**Chapter 7**

**Clauses in Functions other than as Predicates of Modal and Attitudinal Objects**

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Not all clauses have the function of being predicates attributing satisfaction conditions to the attitudinal object described by the embedding predicate. There are *that-*clauses (or rather functions of *that-*clauses) for which this is implausible both syntactically and semantically. These are clauses that have nominal status (in a sense to be made precise) and thus can be called ‘nominal clauses’. Despite their nominal status, such clauses differ from referential DPs in their syntactic and semantic behavior.

 Nominal clauses serve to denote objects that act as (internal) arguments of the embedding predicate. More precisely, given the focus on complex attitude reports on my approach, they will be internal arguments of the noun in an overt or underlying complex attitudinal predicate. I will argue that there are three such objects nominal clauses may denote: facts, state of affairs, or what I call ‘generic thin assertions’, roughly agent-independent assertions without a phatic component. All three types of objects fall under the category of satisfiables. In particular, facts and states can naturally be conceived as modal objects. Facts and states of affairs do not, intuitively, have truth or satisfaction conditions, but they have realization conditions, with concrete situations acting as their realizers. A particularly strong argument to construe facts and states of affairs as modal objects is that like all modal objects, they display a part structure based on partial content, rather than temporal inclusion. As modal objects facts and states of affairs will be distinct from (concrete) actual or possible situations, and they are suited to play the various roles traditionally attributed to them in philosophy and semantics.

 This chapter will also discuss cases where clausal complements have the apparent function of standing for truthmakers, namely with verbs of occurrence such as *happen* and *occur*. I will argue that verbs of occurrence do not involve a distinct semantics, but rather take nominal clauses that stand for states of affairs. Also nouns of occurrence (e.g. English *case*) can stand for situations in their role of truthmakers of clausal modifiers, though there are interesting language-particular differences between English, German, and Russian regarding the ability of nouns acting in that role.

 This chapter will also discuss what I call ‘topic-related locutionary verbs’, verbs like *explain* and *criticize* well as *comment* and *remark.* What is peculiar about those verbs is that they do not permit a replacement a non-nominal clausal complement by a DP (*something, that, what*). I will argue that this has to do with the fact that those verbs involve an explicit or implicit topic argument (fact or state of affairs).

 The chapter will start with the ontology of facts, states of affairs, and thin generic assertions and the nominal clauses standing for them. Then it will turn to the semantics of verbs of occurrence and topic-related locutionary verbs.

**1. Facts as modal objects**

**1.1. Linguistic motivations for facts as denotations of *that*-clauses**

Factive verbs like *acknowledge*, *know*, *regret* and *realize* differ from basic attitude verbs like *claim* and *think* in the semantic role of their complement clause. With factive verbs the complement clause does not serve as a predicate of an attitudinal object described by the predicate; rather it stands for an entity, a fact, that will be an internal argument of the embedding predicate. There are several motivations for that view.

 First, the objects denoted by factive verbs generally do not have truth or satisfaction conditions. Rather they generally are emotive and epistemic states directed towards facts described by the clausal complement. Nominalizations of factive attitude verbs resist satisfaction predicates of any sort:

(1) a. ??? John’s acknowledgment that he was late was true / correct / satisfied.

 b. ??? The realization that it project was manageable was true / correct / fulfilled.

The clausal complement of factive predicates rather serves to describe facts, which form the objects of the attitude in question, not their content.

 Second, nominalizations of factive verbs generally show diagnostics for a clause being a complement rather than having predicative status. They generally disallow displacement in specificational sentences:

(2) a. ??? John’s happiness is that he passed the exam.

 b. ??? The predictability was that John passed the exam.

In specificational sentences, the postcopula clause gives the content of the entity denoted by subject (Higgins 1979, Moulton 2006).[[1]](#footnote-1)

 Furthermore, nominalizations of factive verbs generally permit *of*-phrases instead of a clause providing a fact or related object as internal argument:

(3) a. Joe’s acknowledgment that he is guilty

 b. Joe’s acknowledgment of his guilt

(4) a. Marys’s knowledge that the world his round

 b. Mary’s knowledge of that

 Nominalizations of factive adjectives give further evidence that factive clauses do not act as predicates of content bearers described by the predicate. Nominalizations of factive adjectives denote particular qualities of agents regarding a fact, as in (5a), or else a quality of a fact, as in (5b):

(5) a. John’s happiness that Mary sold her art collection

 b. the predictability that John would pass the exam

 There is a further, semantic diagnostics for factive clauses providing an internal argument of the embedding predicate and that is the reading of *partly*. Ordinary transitive verbs permit a reading of *partly* or *in part* on which it relates to the part structure of the object argument:

(6) John partly ate the cake.

Factive verbs are just like transitive verbs, allowing for a reading of *partly* on which it relates to a fact by picking out partial content:

(7) a. John partly realized that the students failed the exam.

 b. John partly regrets that that it rained on those days.

 c. John is partly happy that Mary sold her art collection.

(7a) can have the reading on which John realized for some of the students that they failed the exam, and (7b) that he regrets for some of those days that it rained then. (7c) can be true if John is happy about a certain part of the collection having been sold.

 Also factive predicates with subject clauses allow for the relevant reading of *partly*:

 (8) a. That the collection was sold was partly predictable

 b. That John solved the problem is partly surprising.

By contrast, basic attitude verbs do not permit a reading of *partly* relating to the parts (partial contents) of the described attitudinal object:

(9) a. ??? John partly thinks that the students failed the exam.

 b. ??? John partly claims that it rained on those days.

That’s because clausal complements of basic attitude verbs do not provide internal arguments of a basic attitude verb. Both factive verbs and transitive verbs take objects described by the complement as arguments, but not so basic attitude verbs.

 The understanding of adverbials like *partly* with factive predicates also shows that facts are entities whose part structure is based on partial content rather than temporal parts or relations of constituenthood, the sort of part relation that would apply to situations conceived as structured complexes.

**1.2. The ontology of facts as modal objects**

Attitudinal-objects semantics can be extended to factive verbs if factive clauses denote facts as modal objects. Factive clauses then denote facts by providing their content in a particular way. How can facts be understood as modal objects whose content can be given by *that*-clauses ?

