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Old and new propositions

1 Introduction

Taking as a starting point Barwise's (1989) situation theory that propositions are a relation between a propositional content and a situation where the content holds, the paper will argue that the illocutionary operator ASSERT which is associated with a declarative root clause provides the situation and thus always contributes to creating a *new* proposition which as a whole updates the Common Ground. A *dass*-clause, however, at most only contributes to updating the Common Ground because it is an argument of a matrix predicate which contributes to denoting or presupposing an *old* proposition, i.e. a proposition that already exists as a worldly entity. Our theory will explain why conceptual factive and volitional predicates need not be expressed so that the *dass*-clause can be independently used, what enables factive predicates to have interrogative complements despite being related to propositions, and why non-factive predicates can have complements that are root declaratives.

Our considerations start from the commonly known fact that in German certain propositional predicates can embed root clauses (= verb-second clauses (1a)) while others – namely the negated propositional (1b) and factual ones (1c,d) – cannot.

(1) a. Anna glaubt, Hans kommt gerade.
Anna believes Hans comes just
Anna believes Hans is just coming.
b. *Anna glaubt nicht, Hans kommt.
Anna believes not Hans comes
c. *Anna bedauert, Hans kommt.
Anna regrets Hans comes
d. *Anna möchte, Hans kommt.
Anna would like Hans comes

In addition to their canonical use as complements, German *dass*-clauses can occur without any linguistic context, i.e as solitaires:

(2) Dass die U-Bahn noch fährt!
that the tube still runs
Well I never, the tube is still running!

As is shown in (3), unlike a root clause, a solitaire *dass*-clause alone cannot be used as an assertion since it cannot follow a canonical assertion.

(3) A. Hans studiert in Berlin.
Hans is studying in Berlin
B. Er studiert dort Jura/*Dass er dort Jura studiert.
he studies there Law that he there law studies

And finally, there are certain predicates that, despite being related to propositions, have interrogative complement clauses – cf. (4a). Other predicates, which are also related to propositions, do not allow interrogatives – cf. (5a).

(4) a. Anna weiß, wer kommt.
Anna knows who is coming.
b. Anna weiß, dass Hans kommt.
Anna knows (that) Hans is coming.
(5) a. *Anna glaubt, wer kommt.
Anna believes who is coming.
b. Anna glaubt, dass Hans kommt.
Anna believes (that) Hans is coming.

As the examples show, *dass*-clauses are not semantically equivalent to declarative root clauses and interrogative complements. The question as to whether *dass*-clauses are the semantic equivalent of declarative root clauses is not trivial since Brandt et al. (1992) and Zimmermann (1993) suggest that V2-declaratives, like *dass*-clauses, express propositions. We will show that the observations above can be explained by the lexical semantics of the involved matrix predicates and by the different semantics of declarative root and complement clauses, on the one hand, and of interrogative root clauses, on the other. We will submit that a declarative root clause creates a propositional situation s_p as a wordly object with the help of assertoric illocutionary force. The latter determines that s_p emerges as a worldly object upon uttering the sentence, that s_p supports a proposition which is true in the linguistically indicated world, and that s_p is related to the utterer as well as to the addressee. A *dass*-clause, however, provides the propositional content of a propositional situation that exists independently of uttering the sen-

tence. Depending on the matrix predicate, the propositional situation supports either a proposition that is true in the current or anticipated actual world, a proposition the truth of which is undeterminate, or a proposition which is true or false. We will see that there are four corresponding classes of matrix predicates: *factive predicates* – they relate to propositions that are true in the actual world, *volitional predicates* – they are true in an anticipated actual world, *undeterminate predicates* – they do not determine the truth value of the proposition they are related to, and *true-false predicates* – they relate to propositions that are possibly true. If the proposition is related to by a factive predicate, it can be indicated by an interrogative (cf. (4)). If it is related to by a factive or volitional predicate, the predicate can be silent (cf. (2)). And if the predicate does not determine the truth value of the proposition it is related to, it can also be related to a proposition which is introduced by the use of a declarative root clause (cf. (1a)).

2 Syntax and semantics of declarative root and embedded clauses

We have hypothesized that declarative root clauses create a propositional situation and that V-final clauses represent propositional situations that exist independently. What notion of a proposition do we have? What does it mean that a propositional situation is created or that it exists independently? And how do our semantic considerations match with syntax?

We regard a *proposition* to be a representation where a situation is selected that fulfills a *state of affairs* σ – cf. (6). One could also say σ "holds in" ($\vDash$) *s* or *s* "supports" σ.

(6) $(s \vDash \sigma) = p$

According to Barwise (1989: 185), σ is a structure that classifies a situation *s*, the latter being the focus situation of the agent. It follows from Barwise's (1989: 226) reasoning "the situation classified by a proposition involves the cognitive activity of an agent in connection with his current focus situation" that the proposition itself can be seen as a representation. It is the representation of an abstract worldly object which, roughly speaking, is a thought. If one considers the HoldsIn-relation between *s* and σ - the proposition - as a state of affairs of itself, i.e. the state of affairs σ' that *s* holds in σ, one can relate this state of affairs σ' to a thought, i.e. to a situation which we call the propositional situation s_p.

