PLING 228: Truth-makers: Scalar Implicatures

Nathan Klinedinst, Daniel Rothschild, and Yasu Sudo

Review: Fine's Truthmaker Semantics

Assume a language $\mathcal{L}$ formed out of atomic sentences $\mathcal{A}$ and the usual propositional operators. Assume also a set S of states with an inclusion relation $\sqsubseteq$ and closed under fusion $\sqcup$.

We assume that the interpretation $\mathcal{I}$ gives is a function from $\mathcal{A}$ to $S \times S$ where we think of the first member of the pair being a truth-maker for and the second a false-maker. (Thus, we are assuming each atomic formula has a single truth-maker and false-maker, though this assumption could be dropped in favor of sets of truth-makers and false makers.) So:

For $a \in \mathcal{A}$, $|a|^+ = \{$first member of $\mathcal{I}(a)\}$,

For $a \in \mathcal{A}$, $|a|^- = \{$second member of $\mathcal{I}(a)\}$

Basic notation:

$s \vDash a$ iff $f \in |a|^+$ (where $s \vDash a$ means that s is a truth-maker for a)

$s \dashv a$ iff $f \in |a|^-$ (where $s \dashv a$ means that s is a falsity-maker for a)

Recursive semantics:

$s \vDash \neg a$ iff $s \dashv a$

$s \dashv \neg a$ iff $s \vDash \neg a$

$s \vDash a \wedge b$ iff for some t and u $t \vDash a$ and $u \vDash b$ and $s = t \sqcup u$

$s \dashv a \wedge b$ iff $s \dashv a$ or $s \dashv b$

$s \vDash a \vee b$ iff $s \vDash a$ or $s \vDash b$

$s \dashv a \vee b$ iff for some t and u $t \dashv a$ and $u \dashv b$ and $s = t \sqcup u$

Subject matter: we can take the (positive) subject matter of a to be the fusion of all its truth-makers. (Another notion is fusion of all truth and false-makers, which is subject matter period.)

Scalar Implicature

Distinguishing epistemic from quantity implicatures.

Quantity implicatures;

(1) A or B $\rightsquigarrow$ not (A and B)

Gricean story: 'A or B' has as alternative 'A and B'. 'A and B' is logically stronger than 'A or B' so if speaker had known it was true he should have said it (to be informative), therefore speaker didn't know it was true (epistemic or primary implicature) assuming speaker is knowledgable speaker knows it is false (secondary implicature).

Issue (to be discussed):

(2) A or B or (A and B) $\not\rightsquigarrow$ not (A and B)

In standard semantics 'A or B or (A and B)' have the same semantic value, so not clear how Gricean reasoning can block this implicatures. (We can discuss options).

There are some alternatives here see work by Fox, Spector and Chierchia.

Fine's story: first we take the notion of the relevant (positive) subject matter (generally this will just be the subject matter of the sentence in question).

Given a subject matter s we take the fusion of all those parts that of s that are actual to be the $s_@$ to be the actual part of s. A sentence A (with relevant subject matter s) is exactly true if $s_@ \dashv A$. (So $s_@$ is an exact verifier of A).

Scalar implicatures come about because it is presupposed (Fine's term) that sentences are exactly true (about their relevant subject matter).

Based on the recursive semantics the $|A \vee B|^+ = \{A, B\}$ and $|A \vee B \vee (A\&B)|^+ = \{A, B, A \sqcup B\}$ (letting atomic sentence letters stand in for the atomic truth-maker states).

Note now that presupposing that $A \vee B$ is exactly true requires that states A or B be actual but not $A \sqcup B$, whereas presupposition that $A \vee B \vee (A\&B)$ is exactly true when A and B are both actual.

Note however that $(A \vee B) \wedge (A \vee B)$ also has $A, B, A \sqcup B$ as truth-makers. So we might expect this to also lead to an implicature, whereas it is instead infelicitous. Fine (p.c.) suggests we should handle this by giving a truth-maker based theory of infelicity of conjunctions and disjunctions, which we turn to in the next section.

Hurford Disjunction and Redundant Conjunction

Recent discussion in semantics has focused on certain infelicitous conjunctions and disjucntions. Schlenker [2006, 2009] discuss conjunctive examples like this:

(3) a. John resides in France and he lives in Paris
b. #John lives in Paris and resides in France.

The basic idea is that there is a (linearly ordered) constraint on redundancy, where a conjunct is redundant if it is entailed by other conjuncts.

Hurford's constraint on disjunction forbids disjuncts that are entailed by other disjuncts. This is much discussed in the context of scalar implicature literature recently, such as Chierchia et al. [2012].

(4) a. #John resides in France or he lives in Paris
b. #John lives in Paris or he resides in France.

We might expect on truth-maker semantics to explain the goodness or badness of conjunctions or disjunction on the basis of whether they make a difference to truth-makers (or false makers). So, for example, this would explain why $A \vee A$ (for atomic A at least) is unacceptable but would make $A \vee B \vee (A \wedge B)$ unacceptable. However this would also make $(A \vee B) \wedge (A \vee B)$ acceptable.

Fine (p.c.) proposes the following conditions on the acceptability of conjunction and disjunction.

- $A \vee B$ is felicitous only when A and B do not share a disjunctive part.
- $A \& B$ is felicitous only when A and B do not share a conjunctive part.

