

Replies to commentators

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Abstract I reply to three commentators—Friederike Moltmann, Daniel Rothschild, and Zoltán Szabó—on six topics—sense and reference, the unity of subject matter, questions, presupposition, partial truth, and content mereology.

Keywords Meaning · Truth · Metaphysics · Intentionality · Propositions

1 Introduction

These were exciting comments to work through. It would have been a different book if I'd seen them first. (Not only because of the backwards causation aspect.) I was all set to complain of misunderstandings, but my commentators understood me too well. Six themes stood out, to do with sense and reference (Szabó), the unity of subject matter (Szabó), questions (Szabó and Rothschild), presupposition and partial truth (Rothschild), and the meaning of “partly” and “completely” (Moltmann). I will consider these in turn.¹

2 Sense and “reference” (Szabó)

Frege distinguished the *Bedeutung* of an expression—what it concerns or is about, its “target”—from the expression’s sense—how the target is presented, under what aspect we’re to conceive of it. The paradigm of course is *Hesperus* and *Phosphorus*;

¹ A fourth commentary, by Kit Fine, speaks to some of these themes as well; it will appear in a later issue with my reply.

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they take different perspectives sense-wise on one and the same target. *The point of intersection of lines a and b* offers a different perspective than *The point of intersection of lines b and c* on what may one and the same point.

But, although these are the kinds of example that always comes to mind, Frege wants to apply the distinction more broadly, to predicative expressions and ultimately sentences. If, as he supposes, the *Bedeutung* of a predicate is a function from objects to truth-values, then sentences will have to *Bedeut* truth-values; for the *Bedeutung* of a sentence is derived by functional application from the *Bedeutungen* of its parts. And now “thoughts,” or sentential senses, are backed into a corner. They will have to be modes of presentation of a shockingly small pool of objects: the True and the False.

Szabó notes some problems with this outcome, and wonders if sentences can be seen as targeting subject matters rather than truth-values.

What are some of the problems? One is that unevaluable sentences—*The best perpetual motion machines are expensive*, say—are left with nothing to be about. Whereas intuitively they are unevaluable in many cases *because* of what they’re about—the price of perpetual motion machines in this case. The truth-value story makes sentential aboutness too *difficult*; a sentence needs to be evaluable to have a subject matter.

The truth-value story also arguably makes aboutness too *easy*; for some truths (like the logical constant \top , “verum”) are not intuitively about anything. A third problem is that aboutness-properties appear to stop *short* of truth-value. To know what *S* is about should not you tell whether it’s true, which will be hard to avoid if *S* is about precisely that: whether it itself is true.

Now, of course, Frege does not pull the truth-value story out of a hat. He has some arguments to offer (writing *sm* for subject matter).

1. *S*’s *sm* can be determined on the basis of the *sm*’s of *S*’s parts.
2. The *sm*’s of its parts are typically used to determine *S*’s truth-value.
3. So, plausibly, *S*’s subject matter is its truth-value.

But, as Szabó says, the most that follows from (1) and (2) is that *S* is about something that *bears* on its truth value. And subject matters as defined in the book do bear on truth-value. If we don’t know how *S* is liable to be true or false, that will make it difficult to determine which it is. Another Fregean argument is this:

1. *S*’s *sm* is a thing that doesn’t change through *sm*-preserving substitutions.
2. Nothing is preserved through these substitutions but truth-value.
3. So, *S*’s subject matter is its truth-value.

But the argument for (2) (the so-called “Slingshot” argument²) assumes that *S* is about the same thing as *The set whose sole member is 1 if S is true, otherwise 0, contains 1*. This seems wrong on a view like ours; *S*’s ways of being true do not

² Neale and Dever (1997).

involve sets. If it is not *forced* on us to conceive a sentence's *Bedeutung* as its truth-value, then sentential subject matters as depicted in the book—sets of ways for *S* to be true or false—are an alternative worth considering.

I like this idea. Two objections come to mind. The first: *Bedeutungen* ought to be *lower* in the type hierarchy than senses, and Szabó's proposal puts them higher. *A*'s sense in the Church–Carnap tradition is the set of *A*-worlds. *A*'s subject matter is a *set* of sets of worlds, each corresponding to a different way for *A* to be true (false).