(7) $s_p \vDash \underbrace{(s \vDash \sigma)}_{\sigma'} = (s_p \vDash p)$

So we regard a proposition as the descriptive content of a propositional situation, i.e. as the representation of s_p. The representation can be conceptual, semantic, or provided in some other way such as a picture. If it is semantic, the verbal meaning contributes a variable *s* for the situation thus causing a propositional predicate, i.e. a function from the set of situations into the set of propositions – cf. (8). The propositional predicate can be regarded as the descriptive meaning of a clause.

(8) $s.\ s \vDash \sigma$

If it is indicated that there is a situation *s* that exemplifies the propositional function as shown in (9), we obtain a proposition '$(\exists s.\ s \vDash \sigma)$' which characterizes the propositional situation s_p - cf. (10).

(9) $\exists s. \langle s\ ;\ s.\ s \vDash \sigma \rangle$
(10) $s_p \vDash (\exists s.\ s \vDash \vDash \sigma)$

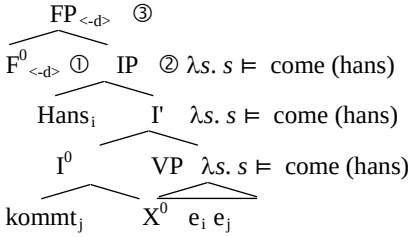
A propositional situation can be located in different modal contexts, such as in doxastic, assertoric or buletic ones. It is expressed to be understood in relationship to the cognitive agent determined by the syntactic subject of the matrix clause. As we will see below, propositional situations are necessary as linguistic objects to distinguish propositional situation matrix predicates like *believe* and *say* from simple situation predicates like *regret* and WANT and to have a discourse referent which can be anchored to an agent and which can be referred to by anaphoric expressions. As shown in Asher (1993) and Smith (2003), situations can be classified as eventualities, states, statives, and propositions. The latter may be objects of knowledge and beliefs. As we will show below, a propositional situation s_p can be introduced into the Common Ground by the semantics of a matrix predicate or by the illocutionary force of the sentence.

2.1 Declarative root clause

Unlike interrogative clauses, both main and embedded declarative clauses do not have the functional category CP which determines their sentence type. Like interrogative and imperative clauses, they do, however, provide the functional category IP which is represented semantically as a

propositional predicate – cf. (11②). Both main and embedded declarative clauses share a Force Phrase (FP), which determines that this propositional predicate is either an argument of a matrix predicate variable *M* or of the illocutionary operator ASSERT.

(11) Hans kommt.
Hans is coming.



In German, ASSERT is syntactically indicated by verb second, which is determined by the syntactic independency feature <-d> in F^0 and by the absence of the functional category CP. We suggest that ASSERT is an interface operator between the ordinary meaning and the conceptually illocutionary meaning – cf. (11①a) which provides the full representation of ASSERT, or (11①b) which provides its short form.[1]

① a. $\lambda P\, \exists s^{pass}.\, s^{pass} \vDash (\exists s^{utt\text{-}\alpha\text{-}P}\, \exists s_{p1}\, \exists s_1\, \exists s^{know\text{-}\alpha\text{-}sp1}\, \exists s^{bel\text{-}\alpha\text{-}sp2}\, \exists s^{p2}\, \exists s^{intend\text{-}\alpha}\, \Diamond\, \exists s^{aware.of\text{-}\beta\text{-}sp2}.$
$(\phi_1 \wedge \phi_2 \wedge \phi_4 \wedge \varphi_5 \wedge \varphi_6))$
$\phi_1\ (s^{utt\text{-}\alpha\text{-}P} \vDash (\text{UTTER}\ (\alpha), (P)))$
$\phi_2\ (s^{know\text{-}\alpha\text{-}sp1} \vDash (\text{KNOW}\ (\alpha), (s_{p1})) \wedge (s_{p1} \vDash [\langle s_1, P\rangle]))$
$\varphi_3\ (s^{bel\text{-}\alpha\text{-}sp2} \vDash ((\text{BELIEVE}\ (\alpha), (s^{p2})) \wedge (s^{p2} \vDash (\exists s^{not.aware.of\text{-}\beta\text{-}sp1}.\, s^{not.aware.of\text{-}\beta\text{-}sp1} \vDash (\text{NOT.AWARE.OF}\ (\beta), (s_{p1})))))$
$\varphi_4\ (s^{intend\text{-}\alpha} \vDash ((\text{WANT}\ (\alpha), (s^{aware.of\text{-}\beta\text{-}sp1})) \wedge (s^{aware.of\text{-}\beta\text{-}sp1} \vDash (\text{KNOW}\ (\beta), (s_{p1}))))$
$\varphi_5\ (((s^{utt\text{-}\alpha\text{-}s1} \oplus s^{know\text{-}\alpha\text{-}sp1} \oplus s^{bel\text{-}\alpha\text{-}sp2} \oplus s^{not.aware.of\text{-}\beta\text{-}sp1} \oplus s^{intend\text{-}\alpha})\ \text{at}\ \tau_0) \wedge (s^{aware.of\text{-}\beta\text{-}sp2}\ \text{at}\ \tau_{+1}) \wedge (\tau_0 < \tau_{+1}))$

b. $\lambda P\, \exists s^{pass}\, .\, s^{pass} \vDash (\exists s_{p1}\, \exists s_1.\, \text{ASSERT}\ (s_{p1} \vDash (\langle s_1, P\rangle)))$