Fine defines conjunctive part as follows: P is a *conjunctive part* of Q iff i) for all $q \in Q$, there is a $p \in P$ and $q \sqsubseteq p$, and ii) for all $p \in P$ there is $q \in Q$ such that $p \sqsupseteq q$ (we can also say that P *contains* Q). P is a *disjunctive part* of Q , iff $P \subseteq Q$.

These principles eliminate any instance of $A \& A$, or $A \vee A$ as A is both a conjunctive and disjunctive part of itself.

On the other hand $A \vee B$ and $A \wedge B$ don't share any disjunctive parts. $A \vee B$ does share conjunctive parts with $A \& B$ (that is A and B) so that explains the infelicity of $(A \vee B) \& (A \& B)$.

Note these also cover more standard, Hurford-disjunctions.

(5) #John owns a car or a porshe.

Any truth maker for John owning a porsche will be a truth-maker John owning a car, so they share a disjunctive part (namely the set of truth maker for John owning a Porsche).

Another potential application (that Yasu points out) is examples like this:

(6) John ate peanuts or didn't eat peanuts and ate cashews.

Under Schlenker's redundancy theory the 'didn't eat peanuts' would be redundant, but obviously on this theory it is acceptable.

Further data

"Cancellation:

For the presupposition of exact truth to be met for a disjunction either the actual part of the subject matter can contain only one of the disjuncts.

(7) Do you have children or earn less than 20k/yr?
Yes, I do [have children or earn less than 20k/yr].

Thus, lack of inference here must be treated as either: a) subject matter including truth maker for only 1 disjunct or b) (more plausibly?) contextual suspension of presupposition of exact truth. (Here we see a difference and possible advantage over van Rooijs way of dealing with (7)? Because of it, he needs assumptions about alternatives to 'A or B or both to block it implying not both.)

Ad hoc implicatures:

(8) A: John was supposed to clean his room and take out the trash. Did he? B: He didnt take out the trash.
$\rightsquigarrow$ He did clean his room. [cf. Giulios upgrade paper]

To derive this the subject matter must be assumed to include the false-maker for John cleaned his room (and not its truth maker). Generally then, the subject matter cant be equated with (positive answers to) explicit question that an utterance speaks to. Jus

Indirect implicatures with $\forall$:

(9) John didnt kiss every girl.
$\rightsquigarrow$ John kissed at least one girl. (?)

Assuming that false makers for universal quantifications correspond to negations of its instances, then some of these must be excluded from subject matter (but why?) or else we get implicature that J kissed exactly one girl. Maybe another way to deal with is to allow more false makers for $\forall$?? But what about:

(10) John didnt do A and B and C and D.

Existential implicatures more generally:

(11) Less than 4 students came.
$\rightsquigarrow$ At least one student came.

(12) More than half of the students came.
$\rightsquigarrow$ Not all of the students came.

As Richard points out, the truth makers for these should include respectively states in which no students came and states corresponding to all students having come. To derive their negations as implicatures, some story would be needed about why the are excluded from the subject matter in context? That looks tricky for more than half though since fusion of the “non-maximal truth makers could just correspond to the truth maker for ‘all?

Universals over disjunction:

(13) Everyone drank beer or wine. $\rightsquigarrow$ some drank beer, someone drank wine

Wont its truth makers include those for ‘all drank beer and ‘all drank wine, not to mention ‘all drank beer and wine? Some principled way needed to exclude those from subject matter.

Lexical symmetry:

This is a tough case for theories that use form-based/structural alts.

(14) Submitting a rough draft is permissible. $\rightsquigarrow$ $\neg$Submitting a draft is mandatory.

Because ‘optional is a lexical alternative. Assuming each truth maker for ‘optional includes a truth maker for permissible (?) and a false maker for mandatory (?), then for Fine the prediction is just that the subject matter cant include truth makers for optional?

Presupposition

To handle presupposition (in a ‘trivalent’ like way) we will not need to enrich the semantics at all, all we need to assume is that for some atomic formulas A it could be that neither an truth-maker of a false maker exists in the actual world. If this case occurs we will say that A’s presupposition is not satisfied . In a sense then we can simply think of the presupposition of A to be the weaker proposition $A*$ where $s \vDash A*$ iff $s \in |A|^-$ or $s \in |A|^+$, we’ll call $P(A) = \{s : s \in |A|^+ \text{ or } s \in |A|^-\}$.

Following standard tradition (but not the only choice here), we’ll talk about what conditions a world w must satisfy to ensure that a sentence A has an actual truth or falsity maker. Call the atomic worldly condition that an element of $P(A)$ is actual, $p(A)$. We can quickly see that $p(A \vee B)$, where B contains no presupposition, is the condition that w make true $p(A) \vee B$. Whereas $p(A\&B)$ is that w make true $p(A) \vee \neg B$. $p(\neg A) = p(A)$.

Question: how else would we represent contexts in this system? One obvious alternative is a set of fusions of facts, the alternatives considered possible. Then a presupposition is satisfied in just in case it there is an exact verifier of it as a part of every alternative in the common ground. If we think of common grounds in this we can state presupposition as conditions on common grounds. For atomic A it is the condition that A

has a truth-maker of false-maker as a part of each member c. The recursive definitions then yield conditions for more complex formulas. Interestingly we no longer have to assume that it is possible that A lacks a truth or false-maker at the actual world, just that one is not available in each part of the common ground.

References

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