

The partial factivity of opinion verbs

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Abstract This paper aims at providing a novel analysis of the subjectivity requirement of opinion verbs based on their presupposition properties. I show that the interpretation of the complement of opinion verbs involves an important amount of presupposed material. Once formalized properly in the form of what I call the Subjective Contingency Presupposition, nothing further needs to be said to exclude sentences where opinion verbs take as complement a non-subjective clause, since such sentences would be associated with a contradictory presupposition. I further show that this new analysis also correctly predicts that analytical propositions under *find* are also ruled out even if they contain subjective predicates, a fact that is otherwise not accounted for.

Keywords: Predicates of personal taste, subjectivity, opinion verbs, presuppositions

1. Introduction

This paper aims at providing a novel analysis of the requirement that opinion verbs take as complement only a (possibly reduced) clause that expresses a subjective statement. This requirement, discussed in Ducrot (1975) for the French verb *trouver* and more recently for a variety of (mostly Germanic) languages by Sæbø (2009), is exemplified in (2) for the English verb *to find*:

- (1) Mary finds Billy nice.
- (2) #Mary finds Billy dead.

A subjective predicate like *nice* is adequate in order to satisfy the requirement of *find*, since whether or not Billy is nice is clearly a matter of opinion, while a predicate like *dead* is not acceptable, since whether or not Billy is dead is an objective, verifiable fact.

Subjective predicates, also known as predicates of personal taste, have received much attention in recent semantic literature. There is no strict definition of the class of subjective predicates, although their participation in dialogues of faultless disagreement, discussed below, seems to be a crucial property. Typical subjective predicates are adjectives like *tasty* and *fun* (either in the bare form or in the comparative; cf. Kennedy (2012)) and dimensional adjectives used in the bare form (cf. Bierwisch (1989); Richard (2004)). The class may also contain certain modal verbs (Egan et al. (2005), Stephenson (2007a), Von Fintel and Gillies (2008), Sæbø (2009)), verbs whose meaning includes an evaluative component such as *rocks* and *stinks*, and finally some nouns like *success* or *failure*. The requirements of opinion verbs can be satisfied by any of these items:

- (3) John finds that Bill is tall.
- (4) John finds that Bill should quit smoking.

- (5) John finds that my food stinks.
 (6) John finds that the conference was a success.

Two types of analyses have typically been proposed, mostly focusing on the core cases of subjective adjectives, although for the most part the proposals can be extended to these other classes of subjective predicates. The simplest solution would be to claim that predicates of personal taste are two-place predicates, having a syntactically expressed, but usually covert, judge argument. This is supported by the fact that some subjective predicates can take overt PPs that introduce the judge, such as in (7), where the *for*-phrase provides the judge for *fun*.

- (7) The roller-coaster was fun for Mary.

In the absence of any overt PP, the assumption is that there is a covert pronoun that provides the judge, and that is usually (but not necessarily) understood as the speaker.

Lasersohn (2005) argues against this view, mainly focusing on the fact that predicates of personal taste can give rise to the intuition of faultless disagreement (cf. Kölbel (2004)), i.e. the intuition that two speakers who utter clearly contradictory statements can be felt to both be in some sense speaking truthfully. The dialogue in (8) has this property, while that in (9) does not. One of the two speakers must be right, and the other must be wrong.

- (8) A: Billy is nice.
 B: No, he isn't! He's a jerk!
 (9) A: Billy is dead.
 B: No he isn't! He's alive and well!

In order to account for this intuition, Lasersohn proposes to enrich the semantics by adding a judge index on the interpretation function, in addition to the better-known world and time parameters. The intension of a sentence is thus understood as a set of world-time-judge triplets, and its extension can only be fixed once appropriate values are provided for all three parameters. Some lexical items, like *nice*, are assumed to be subjective and their value is allowed to vary across judges for a fixed world and time, while every other item in the lexicon must be assumed to have a constant extension across worlds for a given world and time.

This system makes it possible to account for the intuition of faultless disagreement in the following way. The faultless character of the dialogue in (8) is a consequence of the fact that the predicate *nice* is subjective and thus allowed to vary across judges. While A and B's utterances have the same world and time indices, they have distinct judge indices since both speakers naturally take an endocentric perspective, i.e. they take themselves as the judge of the sentence. Both utterances

can thus be true because they are interpreted at distinct indices¹.