This kind of type-reversal is not uncommon in semantics, though, Szabó observes. The semantic value assigned to “Zorba” (if we want to avoid type mismatch between names and descriptions) is liable to be the set of all sets that contain Zorba. This yields the same truth-conditions as assigning Zorba himself: *Zorba is Greek* is true iff the set of Greeks belongs to the set of Zorba-containing sets; it belongs to the set of Zorba-containing sets iff it has Zorba in it, which it does iff Zorba is Greek.

A related objection is that senses are supposed to “present” *Bedeutungen*. It is hard to see in the set of *A*-worlds a mode of presentation of *A*'s subject matter—its ways of being true/false; for one thing, the relation is one-many, not many-one.

But the Church–Carnap theory is not inevitable. The thought that *A* corresponds in *Aboutness* to the *directed* proposition that *A*: the ordered pair whose first member contains *A*'s ways of being true, and whose second member contains *A*'s ways of being false. *A*'s subject matter is the *unordered* pair of the same two sets. The thought qua directed proposition does present the subject matter. *A*'s subject matter is what you get by “anonymizing” the two sets of -makers, pulling the polarity tags off so we don't know which is which. Conversely the thought may be conceived as a polarized subject matter.

3 The unity of subject matter (Szabó)

A sentence has a subject pro-matter, made up of the ways it is liable to be *true*, and a subject anti-matter, made up of *A*'s ways of being *false*. The two together are *overall* subject matters in my parlance. Both have a role to play in the definition of content-part. A consequence *B* of *A* is *included* in *A* iff

PRO *B*'s subject pro-matter is part of *A*'s subject pro-matter, that is, every way for *B* to be true is implied by a way for *A* to be true

ANTI *B*'s subject anti-matter is part of *A*'s subject anti-matter, that is, every way for *B* to be false is implied by a way for *A* to be false.³

Are both of these clauses really necessary? The question is a good one since **PRO** and **ANTI** issue the same verdict in many cases.

Suppose, to take the obvious example, that *B* is *p* and *A* is *p&q*. Is *B*'s pro-matter included in that of *A*? Yes, because *B*'s one truthmaker (**p**, the fact that *p*) is implied by *A*'s one truthmaker (**p&q**). Is *B*'s anti-matter included in that of *A*? Yes again,

³ Is indeed identical to a way for *A* to be false.

because B 's one falsemaker (\bar{p} , the fact that $\neg p$) is a falsemaker for A . If on the other hand A and B are p and $p \vee q$, then inclusion fails both for pro-matter and anti-matter.⁴

But while their verdicts often coincide, the clauses are independent. Some would-be parts get by **ANTI** but are caught by **PRO**, and some the reverse. For an example of the first, let $B = pq \vee rs \vee qs$ and $A = pq \vee rs$. B is false by way of the falsity either of (i) q and r , or (ii) p and s ; both of these are ways for A to be false; so **ANTI** is satisfied. But A 's subject pro-matter does not include the subject pro-matter of B . For B can be true by way of the joint truth of q and s , which is not implied by any way for $pq \vee rs$ to be true.

To say that A 's overall subject matter is made up of A 's ways of being true and false is ambiguous. It could mean, and does in the book, that A 's overall subject matter is a portmanteau object made up of, first, A 's ways of being true—its subject pro-matter—and (in a separate compartment) A 's ways of being false—its subject anti-matter.

Szabó notes a problem with this; it puts overall subject matters one level up from questions—they are *pairs* of questions. This complicates the semantics and means subject matters are not after all the denotata of phrases like *how A is true or false*; they're the paired denotata of *how A is true* and *how A is false*. He suggests a fix; let the subject matter of A be the *union* of its pro- and anti-matters rather than the pair of them.

Why didn't I do this in the first place? Why not say that A includes its consequence B if B 's *merged* subject matter—its ways of being true or false, its (to have a word) *deciders*—is included in A 's merged subject matter?

I can answer the second question. For B to be part of A , its truthmakers⁵ must be implied by *truthmakers* for A (so it seemed). Otherwise $p \vee \neg q$ threatens to be part of $p \& q$; p is implied by a truthmaker $p \wedge q$ for $p \& q$, and \bar{q} by a falsemaker for the conjunction (namely itself). That example doesn't ultimately work, because $p \vee \neg q$'s one falsemaker is not implied by a truthmaker OR falsemaker for $p \& q$. But a more complicated example, devised by Jen Davoren at the University of Melbourne, does work. Davoren's example shows that for B 's -makers to be implied by A leaves the door open to truthmakers for B implied only by *falsmakers* for A . If B were allowed as a part, then a fact that falsifies A could render it partly true—an absurd result.