 First of all a few words are required concerning the notion of a fact as such. The relevant notion of a fact is not that of a situation, a truthmaker of a sentence (a situation). This would be a notion of a worldly, fully specific fact in the sense of Austin (1979). Rather the relevant notion of a fact is that of an entity corresponding to a true sentence, the notion of a worldly fact (Strawson 1950).[[2]](#footnote-2) This is the same notion of a fact that explicit fact descriptions of the form *the fact that* S refer to. A non-worldly fact need not be fully specific. It can be constituted by a nonspecific property (‘the fact that the book is old’); it can be quantificational (‘the fact that someone is in the room’, which is a single fact regardless of how many people are in the room); and it can be disjunctive (‘the fact that Mary or John failed the exam’, which is a single fact even if both Mary and John failed the exam). In these respects non-worldly facts differ from worldly facts or actual situations, which can play the role of truthmakers.[[3]](#footnote-3)

 There are not many proposals in the literature of how to conceive of non-wordly facts. One proposal was mentioned in relation Jaegwon Kim’s account of events in Chapter 2 5Section 4.3.). On a ‘Kimean’ account of facts, a (simple) fact is obtained from an individual, a property, and a time and subject to an existence condition (the fact exists in case the individual has the property at the time), and an identity condition (two simple facts are identical if and only if they are obtained from the same individuals, properties, and times). However, this notion of a non-worldly fact is unsuited for the notion reflected in natural language, since it fails to display a part structure based on partial content.

 Non-worldly facts can naturally be conceived as satisfiable objects. Facts are not attitudinal objects, of course, since facts are not cognitive content bearers. But non-worldly facts can be conceived as modal objects come with a part structure ordered by partial content. Unlike facts, modal objects, like all satisfiables, come with satisfaction conditions, though. Non-worldly facts do not, intuitively, have truthmaking or satisfaction conditions. However, they arguably have realization conditions: they are realized by the situations in virtue of which the non-worldly fact obtains or could obtain, namely situations in virtue of which the fact exists. These situations are also the actual truthmakers of the fact-introducing clause.

 This then motivates the following construal of non-worldly facts as modal objects when they are introduced by a sentence S. ‘The fact that S’ is a modal object satisfying two conditions: first, its satisfiers are the actual situations that are truthmakers of S, and second, it does not have violators. Facts are special modal objects also in that they do not come with a direction of fit, that is, they do not themselves carry a norm (of truth) nor do they impose one on their satisfiers (Chap. 3, Section 3.3.). A fact as a modal object can thus be informally defined as in (10a): uniqueness of a fact for a given true sentence is ensured by imposing the condition in (10b):

(10) a. A modal object *d* is a (non-worldly) fact in relative to a world *w* ([FACT]w(d)) iff *d*

 has satisfiers that are part of *w* and no violators, and d is non-normative.

 b. For a sentence *S* that is true in a world *w* (i.e. that has satisfiers that are part of *w*) there

 is exactly one (non-normative) modal object *d* such that pos(*d*) = pos(*S*) and neg(*d*) =

 ∅.

The denotation of *the fact that* S relative to the world will be be as below:

(11) For a world *w*, [*the fact that* [+prop] S]w = ι*d*[FACTw(d) & prop([S])(d)]

Thus, a clausal modifier *that* S of *fact* will be interpreted by predicate modification, which means that the fact being described shares its satisfiers with the sentence *S*. Independent support for the predicative function of the *that-*clause comes from the possibility of specificational sentences:

(12) The fact is that it is raining.

Recall from Chapter 5 that a noun permits dislocation of a clause in specificational sentences just in case the clause acts as a predicate giving the content of the object denoted by the DP in subject position, rather than as a complement providing an internal argument of the noun.

 What enables (simple) *that-*clause complements of factive verbs to describe facts? Here a few remarks are needed concerning the syntax of factive clauses.

 There is a long syntactic tradition that argues that factive clauses are nominal in some sense. The notion of a nominal clause, however it is to be conceived, is to account for the fact that factive clauses differ syntactically from complements of basic attitude verbs. Among the properties distinguishing factive clauses from clausal complements of basic attitude verbs are the following. Factive clauses are weak islands: they do not allow the extraction of adjuncts and subjects (\* *Whyi did not know that Bill died* ei?, \* *Whoi did John regret that ei offended Mary*?), and they do not permit topicalization inside the clause (*John believes that this man, Mary is going to marry*, \**John regrets that this man, Mary is going to Mary*). Factive clauses do not allow for the proform *so* (*John believes so*, \* *John regrets so*). Finally, factive clauses allow for extraposition, whereas clausal complements of basic attitude do not without a change in a discourse semantic effect (*John regrets it that he lost*, \**John thinks it that he lost,* ? *John believes it that he lost*).

 The notion of a nominal clause, as a clause that displays those syntactic properties, comprises more than factive clauses. It comprises also clausal complements of response-stance verbs and subject clauses on their various interpretations (Cattell 1978, Kastner 2015). In fact, it is widely held that subject clauses in general are nominal clauses.[[4]](#footnote-4) Thus, it has been argued that predicates that permit clauses in subject position (*is believable, is likely, is surprising, occurred never before*) select DPs, whereas verbs like *seem* and *appear* select CPs, which cannot appear in subject position (*It seems that* S*,* \* *That* S *seems*, *It appears that* S, \* *That S appears*) (Alrenga 2005).[[5]](#footnote-5) Moreover, nominal clauses can generally be replaced by special quantifiers, but not the clausal complements of certain non-factive attitude verbs, such as the verbs of saying *remark, complain, comment* (Section 6).

 There has been longstanding view according to which factive clauses are actually DPs, headed by a silent noun *fact* (Kiparski/Kiparsky 1970, Kayne 2008, 2010).[[6]](#footnote-6) A related proposal is that of Kastner (2015), who argued that factive clauses are ‘reduced’ DPs of the form [D CP], consisting of a silent definite (discourse-related) determiner and a CP. Other proposals take factive clauses to be referential CPs, conceiving of a syntactic difference between referential and nonreferential CPs (Haegeman / Ueroegdi 2010, Shaheen / Hinzen 2011).

 There are well-known problems for the view that nominal *that-*clauses are DPs. Unlike *that*-clauses cannot appear after prepositions (*John talked about the fact that* S*,* \* *John talked about that* S). *That*-clauses cannot appear as complements of verbs that only take DPs (*Bill captured the fact that* S, \**Bill captured that* S). Unlike DPs, they can be complements or modifiers of adjectives and nouns (*happy that* S, \* *happy* *the fact that* S, *happiness that* S, \* *happiness the fact that* S). Finally, they can be extraposed, unlike DPs (*John knows very well that* S / *knows very well the fact that* S).