- (10) A: [[Billy is nice]]_{w, A}
 B: [[Billy is not nice]]_{w, B}

The intuition that they nevertheless disagree comes from the fact that their utterances have complementary intensions. In other words, there is no overlap in the set of world-time-judge triplets denoted by A's statement and that uttered by B.

Both the index theory and the pronoun theory face a number of challenges. It is very difficult to account for the intuition of faultless disagreement under the pronoun theory, as shown by Lasersohn. If judges are introduced in the syntax rather than in the index, it would be possible to account for the faultless character of (8), but not for the fact that there is any disagreement. The dialogue is faultless because the statements made by A and B contain distinct covert pronouns as arguments for *nice*, but there is no reason why there should be any disagreement.

On the other hand, the index theory is faced with the problem that non-intersecting intensions do not normally give rise to the intuition of faultless disagreement (cf. Stojanovic (2007), footnote 5). For example, in the following dialogue, A and B are making statements that are interpreted at distinct worlds, and the resulting intuition is that the two speakers are having misunderstanding. The dialogue is not faultless because B's statement is the only one that is actually true, and A is forced to back down on his claim.

- (11) A: Sherlock Holmes lives at 221B Baker Street.
 B: No he doesn't! He doesn't even exist.
 A: Well, I just meant in the books.

These two approaches provide different ways of accounting for the subjectivity requirement of opinion verbs. My purpose here is not to argue in favour of either of these approaches to predicates of personal taste, but rather to show that a more complete observation of the interpretation of sentences containing opinion verbs makes it possible to account for the subjectivity requirement regardless of the choice of theory of subjectivity. In section 2, I review Sæbø (2009)'s proposed analysis of the phenomenon inside the pronoun theory and an alternative analysis inside the index theory. Section 3 presents some new data concerning the presupposition properties of sentences with *find*. Once properly formalized to take into account the peculiar behaviour of negation under *find*, I will show that sentences in which an opinion verb takes a non-subjective complement are associated with a contradictory presupposition, and can thus be ruled out without further stipulation. Section 4 presents some additional predictions of this approach, showing that some additional infelicitous cases can be ruled out. Section 5 concludes the paper.

¹For simplicity I will omit time indices in the rest of this paper.

2. The type mismatch analysis

Sæbø (2009) claims that non-subjective predicates under *find* are ruled out because the resulting sentence would contain a type mismatch. This analysis corresponds to the fact that he adopts the pronoun theory of judge-dependency. Putting aside the gradable nature of these adjectives (cf. Glanzberg (2007)), *nice*, for example, would denote an $\langle e, \langle e, t \rangle \rangle$ function, while *dead* would be $\langle e, t \rangle$. He further proposes that what *find* must combine with is a proposition in which a subjective predicate has not had its judge argument filled in. For example, in (1), the denotation of the small clause *Billy nice* is simply the set of individuals for whom Billy is nice, i.e. the set of judges who would map Billy to true. *Find* combines with this, then with the matrix subject, and yields true iff the matrix is a member of that set of judges. Note that Sæbø's analysis makes the judge the second argument of PPTs.

$$(12) \quad [[\text{find}]]_{\mathbf{w}} = \lambda\phi_{\langle e, t \rangle} \lambda x. \phi_{\mathbf{w}}(x) \quad (\text{Pronoun theory})$$

$$(13) \quad [[\text{nice}]] = \lambda x. \lambda y. x \text{ is nice according to } y$$

$$(14) \quad [[(1)]] = \mathbf{T} \text{ iff } \langle [[\text{Billy}]]_{\mathbf{w}}, [[\text{Mary}]]_{\mathbf{w}} \rangle \in [[\text{nice}]]_{\mathbf{w}}$$

Of course, under this view, there is no way to replace *nice* with a non-subjective predicate. In (2), the predicate *dead* denotes an ordinary set of individuals and the SC *Billy dead* denotes a full proposition. Since this is not the kind of complement that *find* is looking for, the semantic composition cannot proceed any further and the sentence is adequately ruled out.

