A QUD-based analysis of non-at-issue expressions in naturalistic data

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Abstract

A new definition of non-at-issue (NAI) material in terms of optional information is proposed, which is based on an explicit method of reconstructing the Question Under Discussion and the information structure of utterances in naturalistic data (Riester et al 2018). According to this definition, verb and sentence modifiers share important properties with NAI material. We therefore argue that these expressions may represent NAI material, and apply classic diagnostics for non-at-issueness to them. We further show that such expressions are only 'part-time' NAI triggers, namely, unlike supplements or other well-known NAI content, their NAI status varies depending on the context. We focus in particular on temporal and locative modifiers and on conditional clauses in order to show such a property. We finally discuss the position and status of NAI expressions in the QUD tree, showing that such expressions may, but are not always allowed to, have a place in that tree.

Keywords: non-at-issue, questions under discussion, information structure, annotation, naturalistic data, discourse structure, conventional implicatures.

1   Introduction

In this paper, we provide a new 'Question Under Discussion' (QUD) based account of non-at-issue material in terms of optional information. In our definition, non-at-issue material is defined as being optional with respect to a QUD and thus not contributing to the truth or falsity of an assertion.

We show that our approach characterizes well-known triggers of non-at-issue content, such as supplements (cf. Potts 2005), an example of which is the apposition in (1), taken from a spoken interview to Edward Snowden made by a German journalist of ARD TV on Jan 2014 (from now on, SNO corpus). The apposition *James Clapper* is marked in boldface.

(1) [English, SNO]
     I would say sort of the breaking point is seeing the Director of National Intelligence,
     James Clapper, directly lie under oath to Congress.

Furthermore, our approach characterizes a new class of non-at-issue (from now on, NAI) expressions, namely verb and sentence modifiers, usually represented by temporal, spatial, manner, cause prepositional phrases, as well as by different types of adverbial clauses. Three examples of such NAI expressions are given (in boldface) in the German corpus example (2), which is extracted from the *Stuttgart21* corpus, a transcribed panel discussion broadcasted on German TV about the pros and cons of constructing an underground train station in the city of Stuttgart.

(2) [German, Stuttgart21]
     sondern wir haben ... wir hatten ja letzte Woche, [**als wir SMA hatten**,]$_{NAI}$ darüber
     gesprochen, dass es ein iterativer Proz... also ein Entwicklungsprozess ist.
     *Last week, **when we had the SMA here**, we talked about the fact that it is a developing
     process'*

Und jetzt haben wir, [**weil eben letzte Woche die Frage aufkam**,]_{NAI} [**anhand der Folie, die wir vorher vom Herrn Palmer gesehen haben**]_{NAI} einen späteren Arbeitsschritt modellhaft vorgezogen.
*And now, **because the question arose just last week**, we have, **on the basis of the slide that we saw earlier from Mr Palmer**, given priority to a later milestone in an exemplary manner.*

Our analysis relies on a novel discourse-analytic approach (Riester, Brunetti, and De Kuthy, 2018), which identifies the (generally implicit, sometimes explicit) Question Under Discussion preceding each utterance of a text (Roberts 2012, Ginzburg 1996, van Kuppevelt 1995, a.o.). This approach provides a way of precisely deriving the QUD and the information structure of utterances in naturalistic spoken and written data. NAI expressions identified by such an analysis naturally fall into the following classes: (i) expressions providing a side-comment on the propositional content of the assertion, such as evidentials or epistemic modals; conventional implicatures in the sense of Potts 2003 (or "class B" contents in Tonhauser et al. 2013's classification); (ii) and syntactic verb and sentence modifiers. Our novel definition of NAI material – whose core idea is that of optionality with respect to the QUD – will characterize such types of expressions.

The article is structured as follows. In section 2, we introduce our annotation procedure for the identification of QUDs, which is based on explicit pragmatic principles, and of the information structure of each utterance of a text. Based on our account of QUDs, we propose in section 3 a novel definition of NAI expressions, which naturally derives from our model. In section 4, we discuss how our approach analyses established NAI content such as that conveyed by appositions, parentheticals, and other supplements belonging to the class of conventional implicatures according to Potts (2005), and how their properties relate to projective meanings. In section 5 we present the new class of expressions that, according to our QUD-based definition of NAI material, can be analysed as NAI, namely verb and sentence modifiers. We show that, although they do not seem to belong to the class of projective content, these modifiers exhibit the same properties with respect to QUDs under our approach. In section 6 we point out the fact that these expressions are only what we call 'part-time' NAI triggers, since their non-at-issueness exclusively depends on the context in which they occur. Finally, in section 7, we will discuss the place of NAI material in the overall discourse structure, and in particular in the QUD-trees resulting from our QUD analysis of utterances in context. In section 8, conclusions are drawn.

2   A QUD-based approach to IS identification in naturalistic data

The definition of non-at-issue material that will be given in section 3 is built on the idea that such material is not part of the answer to the current QUD. This idea is not new but rather at the core of definitions of NAI content that are based on the notion of relevance, such as Simons (2007) or Simons et al. (2010). Simons (2007), who does not yet use the expression '(not-)at-issue' but talks about content as being (or not) the 'main point' of an utterance, proposes that the main point of an utterance U of a declarative sentence S is "the proposition p, communicated by U, which renders U relevant", and uses "question/response sequences as a diagnostic for main point content", by the assumption that "whatever proposition communicated by the response constitutes an answer (complete or partial) to the question is the main point of the response" (Simons 2007: 1036). In their study concerning projective content, Simons et al. (2010) adopt the term 'not-at-issue' for whatever content does not belong to the main point of the utterance. Their characterization of being or not being at issue is more precise than the one in Simons (2007) and relies more explicitly on Roberts' (2012) Question Under Discussion framework of discourse structure.

Since being or not being at issue strictly depends – both in Simons et al.'s model and in ours – on how QUDs are formulated, in this section we will present our own procedure to derive the QUDs of a text and then point out some differences with respect to other models. We may perhaps already underline an important aspect of our model, which distinguishes it from previous ones, namely that it is based on the analysis of utterances in texts of (spoken or written) *naturalistic data*, rather than on constructed examples.

Our procedure for QUD reconstruction is based on four principles. For a more extensive description of it, see Riester et al. (2018); for a closer analysis of some aspects of the model, see Reyle and Riester (2016) and Riester (forthcoming). As a consequence of our procedure, NAI material will be defined in terms of optionality with respect to a QUD. A precise definition will be given in section 3.

In line with Roberts (2012), van Kuppevelt (1995), Ginzburg (1995), and many others, the starting point of Riester, Brunetti and De Kuthy 2018 (for now on, RBK) is that for any assertion contained in a text there is a (generally implicit) Question under Discussion (QUD) determining which parts of the assertion are focused or backgrounded. A methodology is provided by these authors to reconstruct each QUD and, consequently, to build the QUD-structure of the text. Once each utterance's QUD is reconstructed, each utterance's information structure (IS) is identified by rules that directly derive it from the QUD, as we are going to explain below. Importantly, for the purposes of the present paper, the identification of each utterance's QUD also determines which parts of the assertion do *not* contribute to the QUD at all, namely, which parts are not at issue.

RBK propose that four basic principles constrain the reconstruction of a QUD. These principles are listed in (3).

(3) *Principles of QUD reconstruction*
   i. Q-A-CONGRUENCE: QUDs must be answerable by the assertion(s) that they immediately dominate.
   ii. MAXIMIZE-Q-ANAPHORICITY: QUDs should contain as much given material from the answer as possible.
   iii. Q-GIVENNESS: Implicit QUDs may only consist of given (salient) material.
   iv. PARALLELISM: The background of a QUD with two or more parallel answers consists of the (semantically) common material of the answers.

Principle (i) is trivial: the reconstructed question must be such that the utterance answers it. But this principle alone is too weak and many questions may fulfill it. Principle (ii) further constrains the formulation of a question by putting into practice the idea – expressed in one way or another by several scholars – that an utterance must contain as much anaphoric material as possible (cf. Williams 1997, Schwarzschild 1999, Büring 2008). But this is yet not enough to exclude all possible questions but one, and a third principle is necessary, which assures that no discourse-new material is contained in the question. Indeed, if we assume that the focus of the assertion is what answers the question and therefore corresponds to the question's wh-phrase (cf. Rooth 1992), principle (iii) makes sure that any part of the question that is not the wh-phrase be given.

For an illustration of how these three principles work, consider (4), taken from a speech by Barack Obama delivered as the 2004 Democratic National Convention Keynote Address at the Fleet Center in Boston on 27 July 2004 (from now on, OBAMA corpus). The assertion whose question we want to reconstruct is A_2. Such an assertion might be the answer to any of the questions from Q' to Q^v. But MAXIMIZE-Q-ANAPHORICITY rules out Q', because *she* in A_2 refers to Obama's mother, who is mentioned in the preceding assertion A_1. Q-GIVENNESS rejects Q''' through Q^v, because these questions contain material that is not already given in the preceding context (A_1 does not mention a town on the other side of the world or that somebody was born in such a place). The only question respecting all three principles is therefore Q''.

(4) [English, OBAMA]
A_1:   While studying here, my father met my mother.
Q':   ~~What happened?~~   ← MAXIMIZE-Q-ANAPHORICITY
Q":   *What about Obama's mother?*
Q"':   ~~Where was Obama's mother born?~~   ← Q-GIVENNESS
Q^{IV}:   ~~What about a town on the other side of the world?~~   ← Q-GIVENNESS
Q^V: ~~Who was born in a town on the other side of the world?~~ ← Q-GIVENNESS
A_2:   She was born in a town on the other side of the world.

On the basis of the selected QUD Q", the IS partition of A_2 can be derived. The IS notions we assume in our model are defined within an Alternative Semantics framework of focus (Rooth 1992, Büring 1997). In a nutshell, in that framework the background is an open proposition containing a variable and the focus is the instantiation of that variable. Once the QUD of each assertion is determined, the connection between QUD and the focus and background parts of the assertion is as follows:

(5) QUD-IS correspondence rules:
a.   [Focus]$_F$ is what answers the current QUD;
b.   [Background] corresponds to the QUD except for the wh-phrase;
c.   An [Aboutness Topic]$_T$ is any referential element contained in the background;
d.   A [Contrastive Topic]$_{CT}$ is the instantiation of a focus variable, signaling the existence of a complex parallel structure;
e.   The [focus domain]~ coincides with the sum of focus and background;
f.   [NAI material]$_{NAI}$ is what stays outside the focus domain, namely what neither answers the QUD (Focus), nor coincides with the material contained in the QUD (Background).

Example (6) shows the IS annotation obtained for A_2 in (4). Note that implicit questions are conventionally marked with curly brackets, while explicit ones (when present in the text, see for instance (13)) are not within brackets. Note also that the question (Q) and its answer (A) are indexed with the same number.

(6) Q_2: {What about Obama's mother?}
   > A_2: [[She]$_T$ [was born in a town on the other side of the world]$_F$]~ .

Given the reconstructed QUD Q_2 (*What about Obama's mother?*), *she* in A_2 is the background (and the topic, as it is a referential element), because it is contained in the QUD; the rest of the sentence is the focus, because it is the part that answers the QUD. Background and focus together form the *focus domain*, delimited by square brackets and marked by the squiggle symbol ~ (Rooth 1992).
    As for the definition of NAI material given in (5f), it needs to be discussed further and its relation to the QUD needs to be spelled out. We will do that in section 3. Before that, however, the fourth principle in (3) – PARALLELISM – still needs to be presented. Such a principle regulates the possibility that two or more assertions answer the same QUD. There are two cases of parallelism: either the utterances share some content – which corresponds to the background – and only vary in the instantiation of the focus alternatives (what we call *simple parallelism*, see (7)), or they just share *part* of their background, which means that the two assertions contain contrastive topics (CT) (cf. CONTRAST relation, Mann and Thompson 1988). We call it a *complex parallelism* (see (8).

