

October 10, 2018

Week 7 Notes

Intro:

Why (from what point of view) the nature and even existence of singular terms is a problem, issue, or topic.

Logistical tradition, of artificial monological calculi derived from and in some sense aimed at the language of mathematics (cf. Neil Tennant on the aim of logic being codifying mathematical reasoning) start with singular terms, relational expressions, and sentences.

Anthropological tradition, of natural languages construed as social practices starts with expressions one can use to “make a move in a language game,” or “do something with words.” I want to say: alter one’s normative status, or express one’s normative attitudes.

From this point of view, we need a story about why there so much as *are* sub-sentential expressions: expressions whose free-standing use *cannot* have the normative significance of changing the score or making a move.

Generativity is one plausible answer.

But then we still need to ask: what are singular terms (and predicates) [nouns and verbs], and why are there any?

That is, why does subsentential structure take the general form that it does?

One possible answer here is: because the world comes in (facts about) objects and their properties and relations.

Quine: “Singular terms are expressions that purport to pick out or refer to just one object.”

I want to put off discussion of this response until next week, when we’ll talk about recognition judgments, recognizing as the same again, and so on.

But we can ask to begin with whether we really have a better grip on the concept object [is it a concept? It is *not* itself a sortal term. It is a pseudo-sortal or, as I think, a pro-sortal, a sortal place-holder.] than we do on that of singular term.

Here the argument about complex numbers and expressions for them is important.

On the general topic. I know three sophisticated treatments of this topic:

1. Van Fraasen “Quantification as an Act of Mind”

And my “Singular Terms and Sentential Sign Designs.”

2. MIE
3. Hegel

4 basic parts of the discussion this week:

I. Method of observing invariance under substitution.

Bernard Bolzano (cf. BOCARDO: Some patriarchs (Enoch, Elijah) are not mortal; but all patriarchs are men; hence, some men are not mortal. As it happens, BOb BrAndOm is also a mnemonic for the valid scheme Bocardo, OAO.) Note that Brentano, who recovered/discovered him (and put Husserl on to him) does *not* have a valid syllogism in his name. EAO No S are P, All P are M, so Some S are not M is not valid.)

Picked up by Quine, to get notion of *logical* truth or *logically* good inference/implication.

It is what takes us from pragmatics to semantics, and from sentential to subsentential semantics. Motivate discussion of subsentential expressions. What are they, from an inferentialist point of view? Free-standing vs. ingredient content. Designated vs. multivalued in multivalued semantics for logical vocabulary.

II. The simple, 30-step argument of WASTWATA.

Crucial to this is:

- Dummettian distinction between *simple* and *complex* predicates (in defining substitutional sentence *frames*).
- Understanding what it would *mean* for SIS relations among substituted-*fors* to be *asymmetrical*: $t > t'$. That requires quantification over *all* predicates.
- Q: But what if they don't all behave the same way? A: Then don't have asymmetric SIS.

(Compare: intensional predicate-contexts for real singular terms.)

Then: a procedure for producing inferentially inverting predicates would ensure that not all predicates (sentence frames) behave the same way.

III. Consequences of and objections to this transcendental argument: why the world comes in facts consisting of properties and related objects. Mention Ian Hacking on Wakashan languages (Kwakiutl and Nootka). Projective geometry and “general points.”

IV. Hegel's way of dividing up feature-placing expressions into aristotelian object-property relations.

Re (I):

Q: How can a broadly inferential approach to semantic content be extended from the grammatical category of sentences, the only sort of expression directly involved in inference, to various sub sentential categories such as singular terms and predicates?

1. Dummett: “**free-standing**” and “**ingredient**” content. “Ingredient” content specifies the “contribution” the occurrence of the ingredient makes to the free-standing content of wholes in which it occurs.

In speaking of sentences themselves there are two different ways in which we may regard them; and these may give rise to two distinct notions of [content]. On the one hand, we may think of sentences as complete utterances by means of which, when a specific kind of force is attached, a linguistic act may be effected: in this connection, we require that notion of [content] in terms of which the particular kind of force may be explained.