 The view that nominal clauses are DPs would predict that substitution of the clause by a full DP should be possible, but that is not generally the case, as we will see below.

 It is actually not clear what sorts of a properties a syntactic analysis of factive clauses needs to explain. Extraction from weak islands and topicalization may very well be explained semantically, as some recent research suggests.[[7]](#footnote-7) Clearly, though, an explanation is needed for the various clearly semantic properties of factive clauses (presupposition of truth, the understanding of *partly*, the unavailability of specificational sentences, and the semantics of nominalizations of factive predicates).

 I will adopt simply the generalization that whereas CPs that are complements of basic attitude verbs are semantically predicates of the described satisfiable objects, nominal CPs serve to describe a satisfiable that acts as an argument of the embedding verb. I will refrain from further syntactic assumptions, for example regarding the syntactic position of CPs and potential DPs they may relate to or be part of, thus leaving out syntactic details that do not directly bear on the semantic issues (and that may be developed in different ways within particular syntactic approaches). I will adopt a simple syntactic account for nominal clauses in general and factive clauses in particular on which nominal clauses involve a nominal element that ensures their interpretation, namely a light noun, a functional element that is head of a functional projection FP in the left periphery of the embedded clause (one may call it ‘Force Projection’ following Rizzi (1997), but the term would be quite misleading since it has nothing to do with illocutionary force). Factive CPs thus contain the light noun FACT as head of FP, both in subject position and in complement position, ensuring the interpretation of the CP as a fact. Thus, we have:

(13) a. That Joe lost the election is interesting.

 b. [CPThat [FP[F FACT [+prop]] Joe lost the election]] is interesting.

(14) a. John regrets that Joe lost the election.

 b. John regret [CP that [FP[F FACT [+prop]] Joe lost the election]].

 The complement position of a factive clause can be occupied by the pronoun *it*, possibly relating to an extraposed clause as in (15a) and by special quantifiers as in (15b):

(15) a. John knows it / regrets it that S.

 b. John regretted / saw / realized something / that / just one thing.

It is an important fact, though, that the complement position cannot generally be filled by ordinary DPs. Factive verbs like *see* and *realize* only permit light DP, not explicit fact-referring DPs:[[8]](#footnote-8)

(16) a. Joe knew / saw / realized that it was raining.

 b. ??? Joe knew / saw / realized the fact that it was raining.

The Substitution Problem with factive predicates like *know* appears to be a matter of syntactic selection: *know, see,* and *realize* (on the epistemic reading)selects only light DPs. *Regret,* by contrast, also selects full DPs in addition to light DPs (*regret the fact that* S).

 The interpretation of factive clauses will be the very same as that of explicit fact descriptions of the sort *the fact that* S:

 (17) The Interpretation of Factive Clauses

 For a world w, [*that* FACT [+prop] S]w = ιd[FACTw(d) & prop([S])(d)]

Given (17), uniqueness of a fact referent *d* of a factive clause is already ensured by *d* being characterized as a fact whose satisfiers are shared with S.

 The interpretation of (18a) will be as in (18b):

(18) a. John is happy that FACT [+prop] Mary won the election.

 b. happy(John, ιd[FACTw(d) & prop([Mary wo the election])(d)]

Here it is assumed that the interpretation as a definite description is part of the clausal construction with verbs like regret, which presupposes a fact.[[9]](#footnote-9)

**2. States of affairs as modal objects**

**2.1. Linguistic evidence for states of affairs as denotations of nominal clauses**

Nominal clauses may also stand for states of affairs rather than facts. Like non-worldly facts, states of affairs can straightforwardly be conceived as modal objects, that is, as objects that have satisfaction (or realization) conditions and a content ordered by the relation of partial content. The only difference with respect to facts is that states of affairs may have only non-actual situations as realizers.

 States of affairs are the denotations of subject clauses with predicates like *is likely*, *is* *certain*, and *is* *desirable*, that is, predicates which do not imply the truth of the clause:

(19) That it will rain is likely / certain /desirable.

There are the same diagnostics as for factive predicates that clausal subjects with such predicates are nominal clauses.

 First, the nominalization of an adjective like *likely* does not denote an entity with satisfaction conditions, as seen in the inapplicability of predicates of satisfaction:

(20) ??? The likelihood / certainty / desirability that it will rain is true / satisfied / correct.

Rather *the likelihood that it will rain* denotes a quality of the state of affairs in which it will rain. Qualities of states of affairs differ from epistemic modal objects, such as possibilities (‘the possibility that it will rain’) and obligations (‘Joe’s obligation to take an exam’), which do have satisfaction conditions.

 Second, *that*-clauses with the nouns *likelihood, certainty* , and *desirability* are complements and provide an internal argument of the noun nouns. By contrast clauses with nouns for epistemic modal objects are modifiers, giving the satisfaction conditions of the modal object that is decsribed. Thus, specificational sentences are possible with the nouns *possibility* and *obligation*:

(21) a. A possibility is that it will rain.

 b. Joe’s obligation is to take an exam.

But they are unavailable with the nouns *likelihood, certainty* , and *desirability*, which also permit *of*-phrases in place of a clausal complement, another indication of complementhood:

(22) \* The likelihood / certainty / desirability is that it will rain.

(23) a. the likelihood of rain

 b. the certainty of that.

 Finally, *likely, certain*, and *desirable* permit a reading of *partly* or *in part* relating to the partial content given by the subject clause:

(24) a. That the collection will be sold is *in part* unlikely.

 b. That the students will fail the exam is *in part* certain (since several of them are

 completely unprepared).

States of affairs display a part relation ordered by the relation of partial content, like modal objects in general.

 For a sentence S, ‘the state of affairs in which S’ (or ‘the situation in which S’) will a modal object whose satisfiers are just the situations that make S true, that does not have violators and that is non-normative, as below for a light noun for states of affairs SIT:

(25) For a world *w*, SITw(*d*) iff *d* has no violators and is non-normative.