As shown in (11①a), ASSERT subsumes the illocutionary conditions φ_1 to φ_5. They say that the assertoric propositional situation s^{pass} is given if there is: 1) an utterance situation $s^{utt\text{-}\alpha\text{-}P}$ such that the agent α utters the

[1] The character '<' indicates a temporal relation such that, for example, $s^{know\text{-}2}$ is prior to s^{utt}. 'At' indicates that the situations are simultaneous. Small capitals indicate that these predicates are not given linguistically. Superscripts indicate *indicated situations* and subscripts *described situations.*

propositional predicate *Hans is coming*, 2) the knowledge situation $s^{know\text{-}\alpha\text{-}sp1}$ such that α knows the propositional situation s_{p1} that Hans is coming,[2] 3) the belief situation $s^{bel\text{-}\alpha\text{-}sp2}$ such that α believes that there is the awareness situation $s^{not.aware.of\text{-}\beta\text{-}sp1}$ where β is not aware of s_{p1}, and 4) the intentional situation $s^{intend\text{-}\alpha}$ such that α wants the awareness situation $s^{aware.of\text{-}\beta\text{-}sp2}$ where β is aware of s_{p1}. It is additionally determined that 5) all situations are temporally located at the utterance time τ_0, except the awareness situation $s^{aware.of\text{-}\beta\text{-}sp1}$. The latter is established if β is aware of s_{p1}. ASSERT maps the semantics of the IP, the propositional predicate ②, onto a complex proposition, which is the conceptual representation of the assertoric propositional situation s^{pass} – cf. (11③).

③ a. $\exists s^{pass}.\ s^{pass} \vDash\ (\exists s^{utt\text{-}\alpha\text{-}P}\ \exists s_{p1}\ \exists s_1\ \exists s^{know\text{-}\alpha\text{-}sp1}\ \exists s^{bel\text{-}\alpha\text{-}sp2}\ \exists s^{p2}\ \exists s^{intend\text{-}\alpha}\ \Diamond\ \exists s^{know\text{-}\beta\text{-}sp1}.$
$(\phi_1 \wedge \varphi_2 \wedge \phi_3 \wedge \phi_4 \wedge \varphi_5))$
$\phi_1\ (s^{utt\text{-}\alpha\text{-}P} \vDash\ (\text{UTTER}\ (\alpha), (\lambda s.\ s \vDash\ (\text{come}\ (\text{hans})))))$
$\phi_2\ (s^{know\text{-}\alpha\text{-}sp1} \vDash\ ((\text{KNOW}\ (\alpha), (s_{p1})) \wedge (s_{p1} \vDash [\langle s_1, \lambda s.\ s \vDash\ (\text{come}\ (\text{hans}))\rangle])))$

b. $\exists s^{pass}.\ s^{pass} \vDash\ (\exists s_{p1}\ \exists s_1.\ \text{ASSERT}\ (s_{p1} \vDash\ (\langle s_1, \lambda s.\ s \vDash\ (\text{come}\ (\text{hans}))\rangle)))$

The proposition representing s^{pass} is not determined by a linguistically given predicate-argument structure, but by a conceptual structure which we call *conceptual illocutionary meaning*. The latter corresponds to a certain extent to Portner's (2006) *expressive meaning*. The conceptual representation of s^{pass} is true – or the performed assertoric speech act is felicitous – if the indicated situations exist in the actual world, or in a possible one.

As shown in (11), ASSERT ① initiates that the propositional predicate ② is applied to s_1 and that this application provides the proposition '$\exists s_1.\ s_1 \vDash$ (come (hans))', which characterizes the propositional situation s_{p1}. ASSERT thus simulates that the latter emerges at the very instant the V2 clause is uttered. The agent introduces s_{p1} because he wants to update the Common Ground. In order to update the Common Ground, the illocutionary conditions that ASSERT determines must be met, and the addressee must, at least, believe s_{p1}. If this is the case, the utterance of (11) can be regarded as an update of the Common Ground.

2.2 *Dass*-clauses

[2] The predicate *to know* provides the presupposition that the proposition it denotes is true (cf. Kratzer 2003).

Both *dass*-clauses and declarative V2-clauses have in common that their IP is interpreted as a propositional predicate that characterizes a situation. As for *dass*-clauses, their Focus Phrase FP is marked by the feature <+d>, which indicates via the subordinator *dass* the dependency of the clause on a matrix clause. The latter, in its turn, determines that there is a situation *s* that is a subset of the set of situations denoted by the IP of the *dass*-clause, and also what type of situation this situation is. Huddleston & Pullum (2003: 955) also argue that the English complementizer *that* indicates subordination only.