This, Sæbø suggests, is a better analysis of the subjectivity requirement than what is available to the index theory of judge-dependency. Under the index theory, all that *find* does is shift the judge index of its complement to the matrix subject.

$$(15) \quad [[\text{find}]]_{\mathbf{w}, j} = \lambda\phi. \lambda x. \phi_{\mathbf{w}, x} \quad (\text{Index theory})$$

This will not make it inapplicable if its complement clause is not subjective. Rather, it will make it vacuous. That is, there is no compositional problem with (2), but it is pointless to shift the judge index of a clause that does not contain any item whose value can vary across judges. Under Sæbø's assumption that the semantic contribution of opinion verbs reduces to affecting the judge (index or pronoun) of its complement clause and nothing else, then for the index theory the problem with sentences like (2) is that they are exactly equivalent to their embedded clause. The matrix subject and matrix verb are entirely superfluous. Presumably, Sæbø claims, it would be possible to come up with a pragmatic justification for ruling out such embedding if the shorter sentence is equivalent.

Note that this analysis is only available if we accept Sæbø's "radically reductionistic" view, according to which opinion verbs do nothing else than shift the judge of their complement. This goes against the view advocated for example by Stephenson (2007b), Nouwen (2007) and Pearson

(2012), who all assume that *find* contains an epistemic or doxastic component. Sæbø provides very little evidence for this, but since the position that he advocates (the type-mismatch analysis) does not depend on this feature, this is of little consequence. However it is crucial to this alternative analysis under the index theory.

Though such a pragmatic analysis is not unreasonable, it is not obvious how sentences can be ruled out on the basis of having some superfluous parts. As discussed in Gajewski (2002), *contra* Barwise and Cooper (1981) and Fintel (1993), analytical statements are not generally ungrammatical or infelicitous. Closer to the question at hand, it is not infelicitous to construct a sentence by conjoining a contingent clause with a tautology, despite the fact that the truth-conditions of the sentence reduce to those of the first clause, thus making the tautological conjunct superfluous.

(16) Paul is a smoker, and either Mary is a smoker or she isn't a smoker.

I leave the question open as to whether it is possible to come up with an adequate pragmatic principle to rule out sentences like (2) based on the vacuous contribution of the matrix verb and subject while not ruling out examples such as (16). Rather, I would like to suggest an alternative analysis for the subjectivity requirement. I believe that once we take into account a broader set of data concerning *find*, it is no longer necessary to add anything to the grammar to rule out such examples. In order to simplify the presentation, I will be using the formalism of the index theory in the rest of this paper, though the analysis could just as easily be recast in terms of the pronoun theory. I will show that such sentences always give rise to incoherent presuppositions and should thus be ruled out on independent grounds. I now turn to an examination of the presupposition properties of opinion verbs.

3. A partially factive presupposition

Although this is not so obvious in sentences where *find* only combines with a small clause as in the examples we have seen so far much of the material contained in its complement is presupposed. This is particularly clear in the following example:

(17) John finds that Mike gave a great class yesterday.

Here a full clause is used as the complement of *find*. While it is clear that at least part of the asserted content of this sentence is John's opinion of the class that Mike gave yesterday, the fact that Mike did give a class, great or not, is taken for granted. We can show this using ordinary presupposition projection tests, as all the following examples entail that Mike gave a class yesterday.

(18) John doesn't find that Mike gave a great class yesterday.

(19) Did John find that Mike gave a great class yesterday?

- (20) If John finds that Mike gave a great class yesterday, you should get him to come to Bill's.

This has not gone entirely unnoticed in the past. Ducrot (1975) shows that French *trouver* is sensitive to the subjective character of the asserted content of its complement, and presupposes its non-subjective content. He uses the minimally different locutions *avoir tort de* and *avoir le tort de* to show this. Both locutions must be followed by a non-finite clause and their interpretation can be broken down into the parts: the proposition denoted by the non-finite clause must be true, and the speaker expresses a negative judgement about it. The difference between the two locutions is that while *avoir tort de* presupposes the truth of the embedded clause and asserts the negative judgement, *avoir le tort de* asserts the truth of the clause and presupposes the negative judgement.

- (21) Paul a eu tort de renvoyer Marc.
 Paul has had wrong to fire Marc
 'Paul was wrong to fire Marc.'
- (22) Paul a eu le tort de renvoyer Marc.
 Paul has had the wrong to fire Marc
 ≈ 'Paul made the mistake of firing Marc.'