The syntactic structure of embedded clauses describing states of affairs will be parallel to that of factive clauses.[[10]](#footnote-10) The only difference is that the light noun will now be a light noun for states of affairs ‘SIT’. The denotation of a nominal CP denoting a state of affairs (as well as that of a DP explicitly referring to a state of affairs) will then be as below:[[11]](#footnote-11)

(26) [that [FP [FSIT +prop] S]] =ιd[[SIT](d) & prop([S])(d)]

 Not only subject clauses with predicates like *likely* can stand for states of affairs. Also clausal complements may, for example clausal complments of *imply* and *indicate*, as in (27a, b). Thus, (27b) will have the syntactic structure in (27c):

(27) a. That Mary met Bill in Munich implies that Bill was in Munich.

 b. That Mary is nervous indicates that she is unprepared.

 c. [That [FP [F SIT +prop] Mary is nervous]] indicates [CP that [FP[F SIT +prop] she is

 unprepared]]

 Thus, both facts and states of affairs serve as the denotations of subject and complement clauses, based on the presence of corresponding light nouns in the left periphery of the clause.

States of affairs play not only a role in the semantics of natural language. States of affairs have played various roles in philosophy without being tied directly to natural language, for example as objects of perception and in fact as the bearers of probability and more generally the fundamental bearers of modality[[12]](#footnote-12). The conception of states of affairs as modal objects provides a promising alternative to standard conceptions of states of affairs for those roles. States of affairs in philosophy are often conceived as complexes (involving objects, properties and perhaps connectives and quantifiers). Such a conception, like that of propositions as structured propositions, raises the problem of the unity of states of affairs (Textor 2021). States of affairs as modal objects do not pose that problem: they are taken to be primitives, individuated in terms of the situations that are their satisfiers. As modal objects states of affairs come with the advantage of having a part structure based on partial content, rather than the constituents of a formal complex.

**3. Thin assertions and predicates of truth**

There is a third type of entity that nominal clauses may stand for, generic thin assertions or, better, acceptances. The observation is that *correct* with clausal subject as in (28a) has just the reading it has with claims, suggestions or hypotheses, as in (28b); but it is not applicable with a clear understanding to propositions, as in (28c):

(28) a. That John is the director is correct.

 b. The claim / suggestion / hypothesiss that John is the director is correct.

 c. ?? The proposition that John is the director is correct.

*Correct* in (28a) conveys just truth (Chap. 3), a reading with which correct cannot apply to a proposition as in (28c), but only a truth-directed (constative) attitudinal object, as in (28b). This means that the clausal subject in (23a) itself must stand for a constative attitudinal object.

 On the reading it has with clausal subjects, *correct* also permits modification by *partly*, picking out a partial content of a truth-directed attitudinal object:[[13]](#footnote-13)

(29) That John is in charge is *partly* correct.

*That*-clauses with predicates like *correct* thus serve to describe a constative attitudinal object to which the speaker refers with the light DP in the subject position headed by a silent noun ASSERT. The claim or suggestion referred to need not be an actual one. It may be a kind of claim or suggestion, the sort of thing that could be referred to as ‘the claim that John is the director’ or ‘the suggestion that John is the director’ (permitting the possible truth of *The claim that John is the director has never actually been made*). Furthermore, the attitudinal object is a thin one, not containing a phatic component. This is because, as Moulton (2020) observed, predicates of concreteness are inapplicable to *that*-clauses in subject position when they stand for an attitudinal object, as in (30a) and (31a). Subject clauses differ in that respect from DPs referring explicitly to an attitudinal object, as in (30b) and (31b):[[14]](#footnote-14)

(30) a. ??? That John is the new director was overheard by many.

 b. The claim that John is the new director was overheard by many.

(31) a. ??? That Joe won the election, which caused a commotion, is true.

 b. The claim that Joe won the election, which caused a commotion, is true.

How can a generic thin assertion be understood as an object? Let us focus on the most important properties it comes with. First of all, it is a truth-evaluable attitudinal object. This means that it has a word-to-world direction of fit and thus is associated with an inherent norm of truth. Second, it can have satisfiers as well as violators. Unlike particular constative objects it lacks properties of concreteness. But it will have instantiation conditions: a thin generic assertion *d* is instantiated by a particular attitudinal object *d’* just in case *d’* has the same direction of fit as *d* and shares its satisfiers and violators with d.

 Thus, there will be three light nouns associated with nominal CPs: ‘FACT’, ‘SIT’, and ‘ASSERT’. These light nouns play an additional syntactic role with respect to the embedding verb by restricting the interpretations available for *that*-clauses as subjects. The observation is that *that-*clauses in subject position are not referentially independent. That is, what kind of entity a nominal CP stands for depends strictly on the embedding predicate. This is illustrated by the understanding of the evaluative predicate *nice* below:

(32) a. That Mary got elected is nice.

 b. The fact that Mary got elected is nice

 c. The situation which Mary gets elected is nice.

Sentence (32a) allows only for a reading on which *nice* evaluates a fact, making it equivalent to (32b), even though *nice* could in principle evaluate a state of affairs as well, as (32c) shows. Other predicates may apply only to states of affairs (or possibilities), for example *exclude*. (33a) can only be understood as equivalent to (33b), even though there is a sense in which facts and claims can be excluded too, as in (33c):

(33) a. That John might get elected is excluded.

 b. The possibility that John might get elected is excluded.

 c. The fact / The claim that John got elected is excluded (from the discussion).

Only in the presence of a suitable predicate can a *that*-clause in subject position stand for a contextually given claim or suggestion, for example with *true* or *correct*. This means that the silent light noun in clausal subjects cannot be freely chosen, unlike the overt head noun in the construction *the fact that* S or *the claim that* S.

 Also causal predicates make the point. *Caused surprise* is applicable to both facts and claims. But when applied to a clausal subject, it could not apply to a contextually given claim; rather it triggers a reading applying to a fact only (*That it was raining caused surprise*).

 The same observations hold for nominal clausal complements of factive verbs and response stance verbs:[[15]](#footnote-15)

(34) a. John recognized / appreciates that Mary is talented.

 b. John recognized / appreciates the fact that Mary is talented.

 c. John recognized / appreciates the assertion that Mary is talented.

(34a) has only a fact-related reading as in (34b) on which John recognizes or appreciates a fact, not a reading as in (34c) on which he appreciates a contextually given claim.

 The interpretation of a clause as describing a fact, state of affairs, or assertion is thus not due to semantic selection, but appears a matter of strict syntactic selection by the embedding verb. Even if a predicate could apply to different types of entities describable by a clause, a given predicate-clause relation can determine only a single kind of entity for the predicate to apply to. This generalization can be called the ‘Unique Determination Property’ (Moltmann 2003a):[[16]](#footnote-16)

(35) The Unique Determination Property

 A nominal clause has a single interpretation with a given embedding predicate,

 describing a unique type of entity.