If predicates are related to a proposition, we call them *p(ropositional) predicates*. We distinguish between p-predicates like *wissen* 'know' and *bedauern* 'regret' which relate to a factive proposition (*factive predicates*), those like *wollen* 'want' that determine that the proposition they relate to is intended to be true (*volitional predicates*), those like *glauben* 'believe' which determine that the proposition they affect is possibly true (*T(rue)F(alse)-predicates*), and those like *sagen* 'say' which do not determine the truth value of the proposition they are related to *U(ndeterminate)-predicates*.

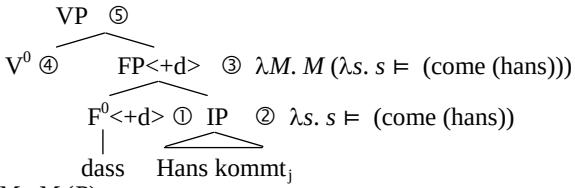
There is a class of predicates, which is an intersection of factive and volitional predicates, containing emotive predicates like *bedauern* 'regret' and volitional ones like *wollen* 'want'. These predicates focus on a non-propositional situation s_i presupposing that the HoldsIn-relation between this situation and its description is true in the current or anticipated actual world. We will call this class of predicates *s_i-predicates*.

The other predicates focus on the HoldsIn-relation. They affect a propositional situation and will be called *s_p-predicates*. The property of focusing on a propositional situation is characteristic for TF- and U-predicates. As discussed in Ginzburg (1995), TF-predicates like *glauben* 'believe' and *hoffen* 'hope' signal the subject's commitment to the truth or falsity of the proposition they affect. We will see below why only U- and TF-predicates allow the embedding of a declarative root clause, why only factive ones permit the embedding of interrogatives, and why only s_i-predicates are reconstructed with respect to solitaires. We will see that *dass*-clauses can uniformly be represented as propositional predicates, independently of whether they are embedded by factive or volitional predicates, U-predicates, or TF-predicates. They always relate to propositions that are independent from the utterance of the *dass*-clause.

Example (12) demonstrates a *dass*-clause that is embedded by an s_i-predicate. The FP of the complement clause is marked by the feature <+d>, which indicates the dependency of the clause on a matrix predi-

cate. For this reason, the semantics of the feature <+d> (12①) introduces a variable for a matrix predicate – cf. Asher (1993).

(12) Anna bedauert, dass Hans kommt.
Anna regrets that Hans is coming.



① $\lambda P\, \lambda M\, .\, M\, (P)$

The matrix predicate ④ determines that there is a situation s_1 which is mapped onto a proposition by the propositional predicate ②, and that this situation is related to the matrix subject. The situation s_1 is given in the actual world, which is determined by the factual predicate.

$V^0_{matr.}$: ④ $\lambda P\, \lambda x\, \lambda s_{emo}\ \exists s_1\ ((s_{emo} \vDash (\text{regret}\ (x), (s_1))) \wedge (\langle s_1, P\rangle))$
$VP/IP_{matr.}$: ⑤ $\lambda s_{emo}\ \exists s_1\ ((s_{emo} \vDash (\text{regret (anna)}, (s_1)) \wedge\ (\langle s_1, \lambda s.\ s \vDash (\text{come (hans)})\rangle)))$

Since the matrix predicate determines the state of affairs which the V-final clause characterizes to be a matter of fact, the truth of the proposition '$\exists s_1.\ s_1 \vDash$ (come (hans))' is not in question. Therefore the proposition need not be related to a cognitive agent.

As in root clause (11), the matrix clause in (12) indicates the functor *ASSERT*, which turns ⑤ into the assertoric propositional representation ⑥.

FP_{matr}: ⑥ $\exists s^{pass}.\ s^{pass} \vDash (\exists s_{emo}\ \exists s_1.\ \text{ASSERT}\ ((s_{emo} \vDash (\text{regret (anna)}, (s_1))) \wedge (\langle s_1, \lambda s.\ s \vDash (\text{come (hans)})\rangle)))$

Recall that factive s_p-predicates like *know*, U-predicates like *say* and TF-predicates like *believe* have an internal argument that is a propositional situation s_p. The syntactic and semantic representation of their *dass*-clause does not differ from the representation of the *dass*-clause in a construction with an s_i-predicate like *regret* – cf. (12③) and (13③).

(13) Anna glaubt, dass Hans kommt.
Anna believes (that) Hans is coming.
F^0: ① $\lambda P\, \lambda M\, .\, M\, (P)$
IP: ② $\lambda s.\ s \vDash$ (come (hans))

FP: ③ $\lambda M.\ M\ (\lambda s.\ s \vDash$ (come (hans)))
$V^0_{matr:}$: ④ $\lambda P\ \lambda x\ \lambda s_{bel}.\ s_{bel} \vDash$ ((believe (x), (s_{p1})) $\wedge$ ($s_{p1} \vDash$ ($\exists s_1.\ \langle s_1$, P$\rangle$))))
IP_{matr}: ⑤ $\lambda s_{bel}.\ s_{bel} \vDash$ ((believe (anna), (s_{p1})) $\wedge$ ($s_{p1} \vDash$ ($\exists s_1.\ \langle s_1, \lambda s.\ s \vDash$ (come (hans))$\rangle$))))

Each of the two *dass*-clauses in (12) and (13) characterizes a situation s_1 which is provided by the semantics of the matrix predicate. Since the situation s_1 provided by a matrix predicate like *believe* in (13④) is not anchored in the actual world, the matrix predicate affects the truth or falsity of the proposition it is related to. It is therefore possible to infer the non-truth of the proposition if the matrix predicate is negated. Since, on the other hand, the situation variable s_1 provided by a factive predicate like *regret* in (12④) and *know* is anchored in the actual world, the truth or falsity of the proposition to which the matrix predicate is related cannot be affected.