Szabó may say that this is not much of a worry. The most that follows from Davoren's example is that for A to include B requires more than that the inference be truth- and subject-matter preserving. Truthmakers should be implied by truthmakers, not falsmakers. So far then, it looks like subject matters *can* be unitary, as Szabó suggests, at the cost of complications elsewhere.

⁴ $p \vee q$'s truthmaker q is not implied by any truthmaker for p , and its falsemaker $\bar{p} \wedge \bar{q}$ is not implied by any falsemaker for p .

⁵ "Truthmaker": a misleading but handy term for ways of being true. "Trueways" (pronounced like "throughways") is not a word, yet.

4 Parts and quantifiers (Rothschild)

Parts play several roles in the book. The main philosophical role is to deal with intuitive contradictions. Sometimes an undeniable claim cannot be true, given what it apparently means. The usual response is to say that, since the claim *is* true, it must not mean what it seems to. So, for instance, the full, literal truth of “She arrived at 3 pm exactly” requires only that she arrived *close* to 3 pm. How close depends on the standards of precision in play; these control the extension of “3 pm exactly,” perhaps via a hidden variable in the logical form.

But then why is this incoherent: *She arrived a few seconds after 3 pm and at 3 pm exactly*? The sentence should if anything strike us redundant, the second conjunct following from the first. Simpler would be to admit that the sentence is not *fully* true, if she arrived 5 s after 3 pm, but explain that we are talking in these sorts of discussions about time to the nearest minute, as one might expect from the use of a notation that cuts no finer than that. The conjunction is incoherent because the words *a few seconds after 3 pm* signal adoption of a more refined subject matter, about which both conjuncts cannot be true together.

The philosophical motivation for parts is metasemantic; it’s to do with our *relations* to meanings. Rothschild is interested rather in the semantic motivation. Parts are called on to make sense of notions like “partly agree” or “getting something right, if not everything.” Our statements partly agree if they overlap in content; part of what I say is identical to part of what you say. Rothschild does not object to the strategy as such, but suspects my implementation of it may cut in the wrong place. I will change his example a bit and develop it in my own way.

Suppose that I think that Al has broken into the house, while you think Betty has broken in. The account predicts, correctly it seems, that *Al or Betty has broken in* is not a point of agreement. But what about *Someone has broken in*? This does seem a point of agreement and yet *Someone has broken in* is not a part of *Al has broken in* for the same sorts of reason as disjunctions are not part of their disjuncts.⁶ There are worries here both about hyperintensionality—explicit disjunctions seem more unsuited to the part role than intensionality equivalent generalizations—and about how to handle the specific case.

I feel myself pulled two ways on this sort of example. Universal instantiation is a lot like conjunct-dropping. Existential generalization is a lot like appending a disjunct. Based on that analogy, we would expect *Fa* to relate to $\exists x Fx$ as *p* relates to $p \vee q$; and we would expect $\forall x Fx$ to relate to *Fa* as $p \& q$ relates to *p*. *Fa* should by that logic be part of $\forall x Fx$ and $\exists x Fx$ should not be part of *Fa*.

But there is another way to look at this. If we ask ourselves *why p* is part of $p \& q$, while $p \vee q$ is not part of *p*, the reasons don’t seem to carry over. $p \vee q$ changes the subject via its second disjunct, while *p* raises no issues not already raised by $p \& q$. *Fa* in some sense changes the subject too, by incorporating a (non-logical) symbol *a* that makes no appearance in $\forall x Fx$; while $\exists x Fx$ takes its (non-logical) symbols

⁶ A falsemaker for *Someone has broken in* is going to have to entail that *no one* has broken in, in particular that Betty hasn’t. A fact strong enough to entail that Betty hasn’t broken in is overkill when it comes to ensuring the falsity of *Al has broken in*.

from Fa . Existential generalization patterns in this respect with conjunct-dropping, while universal instantiation goes with adding on a disjunct.

