

# 9. Leverage: A Model of Cognitive Significance

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Analytic semantics got its start when Frege, first in *Begriffsschrift* and then “Uber Sinn und Bedeutung,” began to worry about differences in cognitive content between sentences that in some good sense say the same — sentences attributing the same properties to the same objects, or putting the same objects in the same relations. He was particularly struck by claims like

Hesperus = Phosphorus (1)

Hesperus = Hesperus, (2)

How is it that (1) is more informative than (2), when they both say of the same object (Venus) that it is identical to the same object (Venus)? Similar problems are raised by

Hesperus is never far from Phosphorus, (3)

Hesperus is never far from Hesperus, (4)

or, Phosphorus being the Morning (not the Evening) Star,

Phosphorus is often seen in the evening, (5)

26 Hesperus is often seen in the evening. (6)

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28 How can (3) be more informative than (4), or (5) more informative than (6), when they attribute the same  
29 features to the same things? Cognitive content is a label for whatever explains/underlies the felt difference  
30 in information value; (1), (3) and (5) are more informative than their counterparts by virtue of possessing  
31 non-trivial cognitive contents. We'll start as Frege did with claims of the form  $a = b$ .

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### 33 1 Coreferring Names

34 Frege's response was in two stages. He conjectured in the *Begriffsschrift* that the sought after contents would  
35 be metalinguistic, to the effect that the names involved co-referred in the relevant language. Since the  
36 sentences are in English, the informational cash value of (1) is that

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38 «Hesperus» and «Phosphorus» co-refer in English, (7)

39 while (2)'s cash value is that

40 «Hesperus» and «Hesperus» co-refer in English. (8)

41 This runs into a problem, he decided. It's true that (7) is more informative. But it's informative about  
42 the wrong thing(s). (7) misrepresents what someone learning (1) comes to know:

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44 the sentence  $a = b$  would no longer refer to the subject matter, but only to its mode of designation;  
45 we would express no proper knowledge by its means. But in many cases, this is just what we  
46 want to do ([Frege, 1948], 209)

By “proper” knowledge, Frege means knowledge of how matters stand non-linguistically. (1) is informative, he is saying, not primarily about language, but the astronomical facts we use language to state. But then the information we seem to be getting from (1) is not really captured by a claim like (7) which speaks mainly of English words.

I stress *English* words because some have sought to drive the point home using the “Church-Langford translation test” ([Linsky, 1983]). Translation ought presumably to preserve cognitive content. So a content-extraction method that delivers different results when applied to  $\phi$  and its translation cannot be right. If indeed (1) shares a cognitive content with its Italian translation

Espero = Fosforo, (9)

then the analogue of (7) for *Espero = Fosforo* should be (7) again, or its Italian translation:

«Hesperus» e «Phosphorus» co-riferiscono in inglese. (10)

Is this what the Frege scheme applied (in Italian) to *Espero = Fosforo* gives us? No, we get instead

«Espero» e «Fosforo» co-riferiscono in italiano. (11)

This is in no way equivalent to (10)! It concerns itself with the referential properties, in a language (10) never considers, of names (10) never mentions.<sup>1</sup>

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<sup>1</sup> Here is how Linsky puts it (adjusted for consonance with the main text):

In translating (7), it is necessary to leave the quoted material intact, for it is the names «Hesperus» and «Phosphorus» that are said to denote the same thing (in English). Any translation of (7) must be about these very names and not about their Italian translations, «Espero» and «Fosforo». Suppose now that you are an Italian who does not understand any English at all. Then it is clear that (9) and (10) convey different information to you. (9) tells you an important astronomical fact, but (10) tells you nothing about the heavens at all. It tells you, rather, a fact about the English language. It is clear that (9) and (10) have different cognitive content. Then

## 2 Coincident Senses

Problems like these are what led Frege to his better known later proposal that (1) owes its non-trivial cognitive content to the fact that «Hesperus» and «Phosphorus» differ in *sense* — in how they present their (identical) referents. Suppose that «Hesperus» has  $\mathcal{H}$  as its sense while «Phosphorus»'s sense is  $\mathcal{P}$ . How is the fact that  $\mathcal{H} \neq \mathcal{P}$  supposed to explain the non-triviality? The idea seems at first to be that

$$\text{Venus-presented-}\mathcal{H}\text{-ly} = \text{Venus-presented-}\mathcal{P}\text{-ly} \quad (12)$$

is more informative than

$$\text{Venus-presented-}\mathcal{H}\text{-ly} = \text{Venus-presented-}\mathcal{H}\text{-ly}. \quad (13)$$