With the theory presented above we can explain why *dass*-solitaires are not equivalent to declarative root clauses, why certain propositional predicates can embed interrogatives, and why certain other predicates embed declarative root clauses.

3 Benefits

Obviously, the theory outlined above may give rise to various objections and questions: i) Why do we not adopt the claim made by Brandt et al. (1992) that root declaratives and *dass*-clauses have a uniform semantics? ii) Why do we not accept their view that *dass*-clauses and root clauses are represented semantically as propositions? And iii), is it compelling that propositional situations are necessary as linguistic objects?

3.1 Non-uniform semantics of declarative root and complement clauses

Brandt et al. (1992) and Zimmermann (1993) argue that declarative root clauses and *dass*-clauses differ with respect to their syntactic structure, but also that both have a uniform semantic representation as given in (14b).

(14) a. Peter schläft.
Peter is sleeping.
b. ..., dass Peter schläft.
... (that) Peter is sleeping.

∃e [e INST (sleep (peter))]

The first objection, which can be raised against this claim, is that the semantic representation should mirror the syntactic dependency of *dass*-clauses. So we would expect that, analogously to our proposal, they should be the argument of a matrix predicate variable. A second, more serious objection is related to the use of *dass*-clauses as solitaires. If they had a similar representation to a root declarative, nothing would prevent them from being the argument of the assertoric illocutionary operator. We consider that our non-uniform semantic analysis does account for the restricted illocutionary potential of solitaire *dass*-clauses. As shown above, the declarative root clauses syntactically indicate assertoric illocutionary force via their non-dependency feature while *dass*-solitaires do not indicate the illocutionary force by their syntactic structure. As shown in Schwabe (t.a. 2006a, b) and outlined below, their illocutionary force results from their propositional content and the situational context.

3.2 Non-propositional situation matrix predicates

We have shown that the ordinary meaning of declarative root clauses is represented as a propositional predicate. At the semantic/syntax-interface, it is the argument of the illocutionary functor ASSERT, the latter not belonging to the ordinary meaning. If the clause is uttered, the agent selects a situation that exemplifies the propositional predicate and thus creates a propositional situation. Analyzing ASSERT of root declaratives as a function from the set of propositional predicates into a set of assertoric propositions (cf. 1①) takes into account Rehbock's (1992) idea that the agent establishes the reference for the sentence. And it makes semantically clear the difference between root declaratives and *dass*-clauses. Whereas the former establish propositional objects, the latter contribute to denoting propositional objects.

It seems understandable that the IP of a *dass*-clause could also be interpreted as a proposition. And indeed, Steube (1987), Rosengren (1992), and Zimmermann (1993) make this proposal. So why not represent *dass*-clauses like they do – cf. (14b)? The *first* argument against this approach is as follows: as we have seen above, matrix predicates have either propositional or non-propositional situation arguments – cf. (12/13④). However, the analysis of a *dass*-clause as a proposition makes it impossible to represent this difference. Consider the non-controversial structures in (15). The representation (15i) obtains if the *dass*-

clause with the semantics as given in (14b) specifies the propositional variable *p* of the matrix predicate. (15ii) is the representation we have argued for in (13).

(15) i. $\lambda s_{bel} . s_{bel} \vDash$ (believe (anna), ($\exists s_1 . \langle s_1, \lambda s. s \vDash$ (come (hans))⟩))) ii. $\lambda s_{bel} \exists s_{p1} . s_{bel} \vDash$ ((believe (anna), (s_{p1})) $\wedge$ ($s_{p1} \vDash$ ($\exists s_1 . \langle s_1, \lambda s. s \vDash$ (come (hans))⟩))))

The representation in (16i), however, shows that the *dass*-clause cannot be a proposition. The subject cannot regret a proposition but can regret the situation s_1 in which the state of affairs 'come (hans)' holds. It is the situation s_1 that is affected by the matrix predicate meaning. A semantic item *a* is affected by another semantic item *b*, if *a* is in the scope of *b*. This is represented in (16ii) where s_1 is an argument of *regret*. The proposition '($\langle s_1, \lambda s. s \vDash$ (come (hans))⟩)', which is presupposed and thus adjoined to the proposition '(regret (anna), (s_1))' is not in the scope of the emotive predicate. The representation (16ii), however, is only possible if we regard a *dass*-clause as a propositional predicate.

