

The Partial Factivity of Opinion Verbs*

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Sinn und Bedeutung 17
École Normale Supérieure

September 8-10 2012

1 Introduction

This presentation is mainly concerned with the English verb *to find* and its correlate in various languages. The basic piece of data that any analysis of *find* must account for is its inability to combine with complements whose value is not subjective:

- (1) John finds Billy clever.
- (2) #John finds Billy dead.

We will simply refer to this as the **Subjectivity Requirement** of opinion verbs, recently discussed by Sæbø (2009), and before that by Ducrot (1975), for French *trouver*. In practice, this reduces to the necessity for *find* to have in its complement a predicate of personal taste¹.

This is not as trivial as it sounds. PPs like *in my opinion* and *in my book*, although near-synonymous, are different in that only the latter imposes a Subjectivity Requirement.

- (3) In my opinion, Billy is dead.
- (4) #In my book, Billy is dead.

In other words, we can have an opinion on various things, subjective or not, but *find* can only combine with things that are genuinely subjective.

- The purpose of this presentation is to provide a new analysis of this contrast, taking into account novel data concerning the presupposition properties of sentences in *find*.
- An additional goal will be to use data concerning *find* to choose between two ways of analysing the judge-dependency of predicates of personal taste, namely via null pronouns or by enriching the index on the interpretation function.
- Here I will reach the exact opposite conclusion that Sæbø reaches when attempting the same thing: I will conclude that the index theory is the better solution.

*I thank Bernhard Schwarz as well as audiences at the Toronto-Ottawa-Montréal workshop in semantics, Modality @ Ottawa, and the Canadian Linguistics Association 2012 Conference for many helpful comments. I also thank the FQRSC for financial support, scholarship #2013-B3-169023.

¹This isn't quite right, but it will serve for the moment. There are syntactic positions in the complement clause from where a predicate of personal taste does not license *find*, as well as some cases where no overt predicate of personal taste is required.

2 Background Assumptions: Subjectivity in Grammar

- Subjective statements are a notoriously thorny issue for any truth-conditional semantics, since such a theoretical position presupposes that all sentences (at least all assertions) can in principle be true or false.
- This seems to be exactly what sentences like (5) lack, since it is not a matter of fact whether this chili is tasty or not.

(5) This chili is tasty.

There are two popular solutions to this:

1. Subjective predicates like *tasty* are relational and contain hidden pronominal arguments. I.e., in (5), *tasty* relates this chili to the speaker.
2. The interpretation function is relativized to a distinguished individual, the **judge**, in addition to the world and time parameters (and others that we may want in there).

(6) This chili is tasty ~~to me~~ (pronoun theory)

(7) $[[(5)]]_{w, j} = T$ iff $[[\text{this chili}]]_{w, j} \in [[\text{tasty}]]_{w, j}$ (index theory)

- These two approaches are difficult to tease apart. Stojanovic (2007) claims that the crucial piece of data that Lasersohn (2005) provides in favour of the index theory, the intuition of faultless disagreement, is not a real thing.
- I will argue that we can conclude from the properties of *find* that the index theory is right, in direct contradiction to Sæbø (2009).
- Since this is the conclusion we will end up reaching, I will be using the formalism of the index theory from here on, although this choice will only be justified in section 4.

Lexical items are identified, in the lexicon, as being subjective or not. Non-subjective items have a constant extension across judges, for a fixed world, while subjective items can vary across judges.

For example:

(8) For any judges j and j' , $[[\text{dead}]]_{w, j} = [[\text{dead}]]_{w, j'}$

So what is the semantic contribution of *find*, then? We will just say that it shifts the index of its complement clause, putting in the matrix subject as the judge:

(9) $[[\text{find}]]_{w, j} = \lambda\phi. \lambda x. \phi_{w, x}$

The truth-conditions of (10), for example, simply state that the embedded clause “this chili (is) tasty” is true if the judge is set to Bill.

(10) Bill finds this chili tasty.

(11) $[[(10)]]_{w, j} = [[\text{this chili}]]_{w, b} \in [[\text{tasty}]]_{w, b}$

3 Presuppositions under *Find*

When complement clauses below *find* are large enough, we can see that the non-subjective component of the complement clause is presupposed, not asserted. In (12), the fact that Mike gave a class yesterday, great or not, is taken for granted.

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

Ordinary presupposition projection tests show this:

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

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

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

All three of these sentences entail that Mike gave a class yesterday. It also seems unlikely that this should be an implicature of some sort, since it does not appear to be cancellable:

(16) #John finds that Mike gave a great class yesterday, but Mike didn't teach at all yesterday.

How can we characterize this presupposition? When the subjective predicate is a modifier, the presupposition can be equated with the complement clause minus that predicate.

(17) Presupposition for (12) = Mike gave a class yesterday.