(7) [English, SNO]
> A_{14}: When you are on the inside and you go into work everyday and then you realize the power you have.
> Q_{15}: {*What power do employees of the NSA have?*}
> > $Q_{15.1}$: {*Whom can you wire tap?*}
> > > $A_{15.1'}$: [You$_T$ can wire-tap [the President of the United States]$_F$]~,
> > > $A_{15.1''}$: [you$_T$ can wire-tap [a Federal Judge]$_F$]~

(8) [English, SNO]
> A_0: In many countries, as in America too the agencies like the NSA are not allowed to spy within their own borders on their own people.
> Q_1: {*Who can spy on whom?*}
> > $Q_{1.1}$: {*Who can the Brits spy on?*}
> > > $A_{1.1}$: So [[the Brits]$_{CT}$, for example, [they]$_T$ can spy on [everybody but the Brits]$_F$]~
> > $Q_{1.2}$: {*Who can the NSA spy on?*}
> > > $A_{1.2}$: but [[the NSA]$_{CT}$ can conduct surveillance [in England]$_F$]~

In (7), we see that PARALLELISM overrides Q-GIVENNESS. Indeed, the latter would produce question Q_{15}, while PARALLELISM allows for the narrower question $Q_{15.1}$ (which entails Q_{15}) to be the question of both $A_{15.1'}$ and $A_{15.1''}$, which share the linguistic material *you can wire tap* and differ in the instantiation of the focus variable (*the President of the United States* vs. *a Federal Judge*). In (8), Q-GIVENNESS would produce question Q_1, but $A_{1.1}$ and $A_{1.2}$ share some semantic content, as the two predicates *spy on* and *conduct surveillance* can be considered as synonyms in this context. What varies in both assertions is the argument with Agent role (the subjects *the Brits* and *the NSA*) and that with the role of Theme (the oblique *everybody but the Brits* and the locative *in England,* under the assumption that *in England* means 'on the Brits' by metonymy). Strictly speaking, both the Agent and the Theme are focused in both assertions, in that they instantiate a variable, but these variables are *inside the background*. In other words, following Büring (1997, 2003), among others, we take *the Brits* and *the NSA* to be 'contrastive topics'. The sub-questions $Q_{1.1}$ and $Q_{1.2}$ arising from the PARALLELISM rule therefore contain respectively the phrases *the Brits* and *the NSA*.

The method for QUD identification described above makes strong predictions concerning the structuring of discourse. In our discourse trees – which structurally differ in a systematic way from analyses of SDRT or RST[1] – the terminal nodes of a tree represent the (A)ssertions and non-terminal nodes represent the (Q)uestions, as shown in Figure 1, taken from RBK. Note that the indentation in the examples above represents the level of embedding of a question or an assertion in the QUD-tree.

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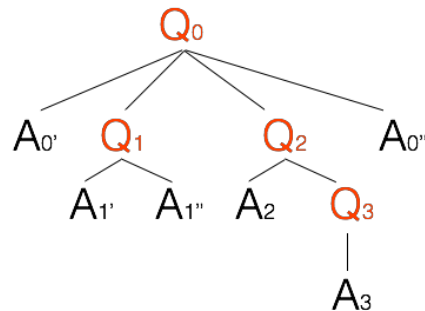
[1] Both SDRT (Asher and Lascarides 2003) and RST (Mann and Thompson 1988; Taboada and Mann 2006) lack (most of) our implicit questions and make slightly different assumptions concerning the elementary discourse units.

Figure 1. Example of QUD-tree, (Riester et al 2018). Non-terminal nodes are (implicit) Questions Under Discussion; terminal nodes are Assertions (the actual utterances of a text).

The terminal nodes $A_{1'}$ and $A_{1''}$ in Figure 1 are parallel answers to the same question Q_1 (a case of simple parallelism). Figure 2 shows a case of complex parallelism (triggering contrastive topics); recall that the sub-questions $Q_{1.1}$ and $Q_{1.2}$ stand in an entailment relation with the super-question Q_1, as indicated by the specific notation (see Roberts 2012, Büring 2003).
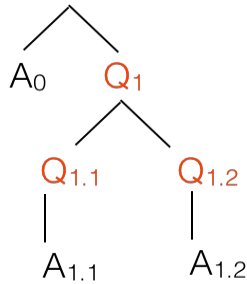

Figure 2. Example of QUD-tree, of a complex parallelism (Riester et al 2018).

As mentioned above, Simons et al. formulate a definition of NAI content based on Robert's QUD framework of discourse and the notion of relevance. In Roberts' framework, increasingly specific QUDs are ordered by an entailment relation and an answer to a QUD must therefore always entail an answer to the more general question. They propose that "an assertion is relevant to a QUD iff it contextually entails a partial or complete answer to the QUD" (Simons et al. 2010:316). In Riester et al. (2018) we argue that such an approach is too restrictive to handle truly naturalistic data and propose that, while it may well be the case that some QUDs are ordered by an entailment relation, other QUDs may simply be anaphorically related to the preceding assertion containing a so-called *feeder* (van Kuppevelt 1995, see also Velleman and Beaver 2016).[2]

Consider the constructed example in (9) from Simons et al. (2010:320).

(9) Context: My daughter Chloe is writing invitations to her birthday party to kids in her class. I notice that all of the invitations are to girls.
  Mom: Are there any boys in your class?
  Chloe: I don't like the boys in my class.

Simons et al. argue that "in responding to the question, Chloe not only answers the direct question actually asked, but also an implicit question along the lines of *Why aren't you inviting any boys to your party?*. If one follows the procedure that we have sketched above, the implicit QUD preceding Chloe's answer can instead be *What do you think of the boys in your class?*. As a matter of fact, according to the preceding context, in particular the preceding overt question, and following MAXIMIZE-Q-ANAPHORICITY and Q-GIVENNESS, *I* and *the boys in my class* are given, and the focus of the utterance, the one that answers the question, is the negated verb alone, as shown below.[3]

(9') Q_1: Are there any boys in your class?

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[2] In footnote 3, Simons et al. also soften their claim by suggesting that an assertion may be relevant because it "rais[es] or lower[s] the probability of some answer to the QUD being correct", though it does not contextually entail the answer to the QUD.

[3] *The boys in my class* is lexically, though not referentially, given, since at the moment of Chloe's answer, the referent has not been introduced yet. Referential givenness is therefore accomodated here.

> Q_2: {What do you think of the boys in your class?}
> >A_2: [I]$_T$ [don't like]$_F$ [the boys in my class]$_T$

Note that our principles, though rigorous, still leave some space for optionality. A question like that proposed by Simons et al. could be derived by our principles as well, if we take into account the fact that 'inviting only girls' is under discussion in the previous context (therefore, it is given). A *why*-question is then a choice that the annotator can make. The difference between Q_2 in (9') and a *why*-question is that the latter makes the rhetorical relation between the two utterances explicit: Chloe's answer is an EXPLANATION relation (Asher and Lascarides 1998). Note that with respect to our annotation procedure, such an additional piece of information is not required, since our procedure is not meant to fully specify the rhetorical relations of a text, despite our assumption that QUDs and rhetorical relations essentially give rise to the same discourse structure. Unlike our procedure, however, Simons et al's procedure does not make it clear on the basis of what link between rhetorical structure and IS structure one must reconstruct the IS of an utterance from the proposed implicit QUD. Our procedure, we believe, takes the link between discourse structure and IS structure more seriously, since QUDs are formulated on the basis of an *anaphoricity* principle (Maximize-Q-Anaphoricity) as well as a *givenness* principle (Q-givenness), namely properties strictly related to IS.

3   A QUD-based definition of non-at-issue expressions

In this section we are going to discuss more closely the status of NAI material in the light of the QUD-based approach for IS identification sketched in section 2, and we are going to provide a more precise definition of NAI material in relation to the QUD principles introduced in the previous section. Before doing that, an important point must be clarified in order to avoid misunderstanding concerning the scope of our work and how it relates to previous literature on NAI content. As the attentive reader may have noticed, the annotation procedure described above provides a definition of NAI *material*, not NAI *content*. In other words, our proposal only concerns linguistically realized expressions within the current assertion. Triggered *contents* such as the alternative presupposition of 'too', or the pre-state of 'stop', etc., which are not linguistically realized within the current assertion, are not targeted by our definition. This is because our procedure was originally intended for the annotation of information structure, not for the classification of different types of entailments. As for the triggers of implicit content, these may overlap with either focus or background. Examples are definite descriptions or *that*-clauses giving rise to existential or factive presuppositions while being either focused or backgrounded.[4] In conclusion, by means of our QUD-reconstruction procedure, we will only make claims about a *subset* of NAI content. This clarification partly accounts for the difference between our definition and certain definitions of NAI content existing in the literature (see in particular the work by Tonhauser and colleagues).

This point made clear, we now turn to our definition of NAI *material*. The subset of NAI content that we take into account is one which is not triggered by material that is itself part of the focus-background structure. On the one hand, NAI material does not contribute to the formulation of the QUD, which means that it is discourse new. On the other hand, despite its being discourse new, NAI material is not the focus or part of the focus, because it is not concerned with the answer to the QUD. In sum, NAI material is neither part of what makes the assertion coherent with respect to previous discourse (the anaphoric part of it) nor what makes it necessary for the discourse to go forward (the informative part of it). This observation leads to an obvious conclusion, namely that NAI material must be *optional*, where optionality is intended as in

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[4] Presumably, some constraints exist on the information-structure possibilities of triggers: for instance, focal adverbs like *only*, *also*, etc., which associate with a focus or a contrastive topic, will clearly be outside the focus (or the contrastive topic) themselves.

relation to discourse needs: NAI material is neither needed for the utterance to be linked to previous discourse, nor for it to be linked to the subsequent one. We thus adopt the following definition of NAI material (cf. RBK, Riester forthcoming):

(10) **Non-at-issue material**: *An expression X whose denotation [[X]] is discourse-new and which is contained in a declarative sentence A represents non-at-issue material with respect to the current QUD Q iff X is optional with respect to Q, where optional means that under deletion of X, A' (where A' = A – X) is still an answer to Q.*

We further claim that NAI material answers itself an implicit QUD (cf. RBK), which is anaphorically dependent on some part (background or focus) of the assertion containing the NAI expression. Since the IS of an assertion is derived from the formulation of an implicit QUD, this implies that even NAI expressions have their own information structure. Such a QUD will generally not, however, be part of our QUD tree, for reasons that we will explain in section 7.

Given the definition in (10), based on optionality with respect to the QUD, some hypotheses can be made concerning the expressions that are (or tend to be) not at issue. Assuming that the propositional content of an utterance is the natural candidate to answer the QUD, we expect anything that is not part of the propositional content to be NAI. This will include expressions establishing or assuring a good transmission of the message (cf. phatic expressions), markers of discourse relations between utterances (cf. discourse markers), or metalinguistic comments to the propositional content of the utterance. NAI expressions are also expected to express the speaker's attitude/commitment towards the propositional content conveyed by the utterance, such as evidential markers and evidential predicates. Furthermore, conventional implicatures, as defined by Potts 2005 (from now on, CIs) clearly match our definition (see next section).