The opinion verb *trouver* is only compatible with the former, where the negative judgement is asserted and the factual component is presupposed.

- (23) Je trouve qu'il a eu tort de faire cela.
 I find that-he has had wrong to do this
 'I find that he was wrong to do this.'
- (24) # Je trouve qu'il a eu le tort de faire cela.
 I find that-he has had the wrong to do this

Loosely speaking, we can say that what is presupposed in sentences with opinion verbs is the non-subjective component of the meaning of the sentence, which is what I call the *partially factive presupposition* of opinion verbs. In simple cases like (17) where the subjective predicate is in modifier position, we can equate the presupposition with the complement clause minus the subjective predicate, in this case yielding *Mike gave a class yesterday*. Of course, this is only a rule of thumb and it should not be taken as a serious proposal, since in cases where the subjective predicate is in complement position, the resulting presupposition would be either incorrect, or an ungrammatical sentence, respectively as in (25) and (26).

- (25) John finds that Bill behaved strangely yesterday evening.
 Presupposition ≠ Bill behaved yesterday evening.

- (26) John finds that Billy became nervous around 5pm.
 Presupposition \neq *Billy became around 5pm.

It is not an easy question to establish exactly how this presupposition arises. In the next section we examine a way of formalizing the presupposition.

3.1. Formalizing the presupposition

How can we adequately characterize the presupposition introduced by sentences in *find*? One straightforward way to get the at least part of the facts right would be to claim the presupposition introduced by *find* is simply existential quantification over judges. That is, for any sentence in *find*, there is a presupposition that there is at least one judge for which the complement clause is true.

- (27) Presupposition for (28) = $\exists j$ [Mike gave a great class yesterday]_{w, j = T}

This is a sufficient condition. For any judge to yield true to the statement that Mike gave a great class, it has to be the case that Mike gave a class, since in this sentence only the extension of *great* is affected by the judge parameter. It is not a necessary condition, however. Examine the following example:

- (28) Nobody finds Billy nice.

This is a perfectly felicitous sentence, yet it should be quite strange according to the view described above. Suppose it is true that nobody finds Billy nice. In this case the semantic calculus would yield true for the sentence, but the presupposition, namely that there is some judge for which the complement *Billy (is) nice* is true, would not be met. This should yield a presupposition failure. If the sentence is false and there is actually someone who finds Billy nice, then the presupposition is satisfied, so in such a situation the sentence should simply be judged false. This means that this sentence should allow for two possible judgements: it is either false, or it is a presupposition failure. Since speakers actually have no difficulty in judging this sentence true in the first of the two scenarios described above, then simple quantification over judges does not seem to quite the way to go.

The problem with this approach is that it is tied to actual judges, while the presupposition could be more adequately described as involving a notion of “possible judges” or “possible judgements”. Of course, now the challenge is to come up with a formalization of the notion of “possible judgement”. In order to do this, I propose to make use of an accessibility relation $\text{Acc}_{\text{opinion}}$ which, for any given world w , gives a set of worlds such that all the objective facts of w are kept constant, while

opinions are allowed to vary freely, which just means that the extension of subjective predicates are allowed to vary, but nothing else is allowed to vary. This corresponds to what we can call the opinion space on w . A possible judgement is simply a pairing of the judge with such a world².

- (29) $\langle w', j \rangle$ is a possible judgement in w iff $w' \in \text{Acc}_{\text{opinion}}(w)$, where $\text{Acc}_{\text{opinion}}$ relates a world to a set of worlds that differ from w only in the extension of subjective predicates determined with respect to j .

I stipulate that the worlds in the opinion space exhaust every possible way of assigning an extension to a subjective predicate that conforms to its domain restrictions. That is, given a subjective predicate like *tasty* with a domain restriction that says that only edible things can be part of its extension, for every set S in the power set of its domain, there is a world in the opinion space where the extension of *tasty* is equal to S . So there is world in $\text{Acc}(w)$ ³ where the judge finds every kind of food tasty, and there is a world where the judge finds nothing tasty, and everything in between, and similarly for every subjective predicate.