On the other hand, sentences may also occur as constituent parts of other sentences, and, in this connection, may have a semantic role in helping to determine the [content] of the whole sentence: so here we shall be concerned with whatever notion of [content] is required to explain how the [content] of a complex sentence is determined from that of its components. There is no a priori reason why the two notions of [content] should coincide.

2. Multivalued logic:

| ! | [*1] | [2] | [3] |
|------|------|-----|-----|
| [*1] | 1 | 2 | 3 |
| [2] | 1 | 3 | 3 |
| [3] | 2 | 3 | 1 |

Designatedness-value = force-relevant one.

Multivalue = ingredient sense.

Key: substituting two sentences with same multivalue into a compound should never change designatedness. Substituting (sentences with) undesignated values for one another *can* change multivalue.

3. This apparatus is usually used (was designed to be used) *synthetically*: start with multivalues and designate some of them, and then introduce connective definitions to determine the multivalues, and thereby the designatedness values, of arbitrary compounds.

But it **can be used analytically**. Start with a notion of designatedness as a kind of force and observe what substitutions preserve it. Then can group sentences into multi-value equivalence classes accordingly as intersubstitution never changes the designatedness of compounds.

The **Lindenbaum** construction is a paradigm of this analytic use of the apparatus. First group sentences into equivalence classes of logically equivalent sentences in the sense of *interderivable*. These are the multivalues. Then further group these equivalence classes.

Designatedness is theoremhood.

Result is that for *any* set of logical theorems, one gets a matrix validating them (usually, with an infinite number of multivalues!)

4. Designatedness-functionality of sentential compounding devices:

Although Frege is the first to take seriously the requirement that some aspect of semantic content determines the contribution a contentful expression makes to compounds in which it occurs as a component, nonetheless in the semantics for his logic he employs one notion, truth-value, to play both freestanding and ingredient roles. He there codifies inferences that depend only on the logical form of the sentences involved, and not on their material or nonlogical content. For these purposes he finds that it is possible to treat truth- (or commitment-) preservation not only as necessary for goodness of inference but also as sufficient. Thus for the inferences codified by his classical conditional, not only is designatedness preserved by good inferences, but any inference that preserves designatedness is a good one. For this compounding device, the two-valued conditional, sameness of designatedness

value (which does duty here for freestanding content) is sufficient for sameness of multivalue (which does duty here for ingredient content). In this sentential context, the force-relevant content determines the role of sentences as components as well.

Designatedness-functional contexts such as this may be said to embed *homogeneously* with respect to designatedness values, since those values are all that matter in determining the contribution made by an embedded sentence to the designatedness value of the whole (that is, they can serve as multivalues). This term is used to mark off **one of the several distinct senses sometimes attached to the expression *extensional*.**

5. What if analysis gives different multivalues (ingredient contents) for different compounds (sentential contexts)?

Two embedding contexts can generate the same multivalues (in case they sort possible embedded sentences into just the same equivalence classes), or one can cut finer than another. Suppose, though, that every sentential embedding context that is discerned yields a different way of carving up the embedded sentences into equivalence classes, in a crazy-quilt of overlapping classes exhibiting no substantial identities or inclusions. In that case there would seem to be no theoretical advantage to discerning the semantically significant occurrence of one sentence in another. Occurrence of a sentential expression as a lexical part or syntactical subunit of another sentence is neither necessary nor sufficient to make it appropriate to discern the semantically significant occurrence of one sentence in another. (342)

6. Note that the **top-level force notion**, in terms of which we determine designatedness, need not be truth (or commitment to) *sentences*. We can also use goodness of *inferences* (or implications). Then two *sentences* will have the same multivalue (relative to that field of implications) in case substituting one for the other never changes the goodness of the implication. This is how Quine defines *logical* truth from ordinary (material) truth, but applied to defining *logical* goodness of an implication, from *material* goodness.