Another hypothesis that suggests itself from the definition in (10) is that NAI expressions are *syntactically* optional, namely they are adjunct-like elements. While our proposal does not depend in any way on an exact mapping between syntax and semantics/pragmatics, a partial overlap is nevertheless legitimately expected. For example, note that most CIs are syntactic adjuncts; specifically, they are adjoined to the noun (cf. appositions, NRRCs, adjectival attributes). We may therefore expect that other syntactically optional expressions also have the potential to be NAI, namely verb or sentence modifiers: temporal, spatial, manner phrases – usually prepositional phrases – as well as temporal, concessive, causal, etc. finite and non-finite clauses. From a semantic point of view, these modifiers are part of the propositional content of the assertion; however, they express some peripheral aspect of the event described by it. Such a class of NAI expression has – to the best of our knowledge – never been studied so far. We will present it and motivate its existence in section 5. But first, we will take a closer look at the established class of supplements, in the light of our definition in (10). For reasons of space, this paper does not deal with other expressions that are expected to be NAI according to our definition; in particular, no detailed study of evidential predicates will be pursued. We leave that study to future work.

4 Properties of supplements as NAI expressions

In this section we discuss in detail how QUDs formulated according to our principles result in analysing supplements as NAI material.

Potts divides CIs into supplements and expressives. Supplements include non-restrictive relative clauses (NRRC, cf. (11a)), English *as*-clauses (11b), nominal appositives (11c), topic-oriented adverbs such as 'cleverly, wisely', speaker-oriented adverbs such as 'unfortunately, luckily', utterance modifiers (11d).

(11) a. Ames, *who stole from the FBI*, is now behind bars.   Potts (2005)

b. Ames was, *as the press reported*, a successful spy.
c. Ames, *the former spy*, is now behind bars.
d. *Confidentially (speaking) / (Speaking) Just between friends*, Sal is about to get canned.

Within the class of expressives, Potts mainly considers attributive adjectives such as *damn* or *friggin* (see (12a)), defining them as "a special class of attributive adjectives that can never contribute at-issue content" (Potts 2005:17). Other expressives mentioned by Potts are epithets (12b) and honorifics (such as Japanese verb markers).

(12) a. I hate your *damn* dog!   Potts (2005)
      b. Every Democrat advocating a proposal for reform says *the stupid thing* is worthwhile.

Epithets such as *the stupid thing* in (12b) express a double meaning: an at-issue one and a triggered, non-at-issue one. Since we only consider expressions which are not themselves part of the focus-background (i.e. at-issue) structure, epithets won't be discussed in the present paper. As we said about other triggers, they will rather be analyzed as being either background or focus, depending on the context.[5] The same reasoning can be made for honorifics. Furthermore, no honorifics exist in the languages to which our QUD and IS annotation scheme has been applied, so no examples of this kind are found in our data. On the contrary, attributive adjectives such as *damn* in (12a), which are noun modifiers, clearly fall under our optionality criterion for NAI material. The same can be said about supplements.

Potts (2005:7) states that supplemental expressions, characterized as CI meanings, are "secondary entailments that cooperative speakers rarely use to express controversial propositions or carry the main themes of a discourse". If we re-formulate it in QUD terms, this statement amounts to saying that such supplemental expressions are not relevant for answering the current QUD, and are thus optional, as stated in our definition in (10). Consider our corpus example (1), repeated below as (13).

(13) [English, SNO]
    > Q_3: What was the decisive moment {for collecting thousands of confidential documents}
    > Q_4: or was there a long period of time or something happening,
    > Q_5: why did you do this?
    > > A_3: [I would say]$_{NAI}$ [sort of the breaking point]$_T$ is [seeing the Director of National Intelligence, [**James Clapper**]$_{NAI}$, directly lie under oath to Congress.]$_F$~

The assertion in A_3 is preceded by three *overt* questions, which are basically three different ways of extracting similar information. In A_3, *the breaking point* is anaphoric to *the decisive moment*, so the utterance specifically answers Q_3, which is thus the relevant QUD here (Q_4 and Q_5 are not answered explicitly). *James Clapper* is discourse new, because the preceding discourse never mentioned the fact that there is somebody named James Clapper. *James Clapper* is also not relevant to answer Q_3, because it just provides additional information on a referent. *James Clapper* is therefore NAI. Note that the NAI phrase is nested inside the focus part, but this does not mean that it is a regular part of that focus.[6] In the same vein, a NAI expression contained or adjacent to the background part does not belong to that background.

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[5] In (12b), the phrase *the stupid thing* is clearly the topic of the embedded clause.

[6] As we said above, non-at-issue material answers its own QUD and therefore contains a focus of its own.

Consider the example below in (14), which is the beginning of an interview in a French blog. The title of the blog constitutes the first (explicit) QUD. The interviewer then starts with a passive sentence, whose subject is *Nathalie*. The passive construction forces an interpretation where *Nathalie* is the topic, and the pronoun *nous* 'we', referring to the blogger, is also interpreted as a topic, so the resulting QUD is *What about the relationship between Nathalie and the blogger?* The apposition *maman de deux enfants nés en 2007 et fin 2011* 'mother of two children born on 2007 and end of 2011' seems rather to answer a different question like *Who is Nathalie?*. The same is true for the apposition *infirmière* 'nurse' in A_2. The given part of A_2 is *elle* (referring to Nathalie, which is mentioned in A_1). As for the apposition, the fact that Nathalie is a nurse is not relevant to answer Q_2 and can be omitted. The apposition just adds some information concerning Nathalie (again, it presumably answers a question like *Who is Nathalie?*) and is therefore NAI.

(14) [French blog https://www.bloghoptoys.fr/connaissez-vous-la-langue-des-signes-avec-les-bebes]

> Q_0: Connaissez vous la langue des signes avec les bébés ? [Blog title]
  Do you know the sign language with babies?
> > Q_1: {What about the relationship between Natalie and the blogger?}
> > > A_1: [[Nathalie]$_T$, [**maman de deux enfants nés en 2007 et fin 2011**]$_{NAI}$, [nous]$_T$ [a été présentée par une maman blogueuse.]$_F$]~
   *Nathalie, **mother of two children born in 2007 and at the end of 2011**, has been introduced to us by a blogger mom*
> > > Q_2: {What about the relationship between Natalie and sign language with babies?}
> > > > A_2: [**Infirmière**,]$_{NAI}$ [[elle]$_T$ [a découvert le principe d'associer signes et parole avec sa fille aînée]$_F$]~
   ***a nurse**, she discovered the coupling of sign and speech with her elder daughter*

Finally the French example below in (15) contains an *as*-clause. The example is taken from a spoken French corpus made of interviews to people living in different districts of Paris, the CFPP2000 corpus (Branca-Rosoff et al 2009). The example contains the NAI *as*-clause *comme nous a dit euh le monsieur de la mairie* 'As the guy from the town hall told us'. The assertion A_{36} explains why obtaining social housing took the speaker relatively short a time, namely two years. The reason is that houses are more easily given to families in the speaker's salary range. Given A_{35}, the only given part of A_{36} is the pronoun *on* 'we' referring to the speaker and his family, hence the legitimacy of Q_{36}. The *as*-clause is not part of the answer to Q_{36}, but only specifies the source of the information which constitutes the actual answer to Q_{36}

(15) [French, CFPP2000]

Speaker 1: et vous avez euh vous êtes restés longtemps sur la liste d'attente ou…
  pour toi ça a été rapide pas rapide à ton avis ça
  And have you been long time in the waiting list or… For you was it fast or not fast, in your opinion?
Speaker 2: euh bah j'pense que par rapport à beaucoup d'gens ça a été un peu rapide
  Ehm, I think that with respect to many people, it has been rather fast
> A_{35}: [[ça]$_T$ [nous]$_T$ [a pris deux ans]$_F$ [j'pense]$_{NAI}$ [à peu près]$_F$]~
  It took us two years, I think, approximately
> Q_{36} : {Why did it take you (only) two years?}
> > A_{36} :euh mais [**comme nous a dit euh le monsieur de la mairie**]$_{NAI}$, [[on]$_T$ [était dans la bonne tranche de salaire]$_F$
  *But, **as the guy from the town hall told us**, we were in the right salary range*

Several authors have noticed that supplements, such as those discussed by Potts (2005), belong to a class of expressions that have projective meanings. In particular, in recent times it has been noticed that presuppositions are not the only type of content that projects and that CIs project too (Potts 2005, Simons et al 2010, Tonhauser et al. 2013, Faller 2014, a.o.). Simons et al. (2010) aim at giving a unified account of all projective content and propose that projective content has a common property, namely that of not being at issue. In fact, their claim is stronger and goes to both directions: not only is projective content NAI, but NAI content is projective. The here discussed supplements behave like Simons et al predict: they are clearly not at issue and also pass the Family-of-Sentences Diagnostics for Projection, which were originally applied to presuppositions (Chierchia and McConnell-Ginet 2000). Consider again our example in (13). The Family-Of-Sentences diagnostics are applied in (16) to the apposition *James Clapper*, which was shown in the previous section to be NAI according to our definition (10). The apposition clearly displays projective behavior.

(16) a. **Negation**. The breaking point was not seeing the Director of National Intelligence, James Clapper, lie to Congress.
  b. **Question**. Was the breaking point seeing the Director of National Intelligence, James Clapper, lie under oath to Congress?
  c. **Conditional**. If the breaking point was seeing the Director of National Intelligence, James Clapper, lie under oath to Congress, then I cannot imagine what will happen.
  d. **Modal**. It is possible that the breaking point was seeing the Director of National Intelligence, James Clapper, lie under oath to Congress.

The proposition expressed by the apposition, namely 'the director of national intelligence's name is James Clapper' is not negated, nor questioned when the main clause is, nor it is inside the scope of a conditional or a modal. Analogously, for (14), the proposition 'Nathalie is mother of two kids…' is not negated, nor questioned, etc., when the main clause is, as shown in (17).

(17) a. **Negation**. Nathalie, maman de deux enfants nés en 2007 et fin 2011, ne nous a pas été présentée par une maman blogueuse.
    Nathalie, mother of two kids born in 2007 and end of 2011, was not introduced to us by a blogger mum.
  b. **Question**. Est-ce que Nathalie, maman de deux enfants nés en 2007 et fin 2011, vous a été présentée par une maman blogueuse?
    Was Nathalie, mother of two kids born in 2007 and end of 2011, introduced to you by a blogger mum?
  c. **Conditional**. Si Nathalie, maman de deux enfants nés en 2007 et fin 2011, vous avait été présentée par une maman blogueuse, alors...
    If Natalie, mother of two kids born in 2007 and end of 2011, was introduced to you by a blogger mum, then...
  d. **Modal**. Il se peut que Nathalie, maman de deux enfants nés en 2007 et fin 2011, leur ait été présentée par une maman blogueuse.
    It is possible that Nathalie, mother of two kids born in 2007 and end of 2011, was introduced to them by a blogger mum.

And finally, the NAI *as*-clause in (15) passes the FOS sentence test and is not negated, questioned nor in the scope of a conditional or modal, when the main clause is, as illustrated in (18).

(18) a. **Negation**. Mais, comme nous a dit le monsieur de la maire, on n'était pas dans la bonne tranche de salaire.

But, as the guy from the town hall told us, we were not in the right salary range.

b. **Question**. Est-ce que, comme vous a dit le monsieur de la mairie, vous étiez dans la bonne tranche de salaire?
Were you really, as the guy from the town hall told you, in the right salary range?

c. **Conditional**. Si, comme nous a dit le monsieur de la mairie, on était dans la bonne tranche de salaire, alors...
If, as the guy from the town hall told us, we were in the right salary range, then...

d. **Modal**. Il se peut que, comme nous a dit le monsieur de la mairie, on soit dans la bonne tranche de salaire.
It is possible that, as the guy from the town hall told us, we are in the right salary range.

While such a projective behavior is not incompatible with our definition of NAI expressions, in section 5, when discussing verb and sentence modifiers as a new class of (potentially) NAI expressions, we will address the question whether all types of NAI material necessarily have projective meanings.