Once we have this definition, we can provide the following preliminary definition for the presupposition introduced by *find*-sentences:

- (30) Presupposition for x finds $p = \exists w' [w' \in \text{Acc}(w) \ \& \ p_{w', j} = \text{T}]$
(To be revised)

Much as with the previous definition that involved quantification over (actual) judges, the presupposition that the non-subjective material in the complement clause must be true follows from the fact that if a proposition can be true for a judge, then it must be the case that every piece of information whose semantic value is not affected by shifting the judge (i.e. the non-subjective component)

²This can be a confusing issue. In Lasersohn (2005)'s fragment grammar, denotations for lexical items are defined at a world, time and judge index. A specific clause of the interpretation function states a given subset of lexical items, those that we call subjective, can have a different value at different judges in a same world and time, while ordinary lexical items do not. Nothing is said however about how subjective items can or cannot vary across worlds for a fixed judge. I see no reason to assume that this should be restricted in any way, meaning that the extension of *tasty*, for example, should be able to vary across worlds for a given judge. This variation is what my interpretation for $\text{Acc}_{\text{opinion}}$ makes use of. I believe this is basically correct, and even necessary to interpret sentences like the following in a manner consistent with general assumptions about the interpretation of conditionals.

- (1) If John found liver tasty, I would make it every day.

Assuming that conditionals involve quantifying over possible worlds, say for simplicity that they involve a subset relation between the set of worlds denoted by the antecedent and that denoted by the consequent (cf. von Stechow and Heim (2007); § 4.2), then allowing the extension of *tasty* to vary across worlds for a constant judge makes it possible to interpret (1) as stating that for all those worlds where liver is tasty for John as the judge, I make liver every day. It would not be possible to do this if judges fixed the extension of subjective predicates consistently across worlds.

³Henceforth I will simply refer to this accessibility relation as Acc .

is true. The presupposition associated with (17) is now formalized as follows, simply stating that it is a possible judgement (i.e. it is part of the opinion space) that Mike gave a great class yesterday.

(31) Presupposition for (17) = $\exists w' [w' \in \text{Acc}(w) \ \& \ [[\text{Mike gave a great class yesterday}]]_{w'}, j = \text{T}]$

What we have gained at this point is that this presupposition no longer entails that any actual judge makes the complement clause true. The presupposition corresponding to (28) is now formalized as follows:

(32) Presupposition for (28) = $\exists w' [w' \in \text{Acc}(w) \ \& \ [[\text{Billy nice}]]_{w'}, j = \text{T}]$

This no longer entails that any real person in the context is required to judge Billy nice for the presupposition to hold, and the presupposition is thus no longer in conflict with the assertion. The presupposition only says that it would be possible for the judge to find Billy nice, since it is part of the opinion space, while the assertion says that there is no such actual judge (at least in the context). Since every possible opinion is realized in the opinion space, there is necessarily at least one world in the accessibility relation where Billy is considered nice by the judge. One such world is the one where the judge finds absolutely everyone nice, for example. Note that in such simple examples, where the complement of *find* only contains a proper name and a subjective property, the presupposition is not informative in any way, which corresponds to the intuition that unlike in more complex cases containing a full clause complement, there is no detectable presupposition here. The fact that it holds follows simply from the fact that *nice* is marked as subjective in the lexicon.

We will further refine this way of building presupposition introduced by *find* in the next section in order to fix an empirical challenge concerning embedded negation, and this will turn out to make the presupposition also enforce the Subjectivity Requirement in a more convincing way than what we have suggested so far, in addition to making sure that the non-subjective material is taken for granted.

3.2. Negation under *find*

A surprising fact about *find* is that the presupposition associated with such sentences is not affected by the presence of sentential negation in its complement clause.

(33) John finds that Mike didn't give a great class yesterday.

A blind application of the principle above would result in the insufficient presupposition that it is a possible judgement that Mike didn't give a great class yesterday.

$$(34) \quad \exists w'. [w' \in \text{Acc}(w) \ \& \ [[\text{Mike didn't give a great class yesterday}]]_{w', j} = T]$$

However this presupposition would be entirely vacuous, since there is no way for it not to be met. If Mike did give a class yesterday, then the presupposition is met since all possible judgements are assumed to be part of the opinion space. If he didn't give a class, then it is of course also met. Thus this sentence is predicted to have no detectable presupposition, contrary to fact. Rather, this sentence has the exact same presupposition as its non-negated counterpart, namely that Mike gave a class yesterday.