(16) i. *$\lambda s_{emo} \exists s_1 . s_{emo} \vDash$ (regret (anna), ($\langle s_1, \lambda s. s \vDash$ (come (hans))⟩)) ii. $\lambda s_{emo} \exists s_1$ (($s_{emo} \vDash$ (regret (anna), (s_1))) $\wedge$ ($\langle s_1, \lambda s. s \vDash$ (come (hans))⟩))

Matrix predicates like *regret*, *know*, and *say* can embed interrogatives and declaratives. This is possible because they are related to true propositions or can be related to true propositions, i.e. to propositions that are suitable for answer acts. Propositions, which are affected by TF-predicates, are not suited for answers since they can be false. As to *regret* or *know*, it is lexically determined that they relate to a presupposed true proposition. Predicates like *say*, however, do not determine whether the proposition they relate to is true in the actual world. The truth value of the proposition they relate to is determined pragmatically. Recall that the proposition a p-predicate relates to has the form shown in (17).

(17) $\exists s. \langle s ; P \rangle$

If there is a *dass*-clause like *dass Hans kommt* 'that Hans is coming', its semantics $\lambda s. s \vDash$ *(come (hans))* specifies the variable *P*. Interrogative complement clauses, on the other hand, only specify a part of such a propositional predicate. Tracing back to Krifka (2001), we regard interrogatives as functions from the set of answers to the set of propositional

predicates. These propositions are structured, consisting of the question *q* and the answer *a*.

(18) ⟨q ; a⟩

As Schwabe (to appear b) shows, factual and undeterminate predicates like *regret* and *say* relate to propositions that can be structured in this respect. Whereas the question part *q* is expressed by an interrogative complement clause like *wer kommt* 'who is coming' with the semantics $\lambda x \in PERSON.\ s \vDash (come\ (x))$, the answer part is not expressed. The variable *a* is then bound. The reason why these predicates relate to propositions, which are structured into an overt question part, and an unexpressed answer part is that they can presuppose a complex question proposition which contains the proposition that there is someone who knows the answer proposition to the question posed. A matrix clause with the predicate *know* just confirms this presupposition, one with *regret* implies it, and one with *say* does not suspend it.

To conclude: the analysis of a *dass*-clause as a propositional predicate, which is an argument of a matrix predicate variable, enables us to distinguish non-propositional situation predicates (s_i-predicates) from propositional ones (s_p-predicates). Whereas both relate to a propositional situation that is given independently of uttering the *dass*-clause, a declarative root clause is related by ASSERT to a propositional situation that only emerges when it is used. In the following sections we will see why s_i-predicates can be covert. And we will give an explanation as to why U- and TF-predicates can 'embed' declarative root clauses.

3.3 Semantic distinction of *dass*-solitaires and declarative root clauses

We have observed that unlike corresponding root declaratives, *dass*-solitaires cannot be used as assertions. The reason for this is that the feature <+d> in the *dass*-clause indicates dependency on a matrix predicate what prevents the illocutionary functor ASSERT from being attached to its semantics. It follows that the illocutionary conditions φ_4 and φ_5 which are connected with ASSERT are not valid – cf. (11). Thus the speaker need not believe that the addressee does not know the proposition that there is a situation which supports the state of affairs the *dass*-clause describes, and he need not want the addressee to know this proposition. And therefore he need not introduce this proposition into the Common Ground. But what happens instead? As shown in Schwabe (to appear, 2006a, b), like every *dass*-clause, a *dass*-solitaire

also depends on a matrix predicate. The latter is, however, elliptical in that it is syntactically empty – cf. (19i) and (20i).

(19) Dass Hans kommt!
that Hans comes
So, Hans is coming!
i. $[_{\text{FocP}}\ [_{\text{ForceP}}$ dass Hans kommt$]_i\ [_{\text{VP}}\ t_i\ [_{\text{V}}{}^0$ e]]]
ii. $[\![\text{FocP}]\!] = \langle \lambda M\,.\, M\ (\lambda s.\ s \vDash \text{(come (hans)))}, \lambda Q.\ \langle Q, \lambda V.\ \exists M.\ M\ (V)\rangle\rangle$
iii. $\langle \lambda M\,.\, M\ (\lambda s.\ s \vDash \text{(come (hans)))}, \lambda Q.\ \langle Q, \lambda V.\ \exists s1\ \exists s_{p1}\ \exists s^{emo}.\ s^{emo} \vDash$
$((\text{IS.AMAZED}\ (\alpha), (s_1)) \wedge (s_{p1} \vDash [_{pres}\ \langle s_1, V\rangle]))\rangle\rangle$

(20) Dass Du jetzt an die Ostsee fährst!
That you now to the Baltic drive
So drive to the Baltic now!
i. $[_{\text{FocP}}\ [_{\text{ForceP}}$ dass du an die Ostsee fährst$]_i\ [_{\text{VP}}\ t_i\ [_{\text{V}}{}^0$ e]]]
ii. $[\![\text{FocP}]\!] = \langle \lambda M\,.\, M\ (\lambda s.\ s \vDash \text{(Baltic.drive (}\beta\text{))}, \lambda Q.\ \langle Q, \lambda V.\ \exists M.\ M\ (V)\rangle\rangle$
iii. $\langle \lambda M\,.\, M\ (\lambda s.\ s \vDash \text{(Baltic.drive (}\beta\text{))}, \lambda Q.\ \langle Q, \lambda V.\ \exists s_{p1}\ \exists s_1\ \exists s^{want}.\ s^{want} \vDash$
$((\text{WANT}\ (\alpha), (s_1)) \wedge (s_{p1} \vDash [_{proj}\ \langle s_1, V\rangle]))\rangle\rangle$