Presuppositions, as a special class of inferential phenomena with the property of projection, have another property: they typically require Strong Contextual Felicity, namely their meaning must be entailed in the context. As originally observed by Potts (2005) and as Tonhauser et al (2013) also point out, CIs differ from presuppositions in that they do not require Strong Contextual Felicity. As a matter of fact, they even require that the context does *not* entail their meaning. This property, which Faller (2014) calls the *Anti-backgrounding effect*, is illustrated below in (19) to (21) for the English example in (13) and the French ones in (14) and (15), respectively:

(19) The Director of National Intelligence's name is James Clapper. #The breaking point is seeing the Director of National Intelligence, James Clapper, directly lie under oath to Congress.

(20) Nathalie a deux enfants nés en 2007 et fin 2011. #Elle, maman de deux enfants nés en 2007 et fin 2011, nous a été présentée par une maman blogueuse.
Nathalie has two children born in 2007 and end of 2011. #Mother of two children born in 2007 and end of 2011, she was introduced to us by a blogger mum.

(21) Le monsieur de la mairie nous l'a dit. #Comme nous a dit le monsieur de la mairie, on était dans la bonne tranche de salaire.
The guy from the town hall told us that. #As the guy from the townhall told us, we were in the right salary range.

The anti-backgrounding effect of NAI material that is defined according to (10) is expected: being discourse new is one of the defining properties of NAI material. An overt expression that is given in the discourse, according to our principles, must instead be part of the background and therefore of the current QUD.

Another property that has been tested for supplements and that makes them different from presuppositions is their being speaker-oriented (cf. Potts 2005, Faller 2014). Being speaker-oriented couples with some projective behavior: the CI is not part of the content targeted by a propositional attitude predicate (such as *believe*) under which the sentence is embedded (cf. Tonhauser et al's *Obligatory Local Effect*, a property "which distinguishes projective contents according to their behavior with respect to embedding operators like propositional attitude verbs,

modals, and conditionals", Tonhauser et al 2013:91-92). In (22) to (24), the supplements of our three corpus examples are embedded under the predicate *believe*. In each example, the content of the supplement is not part of the main-clause subject's beliefs (cf. Potts 2005, Faller 2014).

(22) Snowden wrongly believes that the breaking point is seeing the Director of National Intelligence, James Clapper, directly lie under oath to Congress. #In fact, his name isn't James Clapper.

(23) L'interviewer pense erronément que Nathalie, maman de deux enfants nés en 2007 et fin 2011, vous a été présentée par une maman blogueuse. #En fait, elle n'est pas maman de deux enfants.
The interviewer wrongly believes that Nathalie, mum of two kids born in 2007 and end of 2011, was introduced to you by a blogger mum. In fact, she is not mum of two kids.

(24) L'homme pense erronément que, comme le monsieur de la mairie leur a dit, ils étaient dans la bonne tranche de salaire. #En fait, le monsieur de la mairie ne leur a pas dit ça.
The man wrongly believes that, as the guy from the town hall told them, they were in the right salary range. #In fact, the guy from the town hall did not tell them so.

The incongruity of these utterances comes from the fact that the one who believes the content of the apposition or the *as*-clause is the speaker. As mentioned above, the speaker's attitude or position with respect to the propositional content of the utterance is not expected to be at issue, that is, to answer the current QUD; rather, it is more probable that such a content answers some side question. Therefore, in accordance with our definition of NAI material, it is likely that NAI material be speaker-oriented, though not necessarily so.

Finally, another characteristic of supplements is that they cannot be challenged by a direct denial. Other forms of disagreement must be used, such as the well-known expression *Hey, wait a minute* (von Fintel 2004). This property is the direct result of the NAI status of such semantic content. Indeed, the impossibility to directly deny a particular content is a consequence of the fact that such content does not answer the current QUD. Notice that this is the only test that explicitly checks the NAI status of an expression. The FOS diagnostics and the speaker-orientation diagnostic test other properties and, crucially, do not require the expression to be in a particular context of discourse. The examples in (25), (26) and (27) illustrate that the NAI material of our three corpus examples can indeed not be challenged by direct denial, while disagreement introduced with expressions such as *Hey, wait a minut*e is possible.

(25) a. I would say sort of the breaking point is seeing the Director of National Intelligence, James Clapper, directly lie under oath to Congress.
b. # *That's not true, his name is not James Clapper.*
c. *Hey, wait a minute, are you sure his name is James Clapper?*

(26) a. Nathalie, maman de deux enfants nés en 2007 et fin 2011, nous a été présentée par une maman blogueuse.
Nathalie, mother of two children born in 2007 and at the end of 2011, has been introduced to us by a blogger mom
b. # C'est pas vrai, elle n'est pas maman de deux enfants.
That's not true, she is not mum of two kids
c. Attend, elle n'est pas maman de deux enfants.
Wait, she is not mum of two kids

(27) a. …mais comme nous a dit euh le monsieur de la mairie, on était dans la bonne tranche de salaire
But as the guy from the town hall told us, we were in the right salary range
b. # C'est pas vrai, c'est pas le monsieur de la mairie qui vous a dit ça.
That's not true, it's not the guy from the town hall who told you that
c. Attend, c'est pas le le monsieur de la mairie qui vous a dit ça.
Wait, it's not the guy from the town hall who told you that

To conclude, supplements have the following properties: they are conventional NAI triggers, they project, they are discourse new and have an anti-backgrounding effect (they require that the context does not entail their meaning). Finally, they cannot be directly denied. The last two properties are expected given our definition of NAI expressions in (10), which requires NAI material to be discourse new and not to be part of the answer to the current QUD. The property of being projective, however, is not demanded by our definition, which is therefore neutral with respect to it.

5   Verb / sentence modifiers as NAI expressions

As mentioned above, a novel class of NAI expressions, namely that of verb and sentence modifiers, naturally arises when NAI expressions are defined according to (10) and QUDs are formulated according to the procedure presented in section 2. In order to better motivate why these types of modifiers form a new class of NAI expressions, a couple of constructed examples will be given, before providing examples from our corpus of naturalistic data. Consider the constructed dialogue in (28).

(28) A: Nina is not here.
B: She went to buy an ice-cream with her own pocket money.

B's utterance may be analyzed as being preceded by the implicit QUD *Why isn't Nina here?* (see (29) below).[7] In effect, *she* is the only given part of B's utterance and no new material can be added to the QUD (according to the Q-GIVENNESS constraint). The expression *with her own pocket money,* however, is not really part of the answer to that question, because the main event, namely the fact that Nina went buying ice-cream, is sufficient to explain why Nina is not here. The modifier *with her own pocket money* is therefore pragmatically optional, in that it does not really answer the current question but adds further information about the main event. The modifier rather answers a question of the type *How did she buy it?* and its function in discourse may be that of anticipating a possible remark from the interlocutor about the event of Nina buying ice-cream (if, for instance, Nina is a little girl). So, despite being new information, *with her own pocket money* is not at issue here.

(29) $> A_1$: Nina is not here.
$> Q_2$: {Why (isn't Nina here)?}
$> > A_2$: [[She]$_T$ [went to buy an ice-cream]$_F$ [**with her own pocket money**]$_{nai}$.

The same reasoning does not work for the modifier *on foot* in the following constructed example.

(30) A: Jane is late.

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[7] Other possible QUDs in compliance with our principles of QUD construction are *What about Nina?* or *Where is Nina?*. The latter would presumably be answered in parallel by both (28) A and B.

B: She is coming to the appointment on foot.

The only given part in B's utterance is *she*. A question like *Why is Jane late?* (or *What happened to Jane?*, *What is Jane doing?*, see discussion on *why*-questions in example (9) above) may therefore be constructed. Here, the answer must include the modifier, because specifying that Jane walked (instead of, say, taking her car or her bike) is crucial information in order to explain the reason of Jane's delay.

(31) $> A_1$: Jane is late.
      $> Q_2$: {Why is Jane late?}
      $>> A_2$ [[She]$_T$ [is coming to the appointment **on foot**]$_F$.

Alternatively, if we assume that *Jane is late* implicitly means that Jane is late to the appointment (about which the interlocutors have discussed in the preceding context), Q_2 can be formulated as *How is Jane coming to the appointment?*. In that case, *to the appointment* in A_2 is part of the background and the sole focus of the sentence is the modifier *on foot.*

The two constructed examples allow us to show the main characteristic of the class of NAI verb and sentence modifiers that arises from our QUD and IS annotated corpus of naturalistic data: these expressions are only 'part time' NAI triggers. Unlike supplements, which are always NAI, verb and sentence modifiers are not always NAI: their NAI status crucially depends on the context in which they occur and thus on the QUD answered by the assertion containing the modifier.

Syntactically, verb or sentence modifiers are prepositional phrases, adverbs, and subordinate clauses. From the point of view of their interpretation, they can express different meanings, such as time, space, concession, cause, manner, goal, company, etc. Some examples extracted from our corpus are given below. Consider the Prepositional Phrase *par son jeu d'observation* 'through her curiosity' in the French example (32). In A_{17}, the speaker is explaining how parents can teach some manual signs (of French Sign Language) to their (not hearing-impaired) babies in order to help them communicate, by means of such signs, before spoken language is acquired. The only content of A_{17} that is also found in A_{18} is 'the baby' (with a generic meaning), which is expressed by a pronoun in A_{17} (*vous allez lui dire* 'you are going to tell her') and is referred to as *l'enfant* 'the child' in A_{18}. In addition, the predicate 'realize' is shared by $A_{18'}$ and $A_{18''}$, so according to the fourth principle, PARALLELISM (see (3)), the resulting question is *What does the child realize?*. The PP *par son jeu d'observation* 'through her curiosity' is clearly not part of the answer to such a question. What the modifier does is to provide an additional piece of information about the reason why the child is capable to realize what she realizes, but it does not answer in itself the question about *what* the child realizes. The question the PP answers can rather be *How (does the child realize what she realizes)?*, which is anaphorically related to $A_{18'}$ (the assertion containing the PP).[8]

(32) [French, Blog]
      $> A_{17}$: [De la même façon que vous dites « au revoir ! » en agitant la main,]$_{NAI}$
          In the same way as you say "Goodbye!" by shaking your hand
          [[vous allez lui dire : « tu veux manger ? » en faisant en parallèle le signe de
          « manger ».]$_F$]~
          you are going to tell her "Do you want to eat?" by making in parallel the sign of
          "eating".
      $> Q_{18}$: {What does the child realize?}
      $>> A_{18'}$: Puis [[l'enfant,]$_T$ [**par son jeu d'observation**,]$_{NAI}$ va constater [que vous vous

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[8] Concerning its anaphoric relation with the preceding assertion, see section 7 below.

dirigez ensemble vers   la cuisine…]$_F$]~
*Then the child, **through her curiosity**, realizes that you go together towards the kitchen,*
> > A$_{18''}$: [que vous [sortez les gâteaux du placard,]$_F$]~
that you take the cakes out of the closet…

Consider now the adverb *beispielsweise* 'for example' in the German example in (33), The only given material in A$_1$ which contains the adverb is (apart from the pronoun *ich* 'I') the pronoun *das* 'that' which refers to the weight of freight trains introduced in the previous clause A$_0$. In this context we can thus only formulate a QUD that asks about the weight of a freight train, such as Q$_1$ does.

(33) [German, Stuttgart21]
> A$_0$: Ein leichter Güterzug ist schlichtweg ein Güterzug, der unter 1000 Tonnen wiegt.
>> *A light freight train is simply a freight train weighing less than 1000 tons.*
> Q$_1$: {What can one do with the weight of a freight train?}
> > A$_1$: Und [ich kann [das]$_T$ [**beispielsweise**]$_{NAI}$ [variieren dadurch, dass ich die Anzahl der Waggons limitiere.]$_F$]~
*And one can vary that (the weight**), for example**, by limiting the number of wagons.*

The adverb *beispielsweise* is used to allow the speaker to express in addition that the information provided is not the only possibility to limit the weight of freight train. But such information is not part of the answer to the actual QUD in this context.