Given the present view, this means that a predicates embedding a nominal clause selects a CPs with a particular light noun (FACT, SIT, or ASSERT). Evaluative adjectives select nominal CPs with the light noun FACT, predicates of probability nominal CPs with the light noun SIT, and predicates of truth nominal CPs with the light noun ASSERT. Basic attitude verbs like *claim* and *assume*, which do not take nominal CPs, won’t select a CP with a light noun. Instead they take CPs with just the feature [+prop], which ensures the interpretation of the clause as a property of attitudinal and modal objects.

 Some clause-embedding predicates select only light DPs, that is, special quantifiers like *something* and pronouns like *that*; others allow both light DPs and ordinary DPs such as explicit fact-referring, situation-referring, and assertion-referring DPs. Epistemic *see, realize,* and *know* are examples of the former; *regret* is an example of the latter:

(36) a. John saw / knew / realized that it was raining.

 b. John saw / knew / realized something.

 c. ??? John saw / knew / realized the fact that it was raining.

(37) a. John regrets that it is raining.

 b. John regrets something.

 c. John regrets the fact that that it is raining.

Thus, a substitution problem arises also with nominal clauses and not just with clausal complements of basic attitude verbs. This kind of substitution problem seems to be due simply to a syntactic category selection of a complement that serves to provide an internal argument of the predicate (full DP vs light DP and CP).

**4. Clauses as predicates of truthmakers?**

Given truthmaker semantics, one may expect that sentences should also be able to denote properties of truth makers. That is, a sentence S would denote the property λs[s ╟ S] or λs[pos(S)]. Based on its bilaterial content, a pair consisting of a set of verifiers and a set of falsifiers, this would be a simpler derived meaning of a sentence than the property of attitudinal and modal objects used to far. At first sight, it look like this is indeed the case for *that-*clauses that are complements of what I call ‘verbs of occurrence’, that is, verbs like *occur, happen,* and*,* in certain contexts, *be*, including *be the case* and *be so* (Moltmann 2015a, 2021d):

(38) a. It has never *occurred* that John was late.

 b. It has twice *happened* that John was late.

 c. Could it *be* that John is late? [[17]](#footnote-17)

 d. That John is late *is* often *the case*.[[18]](#footnote-18)

In (38a-d), the  *that*-clause *that John was late* appears to act as a predicate of truthmakers of the sentence *John was late*, occurrences or happenings, which are also Davidsonian event arguments of the verbs *occur, happen*, and *be*. The logical form of (38a) would then be simply as in (39a), based on the syntactic structure in (39b) and a derivative meaning of the clause in (39c), on which the clause denotes the property of being one of its truthmakers (the interpretation of the feature [+tm]):[[19]](#footnote-19)

(39) a. ¬∃e[occur(e) & tm([*that John was late*])(e)]

 b. It has never *occurred* [CP that [FP [+tm] John was late]].

 c. tm([*that John was late*])= λs[s ∈ pos(S)]

There are, however, reasons not to posit a simple property of truthmakers as a derived meaning of *that*-clauses. If *that*-clauses denote properties of truthmakers, they will have a predicative function. However, as subjects, *that*-clauses with verbs of occurrence have nominal status, which would be incompatible with their role as predicates of Davidsonian event arguments, just as nominal clauses cannot be predicates of attitudinal objects. Further indications for the nominal status of *that*-clauses with verbs of occurrences are the impossibility of specificational sentences, as seen in (40a), and the possibility of *of*-phrases with nominalizations of verbs of occurrence, as in (40b):

(40) a. \* The occurrence was that John was late.

 b. the frequent occurrence of thunderstorms in the last weeks

*That-*clauses with verbs of occurrence will thus denote satisfiable objects of some sort, rather than acting as predicates. The most plausible candidate for their denotation of course is states of affairs conceived as modal objects.

 How would this account for the apparent role of the Davidsonian event argument as a truthmaker of the subject clause with verbs of occurrence? This will be due to a lexical condition on verbs of occurrence, namely that their Davidsonian event arguments be satisfiers of their modal object argument, the state of affairs described by the subject clause. Given this, (41a) will have the logical form in (41b) or equivalently (41c), with the lexical condition imposed by *occur* in (41d):[[20]](#footnote-20)

(41) a. it has never occurred that a student failed the exam.

 b. ¬∃e(occur(e, [*that* SIT [+prop] *a student failed the exam*]))

 c. ¬∃e(occur(e, ιd[SIT(d) & prop([*a student failed the exam*])(d))]))

 d. For an event e and a state of affairs d, occur(e, d) iff e ╟ d.[[21]](#footnote-21)

 One potential problem for that analysis is that nouns of occurrence in English generally do not take *that*-clauses as modifiers, in contrast to attitudinal-object nouns. This holds for occurrence nouns with both definite and indefinite determiners:

(42) a. \* the / a occurrence that John was late

 b. \* the / an event that John won the race

 c. \* a being that John was late

Bondarenko (2020a) points out that this is different in Russian. Russian allows clausal modifiers (*cto*-clauses) of nouns of propositional attitudes as in (43) as well as of nouns of occurrence as in (44a, b):

(43) Mne prišla v golovu mysl’ [čto belki s”eli vse orexi].

 ‘I had a thought that squirrels ate all the nuts.’

(44) a. Na prošloj nedele byl was slučaj [čto ˇ belki s”eli vse orexi].

 ‘Last week there was an event of squirrels eating all the nuts.’

 b. Včera proizošla /slučilas’ situacija [čto moj zakaz zaderžali].

 ‘Yesterday a situation that my order was delayed happened /occurred.’

Russian verbs of occurrence, *byvat’* ‘happen’, *sluˇcatsja* ‘occur’, and *proisxodit’* ‘take place’, likewise take *cto*-clauses, as of course do attitude verbs.[[22]](#footnote-22)

 There is a difference between English and German clausal modifiers of nouns of occurrence. English *that*-clauses can denote properties of content bearers, including modal objects that are states of affairs:

(45) That it is raining is likely.

But in English only *in which*-clauses can denote properties of particular truthmaking situations, as seen in (46a, b), or kinds of such situations, as seen in (46c, d):

(46) a. The cases in which a student passed the exam are rare.

 b. \* The cases that a student passed the exam is rare.

 c. The case in which a student passed the exam are rare.

 d. \* The case that a student passed the exam is rare.