Call an entailment $X \therefore Y$ *reductive* if (thinking in Venn diagram terms) X is the intersection of Y with some (not unnatural) Z , and *bounded* if Y brings in no vocabulary not already in X . Then there are four possibilities, as depicted in the following table:

Inference rule	Schema	Reductive	Bounded
Conjunct-dropping	$p \& q \therefore p$	Yes	Yes
Universal instantiation	$\forall x Fx \therefore Fa$	Yes	No
Disjunct-adding	$p \therefore p \vee q$	No	No
Existential generalization	$Fa \therefore \exists x Fx$	No	Yes

The most straightforward approach would be to try to bring the quantificational rules back into line with their truth-functional counterparts. Let me now wave my hands around that idea for a few paragraphs.

Start with universal instantiation. For Fa not to be part of $\forall x Fx$ is actually somewhat intuitive. To know that X , one must know its parts; to command that X is to command its parts; and likewise for a number of other operators. Suppose I claim to know that no one is immortal, and you reply, what about Orlando? (Orlando is represented as living hundreds of years in Virginia Woolf's book of that title.) Must I know that Orlando is mortal to know that no one is immortal?

This seems doubtful, as I may not even have heard of Orlando. Or I may have heard of Orlando, but believe s/he is no longer with us, or never was with us. What does seem to have *Orlando is mortal* as a part is the *conjunctive* premise that no one is immortal and there is such a person as Orlando. The amended entailment is bounded, note, since the name *Orlando* occurs already in *There is such a person as Orlando*. Universal instantiation to this extent falls back into line with conjunct-dropping

Rothschild's example involved existential generalization. Someone has broken in, though we disagree about their identity. Of course we may agree *independently* that someone has broken in. There may evidence for the generalization as such: we heard a noise downstairs. Consider then a case where we reach the generalization from beliefs respectively about two individuals. (This is adapted from Rothschild.) You think I've secretly proved Goldbach's Conjecture based on an intercepted telegram. I think you've proved it from an overheard conversation. Both beliefs are completely off base. Do we *agree* that someone has secretly proved Goldbach's Conjecture? Surely not, since each thinks that no one has proved it if not the other. I propose to bracket this issue, however, since it arises already with disjunction, for instance in Gettier cases.

Can the strategy we used for universal instantiation be adapted to the existential case? The claim would be that Fa seems to include $\exists x Fx$, only because we confuse it with $Fa \& \exists x x = a$; it is really only the latter that includes $\exists x Fx$. If that is right, then our agreement is explicable in terms of shared parts after all, provided only that

we each believe our suspected thief to exist. (Granted, no account has been given of how $\exists x x = a$ gets to be true or false.) Rothschild's worry goes much deeper than this reply suggests, but I am out of ideas.

5 Questions (Rothschild, Szabó)

Rothschild and Szabó take almost opposite tacks on the proper relation of subject matters to the linguist's "questions." LS questions—Rothschild's term for the latter—are sets of propositions, the question's answers. The subject matters in the book are sets of propositions too. If the two are identical, am I not reinventing the wheel? That is Rothschild's worry. Szabó's is more like this: if the two are *not* identical, why would semanticists be interested?

Subject matters are *supposed* to be different, Rothschild points out. For there is meant to be one for every declarative sentence. LS questions are used more sparingly. They tend to be either "questions under discussion"—relatively stable features of the semantic scoreboard that structure a stretch of discourse—or the denotata of phrases like *who came to the party* (also confusingly called questions). A better analogy is with the "inquisitive semantics" program, which associates with each declarative sentence a pair of contents, one interrogative in character.⁷

Even if subject matters are put to different uses, the entities themselves would seem to be already there in the linguist's toolkit. The subject matter of *A* is after all the semantic value of an interrogative phrase in which *A* figures: *how A has its truth-value*, or *how it is that A or not-A, as the case may be*. Things are not so simple, Szabó argues. Linguists have a range of subtly different semantic values to choose from, and it is not clear how exactly subject matters can be made to fit in.

He frames the issue as follows. Questions are (or, in the case of verbal questions, express) sets of answers. Answers give information about what can go in for *x* in the abstract obtained by replacing the question's *wh*-word with a variable. If we're wondering *who is coming to the party*, we're looking for information about who satisfies *x is coming to the party*.