This is just a helpful algorithm, however. Sentences where the subjective predicate is in argument position make this obvious, since then the resulting presupposition would be an ungrammatical sentence, or get the actual presupposition wrong:

(18) John finds that Bill behaved strangely yesterday evening.

Presupposition \neq Bill behaved yesterday evening.

(19) John finds that Billy became nervous around 5pm.

Presupposition \neq *Billy became around 5pm.

Here is a nice way to get the presupposition, which we will have to modify:

(20) Presupposition for sentences in *find*: the complement clause is true for at least one judge. (first attempt)

In (12), this would entail that for at least one judge, Mike gave a great class. Since the judge only fixes the extension of *great* here, the fact that Mike gave a class follows directly.

- The problem is that this presupposition is too strong. There is no need for any actual person, relevant in the context or not, to hold this opinion for the sentence to have a truth-value.
- Take the following example:

(21) Nobody finds Billy smart.

- This sentence asserts that there is no judge for which it is true that Billy is smart, but on the other hand, the presupposition as we have stated it says that there must be one such judge.
- This sentence should only be allowed to either be false, if someone does find Billy smart, or truth-valueless, if nobody does, since the even if the assertion is true, the presupposition is not satisfied.
- Since speakers have no trouble judging this sentence as true, we must change our formulation of the presupposition somewhat.
- Clearly, the problem is that the previous formulation concerns actual people as judges.
- Yet what we really need is an existential claim on possible judgements.
- For this, we introduce an accessibility relation $\text{Acc}_{\text{OPINION}}$, which relates a world to a set of worlds that differ from w in the extension of subjective predicates only. $\text{Acc}_{\text{OPINION}}(w)$ is the **opinion space** on w .

We will say that it is a **possible judgement** in w that p is true iff $\exists w' \in \text{Acc}_{\text{OPINION}}(w)$ $p_{w', j}$, i.e. if it is part of the opinion space on w that p .

- We can now reformulate the presupposition introduced by *find*.

(22) Presupposition for *x finds p* = $\exists w'. [w' \in \text{Acc}_{\text{OPINION}}(w) \ \& \ p_{w', j} = \text{T}]$
(second attempt, almost there)

This allows us to account for sentences like (21). Now it just says that it is a possible judgement that Billy is smart. It no longer needs anyone to have this opinion, so the assertion is no longer in contradiction with the presupposition.

This will need to be refined again to account for the behaviour of negation under *find*.

3.1 Negation under *Find*

Oddly enough, the presupposition associated with embedding a clause p and a clause not- p under *find* is exactly the same:

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

(24) Presupposition \neq Mike didn't give a class yesterday.

(25) Presupposition = Mike gave a class yesterday.

Blindly applying the method outlined above gets us the following formula, which turns out to be a tautology because of the way we have defined the accessibility relation.

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

- This presupposition is satisfied if Mike didn't give a class yesterday, or if he did, as long as it is in the opinion space that it wasn't good. Of course, since all judgements are in the opinion space, then this will always be true.

- Since the presupposition is always satisfied, then (23) should have no detectable presupposition. But it does. It presupposes that Mike gave a class yesterday, same as in (12).

How can we make the presupposition ignore embedded negation? The simplest way is to enrich the presupposition introduced by *find*, adding that it is also a possible judgement that the complement clause is false.

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

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

This can be seen as a minimal usability condition: We can only say a sentence of the form "x finds that p" if it is a possible judgement that p and it is also a possible judgement that not-p.

3.2 A Pragmatic Account of the Subjectivity Requirement

Interestingly, this way of formulating the presupposition gives us the Subjectivity Requirement for free. It predicts that non-subjective clauses under *find* should always be associated with a presupposition that expresses a contradiction, which pragmatics will not accept.

Take the simple example (2), which we repeat here:

(28) #John finds Billy dead.

Applying the Subjective Contingency Presupposition to (28) gives us the following formula:

(29) $\exists w' \in \text{Acc}_{\text{OPINION}}(w) [[\text{Billy dead}]]_{w', j} = \text{T} \ \& \ \exists w'' \in \text{Acc}_{\text{OPINION}}(w) [[\text{Billy dead}]]_{w'', j} = \text{F}$

- Given the way we have defined $\text{Acc}_{\text{OPINION}}$, this cannot be true. The worlds inside $\text{Acc}_{\text{OPINION}}(w)$ only vary from w in the value of subjective predicates.
- Since *Billy* and *dead* are not subjective predicates, their extension does not vary across worlds in the opinion space, and the formula in (29) is a contradiction.

We do not need a special pragmatic rule to exclude this, since a contradictory presupposition would entail an empty common ground, and common sense seems sufficient to rule that out.

3.3 Analytical statements under *Find*

- Here is another prediction of the Subjective Contingency Presupposition: contradictions and tautologies should be unacceptable in this position.
- I believe this prediction is borne out, although judgements are pretty weak.