The German example in (2), repeated below as (34), contains two different NAI subordinate clauses. Altogether, the two clauses A$_{2.1}$ and A$_{2.2}$ are an instance of a parallel structure (as discussed in section 2) where the two temporal expressions *letzte Woche* 'last week' and *jetzt* 'now' are contrasted with each other. They are analyzed as contrastive topics under our approach and are thus part of the QUDs Q$_{2.1}$ and Q$_{2.2}$. The rest of the clauses present new information and the QUDs are formulated in such a way as the entire VPs are focused.

(34) [German, Stuttgart21]
> A$_1$: es geht dort nicht um ein neues Gutachten,
>> *The issue there is not about a new expert report,*
> Q$_2$: {What did we do when?}
> > Q$_{2.1}$: {What did we do last week?}
> > > A$_{2.1}$: sondern wir haben ... wir hatten ja [letzte Woche,]$_{CT}$ [**als wir SMA hatten**,]$_{NAI}$ [darüber gesprochen, dass es ein iterativer Proz... also ein Entwicklungsprozess ist.]$_F$
*instead, last week, **when we had the SMA here**, we talked about the fact that it is a developing process.*
> > Q$_{2.2}$: {What are we doing now?}
> > > A$_{2.2}$: Und [jetzt]$_{CT}$ haben wir, [**weil eben letzte Woche die Frage aufkam**,]$_{NAI}$ [anhand der Folie, die wir vorher vom Herrn Palmer gesehen haben]$_{NAI}$ [einen späteren Arbeitsschritt modellhaft vorgezogen.]$_F$
*And now, **because the question arose just last week**, we have, on the basis of the slide that we saw earlier from Mr Palmer, brought forward a later milestone in an exemplary manner.*

The temporal clause *als wir SMA hatten* 'when we had the SMA (here)' in A$_{2.1}$ expresses new, but optional information about the time of the actions described by the speaker as an answer to

$Q_{2.1}$.[9] Note that such a temporal clause could be interpreted either restrictively or non-restrictively with respect to *letzte Woche* 'last week'. In the former case, the expression would be contained in the same informational chunk as *letzte Woche*, so it would be part of the at issue content. In the present context, however, it is clear that its interpretation is not restrictive. What is relevant for the speaker in uttering *als wir SMA hatten* is not to make it clear at what precise moment of the week they talked, but to recall the event associated with the talking.

In $A_{2.2}$, the embedded causal subordinate clause *weil eben letzte Woche die Frage aufkam* 'because last week the question came up' contains optional information with respect to why the action described by the speaker takes place. Again, this information does not provide an answer to the actual QUD *What are we doing now?*. A QUD asking *Why did we bring forward a later stage of work?* cannot be the QUD that is addressed by $A_{2.2}$ in this context, since this would be a QUD that contains new material, and, according to the Q-GIVENNESS principle, QUDs can only contain given material. Note that this example contains another NAI constituent, namely the parenthetical *anhand der Folie, die wir vorher vom Herrn Palmer gesehen haben* 'on the basis of the slide that we saw earlier from Mr Palmer'. This parenthetical, which also provides new information, is optional with respect to the QUD. This is expected, as discussed in the previous section, since such parentheticals belong to the class of supplemental expressions that are NAI material.

5.1   Properties of modifiers as NAI expressions

We have seen in section 4, that our definition (10) is able to classify supplements as not at issue, which confirms what is said in previous literature on the subject. More specifically, our definition is compatible with the fact that these supplements pass the HWAM test, because the HWAM test precisely tests whether an expression is at issue or not.

We will therefore start by applying this test to some of our examples of NAI verb/sentence modifiers discussed above. Consider again the French example (32), the relevant part of which is repeated below as (35). The expression *par son jeu d'observation* 'through her curiosity', means that the child does what she does thanks to her curiosity about the world around her. The HWAM diagnostic is applied in (36).

(35) > Q_{18}: {What does the child realize?}
> > A_{18}: Puis [[l'enfant,]$_T$ [**par son jeu d'observation**,]$_{NAI}$ va constater [que vous
vous dirigez ensemble vers la cuisine...]$_F$]~
*Then the child, **through her curiosity**, realizes that you go together towards the*
kitchen,

(36) HWAM test
a. # Ce n'est pas vrai, ce n'est pas par son jeu d'observation que l'enfant constate cela.
  That's not true, it is not because of her curiosity that the child realizes that
b. Attend! Ce n'est pas par son jeu d'observation que l'enfant constate cela.
  Wait, it is not because of her curiosity that the child realizes that

The *That's not true* response sounds definitely worse than the one using a HWAM expression. It must be noticed, however, that what is denied in (36) is not the existence of the curiosity of the child, which is the presupposition triggered by the definite description *son jeu d'observation* (literally, 'her observing game'). What is denied is the fact that the child's realizing

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that the mother goes towards the kitchen is done by means of her curiosity. Therefore, what is tested is whether the modifier's semantic content is *part* of the at-issue proposition or not.

The same observations can be made for the non-at-issue material expressed by a temporal clause, such as the one in (34). The test is given in (37).

(37)   a. # Das stimmt nicht, wir haben nicht, als wir SMA hier hatten, darüber gesprochen.
           That's not true, we did not talk about it when the SMA was here.
       b. Einen Moment mal, wir haben nicht, als wir SMA hier hatten, darüber gesprochen.
           Hey, wait a minute, we did not talk about it when the SMA was here.

As expected, the modification of the main proposition by the temporal clause cannot be directly denied, but can only be challenged with *Hey, wait a minute*. Similarly, it is less acceptable to directly deny the modification of the main clause with the embedded *because*-clause in (34), as in (38a), whereas challenging it indirectly, as illustrated in (38b), is possible.

(38)   a. # Das stimmt nicht, wir haben das nicht getan, weil letzte Woche die Frage aufkam.
           That's not true, we have not done that because the question arose last week.
       b. Einen Moment mal, wir haben das nicht getan, weil die Frage letzte Woche
           aufkam, wir haben das getan, weil…
           *Hey, wait a minute, we have not done that because the question arose last week: we
           have done it because…*

Consider now the anti-backgrounding effect seen above for supplements. The denotation of NAI expressions is, by definition, discourse new (cf. (10)). Therefore, we expect NAI verb and sentence modifiers, like supplements, to have an anti-backgrounding effect. This property though cannot easily be tested, because these expressions are not conventionally NAI, but are only NAI *in certain contexts*. Therefore, in some contexts, they can be counted as given. We will see an example of a given modifier in section 6.

It would now be interesting to see whether modifiers that we identify as not at issue according to (10) and that pass the HWAM test share with supplements the projective behavior observed in the literature and reviewed in section 4. As for the property of being speaker-oriented, we said above that speaker-orientation is a sufficient condition – we expect such a speaker-oriented content to be NAI – but not a necessary one, namely we do not expect NAI material to always be speaker-oriented. Verb and sentence modifiers do not seem to scope over a propositional attitude verb like *believe*, though judgments are not very clear. In (39) and (41) the expressions *par son jeu d'observation* 'through her curiosity' and *weil letzte Woche die Frage auf kam* 'because the question arose just last week' seem to be part of the subject's (not the speaker's) beliefs (though judgments are not sharp), whereas the temporal clause *als wir SMA hatten* 'when we had the SMA here' in (40) shows speaker-orientation and is not part of the subject's (here, the reporter's) belief.

(39)   Les pédiatres croient erronément que l'enfant, par son jeu d'observation, constate que vous vous dirigez vers la cuisine. Or, ils se trompent: ce n'est pas par son jeu d'observation que l'enfant fait ça.
       Pediatricians wrongly believe that the child, through her curiosity, realizes that you direct towards the kitchen. But they are wrong: it's not by means of her curiosity that the child does that.

(40)   Der Reporter glaubt fälschlicherweise, dass, letzte Woche, als wir SMA hier hatten, darüber gesprochen wurde, dass es ein Entwicklungsprozess ist.
       The reporter wrongly believes that last week, when we had the SMA here, we talked

about the fact that it is a developing process: we did not talk about it when the SMA was here, but when the president arrived.

(41) Der Politiker glaubt fälschlicherweise, dass wir jetzt, weil letzte Woche die Frage auf kam, einen späteren Arbeitsschritt modellhaft vorgezogen habe. Aber das stimmt nicht, wir haben das nicht getan, weil letzte Woche die Frage aufkam.
The politician wrongly believes that now, because the question arose just last week, we have brought forward a later stage of work. Now he's wrong, we did not do it because the question arose just last week.

Since judgments are slippery, it can only be speculated here (and needs to be further investigated) whether certain modifiers, as for example those expressing a causal relation (cf. 39 and 41), are more closely tied to the main predicate such that they cannot express content that is independent enough from the main event to show projective behavior.

We now try to apply the Family of Sentences diagnostic to the French example.

(42) a. **Negation:** L'enfant, par son jeu d'observation, ne constate pas que vous vous dirigez vers la cuisine.
The child, through her curiosity, does not realize that you direct towards the kitchen.
b. **Question:** Est-ce que l'enfant, par son jeu d'observation, constate que vous vous dirigez vers la cuisine?
Does the child, through her curiosity, realize that you direct towards the kitchen?
c. **Conditional:** Si l'enfant, par son jeu d'observation, constate que vous vous dirigez vers la cuisine, alors ....
d. **Modal:** Il est possible que l'enfant, par son jeu d'observation, constate que vous vous dirigez vers la cuisine…
It is possible that the child, through her curiosity, realizes that you go towards the kitchen…

The results of these diagnostics illustrated in (42) are as puzzling as those of the speaker-orientation diagnostic. Both the embedding within a verb like *believe* and the embedding within the truth-conditional operators seem inadequate with this kind of expressions.

Before explaining the reason of this behavior, we would like to point out again that projectivity is not required for these expressions to be NAI according to (10). As mentioned above, the HWAM test is the only diagnostic that actually tests whether an expression is or is not at issue; the other diagnostics simply highlight the link between NAI content and another property, namely a certain projective power. But the properties of different types of content vary in this respect, as Tonhauser et al (2013)'s taxonomy well shows: in section 4, for instance, we recapitulated the differences between presuppositions and conventional implicatures, which are both NAI contents. An explicit claim that the link between NAI content and projection is a necessary one is made by Simons et al (2010). For them, the relation between NAI-ness and projection is a bidirectional one: projective content is NAI, and NAI content projects. We do not commit here to such a claim: while projective content is always NAI, we leave open the possibility that at least certain NAI expressions – in particular verb and sentence modifiers – may not project.

Going back to the very feasibility of the projectivity diagnostics, various problems must be pointed out. The first and perhaps main problem is that a verb/sentence modifier modifies an event. In this respect, verb/sentence modifiers differ from supplements such as appositives or

NRRCs, which are adjoined to a noun and therefore modify a referent.[10] When the utterance is embedded under an operator, the event is modified and the modifier may not have a reason of being any more, or it may be incongruent with the content of the new (complex) proposition. For instance, in (42), if the sentence is negated, the very reason of the presence of the modifier in the utterance is lost: the speaker is negating that the child does something and at the same time, she says that it is thanks to a certain curiosity of hers that she does that! The point of explaining by means of what attitude of hers the child does something is clearly lost if the utterance states that the child does *not* do that something.