The truth is that *neither* provides a whole lot of information. Venus presented thus-ly is *trivially* the same object as Venus presented such-ly, whether it's the same mode of presentation twice over or not. (As a pound of salt weighs the same as a pound of sodium chloride whether salt = sodium chloride or not.) There is an informational difference between

$$\mathcal{H} \text{ and } \mathcal{P} \text{ present the same object,} \quad (14)$$

and

$$\mathcal{H} \text{ and } \mathcal{H} \text{ present the same object.} \quad (15)$$

But this way of formulating the contents invites the same sort of objection as the *Begriffsschrift* account

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(1) and (7) must also convey entirely different information, and for the same reason. One is about the heavens and the other is about English words. Thus Frege is forced to abandon his earlier view ([Linsky, 1983], p7)

ran into. What (1) tells us is no more about modes of presentation than names; perhaps it is less about modes of presentation, since no one pre-Frege had *heard* of such things, and few have heard of them yet. (1) gives information about astronomy, (14) about abstract objects. The “news” encoded in (1) is not captured therefore by (14), for the same sort of subject-matterish reason that (7) failed to capture that news.<sup>2</sup>

### 3 Definite Descriptions

That (14) concerns modes of presentation stems from its containing names « $\mathcal{H}$ » and « $\mathcal{P}$ » of the senses  $\mathcal{H}$  and  $\mathcal{P}$ . This looks at first like an insuperable difficulty, since it is precisely  $\mathcal{H}$ 's distinctness from  $\mathcal{P}$  that confers on (14) its greater informativeness (relative to (15)).

But, the fact that  $\mathcal{H}$  and  $\mathcal{P}$  are *named* suggests a way out. It is not clear that their contrasting effects on cognitive content require them to be named, or hence that  $\mathcal{H}$  and  $\mathcal{P}$  have to figure in the contrasting contents' subject matters. Why do I say this? Well,  $\mathcal{H}$  and  $\mathcal{P}$  differ not merely as abstract objects, but in the features they predicate of the referent  $x$ , by virtue of which it *is* the referent.  $\mathcal{H}$  picks the referent out as the  $\phi$  — the first celestial body visible in the evening sky, say — while  $\mathcal{P}$  picks it out as the  $\psi$  — the last celestial body visible in the morning sky.

Suppose that analogues of (14) and (15) could be found that incorporated the predicative material ( $\phi$ ,  $\psi$ ) directly, rather than naming objects encoding that material. These analogues would not contain « $\mathcal{H}$ » and « $\mathcal{P}$ », and would not be about modes of presentation. They'd be about whatever celestial bodies were in fact  $\phi$  and  $\psi$ . This in essence was Russell's approach. (1) and (2)'s cognitive contents for him were

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<sup>2</sup> (14) does do better with the Church-Langford objection, assuming «Espero» and «Fosforo» agree in sense with their English counterparts.

The first evening-visible celestial body = the last morning-visible celestial body, (16)

and

The first evening-visible celestial body = the first evening-visible celestial body. (17)

Russell appears to accomplish by this maneuver what Frege could not. The contents he gives us are (i) astronomical as to topic, and (ii) unequally informative about that topic.

This would solve the problem completely, if informativeness and aboutness were the only desiderata in play. But they aren't: a certain kind of *fidelity* is required to the target sentences (1) and (2). Otherwise one could use any old (1\*) and (2\*) that were about astronomy, informative in the case of (1\*), and trivial in the case of (2\*) — no matter how much violence they did to the semantics of (1) and (2).

It's henceforth taken as given that  $X^*$  and  $Y^*$  cannot hope to explain the cognitive difference between  $X$  and  $Y$  unless they are faithful to  $X$  and  $Y$ ; paraphrases should be in some appropriate sense "true" to the sentences whose cognitive contents they purport to capture. What this comes to in practice is anybody's guess at this point, but a good place to start is with standard objections to Russell's approach. These turn out to revolve in many cases around infidelity worries.