Speakers I have asked find (30) degraded. Of course, its predicted presupposition is a contradiction, as shown in (31):

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

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

This is not because the two subjective predicates are in conjoined clauses, since this is fine when the resulting conjunct is contingent:

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

4 Asymmetric Conjunctions under *Find*

Saebø claims that subjective and non-subjective predicates cannot be conjoined under *find*. We will see that this is only sometimes true, and it will require a pragmatic explanation, rather than one in terms of the compositional semantics.

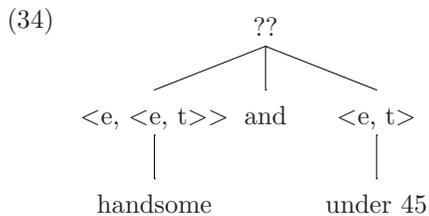
- (33) is meant to show this restriction:

- (33) #Mary finds John handsome and under 45.

- He shows how this restriction follows from the pronoun theory of judge-dependency, but not the index theory.

Under the pronoun theory, this is expected to be either a type-mismatch, or a violation of the Subjectivity Requirement.

1. If the judge argument of *handsome* is left open, the coordination cannot succeed because the two predicates are not of the same type (cf. tree in (34)).
2. If the judge-argument is fixed by some null pronoun, then coordination is possible, but the resulting conjunct is not judge-dependent.



Thus the grammar is caught in a sort of Catch-22, since both potential derivations fail, and the sentence is judged infelicitous.

- The index theory has nothing to say about (33). The two predicates should be able to conjoin, and the resulting constituent should inherit the judge-dependency of its subjective half, satisfying the Subjectivity Requirement.
- If the data were as Saebø claims, this would be a strong argument in favour of his view. However, not all such conjunctions are bad under *find*:

- (35) Mary finds that nobody at the party was **handsome and under 45**.

- The felicitous nature of (35) is a hard blow to Saebø's claim.

- I will argue that (33) is bad because the conjunct *under 45* only strengthens the truth-conditions of an alternative sentence without the conjunct by enlarging the truth-value gap, not by enlarging the set of worlds that make it false.

Let us see this in some detail by comparing (36) to an alternative without the offending conjunct:

(36) Mary finds John handsome.

How does this sentence differ from the infelicitous alternative with the PP conjunct?

- (33) is true in fewer worlds, since it is only true if Mary finds John handsome, AND John is under 45.
- It is NOT false in more worlds, however, since worlds where John is not under 45 do not satisfy the presupposition.
- Thus, adding the conjunct has the effect of narrowing the set of worlds made true by the sentence by making these world truth-valueless.

Now let us compare the good case of conjunction (35) with an alternative without the conjunct:

(37) Mary finds that nobody at the party was handsome.

How do these two versions differ?

- (35) is true in more worlds than (37), since Mary only needs to have a negative opinion of some of the people at the party.
- It is also false in fewer worlds, since for example, it is no longer false if she thought Roger wasn't handsome, but Roger is 55.
- Thus, adding the conjunct has the effect of expanding the set of worlds that is made true by the sentence by making worlds that were false without it true.

So adding the conjunct to (37), yielding (35) is felicitous, while adding the same conjunct to (33) isn't.

- I argue that this is because of a general restriction against stand-alone constituents, i.e. a conjunct here, whose sole purpose is to expand the truth-value gap of a sentence.
- In other words, this pragmatic principle disallows conjuncts that make the sentence true for fewer worlds but not false for more, or vice-versa.

Here is a preliminary formulation of the pragmatic principle:

(38) Avoid optional syntactic constituents whose sole contribution is to strengthen the presupposition of the sentence.

This is reminiscent of Schlenker (2004)'s *Minimize Restrictors!* rule, which requires avoiding modifiers in definite description if that modification is already known.

- Basically, what I propose is that the compositional semantics is perfectly capable of dealing with conjoining subjective and non-subjective predicates under *find*.
- The problem is that pragmatics will often have none of it, since the conjunct does not alter the meaning of the sentence it attaches to in an acceptable way.

5 Conclusion

What I have done in this paper is the following:

- I have shown that opinion verbs presuppose the non-subjective part of their complement.
- I have formalized this as the Subjective Contingency Presupposition, which gives us the Subjectivity Requirement for free.
- I have also shown that some conjunctions of subjective and non-subjective predicates under *find* are acceptable, ruling out the pronoun theory of judge-dependency.
- Rather, I suggested that semantics allows such conjunctions across the board, and it is rather a pragmatic principle that is at play.

One important field of future research would be to use verbs like *find* as a means to investigate the representation of subjectivity in grammar more generally.

For example, given the assumption that this verb is only satisfied by subjective predicates, contrasts like the following are very telling about the relation between judges and various types of modals (see, for example, Stephenson (2007) and Von Fintel and Gillies (2008) for discussion of these issues).

(39) John finds that Bill should quit smoking.

(40) #John finds that Bill might quit smoking.

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