A second problem with the projection diagnostics is that if the utterance is modified, it easily becomes incongruent in its context. Notice again that the diagnostics do not require that the sentence be in a context and indeed they have been usually applied to constructed context-less sentences. Yet, context is crucial to identify NAI material. Both in our and in previous definitions, (non-)at-issueness is defined on the basis of the QUD, and the formulation of the QUD is strictly dependent (both in our model and in previous ones, though in different ways) on the context. The problem of being forced to ignore the context in order to apply the projection diagnostics is even more severe for the new class of expressions we consider, which, unlike supplements, are NAI *only* in certain contexts and, in others, can be focused or background or contrastive topics, as we will illustrate in section 6. In conclusion, on the one hand, the property of being NAI depends on the formulation of the QUD and the formulation of the QUD strictly depends on the previous context; on the other hand, projection diagnostics are conceived for sentences out of context, and crucially they modify the sentence in a way that potentially makes it not suitable in the original context, if one is given.

To conclude, verb/sentence modifiers do not exhibit – or better, it is not clear, due to the nature of the diagnostics, whether they exhibit – projective behavior. However, they do share the property of being NAI (plus that of being discourse new) with contents that have been established as being projective (Tonhauser et al's class B). Since Tonhauser et al (2013) have shown that the classes of projective content they analyze – which is also NAI content – may exhibit very different properties, one possibility is thus that our modifiers belong to yet another class of NAI meanings.

6 Modifiers are part-time triggers of non-at-issue content

As we already mentioned, being not-at-issue seems the only possible condition for some expressions, such as phatic expressions or other expressions that are not part of the propositional content of the utterance. Evidentials, they are generally not at issue, but they may be at issue in some cases (cf. Simons 2007). As we said, we will leave the discussion on evidentials to future research. Supplements are NAI in all contexts. As for verb and sentence modifiers, they are only 'part time' NAI triggers and their focused or (contrastive) topic status is not at all exceptional in naturalistic data.

The fact that some expressions are (not) at issue depending on the context is not surprising, but rather expected under our definition (10). According to that definition, an expression is NAI if it is not needed to answer the QUD; therefore, its non-at-issueness will depend on how the QUD is formulated; but since the formulation of the QUD in turn depends on the *context* in which the assertion occurs (see section 2 and principles in (3)), then the non-at-issueness of the expression will also consequently depend on the context.

Cases where verb/sentence modifiers are NAI in the sense of (10) have been illustrated in section 5. In the two sub-sections below, the variability in the IS status of two kinds of modifiers will be illustrated, namely that of temporal/locative modifiers and that of conditional clauses.

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[10] Though other supplements, such as *as*-clauses or other parentheticals, also modify an event or have a less clear semantic status.

Note that when these expressions are at issue, we do not expect them to be optional anymore: indeed, they are obligatory when focused and when contrastively topicalized.

6.1   The variability of IS status of temporal and locative modifiers

Temporal and locative modifiers show an interesting variability in their IS status. In the languages we have worked on, different IS interpretations seem to be favored by the position in which the modifiers occur in the sentence, as well as by whether the expression modifies the verb or the whole sentence. An example of temporal clause which is NAI is given in (34): *als wir SMA hatten* 'when we had the SMA (here)'. The NAI status of that expression is uncontroversial, as we have seen in section 5. For other temporal expressions, the at-issue/non-at-issue distinction is less clear.

A thin line for example divides contrastive topics and NAI in some temporal expressions such as 'then', 'later', often used as so-called 'frame-setting' adverbials in narratives: are these contrastive topics of a set of times, or NAI expressions? In the German example (43), the adverb *dann* 'then' occurs in a context, where it is used to connect a series of parallel statements. Since in general, we analyze sentence connectives, such as 'and' or 'or', as being outside of the focus domain and thus as NAI material, the occurrence of *dann* 'then' in A_1 is here analyzed as NAI.

(43) [German, Stuttgart21]
    > A_0: Es folgen weitere Themen in darauffolgenden Sitzungen, ich spreche sie im
        Einzelnen an.
        further topics will follow in subsequent sessions, I address them in detail
    > Q_1: {What are the topics that we will work on?}
    > > $A_{1'}$: [Wir werden uns weiter beschäftigen [mit der Neubaustrecke Wendlingen
        Ulm.]$_F$]~
        We will continue to work on the new line Wendlingen-Ulm.
    > > $A_{1''}$: [**Dann**]$_{NAI}$ [[mit dem Kopfbahnhof 21,]$_F$]~ [also den Alternativen zu
        Stuttgart21.]$_{NAI}$
        ***Then** on the terminal station 21, that is the alternatives to Stuttgart 21,*
    > > $A_{1'''}$: [**Dann**]$_{NAI}$ [natürlich]$_{NAI}$ [die Kosten und Wirtschaftlichkeitsrechnung ist ein
        Komplex.]$_F$]~
        ***then** of course the complex issue of cost and profitability.*
    > > $A_{1''''}$: [**Dann**]$_{NAI}$ [wird es darum gehen, [Geologie, Sicherheit und Bauablauf
        darzustellen]$_F$]~
        ***Then** the next step will be to illustrate geology, safety and construction progress.*

Other temporal frame-setting adverbials are clearly analyzed as contrastive topics in our corpus. In (44), the two adverbs *zuerst* 'first of all' and *anschließend* 'next' are used as the two contrasting times of a set of times under discussion.

(44) [German, Stuttgart21]
    > Q_1: {What will you do when?}
    > > $Q_{1.1}$: {What will you do first?}
    > > > $A_{1.1}$: [Wir haben ja letzte Woche erfahren:]$_{NAI}$ [[**zuerst**]$_{CT}$ [definieren Sie, welche
        Gleise gebaut werden]$_F$, Herr Dr. Kefer,]~
        *We learned last week: **first** you define which tracks are to be built, Dr. Kefer,*
    > > $Q_{1.2}$: {What will you do next?}
    > > > $A_{1.2}$: und [[**anschließend**]$_{CT}$ [fangen Sie an, sich zu überlegen – [das Projekt läuft
        ja schon 15 Jahre]$_{NAI}$ – wie denn der Fahrplan aussehen soll.]$_F$]~

> *and **then** you start to think about – the project has been going on for 15*
> *years – what the timetable should look like*

A similar example is French (45). The two temporal expressions *la première semaine* 'the first week' and *dès qu'on a emménagé* 'after we moved' are clearly contrasted, since two opposed events take place at each of these times. Each temporal expression is contained in a partial answer to Q_{13}. It is important to note that since they are contrastive topics, these expressions cannot be omitted. Indeed, if they were, the contrast between $A_{13.1}$ and $A_{13.2}$ would be lost, as well the meaning of the second assertion (*ça allait* 'it was ok').

(45) [French, CFPP2000]
    Alors j'suis rentrée ouais j'suis [bien]$_F$ rentrée à l'école euh au niveau d'la rentrée scolaire en septembre en CE1 oui (…)
    So I started school at the beginning of the year, in September, in first grade, yes…
    > Q_{13}: {What happened, at that time, concerning your going to school?}
    > > $Q_{13.1}$: {What happened during the first week?}
    > > > $A_{13.1}$: en fait les premiers… la [j'crois]$_{NAI}$ [qu'[**la première semaine**]$_{CT}$ [mes parents m'emmenaient]$_F$ à l'école]~ (…)
        *Well, the first... I think **the first week** my parents brought me to school*
    > > $Q_{13.2}$: {What happened after you moved?}
    > > > $A_{13.2}$: et après [[**dès qu'on a emménagé**]$_{CT}$ euh bah [ça allait]$_F$]~
        *and then, **after we moved**, ehm well, it was ok*

In her article on locative modifiers, Maienborn (2001) discusses 'frame-setting' locative modifiers like *in Argentina* in (46a), and argues that they display inferential behavior, namely that they "restrict the speaker's claim", so that "their omission does not necessarily preserve truth", as shown in (46b) (Maienborn 2001: 194).

(46) a. In Argentina, Eva still is very popular.
    b. In Argentina, Eva still is very popular. =/=> Eva still is very popular.

If the omission of an expression causes a potential change in truth conditions, we expect such an expression to be at issue. An assertion is a commitment to some truth; since NAI material is not part of the main assertion, it should not affect the truth of the assertion and its omission should be without consequences for the way the utterance answers its implicit QUD. Depending on the preceding context, a modifier like the one in (46) then will be part of the answer to either of the following questions: *What happens in Argentina?* (the modifier is then a topic); *What about Eva (in general)?* followed by sub-questions on specific places related to Eva, among which *What about Eva in Argentina?* (the modifier is then a contrastive topic); or, even, *Where is Eva popular?* (the modifier is then the sentence focus). The question will never be, however, *What about Eva?* without any sub-questions about places related to Eva. Indeed, if the answer to this question is (46a), and if (46a) means that Eva's popularity holds for Argentina but not necessarily for other places, then the actual question this sentence answers is *What about Eva in Argentina?*. In other words, a contrastive topic interpretation is obligatorily inferred, and a NAI interpretation excluded. The sentence initial position of these 'frame-setting' modifiers might be responsible for such a pragmatic behavior (see also Charolles 2003, who studies sentence initial, temporal or locative modifiers in French). However, more investigation is needed to evaluate whether sentence initial temporal or locative modifiers can ever be NAI. We leave such analysis to further research.

If we now consider modifiers that are sentence final, a focus interpretation is, depending on the context, a natural one next to the NAI interpretation. Two examples of focused modifiers are

given in (47), in $A_{9'}$ and in $A_{9''}$. They constitute the only parts of the utterance providing an answer to Q_9, so they are unambiguously focused (in $A_{9''}$, to be precise, the preposition alone is in focus). Assuming that every sentence needs a focus, these modifiers cannot be omitted.

(47) [English, SNO]
> A_8: [[The public had a right to know]$_F$ about [these programs]$_T$.]~
> Q_9: {The public had a right to know that which the government is doing in
        WHAT manner with respect to the public?}
>> $A_{9'}$: [[The public]$_T$ had a right to know that which the government is doing
        [in]$_F$ [its]$_T$ [name]$_F$,]~
>> $A_{9''}$: and [that which the government is doing [**against**]$_F$ **the public**],~

Another example of focused PP modifier –a locative one – is in (48), which is taken from the Stuttgart SFB732 Silver Standard Collection (Eckart and Gärtner 2016), a corpus made of German radio interviews from the SWR2 public radio. The PP *in jedem Winkel unseres Landes* 'in every corner of our country' is the only part of the utterance that answers the question, so there is no ambiguity with respect to its informational role.

(48)   [German, SWR]
> A_{47}: Wir haben in der Hospizversorgung in den letzten Jahren gewaltige Fortschritte
        erreicht,
        We have made tremendous progress concerning the availability of hospices
> $Q_{48:}$: {What is the current level of coverage?}
>> A_{48}: [[wir]$_T$ haben aber [noch nicht genug]$_F$.]~
        but we do not have enough of them yet
>> Q_{49}: {Where do we need hospice facilities?}
>>> A_{49}: [[Wir]$_T$ brauchen [diese Versorgung]$_T$ [**in jedem Winkel unseres Landes**]$_F$.]~
        We need these facilities in every corner of our country

This locative modifier above exemplifies one of the other two types of locative modifiers discussed by Maienborn (2001), which are postverbal and respectively modify the VP (see (50a)) and the verb (see (50b)).

(49)   a. Eva signed the contract **in Argentina**.
       b. Eva signed the contract **on the last page**.

As Maienborn shows, these modifiers do not display inferential behavior, so we expect them to be NAI depending on the context, namely to be part-time NAI triggers. Instances of these modifiers with a NAI interpretation are found in our corpus. Two examples are *in America* and *in Germany and in Brazil* in (50) below. The information provided by these expressions is additional with respect to the question about the fear that nothing will change. $A_{16.2}$ already fully answers that question, saying that this fear is unmotivated now, because there is a discussion about the situation with the NSA. The contrasting information with respect to $A_{16.1}$ is already given, and $A_{17'}$ and $A_{17''}$ just add some specifications about the extension of the discussion. Note that, since we assume that NAI material answers its own QUD, and since these NAI modifiers are in sentence final position, the QUD they answer (Q_{17}) can be inserted in the tree as a sub-question of the QUD that they do *not* answer, namely $Q_{16.2}$. This explains why they are marked as focused in the annotation. We will say more about this procedure in section 7.