#### 4 Fidelity as Synonymy

Perhaps  $X^*$  is faithful to  $X$  only if they *mean the same* — albeit  $X^*$  might render the meaning more perpicuously, or in a way that better brings out its news value. The description account is in trouble if fidelity is synonymy, for reasons developed by Kripke in *Naming and Necessity*. (16) agrees in meaning with (1), it would seem, only if «Hesperus» means the same as «the first evening-visible celestial body» and «Phosphorus» the same as «the last morning-visible celestial body».

But there are reasons to doubt this, and to doubt more generally that «n» means the same as some associated description «the  $\chi$ ». These reasons tend in the literature to be filed under three headings: modal, semantic, and epistemic.

*modal* names are rigid; descriptions usually pick out different objects at different worlds

*semantic* one can grasp «n»'s meaning while unaware that it refers to the  $\chi$ <sup>3</sup>

*epistemic* it is a priori that the  $\chi$ , if it exists, is a  $\chi$  — but not that n, if it exists, is a  $\chi$ .

A number of other objections have been raised. E.g., names and descriptions differ *metasemantically*; names require in most cases a causal link to the referent. And they are of different grammatical categories; «the  $\chi$ » is a determiner, a kind of quantifier-phrase. And a quantifier phrase can't mean the same as a name.

Some would respond to the first worry that we can switch to rigidified definition descriptions («the actually first evening-visible ...»); to the second, that grasping a meaning doesn't require one to recognize it however presented; to the third, that analyticity does not entail apriority (and/or that defeasibility does not preclude apriority); to the fourth, that causal relations can play a role in the semantics of descriptions too, since «the  $\chi$ » denotes the one and only  $\chi$  in a certain contextually indicated situation, singled out in part causally; to the fifth, that grammatical category potentially crosscuts meaning (e.g., names retain their meaning through type-shifting operations that force them sometimes into determiner mode).

A different sort of response *concedes* the non-synonymy of  $X^*$  with  $X$ . It asks why fidelity should require meaning agreement in the first place. All we know so far about cognitive content is that it's the I-know-not-what that explains differences in felt information value. Whether it takes an out and out synonym to accomplish this is not obvious.

Sentences' semantic contents — what *they* say — are often distinguished from their assertive contents — what speakers are apt to say *with* them.  $X^*$  might line up less with the first than the second. Views along these lines will be considered shortly. First let's look at an option that Kripke himself considers as he wrestles (in [Kripke,

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<sup>3</sup> This comes in two flavors. «n» does refer to the  $\chi$ , but competent speakers needn't be aware of this (the “argument from ignorance”); competent speakers take «n» to refer to the  $\chi$ , but they're wrong (the “argument from error”). The first possibility is illustrated by «Feynman» — people tend to know only that he's a physicist — the second by «Peano» — it was Dedekind who discovered so-called Peano's Axioms.

1980]) with the phenomenon of contingent truths that appear as a cognitive matter to hold necessarily.

## 5 Reference-Fixers

If ordinary proper names are disguised descriptions, as Russell thought, then they share a meaning, presumably, with the descriptions they stand in for. Kripke rejects Russellianism (as a semantic theory) for this reason. But he allows that descriptions can function metasemantically as *specifiers* of the item a name «n» refers to — the item Kripkeans generally take to exhaust «n»'s meaning.

Now, the referent can hardly fail to be picked out by some description or other. The suggestion to be interesting has got to be that «the F» carries some kind of *authority*. This is NOT the requirement that «n is F» be a priori. We know a priori that « $\pi = 4 \times (1 - 1/3 + 1/5 - 1/7 + 1/9 \dots)$ ». But the infinite series is not what fixes the reference:

$\pi$  is supposed to be the ratio of the circumference of a circle to its diameter. It seems to me that here this Greek letter is not being used as short for the phrase 'the ratio of the circumference of a circle to its diameter,' nor is it even used as short for a cluster of alternative definitions of  $\pi$ , whatever that might mean. It is used as a name for a real number. ([Kripke, 1980], 60)

A reference-fixing description spells out what *qualifies* x as the referent; «n» refers to x if and because x is F and nothing else is F. A priority is conferred on «n is F», or «n is F, if anything is (uniquely) F», by the fact that a non-F has no hope<sup>4</sup> of counting as the item in question.

Why is this not just Russell again? The point about reference-fixing descriptions is that while they *guide* us to the meaning (= the referent), they do make it *into* the meaning.<sup>5</sup> If the cognitive content of «A meter

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<sup>4</sup> For certain speakers, at least, at certain times.