The easiest way I see to fix this is to strengthen the presupposition introduced by opinion verbs to include a second conjunct that states that the complement clause must also be false for some possible judgement.

(35) *Subjective Contingency Presupposition* (Final version):

Presupposition for x finds $p = (\exists w'. [w' \in \text{Acc}(w) \ \& \ p_{w', j} = T]) \ \& \ (\exists w''. [w'' \in \text{Acc}(w) \ \& \ p_{w'', j} = F])$

This new definition states that it is possible for a judge to yield true for the complement clause, and it is also possible for a judge to yield false. An immediate advantage of the Subjective Contingency Presupposition is its intuitive appeal. Basically, it states that both judgements concerning the complement clause, positive and negative, are in principle available. This can be understood as a minimal usability condition: if only one judgement were possible for a proposition p , then it would be pointless to ascribe a judge for this proposition, since it would yield the same value as any other judge. Indeed, this is intuitively exactly what being subjective is all about.

We can now verify that this new definition gives us the same presupposition for negated and non-negated complements to *find*:

$$(36) \quad \text{Presupposition for (17)} = (\exists w'. [w' \in \text{Acc}(w) \ \& \ [[\text{Mike gave a great class}]]_{w', j} = T]) \ \& \ (\exists w''. [w'' \in \text{Acc}(w) \ \& \ [[\text{Mike gave a great class}]]_{w'', j} = F])$$

$$(37) \quad \text{Presupposition for (33)} = (\exists w'. [w' \in \text{Acc}(w) \ \& \ [[\text{Mike didn't give a great class}]]_{w', j} = T]) \ \& \ (\exists w''. [w'' \in \text{Acc}(w) \ \& \ [[\text{Mike didn't give a great class}]]_{w'', j} = F])$$

3.3. Negative quantifiers below *find*

Negated embedded propositions and their non-negated correlates discussed in the previous section could be described as involving the same presupposition on the basis of native speaker intuition.

Things are a little more complicated with negative quantifiers. Intuitively, what is the presupposition introduced by (38)?

(38) John finds that nobody gave an interesting talk.

Does this sentence have the weak presupposition that somebody gave a talk, or a stronger presupposition that everyone of some relevant set of people gave a talk? Judgements I have asked on similar examples as well as my own judgements on French *trouver* are somewhat inconclusive. Let us first see what the Subjective Contingency Presupposition predicts. Applying the formalism gives us the following formula as the presupposition for (38):

(39) $(\exists w' [w' \in \text{Acc}(w) \ \& \ \llbracket \text{nobody gave an interesting talk} \rrbracket_{w', j} = \text{T}]) \ \& \ (\exists w'' [w'' \in \text{Acc}(w) \ \& \ \llbracket \text{nobody gave an interesting talk} \rrbracket_{w'', j} = \text{F}])$

The first half of this formula is a tautology because it would be made true if nobody gave a talk at all, or if the standard for being an interesting talk were set high enough to exclude every talk, which by definition is always part of the opinion space. As such, it doesn't tell us anything. The second half tells us that it is a possible judgement that *nobody gave an interesting talk* is false, which only entails that somebody gave a talk, not that everyone did. So the prediction that we make is clear: only the weak existential presupposition should be found.

So now we have a clear prediction from the theory, but the actual facts are murky. Let us look at examples where the restrictor of the negative universal quantifier is explicitly provided:

(40) John finds that none of his roommates gave an interesting talk.

Judgements on this sentence lean more towards a universal presupposition than a mere existential one. Yet this sentence is almost structurally identical to the previous example (38), whose status was not as clear.

This issue is reminiscent of a well-known debate in the literature concerning presupposition triggers that appear in the scope of a quantifier. Chemla (2009) discusses the following example:

(41) No student knows that he is lucky.

There is disagreement concerning whether this sentence has the universal presupposition that every student is lucky, or only the weaker presupposition that some student is lucky. The interesting thing to note is that judgements become noticeably crisper in such examples too when the restrictor of the quantifier is made more specific:

(42) None of my Semantics 1 students knows that he is lucky.