(50)   [English, SNO]
> A_{15}: "The greatest fear I have", and I quote you, "regarding the disclosures is

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nothing will change."
> Q_{16}: {What about this fear?}
> > $Q_{16.1}$: {How was this fear that nothing will change, at the time you said that?}
> > > $A_{16.1}$: [[That]$_T$ was [one of your greatest concerns]$_F$ [at the time]$_{CT}$]
> > $Q_{16.2}$: {How is this fear that nothing will change, in the meantime?}
> > > $A_{16.2}$: but [[in the meantime]$_{CT}$ [there is a vivid discussion about the situation with the NSA]$_F$]~ ,
> > > Q_{17}: {Where?}
> > > > $A_{17'}$: [[not only **in America**]$_F$]~>
> > > > $A_{17''}$: [[but also **in Germany and in Brazil**]$_F$]~ ;

The modifiers in (50) can be contrasted with the German ones in (51). Here, the locative prepositional phrases *in Teeküchen* 'in staff kitchens' and *am Heimarbeitsplatz* 'in home workplaces' are a crucial part of the answer to Q_1. $A_{1'}$ and $A_{1''}$ are parallel answers, therefore the shared verb (which is elided in the second assertion, see the crossed-out part in $A_{1''}$) is background material (cf. PARALLELISM in (3)), and the foci are *Fenster in Teeküchen* 'windows in staff kitchens' and *die Helligkeit am Heimarbeitsplatz* 'the brightness in home workplaces' respectively. There is no doubt that the locative expressions *in Teeküchen* and *am Heimarbeitsplatz* are part of the focus, since the relevant information here is not just that more light will be prescribed, but that it will even be prescribed in staff kitchens and in home workplaces. Note also that 'windows' and 'brightness' almost have the same meaning here, since windows are prescribed in order for the employees to have more light when they work; therefore, the place in which more light is prescribed is crucial for each focus to be informative.

(51) [German, SWR]
   > A_0: Ein anderes Projekt, bei dem die Arbeitgeber Sie mit dem Bürokratievorwurf überziehen, ist die Arbeitsstättenverordnung.
   Another project for which employers are accusing you of bureaucratisation is the workplace regulation bill.
   > Q_1: {What will be prescribed by this bill?}
   > > $A_{1'}$: [Da$_T$ sollen [Fenster **in Teeküchen**]$_F$ vorgeschrieben werden]~
   *There (in the bill) they are going to prescribe having windows **in staff kitchens***
   > > $A_{1''}$: oder auch [[die Helligkeit **am Heimarbeitsplatz**]$_F$ ~~soll vorgeschrieben werden~~]~.
   *as well as ~~they are going to prescribe~~ the brightness **at home workplaces**.*

The acute syntax observer might remark that *in Teeküchen* 'in staff kitchens' is perhaps not an adjunct of the verb 'be prescribed', but must be analyzed as either a complement of the Noun *Fenster*, or part of a small clause *Fenster in Teeküchen* 'windows in staff kitchens', which is complement of 'prescribe'.[11] In both cases, the expression would not have a syntactically optional (adjunct-like) status. This observation gives us the opportunity to comment a little more on the relationship between syntax and discourse with respect to (N)AI expressions. One might argue that the PP in this example is not an adjunct precisely because it is at issue; or, vice versa, that it is at issue precisely because it is not a syntactic adjunct. Such a perspective would be one that takes the syntax-discourse mapping seriously and tries to find the exact syntactic correspondent for every pragmatic phenomenon. In the particular case of (non-)at-issue material, the adjunct-like status would correspond to the NAI status. Supplements (parentheticals, appositions, etc...) all seem to conform to such a strict mapping: they are all syntactically optional and are always not

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[11] The same can be said for *am Heimarbeitsplatz* 'at home workplaces'.

at issue. The point of the present paper, however, is to show that the mapping is not strict for *all* (N)AI material. Verb and sentence modifiers are syntactically optional, but they are less constrained with respect to their pragmatic status: the examples of the present section are precisely cases in which these expressions *are* at issue. Rather than a strict mapping, what we observe then is a *tendency* – for at-issue expressions not to be adjuncts, namely, not to be syntactically optional and vice versa for NAI expressions to be syntactically, other than pragmatically, optional, namely to be adjunct-like elements. In other words, the focused or (contrastively) topicalized modifiers exemplified in this section would be less 'canonical' or more 'marked' than NAI modifiers, in that they display an unexpected mismatch between a syntactically optional status and a pragmatically obligatory one.

To conclude on temporal/locative modifiers, the example in (52) shows a case in which they are background material. The temporal clause *while studying here* is given in this context: both the fact that Obama's father was studying and the place where he was studying are already introduced in A_{10}.

(52)　[English, OBAMA]
　　> A_{10} Through hard work and perseverance my father got a scholarship to study in a magical place,
　　> Q_{11}: {What place was that?}
　　> > A_{11}: [[America,]$_F$]~
　　> Q_{12}: {What about that place?}
　　> > A_{12}: [[that]$_T$ [shone as a beacon of freedom and opportunity]$_F$]~
　　> > Q_{13}: {To whom did it shine as a beacon of freedom and opportunity?}
　　> > > A_{13}: [[to so many who had come before]$_F$]~.
　　> Q_{14}: {What happened to Obama's father in that place?}
　　> > A_{14}: **[[While studying here]$_{NAI}$,** [my father]$_T$ [met my mother]$_F$.]~

In conclusion, temporal and locative adverbials do not seem to belong to a fixed class of elements with a certain pragmatic function, but depending on the context, can function as contrastive topic, focus, background, or occur as NAI material.

6.2　The variability of IS status of conditionals

Another interesting case where we see variation in the IS status of the modifier depending on the context is conditionals. As we already briefly mentioned in RBK, a *hypothetical* conditional clause such as the one in A_0 in (53) from RBK is typically analyzed as a contrastive topic. In this example, the idea of the Stuttgart train station being unhitched from long-distance connections is contrasted with the idea of the Kassel train station being so unhitched.

(53)　　[German, Stuttgart21]
　　> A_0: Wenn die Deutsche Bahn auf die Idee kommt, solche Bahnhöfe vom Fernverkehr abzuhängen, kann sie zumachen. (...)
　　　　If the German railway company tries to unhitch such train stations from long-distance connections, then they can close down.
　　> Q_1: {For which cities does it make sense to unhitch the main station?}
　　> > $Q_{1.1}$: {Does it make sense in Kassel to unhitch the main station?}
　　> > > $A_{1.1}$: [Wenn sie in [Kassel]$_{CT}$ den Hauptbahnhof abhängen, dann ist das [richtig]$_F$]~.
　　　　If you unhitch the main station [in Kassel]$_{CT}$ then that makes sense.
　　> > $Q_{1.2}$: {Does it make sense in Stuttgart to unhitch the main station?}
　　> > > $A_{1.2}$: [Wenn sie es in [Stuttgart]$_{CT}$ machen, ist es [falsch]$_F$]~.
　　　　If you unhitch the main station [in Stuttgart]$_{CT}$ then that doesn't make sense.

Hypothetical conditionals, by the fact of always presenting a choice, are indeed always cases of contrast. Such a contrast can be thematic, as we have seen in (53), but it can also be rhematic, namely the conditional is in focus. This is shown in the example below, from the Snowden interview. Note that the focus particle *even* is associated with the conditional.

(54) [English, SNO]
> A_2: **[**Every time you pick up the phone, dial a number, write an email, make a
purchase, travel on the bus carrying a cell phone, swipe a card somewhere,$]_{NAI}$
[you [leave a trace]$_F$] ~
> Q_3: {What about these traces?}
>> A_3: and [[the government has decided that it's a good idea to collect]$_F$ [it]$_T$ all]$_F$]~,
[…]
>> Q_4: {In what circumstances can the government collect these data?}
>>> A_4: even [[if you've never been suspected of any crime]$_F$] ~ .

Another example of rhematic hypothetical conditional is the French corpus example below, taken from Corminboeuf (2014:5), who precisely discusses cases of focused conditionals in French. The conditional is clefted in this example, and therefore it is clearly in focus.

(55) [French, Corminboef 2014]
On ira   *si* je veux, gueula la mère, c'est *si* je le veux seulement qu'on ira !
"We'll go if I want to", cried the mother, "It's only if I want to, that we'll go!"

Nevertheless, when hypothetical conditionals occur neither at the beginning nor at the end, but inside the main clause, the more natural interpretation is a NAI one. An example illustrating this is (56).

(56) [German, Stuttgart 21]
> A_9: …, der Kopfbahnhof hat 16 Bahnsteiggleise,
the terminal station has 16 platform tracks,
> Q_{10}: {What can you do at these 16 platforms?}
>> $A_{10'}$: und [an diese 16 Bahnsteiggleisen]$_T$ können eben, [**wenn Sie keine
Doppelbelegung machen wollen, das wäre mir neu,**]$_{NAI}$ können [Sie maximal
16 Züge gleichzeitig abstellen]$_F$
*and on these 16 platform tracks, **even if you don't want to make a double
occupancy, that would be new to me**, you can park a maximum of 16 trains at
the same time*
>> $A_{10''}$: und dann [zwischen diesen]$_T$ [umsteigen]$_F$.
and then switch trains between them.

In this case, the conditional *wenn Sie keine Doppelbelegung machen wollen* 'if you don't want to do a double occupancy' only provides additional information and is thus not part of the answer to the current QUD. The conditional basically behaves as a parenthetical, hence its NAI status.

   In RBK, hypothetical conditionals were compared with relevance conditionals, which were taken not to be at issue. Indeed, the information provided by the relevance conditional is new, but it does not answer the current QUD, which is answered by the main clause alone. Example (57) illustrates a case of relevance conditional from our German data.

(57) [German, Stuttgart 21]
> A_1 : Fest steht, dass wir in der Planfeststellung auf alle Fälle dort das zweite Gleis mit

> vorsehen und
>> *What is certain is that in the plan approval we will definitely include the second track there and*
> Q_2 : {What can the speaker do with respect to this fact ?}
>> A_2 : [ich]$_T$ darf Ihnen [zwei Beispiele[12] nennen]$_F$,
>>>> *I can give you two examples*,
>> Q_3 : {Under which circumstances ?}
>>> A_3: [**falls der Vorwurf kommt "warum baut Ihr sowas denn nicht gleich?"**]$_F$,
>>>>> ***if the accusation comes up "why don't you build something like this right away?"***.

Since *falls der Vorwurf kommt…* 'if the accusation arises…' occurs at the end of the clause, we can introduce a separate QUD for this subordinate clause, as we have already seen for NAI expressions in (51). Therefore, the (NAI) conditional is annotated as focused in A_3. This procedure is motivated and explained in the following section, where we discuss the place of NAI material in the QUD structure that arises from our QUD annotation procedure.

7   The place of NAI material in the QUD structure

What is the place of NAI expressions in the QUD tree as it is proposed in RBK (see figure 1)? We argue that a NAI expression is in itself an answer to an implicit question. Such a question is *not* the current QUD, the one answered by the utterance hosting the NAI expression: it is, however, related to the current QUD in that it is anaphorically dependent on some part of it.[13] Consider again some of the examples seen above. In (13), the apposition *James Clapper* is the answer to a question like 'Who is the Director of National Intelligence?' which is anaphorically related to the host assertion, because the Director of National Intelligence is mentioned there. Assuming that the antecedent on whose basis the QUD is construed is the host assertion, then the QUD is built in accordance to the principles stated in (3) in section 2. In (15), the NAI *as*-clause answers a question of the type: *Who told you that (namely that you were in the right salary range)?* or '*By means of what source of information do you say that (that you were in the right salary range)?*, depending on whether the verb 'to say' is considered as given or not. Both possible questions are, again, anaphorically related to the assertion stating that they were in the right range of salary. Both questions are also built in accordance to the QUD-principles: the fact that they were in the right salary range is mentioned in the host assertion.[14] In the German example in (34), the NAI temporal subordinate clause answers the question *In what occasion precisely (did you talk about the fact that it is a developing process, last week)?*, where once more, every part of the QUD is mentioned in the host assertion.