Since the semantic content of the matrix predicate is not determined linguistically, a *dass*-solitaire is semantically indeterminate – cf. (19ii) and (20ii). As shown in (19i and 20i), we regard the *dass*-clause of the *dass*-solitaire as a focused constituent. The *dass*-solitaire is therefore represented semantically as a structured propositional predicate, i.e. as a pair consisting of the semantics of the *dass*-clause – the focus part – and the semantics of the elliptical matrix clause – the background part – cf. (19ii and 20ii). The latter contains the variable *M* for the matrix predicate. The conceptual specification of *M* is provided by the situational context. It can be an abstract EMOTIVE or VOLITIONAL predicate, thus yielding the conceptual meanings as given in (19iii) and (20iii).

It is obvious that only s_i-predicates can specify the matrix predicate variable *M*. The reason for this is the situation s_i that they provide is easily accessible. Since the situation is given or is intended to be given by the actual context, there is no need for an operator to provide this situation and thus to introduce a new proposition. This explains why *dass*-solitaires can be used for speech acts that do not introduce new propositions. Depending on the actual context and the propositional content, they can be used, for example, as exclamatives or commands. S_P-predicates, on the other hand, cannot specify the matrix predicate variable. The reason for this might be that propositional situations are barely accessible without being denoted by a matrix predicate.

As shown in Schwabe (to appear b), interrogative complements of interrogative solitaires are arguments of conceptual s_i-predicates as well. They are embedded either by conceptual EMOTIVE predicates as in (21) or by conceptual VOLITIONAL ones as in (22).

(21) Was er dort macht!
what he here is doing
What on earth he's doing there!
(22) Was er wohl macht?
What he PART is doing
I wonder what he is doing.

3.4 Embedded declarative complement and root clauses

We have represented the different semantic forms of s_i- and s_p-predicates taking into account that s_p-predicates affect propositional situations, i.e. they scope over propositional situations. We will show below that the concept of a propositional situation helps us to explain why only TF-predicates like *glauben* (*believe*) and U-predicates like *sagen* (*say*) can embed declarative verb-second clauses while factive predicates and negated TF ones cannot.[3]

(23) a. Anna glaubt, Hans kommt.
Anna believes Hans comes
Anna believes Hans is coming.
b. *Anna glaubt nicht, Hans kommt.
Anna believes not Hans comes
c. *Anna bedauert, Hans kommt.
Anna regrets Hans comes
d. *Anna möchte, Hans kommt.
Anna would like Hans comes

As we can see in (24), the *conceptual* representation of (23a), three propositions are conjoined: p_i is determined by the matrix clause and contains the variable s_{p1} for a propositional situation that is identified with the propositional situation variable s_{p2} provided by the subsequent root declarative. Proposition p_{ii} is a complex proposition representing an assertoric speech act that results when the declarative root clause is uttered. It provides the complex assertoric illocutionary proposition s^{pass} including φ_1 to φ_5 with the propositional situation s_{p2}, the content of which is given by the ordinary meaning of the root declarative. Proposition p_{iii} identifies the propositional situations s_{p1} and s_{p2} with each other. It follows from illocutionary reasoning that ϕ_2 as given in the assertoric default case as in (11) is modified to the effect that the

[3] See Gärtner (2002) and Meinunger (2004) on embedded declarative root clauses.

predicate KNOW is overridden by BELIEVE, and that the agents of BELIEVE are the matrix subject as well as α.

(24) $\exists s_{p1}\, \exists s_{p2}$.
i. $(\exists s_{bel}\ (s_{bel} \vDash (\text{believe (anna)}, (s_{p1}))) \wedge$
ii. $(\exists s^{pass}.\ s^{pass} \vDash (\exists s^{utt\text{-}\alpha\text{-}P}\ \exists s^{bel\text{-}\alpha\text{-}sp2}\ \exists s^{bel\text{-}\alpha\text{-}sp3}\ \exists s^{p3}\ \exists s^{intend\text{-}\alpha} \Diamond\ \exists s^{know\text{-}\beta\text{-}sp2}.\ (\phi_1 \wedge \varphi_2 \wedge \phi_3 \wedge \phi_4 \wedge \varphi_5))) \wedge$
iii. $(s_{p1} = s_{p2}))$
ϕ_1 $(s^{utt\text{-}\alpha\text{-}P} \vDash (\text{UTTER}\ (\alpha), (\lambda s.\ s \vDash (\text{come (hans)}))))$
ϕ_2 $(s^{bel\text{-}\alpha\text{-}sp2} \vDash ((\text{BELIEVE (anna}\oplus\alpha), (s_{p2})) \wedge (s_{p2} \vDash (\exists s_1.\ \langle s_1, \lambda s.\ s \vDash (\text{come (hans)})))))$
φ_3 $(s^{bel\text{-}\alpha\text{-}sp2} \vDash ((\textit{believe}\ (\alpha), (s^{p3})) \wedge (s^{p3} \vDash (\exists s^{not.aware.of\text{-}\beta\text{-}sp2}.\ s^{not.aware.of\text{-}\beta\text{-}sp2} \vDash (\text{NOT.AWARE.OF}\ (\beta), (s_{p2})))))$
φ_4 $(s^{intend\text{-}\alpha} \vDash ((\text{WANT}\ (\alpha), (s^{aware.of\text{-}\beta\text{-}sp2})) \wedge (s^{aware.of\text{-}\beta\text{-}sp2} \vDash (\text{AWARE}\ (\beta), (s_{p2}))))$
φ_5 $(((s^{utt\text{-}\alpha\text{-}s1} \oplus s^{know\text{-}\alpha\text{-}sp1} \oplus s^{bel\text{-}\alpha\text{-}sp2} \oplus s^{not.aware.of\text{-}\beta\text{-}sp1} \oplus s^{in\text{-}tend\text{-}\alpha})\ \text{at}\ \tau_0) \wedge (s^{aware.of\text{-}\beta\text{-}sp2}\ \text{at}\ \tau_{+1}) \wedge (\tau_0 < \tau_{+1}))$