The cases referred to in (46a) are truthmakers of the sentence *a student passed the exam*, and so are the instances of the kind of case referred to in (46c).

 In contrast to English, German  *dass*-clauses can modify definite singular *case*-NPs that stand for kinds of cases, as in (47a), though this is not possible for plural *case*-NPs that stand for particular cases, as seen in (47b):[[23]](#footnote-23)

 (47) a. der Fall, dass ein Student das Examen besteht

 the case that a student passes the exam

 ‘the case in which a student passes the exam’

 b. \* die Faelle, dass ein Student das Examen besteht

 the cases that a student passes the exam.

The difference between Russian, English and German nouns of occurrence with clausal modifiers can be accounted for if clauses with nouns of occurrence act as predicates of occurrences, rather than as complements denoting states of affairs. The additional assumption is that clauses across languages differ in their ability to denote properties of truthmakers. An English *that*-clause that S can denote only a property of attitudinal and modal objects (λd[prop([S])(d)]). A German *dass*-clause can in addition denote a property of kinds of situations that are truthmakers of the clause (λk[∀i(i I k 🡪 i ∈ pos(S)], for ‘I’ standing for the instantiation relation). A Russian *cto*-clause can in addition denote a property of situations that are truthmakers of the clause (λs[s ∈ pos(S)]).

 Nouns of occurrence differ from verbs of occurrence in that with verbs of occurrence clauses are nominal, standing for states of affairs, rather than acting as predicates. For that reason verbs of occurrence permit *that*-clauses in English, as well as their correlates in Russian and German. With verbs of occurrence clauses are nominal in English, German and Russian providing providing states of affairs as internal arguments of the embedding verb.

 There is another candidate of a construction in which clausal complements appear to act as predicates of truthmakers, namely perception verbs with bare infinitives as complements:

(48) a. John saw [Mary leave].

 b. John heard [Mary sing].

Perception verbs with bare infinitival complements, which generally describe events of direct perception, were of course a motivation for introducing situations in the Situation Semantics of Barwise and Perry (1983). On Barwise and Perry’s view, situations are denotata of bare infinitives and as such arguments of perception verbs. On the alternative, Davidsonian semantics of perception verbs of Jim Higginbotham (1983), events in such perception reports act both as the implicit arguments of the infinitival verb and of the embedding perception verb.

 Truthmaker semantics offers yet another alternative for the semantics of perception verbs with bare infinitives, namely on which a perception verb would take as its argument a situation that is the truthmakers of the bare infinitive, as in the logical form of (49a) below, making use of the function *tm* defined earlier in (39c):

(49) ∃e(see(John, e) & tm([*Mary leave*])(e))

In this construction, the clausal complement would thus take as its semantic value the property of being a truthmaker of the clause. However, perception reports with bare infinitives do not make a particularly good argument for clausal complements as predicates of truthmakers. Bare infinitives are syntactically distinct from *that*-clauses and are selected by only few verbs. Perception verbs moreover do not have the same reading when they take bare infinitives and when they take clausal complements (*John saw that Mary left* can describe indirect perception). Thus, they hardly give evidence for a general function of clauses acting as predicates of truthmakers.[[24]](#footnote-24)

**5. Topic-related locutionary verbs**

What I call ’topic-related locutionary verbs’ are verbs that describe locutionary acts that are about a particular issue, a fact or any topic under discussion in the context of the utterance. Such verbs include *explain, criticize* and *praise* on one of their two readings, as well as *complain*, *boast*, *comment* and *remark*, verbs that are known not to take any DPs, as complements, not even special quantifiers.[[25]](#footnote-25)

 Topic-related locutionary verbs like *explain, criticize* and *praise* allow for two readings of their clausal complement: a topic-related reading, on which the complement serves to describe the topic that the speech act is about, and a content-related reading one, on which the complement gives the content of the locutionary object that is produced. The most obvious reading of (50a) is a content-related reading, whereas (50b), with an explicit fact-referring term, displays the topic-related reading only:

(50) a. John explained that there was no water.

 b. John explained the fact that there was no water.

However, (50a) also allows for a topic-related reading, as is made clear by *how*-questions as below, asking for a specification of content:[[26]](#footnote-26)

(51) How did John explain that there was no water?

Likewise complement clauses of *criticize* allow for both content-related and a topic-related readings:

(53) a. Looking at the well, John criticized that there was not enough water.

(54) a. John criticized that there was no water, by saying that without water the project cannot

 be done.

 c. John criticized the water shortage / the fact that there was not enough water.

in (5), the content-related reading is enforced by an indication of the topic, and (54a) the topic-related reading is due to the *by*-phrase, rendering (54a) equivalent to (54b):

 In specificational sentences, the clause in postcopula position permits only the content-related reading:

(54) a. John’s explanation was that there was no water.

 b. John’s criticism was that there was no water.

That is because clausal complements of verbs like *explain* and *criticize* that refer to a topic are nominal clauses and have the status of complements with nominalizations, providing an internal argument rather the content of the described attitudinal object.

 Only nominal clauses can be subjects, which means that passivization only permits the topic-related reading:

(55) That there was not enough water was not explained / criticized.

Finally, a sentential anaphor in an *of*-phrase can only pick out the topic, not the content (*the explanation of that, the criticism of that*).

 Thus, *explain* and *criticize* permit both nominal and non-nominal clauses: the nominal clause serves to describe a fact or topic as an internal argument of the verb; the non-nominal clause gives the content of the locutionary object that is described, the explanation or critique.

 The verbs *complain, comment,* and *remark* only permit a content-related reading of their complement clause and not a topic-related reading:

(56) John complained / commented / remarked that there was no water (??? by saying that

 without water the project could not be done).

 However, there are reasons to assume that such verbs always syntactially realize a topic argument as well, even if it stays unpronounced. What is peculiar about topic-related locutionary verbs and what distinguishes them from other locutionary verbs is that they do not permit special quantifiers in place of a clausal complement:

(57) a. John complained that it rained.

 b. \* John complained something.

(58) a. John commented that the idea was good.

 b. \* John commented something.

(59) a. Mary remarked that she would come.

 b. \* Mary remarked something.

This can be connected to the observation is that with the verbs *explain* and *criticize* a special quantifier or pronoun can replace the clausal complement only on the topic-related reading, not the content-related one:[[27]](#footnote-27)

(60) a. John explained something, that there is no water.

 b. What did John explain?