But information can be packaged in various ways. *Strongly* exhaustive answers provide (i) a list of all of the satisfiers, and (ii) assurances that they *are* all of the satisfiers. *Weakly* exhaustive answers give us (i) but not (ii). *Mention-some* answers give us some of the satisfiers with no pretense of completeness. *Partial* answers may not name *any* satisfiers. But they put constraints on the set of them, telling us e.g. that Alice is not coming to the party, or that either Bert or Carol is coming. *Minimal* answers tell us of one particular individual that he is coming (in the case of a positive minimal answer), or that he is not coming (that's a negative minimal answer).

⁷ Ciardelli et al. (2013) is a good summary. Ciardelli (2013) draws connections between inquisitive possibility semantics and Kit Fine's truthmaker semantics.

Subject matters as defined in the book fall into the last of these categories. They are comprised of positive minimal answers to *how does A have its truth-value?*, for instance, *Like so*, or *Thusly*. *Non-minimal* answers, like *like Like so*, or *Thusly*, are *recoverable* from minimal answers, but they don't go into the subject matter themselves.

Szabó asks in effect, how can they be excluded, given that they too speak to how *A* has its truth-value? Well, *speaking* to how *A* has its truth-value is one thing, and *saying* how *A* has its truth-value is another. But this is where Szabó sees a problem. The players are *A*, minimal answers to *how is it that A?*, and partial answers to the same question. All of these are in some good sense about the same thing. What else could it be, but the subject matter of *A*? But the subject matter of *A*, Szabó stresses, favors minimal answers over partial answers. Something has got to give.

An example may help. The subject matter of *c is colored* is the set of all positive minimal answers to *how is it that c is (or is not) colored?*. These include, for instance, that *c* is red, and that *c* is green, and that *c* is transparent. But they do not include conjunctions or disjunctions of the above because to be red or green, or red and/or rufous, are not themselves ways of being colored.⁸ And yet *c is red or green* is about how the thing is colored.

I reply that *c is red or green* is *not* about how *c* is colored, not in my sense, anyway. *C is red or green* is about, to repeat the formula, how it is that it holds or fails—how it is that *c is red or green*, or that *c is neither red nor green*, as the case may be. Szabó will object, I think, that this cuts subject matters too fine. He would like to say, for instance, that

Odysseus was set ashore at Ithaca while sound asleep is about how Odysseus arrived at Ithaca.

But then *Odysseus parachuted down to Ithaca from an air balloon* is also presumably about how he arrived at Ithaca. I can't say this, since parachuting down from a balloon is not a way of being set ashore in a boat. The question is, should I want to say it?

This much seems clear: both sentences *speak to* the question of how Odysseus arrived. Both are pertinent contributions to a conversation where *how he arrived* is the question under discussion. For there to be *a* subject matter they both speak to is not the same, however, as an identity obtaining between *the* subject matter of *A* and *the* subject matter of *B*. And this identity claim seems implausible. *A* concerns sleeping and *B* doesn't; only *B* takes an interest in air balloons. How given these differences can *A*'s subject matter be identical to that of *B*? Szabó is right that exclusive attention to *the* subject matter puts us at odds with many everyday judgments of what a sentence is about. But exclusive attention to *a* subject matter had in common puts us at odds with other everyday judgments.

How fine-grained are we talking about here? How often does *the* subject matter of *A* agree with that of *B*? *A* and *B* on the bipartite conception of subject matter will have to draw the same line through logical space; *A* must be necessarily equivalent

⁸ Rufous and red are overlapping color categories neither of which includes the other.

either to B or to $\neg B$. That is not enough for agreement in subject matter, but as necessary conditions go it is non-trivial.

Suppose we switch now to merged subject matters, with a sentence's truthmakers and falsemakers all thrown in together. Does subject matter agreement still require A and B to make the same cut in logical space? The answer seems to be no. Let A and B be $(p \leftrightarrow q) \vee \neg(p \leftrightarrow r)$ and $(p \leftrightarrow r) \vee \neg(p \leftrightarrow q)$. These are logically independent but have the same deciders: $\mathbf{p\&q}$, $\mathbf{\bar{p}\&q}$, $\mathbf{p\&\bar{q}}$, $\mathbf{\bar{p}\&\bar{q}}$, $\mathbf{p\&r}$, $\mathbf{p\&\bar{r}}$ and so on through $\mathbf{\bar{q}\&\bar{r}}$.