Again, making the restrictor more precise favours the universal presupposition reading. This is an interesting parallel and it strongly suggests that whatever is responsible for strengthening and making clearer the presupposition in the better-known environment of presupposition triggers like *know* is also responsible for the same effect that appears with *find*. I will not go in detail into this issue here since it would take us too far afield⁴, and because I believe that some additional work, perhaps experimental, would be necessary to establish exactly when it is that the presupposition is strengthened into a universal claim before any analysis of the phenomenon can be proposed.

3.4. Accounting for the subjectivity requirement

It is now a trivial matter to account for the subjectivity requirement of opinion verbs. Sentences where the complement clause does not contain any subjective material will always contain a contradictory presupposition. Let us look at an example:

(43) #John finds that Billy is in his office.

(44) $(\exists w'. [w' \in \text{Acc}(w) \ \& \ [[\text{Billy is in his office}]]_{w', j = T}] \ \& \ (\exists w''. [w'' \in \text{Acc}(w) \ \& \ [[\text{Billy is in his office}]]_{w'', j = F}])$

The subjective contingency presupposition states that it must be the case that the complement clause is true in some world in the opinion space and it must be false in some other world in the opinion space. However these worlds are only distinguished in the extension of subjective predicates. Since there is no such predicate in this sentence, then it will have the exact same value in all worlds in the opinion space. This means that the presupposition associated with (43) is contradictory, and the sentence is deemed infelicitous because of this.

Unlike the analysis that Sæbø (2009) sets up for the index theory of judge-dependency, this explanation for the subjectivity requirement does not depend on the claim that opinion verbs contribute nothing else than shifting the judge index of their complement, nor is it dependent on any pragmatic principle that rules out sentences that have superfluous parts. Rather, such sentences are infelicitous because it is impossible for them to have a truth-value, regardless what the facts of the world could be.

⁴An obvious difference between the data that I introduce in this section and those discussed in Chemla (2009) and others is that my problematic examples involve a quantifier that stands inside the complement clause of the presupposition-introducing verb, while the others involve a quantifier in the matrix binding a pronoun in the complement clause. Nevertheless, the similarity between examples like (38) and (40) on the one hand, and (41) and (42) on the other, makes a unified analysis of both phenomena highly desirable.

4. Trivial propositions under *find*

Here is an interesting prediction made by this account of the subjectivity requirement. The Subjective Contingency Presupposition rules out sentences where no subjective predicate appears under *find*, but it should also rule out many other cases. Among these are tautologies and contradictions, even if they contain subjective predicates. In principle, analytical statements should always have a contradictory presupposition, and hence be judged infelicitous. The following sentence seems to show that this is a correct prediction.

(45) #John finds that Mary is pretty and (that) she isn't pretty.

(46) $(\exists w'. [w' \in \text{Acc}(w) \ \& \ [[\text{Mary is pretty and she isn't pretty}]]_{w', j} = T]) \ \& \ (\exists w''. [w'' \in \text{Acc}(w) \ \& \ [[\text{Mary is pretty and she isn't pretty}]]_{w'', j} = F])$

Before analysing this sentence in detail, we can rule out the hypothesis that it is infelicitous because the subjective predicates appear in conjoined clauses under *find*. The following example shows this, since here the two conjuncts are not in any entailment relation, and the sentence is judged felicitous, despite the fact that the predicates of personal taste are still in conjoined clauses.

(47) John finds that he saw an interesting talk and had an enjoyable dinner.

(46) gives the presupposition for (45). What this formula says is that there is a possible judgement according to which *Mary is pretty and she isn't pretty* is true, and one for which it is false. Of course, this cannot be true for a single judge in a constant world. The first part of this claim, that there is such a judge, is a contradiction, so the fact that the second half is a tautology is inconsequential. The entire formula in (46) is a contradiction. (45) is thus ruled out by exactly the same mechanisms that enforced the Subjectivity Requirement. Basically, it is infelicitous because the complement clause is not something for which both a positive and a negative judgement are possible.