If the matrix predicate *believe* is negated as in (23b), the proposition given with ($24\phi_2$) can no longer be true. Factive predicates as in (23c) and volitional ones as in (23d) cannot be related to complex assertoric propositions since they are related to propositions which are true, i.e. the proposition they are related to is not in question.

To return to the question of whether it is compelling that propositional situations are necessary as linguistic objects: they are. They are necessary to identify Anna's belief with one provided by the associated assertion p_{ii} in (24). Imagine the potentially alternative representation (25) of (23a) where the matrix predicate *believe* has a proposition variable *p* instead of the propositional situation variable s_p and ASSERT is represented as λq. ASSERT (q).

(25) $(\exists p.\ \text{believe (believe (anna), (}p\text{))}) \wedge (\text{ASSERT}\ (\exists s.\ s \vDash (\text{come (hans)})))$

We can note with respect to the second conjunct that it does not contain a variable that the existentially bound proposition variable *p* could be identified with. And propositional situations are further necessary, as shown above, to distinguish s_p-predicates like *believe* and *say* from s_i-predicates like *regret* and *want*, and to provide discourse referents which can be referred to by anaphoric expressions as in (26).

(26) Anna glaubte, dass Hans kommt und bestätigte es (später).
Anna believed (that) Hans was coming and confirmed it (later).

U-predicates like *say* allow the 'embedding' of root clauses since they do not determine the truth value of the proposition they are related to. Compare (27) where the proposition is factive with (28) where its truth value is not determined, provided *Hans* is an actor.

(27) Hans sagt, wer kommt.
Hans says who will come
Hans is saying who will come.
(28) Hans sagt im ersten Akt, er ist krank.
Hans says in the first act he is ill
Hans says in the first act he is ill.

4 Conclusion

Taking as a starting point Barwise's (1989) situation semantics, we considered declarative root clauses as propositional predicates that are the argument of ASSERT, which we regarded as an operator not to the ordinary meaning. We further argued that *dass*-clauses are propositional predicates that are the argument of a matrix predicate variable. We thus could show that declarative root clauses and verb-final clauses do not have a uniform semantics and that their ordinary meaning does not denote a proposition. The proposition results if the illocutionary functor ASSERT is attached to the ordinary meaning of the declarative root clause or if the *dass*-clause is an argument of a matrix predicate. If the latter is the case, the proposition is either denoted or presupposed, i.e. it exists independently of the use of the sentence. If ASSERT is attached to the declarative root clause, it simulates, so to speak, the causation of a new propositional situation and *new* proposition. It does so by providing a situation s_i that supports the ordinary meaning of the sentence, the propositional predicate. New propositions always update the Common Ground since they are believed not to be known to the addressee. Old propositions, i.e. propositions that exist independently, can, but need not contribute to updating.

We have introduced the concept of a propositional situation s_p which we regarded as a discourse referent, i.e. as a cognitive worldly entity. It is represented by a proposition which is structured conceptually and, if necessary, semantically. Both propositions must be applicable onto each other. The distinction between propositional situations s_p and non-propositional situations s_i was helpful to distinguish matrix s_p-predicates like *believe*, which focus on propositional situations, from s_i-predicates like *regret*, which focus on non-propositional ones.

As to conceptual EMOTIVE and VOLITIONAL s_i-predicates, we were able to show that they need not be expressed if the situation they affect, and the situation they characterize are given in the actual world and are easy for the addressee to access. This was the case with respect to declarative solitaires, which we argued to be elliptical structures with a non-expressed conceptually given matrix predicate. We were also able to show that factive s_i- and s_p-predicates can have interrogative complements because they relate to answer propositions that are thought to be factive. And we discussed why factive as well as volitional predicates do not allow the 'embedding' of a root declarative. We argued that these predicates relate to a proposition which is true in the current or anticipated actual world, whereas non-factive and non-volitional predicates, like declarative root sentences with modified ASSERT, relate to a proposition whose truth value is not yet determined. We showed that non-factive and non-volitional predicates can 'embed' root declaratives if the propositional situation they affect is identical with the propositional situation created by the root declarative and if the proposition they are related to is either true or false.

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