Could it be, to take a common-sense example, that x is yellow has the same deciders as x is purple? At the very least we would need that for each way W of being non-yellow, W is either a way of being purple or a way of being non-purple. This seems not implausible if W is a particular hue. But there might be other options. Yellow is a so-called *unique* hue, whereas purple is a mixture of red and blue. Is mixed-ness a way of not being yellow? If so then the deciders are different, since to be mixed leaves it open whether a thing is purple.

6 Presupposition (Rothschild)

A lot of work has been done on the projection problem for presuppositions. Suppose that A presupposes P . Why does the presupposition carry over to $\neg A$ and $A \rightarrow C$, but not to $P \rightarrow A$? But there is a prior question. Why does A (let it be atomic) presuppose P in the first place? The usual story is that A contains words like *stop*, *succeed*, and *know*, which signal by their presence that certain facts—the thing was done before, the proposition is true—are to be treated as already on the table and not now under discussion.

This only pushes the question back a step, one might think. Why would words give rise to presuppositions in the first place? Rothschild notes “a recurring form of strategy for explaining [this].” Suppose that two independent conditions X and Y must be met for a word to apply. It will then be unclear, when someone objects to applying it, which of the two conditions they are querying. If Y is for some reason a likelier candidate than X (maybe X could have been queried more directly) we assume they are doubtful of Y . The word's application conditions thus get divided into those that are at issue and those that are not at issue. The not at issue conditions X are the ones we call presupposed.

The explanation is still not complete. Why do some words possess this magical duality but not others? This is the trigger problem for presupposition. That X and Y are both necessary suggests the application conditions are implicitly conjunctive. But it is not clear what this even means in a standard possible-worlds setting; virtually every set is (trivially) the conjunction or intersection of other sets. If we insist on *natural* or *intelligible* conjuncts, then the opposite problem arises. Few if any concepts are exhaustively analyzable into factors that are independently graspable.

Subject matter theorists have their worlds grouped into ways. Rothschild wonders whether this extra structure might be helpful. An “implicit conjunct” of A is a Z such that $\neg Z$ is a way for A to be false. A is weakly conjunctive if it has non-trivial implicit conjuncts. Knowledge that p is weakly conjunctive since $\mathbf{\bar{p}}$ is a way

for *Sam knows that p* to be false. *A* is *strongly* conjunctive if it has implicit conjuncts which yield *A* when conjoined.

This is a much higher bar. Knowledge is strongly conjunctive only if there is a thing called *warrant* that is independent of truth such that (i) Sam's lack of warrant is a way for *Sam knows that p* to be false, and (ii) Sam knows that *p* iff her belief is warranted and true. But this seems unlikely for reasons emphasized by Williamson. The kind of justified belief that is independent of truth, does not combine with truth to imply knowledge, as we know from the Gettier examples. The kind of justified belief that might combine with truth to imply knowledge is not independent of truth.

The proposed line on the trigger problem had better not require strong conjunctiveness, or it will not explain why factive attitudes presuppose their facts. I suspect that weak conjunctiveness is enough but it would be good to have an argument. Logical subtraction might be useful in this connection. (*Sam knows that p*) $\sim p$ need not be independently intelligible to serve as the at-issue content.

Why would *Y* be likelier than *X* to be the point at issue? Rothschild notes one reason: *X* could have been addressed more directly. Truthmaker theory expands our options here. Suppose that *X*, if it is false, is made false by one sort of fact (\bar{x}), and *Y* by another. Whether \bar{x} holds might not be the best thing to be arguing about at right now. Maybe it concerns events long past—like the fact that Jones never did smoke—or otherwise far removed from the Davidsonian “main event.”⁹ Alternatively, \bar{x} might be *indiscriminate*, a falsemaker for *all* claims in a certain area. (As the absence of mathematical objects threatens to falsify all of physics.) Identifying the *otherwise* acceptable claims is a better use of our time than trying to expose the whole lot as false.

7 Content and mereology (Moltmann)

The book emphasizes *content*-parts, for two reasons: first, to make clear that (and how) contents *have* parts, and second, in the hope that *other* mereological locutions—partial agreement, and partial truth—can be explained in terms of content-parts. The first reason can claim more support from ordinary thought and talk than the second, in Moltmann's view: “Natural language ontology clearly supports a notion of part of applied to content.” But the “range of entities that ...come with a content-based part structure” is larger than the book recognizes. It includes contentful *acts*, *states*, *norms*, and much more.