Then we do *not* need compound sentences. Can just look at sentences, treating the implications as, in effect, sentential compounds.

Notice that it *might* happen that two sentences are interchangeable as *premises* in all inferences, but *not* as *conclusions*, or *vice versa*. Then we are sorting by premissory or conclusory role. “I will write a book about Hegel” and “I foresee that I will write a book about Hegel” might have same conclusory role but certainly have different premissory roles.

If we have both top-level force notions, goodness of inference and assertional commitment, and *do* have a class of sentential compounds (a notion of “primary occurrence” of a sentence in a sentence) can ask whether the multivalues substitutionally derived from *assertional* commitment cut as fine as the multivalues substitutionally derived from *inferential* commitment.

7. Even on the inferential side, we can turn the crank one more time:

- i. Group free-standing sentences into equivalence classes (first-level multivalues) accordingly as intersubstitution in role of premise or conclusion (recall that these might diverge).
- ii. Group component sentences into equivalence classes accordingly as intersubstitution w/res to some class of *sentential* contexts never changes the *inferential role* (in sense (i)) of the compound sentences in which they occur.

This gives us a substitutional semantic hierarchy that has more than just the two levels that correspond to designatedness and multivalue.

8. We can now ask a series of questions about the relations between the substitutional hierarchy generated by *assertion* as the top-level notion and the substitutional hierarchy generated by *inference* as the top-level notion. (MIE Chapter Six, Section II)

So, for instance, one dimension of “extensionality” is defined *within* each hierarchy: if designatedness determines multivalue, or again, if *subsentential intersubstitutability* of sentences (as components of compound sentences), that is, ingredient content, is determined by sentential content, that is, free-standing content.

Another is defined *between* the hierarchies: if some level of *inferential* substitutional content is determined by *assertional* substitutional content.

Summary of (I) (MIE 358):

1. Dummett explicitly distinguishes the explanatory role played by **freestanding and ingredient contents** and recognizes Frege's accomplishment in conceiving of the latter.
2. He also explains the relevance of **multivalued logic** to these two notions of semantic content by pointing out that the two notions of truth-value in play in such logics—what have been called here 'designatedness' and 'multivalue'-ought to be understood just as versions of freestanding and ingredient content, respectively.

These insights of Frege and Dummett have been applied and extended here by conjoining them with three further theoretical orientations.

3. First, the substitutional apparatus that induces the distinction between levels of content is applied **analytically**, or in a top-down categorial direction, rather than *synthetically*, or in the bottom-up categorial direction of explanation that has dominated logic and semantics since Frege.
4. Second, where standard treatments focus exclusively on the pragmatic goodness of *asserting*, to generate a top-level notion of truth-value as assertional designatedness, attention has been drawn here as well to the pragmatic goodness of *inferring*, to assign inferential roles to sentences, on the basis of which ingredient contents can then be defined substitutionally. Dummett recommends a move like this in understanding multivalued logics, under the heading of shifting from concern with logical validity to concern with logical derivability, from formally good claims to formally good inferences.
5. Finally, and perhaps most important, the substitutional mechanism that relates designatedness to multivalue is applied to *contents* rather than to *forms*. It provides a general semantic structure answering to **material** commitments and endorsements and the properties they induce, not merely to formal ones.

On the *assertional* side,

assertional commitments generally are considered at the top level, not just formally validated theorems.

On the *inferential* side,

material-inferential commitments are considered at the top level, not just formally valid inferences.

Furthermore, this shift from the formal to the material is **extended down the substitutional hierarchy**—not just from pragmatic significance to freestanding sentential semantic content, but from such content to the ingredient contents that matter for the behavior of sentences as components in compound sentences. So the sentential compounding devices that can be considered are extended from purely formal vocabulary such as the conditional to any materially contentful sentential context in which other sentences can appear embedded as components (embedded as components in the sense that they can be substituted for).