer is*

3.2.2 From ⟨*s*, *e*⟩-basis to fact: Roadmap

- Recall that definite descriptions (assume ⟨*s*, *e*⟩) can map to different sorts of facts:

(27) Given Joe's lawyer, we'd better prepare for an ugly fight.
  a. that Joe's lawyer is who she is — ***specificational***
  b. that Joe's lawyer has the properties she has — ***predicational***
  c. that Joe has a lawyer — ***existential***

- Joe's lawyer is who she is; has the properties she has; Joe has a lawyer if he has one. Yet these GAs are not trivial.

➽ GAs contrast the referent's *actual* properties with properties that it *could have* had.

- The alternatives induce a partition of the logical space (similar to a question denotation)
- The speaker's choice of discourse move depends on which cell in the partition is true.
  (the true answer to the question)

(28) a. If Answer1, Move1
  b. If Answer2, Move2
  c. . . .

- Knowing the answer, the speaker motivates her discourse move with the relevant fact
  (i.e., the fact that the true answer is the true answer)

3.2.3 From ⟨*s*, *e*⟩-basis to fact: Details

Definition 1 *A **criterion** is a set of properties* $\in D_{\langle\langle s,\langle e,t\rangle\rangle,t\rangle}$

Variable C ranges over criteria. The value of C is (typically) given by context.

- specificational: identity to an individual $C_{spec} = \{\lambda w \lambda x[x = d] | d \in D_e\}$
- predicational: properties more generally $C_{pred} = \{nasty, nice\}$
- existential: we assume an *existence* predicate $\mathcal{E}$ $C_{ex} = \{\lambda w \mathcal{E}_w\}$

Assumption: The properties in C are mutually incompatible. if $P \neq Q$ then $P_w \cap Q_w = \emptyset$ at all worlds w

Definition 2 *The **derived partition** for an individual concept f relative to criterion C represents the question which of the properties in C f has.*[5] $\pi(C)(f) = \lambda w \lambda v \forall P \in C[P_w(f_w) \leftrightarrow P_v(f_v)]$

- specificational: "which individual is the f" $\pi(C_{spec})(f) = \lambda w \lambda v[f_w = f_v]$
- predicational: "whether the lawyer is nice or nasty"
  $\pi(C_{pred})(f) = \lambda w \lambda v[(\text{nasty}_w(f_w) \leftrightarrow \text{nasty}_v(f_v)) \wedge (\text{nice}_w(f_w) \leftrightarrow \text{nice}_v(f_v))]$
- existential: "whether f exists" $\pi(C_{ex})(f) = \lambda w \lambda v[\mathcal{E}_w(f_w) \leftrightarrow \mathcal{E}_v(f_v)]$

Definition 3 *The **true cell** in a derived question is the true answer to the question.*

- specificational: "that the f is the f" $\pi(C_{id})(f)(w) = \lambda v[f_w = f_v]$
- predicational: "that the lawyer has the property she has"
  $\pi(C_{pred})(f)(w) = \lambda v\ [(\text{nasty}_w(f_w) \leftrightarrow \text{nasty}_v(f_v)) \wedge (\text{nice}_w(f_w) \leftrightarrow \text{nice}_v(f_v))]$
- existential: "that f exists (if it does)" $\pi(C_{ex})(f)(w) = \lambda v[\mathcal{E}_w(f_w) \leftrightarrow \mathcal{E}_v(f_v)]$

[5] Since the properties in C are mutually incompatible, $\pi(C)(f)$ is an equivalence relation on the set of worlds at which f is defined. (similar to a question denotation)

3.2.4 Facts! Facts!

- ***fact-denoting complement:*** used as-is
- ***individual concept-denoting complement:*** shifted to the fact that it has the relevant property (relative to a contextually given criterion) that it has.

$$[\![FACT_1]\!]^{w,C} = \lambda f_{\langle s,e\rangle}.\textsc{Fact}_w(\pi(C)(f)(w))$$

- ***question-denoting complement:*** shifted to the fact corresponding to its true answer.

$$[\![FACT_2]\!]^{w} = \lambda Q_{\langle s,\langle s,t\rangle\rangle}.\textsc{Fact}_w(Q(w))$$

Comments:

- Why no type proper names? (*given John Smith this meeting is bound to be stressful* cannot mean 'given what kind of person John Smith is')
  - Option 1: Proper names cannot be interpreted as individual concepts
  - Option 2: $[\![\text{FACT}_1]\!]^{w,C}$ presupposes that f is non-constant
- Interrogatives require a separate (independently motivated) shifter $[\![\text{FACT}_2]\!]^{w}$
  - The shift from question to fact corresponding to true answer is part of what $[\![\text{FACT}_1]\!]^{w,C}$ does - unify?
  - Would allow individual concepts to shift to any sort of interrogative (specificational, existential, predicational) as long as a criterion is contextually available.

  ⇒ Overgenerates on CQs unless we are sure that CQ-embedding verbs don't take $\langle s,\langle s,t\rangle\rangle$-arguments and DP-complements are blocked syntactically under predicates that take $\langle s,\langle s,t\rangle\rangle$-arguments (like *know, wonder,...*).

3.3 GAs as a topic at speech act level

- GAs are topics operating at speech act level (Repp, 2011, for relevance topics)
- Building on Krifka (2001): speech acts are functions from commitment states to commitment states.

  (29) $[\![\text{given}]\!]^{w} = \lambda F_{\text{Fact}}.\lambda A_{\text{SpeechAct}}.\lambda s.\lambda s'.s' \in A(s)\ \&\ \textsc{Commit}_{\text{Speaker}}(\textsc{EpistGrounds}(F, A, s))(s')$
- The fact named in the GA provides the epistemic justification (declaratives, explicit performatives,...) or epistemic background (interrogatives) for the speech act performed with the main clause.
- Evidence that justification targets a speech act/the speaker's commitments (rather than the proposition itself): reported speech acts.

  (30) Given that the incompatibility between imperative marking and negation is not universal, most authors propose a syntactic solution.

  (31) a. [Given FACT, Commit/Question p]
  b. [Commit/Question [Given FACT [Subject *proposes, claims, believes, argues,...*]]]

  In both cases, the actual speaker is committed to the FACT named in the basis, but only the author of the reported act is committed to the justification relation between the FACT and the speech act:

  (32) ✓(30), but I don't think that this is compelling grounds to not treat it in the semantics.

4 Conclusions and outlook

- AAs and GAs interact differently with matrix clauses (modalized or not)
- GAs provide evidence that ***facts*** play a role not only at the level of sentence composition, but also at the level of discourse management
- AAs vs. GAs may provide insights into richer evidential systems: Japanese AAs require main clause to be marked as reportative *soo da*, GAs inferential *yoo da* (Matsubara, 2017).
- Open question: GAs do not admit *whether*-questions. Why?

  (33) a. Given that John { is / is not } here, I propose an amendement.
  b. #Given whether John is here (or not), I propose an amendment.

  Note the similarity with (emotive) attitude verbs which embed questions, but not *whether*-questions:

  (34) Bill regrets { that / # whether } he went to the party.

  Similarly for *resent, admit, be surprised,. . .*

  Much discussion, but little agreement (Ginzburg, 1995a,b; Lahiri, 2002; Sæbø, 2005; Egré, 2008, i.a.)

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