(61) a. John criticized something.

 b. What did John criticize?

The impossibility of special quantifiers on the content-related reading can be explained if clausal complements of *explain* and *criticize* occupy different positions on the two readings. On the topic-related reading, the complement clause occupies the direct-object position, a receiver of (structural) case. On the content-related reading, the complement clause occupies the indirect object position, which cannot receive (structural) case and thus excludes any DP in that position.

 Now if locutionary verbs such as *comment* and *remark* always involve a topic (a fact, suggestion or claim) as an additional argument, this allows for an explanation why special quantifiers are impossible in place of their clausal complement. The only additional assumption that is required is that the topic argument is syntactically realized by a light DP even if it is not (or even cannot be) filled by a *that*-clause on the content-related reading:

(62) John [[remarked] [DP e]][that S]

In (62), the clausal complement is not in direct object position, but in indirect object position where no (structural) case can be assigned. This means that the *that*-clause complement of *remark* and *comment* and, on the content-related reading, of *explain* and *criticize* cannot be replaced by a special quantifier, which would not be in a position to receive case. The two readings of (51a), repeated below as (63a), will thus correspond to the two different syntactic structures in (63b) and (63c) respectively:

(63) a. John explained that there was no water.

 b. John [V’explained [DP e]] [CP that [+prop] there was no water]]

 c. John [V’explained [CP that FACT [+prop] there was no water]]

 The complex-predicate analysis will apply to *explain* as well. This means that the verb *explain* is derived from a complex-predicate of the sort *give explain* with an abstract nominal root *explain*. (63a) on the two readings will then have the logical forms in (64a) and (64b) respectively, where the nominal *explain* will denote a two-place relation between an attitudinal object (the external argument) and a fact, an explanans (the internal argument):

(64) a. ∃d(give(John, d) & [*explain*N](d, tc) & [*that there is no water*](d))

 b. ∃d(give(John, d) & explainNw(d, ιd’[FACTw(d’) & prop([*that there is no water*])(d’)])

In (64a), *tc* is the topic relevant in the utterance context *c*.

**6. Conclusion**

In this chapter we have seen that attitudinal-objects semantics can naturally be extended to clausal complements and subject that have nominal status and as such stand for facts or states of affairs conceived as modal objects or for thin assertions conceived as kinds of constative attitudinal objects.

 A special case of verbs taking nominal clauses are verbs of occurrence such as *happen* and *occur*. At first sight, verbs of occurrence seem to give evidence for verbs conveying truthmaking as a relation between situations and sentences. However, it turns out that it is not the verb of occurrence that conveys truthmaking. Rather truthmaking is a lexical condition on the relation between the Davidsonian event argument and a state of affairs argument of the verb of occurrence that is provided by the subject clause.

 Some topic-related illocutionary verbs like *explain* and *criticize* allow for clausal complements with two different linguistic roles: as predicates of the described attitudinal object and as nominal clauses standing for topics, such as facts conceived as modal objects. Other topic-related locutionary verbs like *remark* and *comment* require their clausal complement to always have a predicative, content-conveying role, yet they arguably involve a syntactic realization of the topic role as well, though one that stays silent.

 There lots of issues concerning the syntax of factive and presuppositional verbs that had to be skipped in this discussion. Making use of ‘simplified syntax’, I have adopted a simple syntactic view of nominal clauses, invoking the theory of light verbs. However, the main semantic and ontological contributions of attitudinal objects semantics could very well be stated within other syntactic views.

1. The latter, though, does not hold for certain factive verbs that describe mental states such as *regret*:

(i) John’s only regret was that he did not try harder.

This suggests that clausal complement of *regret* has in fact a double function: specifying both the content of a fact (as the object of regret) and the content of the regret as a mental state. [↑](#footnote-ref-1)
2. See also Fine (1982) for the distinction between worldly and non-worldly facts. [↑](#footnote-ref-2)
3. There is a historic debate between Strawson and Austin about the nature of facts. Strawson (1950) takes facts to be non-worldly; Austin (1979) takes them to be worldly situations. See Fine (1982) for more on the distinction between worldly and non-worldly facts. [↑](#footnote-ref-3)
4. There is also the view, though, that subject clauses are in fact in topic position, coindexed with an operator in subject position (Koster 1978). [↑](#footnote-ref-4)
5. With verbs of appearance, clausal complement should then act as predicate of content bearers, entities of the sort of appearances or seemings. This is entirely plausible semantically since appearances and seemings are entities that have satisfaction conditions (more specifically ‘success conditions’) and thus can be attributed truthmaker-based satisfaction conditions. [↑](#footnote-ref-5)
6. Kayne (2008, 2010) proposes that factive clauses involve raising a noun *fact* from a PP *in fact* inside the *that*-clause: [NP fact [that it is raining in ~~fact~~]]. [↑](#footnote-ref-6)
7. See, for example, Abrusan (2014). [↑](#footnote-ref-7)
8. German makes the occurrences of light pronouns particularly clear in the appearance of the morpheme *da-* with prepositions:

(i) Er ist froh darueber, dass es regnet.

 he is happy that about that it raining

 ‘He is happy that it is raining.’ [↑](#footnote-ref-8)
9. Factive verbs like *discover* may instead involve existential quantification over facts as in the logical form in (iib) for (iia):

(i) a. John did not discover that Mary is guilty (because Mary is in fact innocent).

 b. ¬∃d(regret(e, John d) & [that FACT [+prop]Mary is guilty](d))

This permits negation and other scope-taking expressions to take wide scope over the existential quantifier ranging over facts. [↑](#footnote-ref-9)
10. Note that like fact-referring terms, terms explicitly referring to states of affairs (as ‘situations’) permit specificational sentences:

(i) The situation is that it is raining. [↑](#footnote-ref-10)
11. As Keir Moulton pointed out to me, there is some evidence that the interpretation of a clause as denoting a state of affairs is in fact the unmarked interpretation of a nominal clause and should thus not be based on the presence of a light noun. States of affairs have considered the general interpretation of verbal gerunds (Zucchi 1993). Moreover, according to Moulton (2020), Spanish nominal CPs that denote states of affairs do not involve a silent noun, whereas those that denote facts or thin assertions involve a silent light noun like FACT (see also Section 3). [↑](#footnote-ref-11)
12. See Textor (2021) for an overview of the notion of a state of affairs through the history of philosophy. [↑](#footnote-ref-12)
13. *Believe* behaves somewhat different in that it does permit a partial content reading of *partly,* at least when focused:

(i) Joe partly believes that the collection is valuable.