The type-mismatch account does not extend to such cases. The presence of a subjective predicate should be enough to satisfy the subjectivity requirement, regardless of the fact that it appears inside a contradiction⁵. To be fair, though, it would still be possible to attribute the infelicity of such examples directly to the fact that one is not expected to hold contradictory opinions, so the sentence is judged odd because of this, quite independently of any presupposition properties. Although this is a logical possibility, it would be a strange analysis given the well-known fact that

⁵It is unclear to me how the type-based theory could function at all if two subjective predicates are present. Saebø seems to imply (in his section 3.3) that such a situation would be accounted for in his approach, but he does not give any technical detail. It would not be to his advantage to completely rule out multiple subjective predicates below *find* in his approach, since although it would correctly rule out (45), it would undergenerate in not accounting for the meaning of many acceptable cases such as (47)

sentences expressing contradictory beliefs and desires are fine, for example. We may think less of John if he contradicts himself as in (48), or assume that he is confused, but still, the following sentences are not judged infelicitous by most speakers:

(48) John thinks the Bill is dead and that he is alive.

(49) I wanna go and I don't wanna go.

The intuitive availability of the contradictory thought reading in Russell ambiguity sentences like (50) also argues against the fact that infelicity results from ascribing a contradictory thought to an individual, thus weakening the hypothesis that Saebø could make that the infelicity of (45) can be attributed to a general prescription against attributing contradictory mental states to individuals.

(50) John thought the yacht was longer than it was.

Similarly, if the complement clause is a tautology, a situation that we can get simply by replacing the conjunction with a disjunction in (45), the result is still infelicitous, and still for the same reason: the complement clause does not express something for which both a positive and a negative judgement are possible. This is illustrated in (51) and (52):

(51) #John finds that Mary is pretty or she isn't pretty.

(52) $(\exists w'. [w' \in \text{Acc}(w) \ \& \ [[\text{Mary is pretty or she isn't pretty}]]_{w', j = T}]) \ \& \ (\exists w''. [w'' \in \text{Acc}(w) \ \& \ [[\text{Mary is pretty or she isn't pretty}]]_{w'', j = F}])$

What these examples show is that the subjectivity requirement is not a mere matter of *find* needing to get a subjective predicate. The unacceptable examples (45) and (51) both have such predicates. We know already that it would not be possible to make the case that the problem with these examples is that predicates of personal taste appearing in conjoined propositions are incapable of licensing *find* for some reason, since such a configuration is fine in (47). The contrast between (45) and (51), on the one hand, and (47) on the other argues strongly in favour of viewing the source of the infelicity of (45) and (51) as not coming from its syntactic structure, but rather from the contradictory nature of their presupposition. This is a correct prediction of the presupposition account of the Subjectivity Requirement, and it is an important weakness of Saebø's type-based approach that it cannot account for these facts.

I want to emphasize that none of this discussion shows that there is no type-mismatch in examples that do not obey the subjectivity requirement, and that the pronoun theory of judge-dependency is wrong. However what these examples do show is that the presupposition account is necessary since it covers more data than the type-mismatch account.

5. Conclusion

In this paper, I have presented some new data concerning the presuppositions introduced by opinion verbs and shown that once properly analyzed, nothing further needs to be added to account for the subjectivity requirement of opinion verbs.

It is interesting to note that the data that I present in this paper suggests that opinion verbs are in a sense more well-behaved than intensional operators. The subjectivity requirement makes it necessary for opinion verbs to only combine with complements for which it is potentially useful to shift the judge parameter. Intensional operators, on the other hand, are not so picky. It is not infelicitous in any way to embed contradictions or tautologies under a possibility or necessity modal, or under an epistemic verb, despite the fact that such complements could not have different values at different worlds.

- (53) It is possible that Mary is a smoker that and she isn't a smoker.
- (54) It is necessary that Mary is a smoker and that she isn't a smoker.
- (55) It think that Mary is a smoker and that she isn't a smoker.

These sentences are not made infelicitous by the fact that the complement clause, *that Mary is a smoker and that she isn't a smoker*, is false in every possible world. The examples with a modal are simply made false, and the case with an epistemic modal entails that I have a contradictory thought (unless some pragmatic accommodation is made).

Surprisingly little is known about the differences and similarities between the semantic behaviour of judges and that of possible worlds. Given the fact that similar questions arise in both areas of inquiry (as well as in the study of tense, cf. Kusumoto (1999)), including the issue discussed in the introduction of whether null judge/world pronouns should be posited in the syntactic representations (cf. Percus (2000)), I believe that further work on asymmetries such as the one just described could be of great use in constructing an adequate theory of how such information should be represented is semantic theory.

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