The idea that the QUD triggered by the NAI expression and the host assertion are related is also present in Onea (2016). Onea takes into account supplements (in particular appositives and NRRCs), and proposes that the proposition conveyed by such expressions is headed by a special 'supplement-assertion' operator, which demands that the supplement answers a question raised by the host assertion. Our position is basically the same, though we do not think it necessary to state

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[12] *Zwei Beispiele* 'two examples' refers to the examples of train stations where a second track is part of the plan approval, but will not be built right away, something that is being done in the planning of other train stations as well. Also the pronoun *sowas* 'something like this' in A_3 refers to this second track.

[13] The formulation of such a question is more difficult with evidentials, phatic expressions, etc. With evidentials, for instance, the question will be about the speaker's level of commitment to the truth of or her/his attitude towards the proposition.

[14] The antecedent of the material contained in the QUD is here mentioned *after* the NAI expression is uttered. That is indeed something which only occurs with NAI expressions and which makes their QUDs different from the other QUDs.

the existence of a special operator. The fact that NAI material is syntactically (and semantically) dependent on the host assertion is a sufficient reason to justify that its QUD is anaphorically related to the hosting assertion. The special supplement-assertion operator is also proposed by Onea to explain the fact that the assertion expressed by the sentence-internal supplement cannot be the attachment site to build subsequent discourse, nor can be confirmed or denied directly by the interlocutor. Again, in our approach we do not need a special operator for such a constraint: the constraint is simply a result of the way our QUD tree is built. Where could the QUD of an assertion-internal NAI expression be inserted in our discourse tree?

Recall that the terminal nodes of our discourse tree represent complete assertions, and that the order of terminal nodes corresponds to the linear order of the assertions in the text (cf. Figure 1). For the treatment of sentence-internal NAI material as a separate assertion, we would have to break up that linear textual order and insert the assertion and its QUD before or after the hosting one (as proposed in Riester forthcoming). But by treating sentence-internal NAI material this way, we would loose an important property of our discourse trees; following common assumptions in discourse semantics, the only material that is accessible to anaphoric retrieval is material at the right frontier (Polanyi, 1985, Asher 1993, Asher and Lascarides 2003), therefore a QUD can always only attach to the right of the preceding assertion (that is, directly right to the preceding assertion or as high as necessary to still ensure discourse coherence). By adding sentence-internal NAI material to the right of the hosting assertion, such material would, incorrectly, be available as an attachment site for the subsequent discourse. Furthermore, as we already said, the correspondence between the order of terminal nodes and that of the assertions in the text, now present in our QUD tree, would be lost. The conclusion is that our QUD tree can only allow for the insertion of nodes for NAI expressions occurring at the very beginning or at the very end of an assertion. Examples of the two kinds are illustrated below.

Consider first a case where the NAI expression precedes the assertion. In (14), repeated below as (58), the apposition *infirmière* 'a nurse' preceding the whole sentence answers its own QUD, Q_3, which is subordinated to Q_2. The host assertion, A_2, then answers Q_2 and is therefore directly attached to Q_2. The resulting tree for the relevant part is given in Figure 3.

(58) [French blog]

    Q_0: Connaissez vous la langue des signes avec les bébés ? [Blog title]
        Do you know the sign language with babies?
    > Q_1: {What about the relationship between Natalie and the blogger?}
    >> A_1: [[Nathalie]$_T$, (…) [nous]$_T$ [a été présentée par une maman blogueuse.]$_F$]~
        Nathalie (...) has been introduced to us by a blogger mom
    >> Q_2: {What about the relationship between Natalie and sign language with babies?}
    >>> Q_3: {Who is Nathalie?}
    >>>> A_3: [Infirmière,]$_F$
        A nurse,
    >>>A_2: [[elle]$_T$ [a découvert le principe d'associer signes et parole avec sa fille aînée]$_F$]~
        she discovered the coupling of sign and speech with her eldest daughter

Figure 3. Tree corresponding to a part of example (56)

Given such a tree, we predict A_3 to be the place for further attachment. Indeed, the speaker might have continued after *infirmière* 'a nurse' with further statements such as 'though not happy with her job' or 'in the same hospital since 2003', etc. Yet, it is obvious that this branch cannot be prolonged for too long, because the apposition is syntactically dependent on the main sentence, which has not been uttered yet.

Consider now example (59) below, whose analysis shows interesting similarities with (58). The tree corresponding to (59) has exactly the same shape as that in Figure 3. A_{14} does not answer the explicit question Q_{13}, but makes a side comment on that question (the speaker is not sure to be able to answer the question). By uttering A_{14}, the speaker answers a different question, namely Q_{14}, and then goes back to Q_{13} and answers it with A_{13}, which is therefore directly attached to Q_{13}. The difference from the previous example is just that A_{14} is an independent clause, syntactically unrelated to A_{13}. Like in the previous example, A_{14} could be the place for further attachment, for instance the speaker might have continued with an assertion like 'I am happy to answer it', or the interlocutor might have asked 'Why do you say it is an excellent question?' etc. Not even in this example, however, despite the syntactic independence of A_{14}, do we expect that branch to continue for very long, because the *explicit* question Q_{13} has not been answered yet. To continue the parallelism with the previous example, notice finally that A_{14} could be viewed as additional (NAI) material with respect to Q_{13}.[15]

(59) [French, CFPP2000]
> $> Q_{13}$: vous aviez quel âge?
>   *How old were you?*
>   **$> > Q_{14}$: {What about this question?}**
> $> > > A_{14}$: alors [[ça]$_T$ [c'est une excellente question]$_F$]~
>   *well that is an excellent questio*n
> $> > A_{13}$: [j]$_T$ ['devais avoir]$_{NAI}$ [dans les six ans]$_F$ [j'pense]$_{NAI}$]~
>   *I must have been about six I think*

The other case where NAI expressions represent a node in the tree (and their QUD is included in the tree too) is when they are sentence final. Not surprisingly, NAI material in sentence final position has been claimed in the literature to be at issue in some cases: see for example AnderBois et al (2010) and by Syrett and Koev (2015) on NRRCs, the latter work providing experimental evidence for this phenomenon. Examples of sentence-final NAI expressions from our corpus are the NAI modifiers *In America* and *In Germany and in Brazil* in (50), as well as the NAI relevance conditional in (57). Another example is given below in (60). The QUD answered by the main assertion is Q_8: *What did these people tell the reporter that they wanted to do (to Snowden)?* $A_{8'}$, $A_{8''}$ and $A_{8'''}$ all answer such a question: these people told the reporter that they wanted to murder Snowden. The fact that they wanted to murder him *as he was returning from the grocery store* is not relevant to the question, and seems rather to answer a more specific question about the circumstances for such a murder (cf. Q_9). Since the *when*-clause is at the end of the utterance, we are allowed to make it an independent assertion (A_9) and to include its question (Q_9) in the tree shown in figure 4. The case of A_{10} is less clear, because it is less clear whether A_8^{iv} can be accepted as an answer to Q_8 by itself (whether its content is informative enough). If one opts for the conclusion that its content is not enough to answer Q_8, *in the shower* will then not be a separated assertion but part of A_8^{iv}, so it will not answer any question of its own.

(60) [English, SNO]

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[15] Another example of sentential NAI material is the epistemic modal *Wir haben ja letzte Woche erfahren* 'We learned last week' in (44).

There was [an article that came out in an online outlet called Buzz Feed, where they interviewed officials from the Pentagon, from the National Security Agency, and they gave them anonymity to be able to say what they want

$>$ Q_8:   {What did these people tell the reporter that they wanted to do with Snowden?}

$>$ $>$ A_8': and [what [they]$_T$ told the reporter was that [they]$_T$ wanted [to murder]$_F$ [me]T]~

$>$ $>$ A_8'' [[These individuals]$_T$ [– and these are acting government officials –]$_{NAI}$ [they]$_T$ said [they]$_T$ would be happy, they would love [to put a bullet in]$_F$ [my]$_T$ [head]$_F$]~,

$>$ $>$ A_8''': [[to poison]$_F$ [me]$_T$]~

$>$ $>$ Q_9: {When would they want to poison Snowden?}

$>$ $>$ $>$ A_9: [as [I]$_T$ [was returning from the grocery store]$_F$]~

$>$ $>$ A_8^{iv}: and [have [me]$_T$ [die]$_F$]~

$>$ $>$ Q_{10}: {Where would they have him die?}

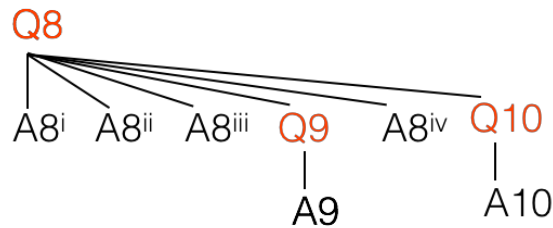$>$ $>$ $>$ A_{10}: [[in the shower]$_F$]~

Figure 4. Tree corresponding to (60).

8   Conclusions

RBK's model of QUD and information structure annotation in naturalistic data is based on principles which impose that the QUD be congruent with its answer, be made of as much given material as possible, and be not made of discourse new material (with the exception of parallel assertions). In the present paper, on the basis of such QUD and IS annotation of naturalistic data in French, German, and English, we have singled out certain linguistic material as not addressing the current QUD and therefore as not being at issue, where NAI (not implicit) content has been defined as linguistic material whose denotation is discourse new and which is optional with respect to the current QUD. NAI material, so defined, belongs to different classes, all such that they naturally do not answer the current QUD: elements outside the propositional content of the utterance such as phatic expressions, markers of discourse relations, etc.; comments or expressions of the speaker's attitude on the propositional content of the utterance, such as evidentials or expressives; propositions that are independent from the main proposition expressed by the utterance (supplements such as appositives, NRRCs, parentheticals…); and finally, expressions that provide peripheral information about the event, such as verb and sentence modifiers. In the present paper, we only analyzed the last two classes, namely supplements and verb/sentence modifiers. For supplements, we just confirmed by means of our naturalistic corpus data what was previously claimed in the literature on the basis of constructed examples. For verb/sentence modifiers we argued that they are 'part-time' NAI triggers, namely that they are NAI only in some contexts, while in others, they can be focused or backgrounded or be contrastive topics. The property of being 'part-time' NAI triggers is presumably shared with evidentials, though for reasons of space, we chose not to analyze that class in the present paper. Among verb/sentence modifiers, we took a closer look at temporal/locative expressions and at conditional clauses, two sets of expressions that rather systematically alternate between being at issue and being contrastive topics.

Concerning the status of NAI material inside the QUD-tree derived by our annotation procedure, we claimed that NAI material does not usually have a place in such a tree, because structurally embedded in the main assertion. In sentence initial and in sentence final position, however, a NAI expression becomes independent from the main assertion and answers its own QUD, represented in the tree.

As an end note, we would like to point out that, since our QUD annotation procedure is cross-linguistically applicable, and our NAI definition does not refer to any language specific properties, this work opens up the possibility to study NAI phenomena across typologically different languages (cf. Riester and Shiohara 2018, Latrouite and Riester 2018 for a first attempt in this direction). We leave such a research of larger scope to future research.

Acknowledgements

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