The partial-content reading of *partly* is particularly easily available with proleptic *it*, as pointed out to me by Keir Moulton:

(ii) Joe partly believes it that the collection is valuable.

This can be related to the fact that *believe* has a relational use:

(iii) Joe believes the claim that the collection is valuable

It indicates that *believe* with a *that*-clause complement can have the relational meaning as well, with the *that*-clauses standing for a constative attitudinal object, a thin assertion, rather than acting as a predicate of the described belief. [↑](#footnote-ref-13)
14. Moulton (2020) uses a somewhat different example, involving the predicate *loud*:

(i) a. ??? That bike lanes hurt business was loud.

 b. ? The claim that bike lanes hurt business was loud.

However *loud* does not sound particularly good with *claim* either; which is because the properties of concreteness that attitudinal objects can bear generally must relate to content as well. [↑](#footnote-ref-14)
15. This is a problem for an account of Kastner’s (2015) account of factivity, which tries to derive factivity as a special case of a general presuppositional, discourse-related determiner. Nothing on that view should exclude an assertion-related reading for verbs like *recognize* and *appreciate*. [↑](#footnote-ref-15)
16. Keir Moulton (p.c.) points out an interesting connection to the implicit objects arguments of transitive verbs like *drink* and *eat*, which are restricted to what is drinkable / edible (*John drank, John ate*), even though an overt NP could denote something that is not (*John drank the ink, John ate the sand*). [↑](#footnote-ref-16)
17. *Be* on the occurrence use is subject to restrictions, generally requiring a context of epistemic uncertainty, as indicated by the contrast below:

(i) a. \* It is that the problem has been solved.

 b. It can’t be that the problem has been solved.

 *Be* can act as a verb of occurrence not requiring epistemic uncertainty when accompanied by the modifier *so*, as in (ii), though only with a sentential anaphor, such as *that* instead of a clausal subject:

(ii) a. That *is* so.

 b. ?? That John is late is so. [↑](#footnote-ref-17)
18. In Moltmann (2021d), I have argued that the predicate *is the case* subject to a particular condition that enforces the presence of adverbials or particles like *often* or *not* in (33d) namely the requirement of a case space, a set of linguistically or epistemically given alternative situations. [↑](#footnote-ref-18)
19. *Occur* also imposes lexical presuppositions on its implicit argument, since it accepts only *that*-clauses with eventive verbs, as the contrast between *occur* and *is the case* below makes clear:

(i) a. In John’s family, it is not the case that children respect their parents.

 b. ?? In John’s family, it does not occur that children respect their parents.

This means that occur semantically selects only states of affairs that have events (eventive situations) as realizers. [↑](#footnote-ref-19)
20. Note that the *that*-clause can be replaced by a special quantifier:

(i) a. Nothing special has occurred, except that John gave a speech.

 b. John gave a speech. That has never happened before.

This is unproblematic on the view on which clausal subjects of verbs of occurrence stand for modal objects, which special quantifiers can then range over. By contrast, it would not be obvious how special quantifiers in place of clausal subjects were be treated if the clausal subject was a predicate of truthmakers. [↑](#footnote-ref-20)
21. The verb *occur* with a dative involves a slightly different semantics:

(i) It had never occurred to Joe that he made a mistake.

Here the event arguments are mental events, occurring thoughts, which are not themselves truthmakers of *he made a mistake*. Thus the lexical condition (41d) won’t obtain. Rather *occur to* just takes a state of affairs as an argument, which provide the object that occurring thought is about. [↑](#footnote-ref-21)
22. Bondarenko (2020a) posits two distinct meanings of *čto*-clauses, as predicates of content bearers and as predicates of events, and points out that the second meaning can occur with an optional modifier *takoe* ‘such’, but not with the first meaning:

(i) a. Slučilos’ /proizošlo (takoe) čto belki s”eli vse orexi.

 ‘That the squirrels ate all the nuts occured /happened.’

 b. Maša dumaet /somnevaetsja (\* takoe) čto belki s”eli vse orexi.

 ‘Masha thinks /doubts that the squirrels ate all the nuts.’

This points at the semantic difference between nominal clauses standing for eventive states of affairs and clauses acting as predicates of content bearers. [↑](#footnote-ref-22)
23. See Moltmann (2021d). [↑](#footnote-ref-23)
24. Bondarenko (2020a) points out that the Russian verbs *pomnit’* ‘remember’, *zamečat’* ‘notice’, *videt’* ‘see’ display a direct perception reading only with *takoe* modifying the complement clause:

(i) Lena pomnit takoe čto Mitja kuril.

 ‘Lena remembers Mitya’s smoking.’ ⇒ Lena directly perceived M. smoking.

Without modification by *takoe* ‘such’, there is no direct perception requirement:

(ii) Lena pomnit (to) čto Mitja kuril, xot’ ona i ne videla ego ni razu kurjaščim.

 ‘Lena remembers the fact that Mitya smoked, despite not seeing him’

This is indicative of the similarity of the semantics of occurrence and direct perception and suggests that both involve eventive states of affairs. [↑](#footnote-ref-24)
25. Grimshaw (2015) calls *complain* and *praise* ‘verbs of speaking with an attitude ‘and *comment* and *remark* ‘verbs with a discourse function’ (a distinction I used in Chapter 5). This may look like a different classification. However, her labels capture the topic-relatedness implicitly: emotional attitudes are generally about something and so are locutionary acts with a discourse function. [↑](#footnote-ref-25)
26. Pietroski (2000) incorrectly assumes that there is a single, content-related reading of the clausal complement of *explain*. Bondarenko (2021b) shows that Russian allows for both readings with a much greater range of topic-related locutionary verbs. [↑](#footnote-ref-26)
27. Elliott (2016) claims that *explain* allows for special quantifiers to replace a *that*-clause on the content-related reading, as below (his 13b):

(i) Angela explained that Boris resigned, therefore Angela explained something.

I disagree with his judgment. The use of the special interrogative pronouns *what* in place of the *that*-clause makes the absence of a content-related reading particularly clear:

(ii) What did Angela explain?

The question in (ii) clearly lacks a content-related reading. [↑](#footnote-ref-27)