Do these inherit their mereological features from their contents? I never said so (I hope) but readers may come away with that impression. This would be unfortunate since contents play, in many cases, a marginal role at best. Moltmann gives a great deal of evidence for this. If the *part* in *Part of John's remark was true* was just the pure propositional content, we ought to be able to say

1. The rest will not be true until we're all dead.
2. The true part is Mary's greatest regret.

⁹ Abrusán (2011).

but not this

1. But it was only made in passing.
2. And it caused a commotion.

Of course, John's remark might still *owe* its partial truth to that of a pure proposition, but this strategy takes us only so far. To partly recognize that you've failed is not to recognize part of *I've failed*.

Partial agreement may not always be content-based either. To partly agree that Trump is the worst candidate ever is not to completely agree with part of *Trump is the worst candidate ever*. Nor is complete agreement with this view of Trump's candidacy a matter of agreeing with every last bit of the content of *Trump is the worst candidate ever*.

I will not try to review all of Moltmann's marvelous data, or the theory of attitudinal and modal objects that she develops to accommodate it. I want to focus instead on an observation Moltmann makes about "adverbs of completion," a category that includes, along with *partly*, words like *completely* and *largely*. Adverbs of this sort were what drew Lewis to subject matter in "Statements Partly About Observation" (Lewis 1988). He made the following proposal:

The recipe for modifying *X* by 'partly' is something like this. Think of the situation to which *X*, unmodified, applies. Look for an aspect of that situation that has parts... – and there you have a situation to which 'partly *X*' could apply. If you find several aspects that could be made partial, then you have ambiguity. Maybe considerations about what it could be sensible to mean will help diminish the ambiguity.

Example. On a cloudy day, clouds cover the sky. Then what could a partly cloudy day be? Well, what in the situation has parts? First, the clouds have parts. ...But cloud-parts, or anyway the most salient ones, are just clouds; so there's no difference between cloud-parts covering the sky and clouds covering the sky; so this would be a pointless thing to mean...

Second, the day has parts. Maybe a partly cloudy day is one on which clouds cover the sky for part of the day? – Yes, the phrase can mean that. Third, the sky has parts. Maybe a partly cloudy day is one on which clouds cover part of the sky? – Yes, and in fact this is what the phrase most often means.

Another reading is possible, as we see by following Moltmann a little further. Adverbs of completion have in statements like

1. The buildings were largely destroyed
2. The sky is completely black.
3. I fully understand your instructions.

a *degree*-related reading: the buildings have reached a high degree of destruction, the sky couldn't be any blacker, I understand the instructions perfectly well.

Parts play a role here too, she proposes, but *intensive* parts rather than *extensive* (she may not like this terminology). If black skies can be more or less intensely black, then cloudy days can be more or less intensely cloudy. This falls under

Lewis's scheme if, but only if, we say that to be (at least) pretty black is part of being maximally black. Moltmann is doing Lewis a posthumous favor by extending the reach of his idea.

What about partial truth? One way for S to be truer than T is to have *more* true parts: S has a true part X that is not implied by T , and not vice versa; or T has a false part Y that is not implied by S , but not vice versa. This is Popper's definition of verisimilitude, more or less. It doesn't work, we saw, if parts are mere implications. This was quickly realized and people began looking elsewhere.¹⁰

The next idea to be considered was distance-based: S is truer than T if S -worlds are on balance closer to actuality than T -worlds.¹¹ The new approach effectively reconceives "more true" in terms of intensive parts. A theory gets truer as its worlds come closer to actuality; they are nearby to a higher degree. S is completely true if S -worlds are nearby to the highest degree, that is, one of them is actual. A lot could be said about the pros and cons of these approaches. The point is just that the theory of verisimilitude has trafficked over the years in two sorts of parthood.¹² This falls naturally out of Moltmann's part-based view of "true to a greater extent" and her ecumenicalism about parts.

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¹⁰ Tichý (1974), Gemes (2007).

¹¹ Niiniluoto (1987), Oddie (2005).

¹² I try, following Gemes, to resuscitate the extensive-parts approach in *Aboutness*.