<sup>5</sup> As Moses supposedly led the Israelites to the promised land, without making it in himself.



is the length of this stick» is given, despite the difference in meaning, by «This stick's length is the length of this stick», perhaps their non-synonymy is not an obstacle either to «The first evening-visible celestial body = the last morning-visible celestial body» giving the cognitive content of «Hesperus = Phosphorus».

This explains *in principle* how coreferential substitutions can affect cognitive content — news value — while leaving meaning unchanged. Say «n» has its reference fixed by «the F», while «m», which corefers with it, has its reference fixed by some other description, or by no description at all. Then

n is F, if anything is (uniquely) F (18)

will be uninformative, while

m is F, if anything is (uniquely) F, (19)

packs an informational punch. The contrast is non-semantic since the two sentences mean the same. Not everyone finds this convincing. (Is it the truth (18) expresses that's trivial, or the fact that it expresses some truth or other?) But never mind that for now. Our problem is more basic.

Cognitive significance issues arise for all *kinds* of name. But for a name to have its reference fixed (in the sense under discussion) by a description is quite uncommon.<sup>6</sup> Kripke does not *even in the meter stick case* want to put the referent entirely at the mercy of the associated description.<sup>7</sup> The stipulator is said to have “a certain length he wants to mark out.” The standard meter stick S is chosen with that end in mind. But it is an empirical matter whether stick S really is the intended length:

what happens if he is wrong and it is a different length than intended? It might be, for instance, that the stick is a millionth of an inch long, but emitting magnification rays that delude us into seeing it as longer. Or maybe the stick is a mile long, but much farther away than anyone had realized. I take it that it is no part of the reference-fixer's understanding of 'meter' that it

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<sup>6</sup> “I also think, contrary to most recent theorists, that the reference of names is rarely or almost never fixed by means of description” ([Kripke, 2011]: 21).

<sup>7</sup> As he confirmed in conversation.

continues to stand for the length of S even if S is much shorter or longer than it appears. ([Yablo, 2008]: 184)

This is part of the reason that Kripke quickly moves on to the model of initial baptism followed by chains of reference-preserving intentions.

The baptism model may seem at first to grant its own sort of authority to descriptive material. The initial baptism has no chance of success, it's been argued, unless a sortal comes in to disambiguate; the name-giver knows a priori (to begin with, anyway) that the sortal attaches if the referent exists.<sup>8</sup> Kripke considers this and rejects it:

Even if a sortal is used to disambiguate an ostensive reference, surely it need not be held a priori to be true of the object designated. Couldn't Dobbin turn out to belong to a species other than horses (though superficially he looked like a horse), Hesperus to be a planet rather than a star, or Lot's guests, even if he names them, to be angels rather than men? ([Kripke, 1980]: 116, note 58)

Reference-fixers as we find them in nature are not — neither in the purely descriptive case («Neptune») or when a demonstrative is involved («meter», «Dobbin») — a tool for tying ourselves to the semantic mast.<sup>9</sup> They rest almost always on empirical presuppositions whose failure could and should prompt a rethinking of the proposed descriptive conditions. In practice those conditions are recommended by the presumed referent as much as, if not more than, the referent is recommended by the conditions.

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<sup>8</sup> [Thomasson, 2014]

<sup>9</sup> If Dobbin could turn out not to be a horse, it is hard to see why “mythical” animals could not surprise us both on the score of existence and biological type. Unicorns, if there are any, could turn out to be a previously unknown sort of horse. This is one of the likelier scenarios, in fact, on which they turn out to exist ([Yablo, 2020]).

## 6 Diagonal Propositions

When reference-fixing descriptions function as advertised, they associate with «n is G» a proposition that, although not literally expressed by that sentence, has some claim to be regarded as «n is G»'s cognitive content. I am speaking of course of

The proposition that is true at  $w$  iff «n is G» *as uttered in  $w$*  expresses a singular truth there. (20)

What the reference-fixing description, if we have one, gives us is a tidy way of identifying the singular truth — the one that is expressed in  $w$  by a (true) utterance of «n is G». It's

The proposition attributing G-ness to whichever object  $\mathbf{o}_w$  uniquely satisfies in  $w$  the description fixing «n»'s reference — whichever object is uniquely F in  $w$ . (21)

The handy mode of identification set out in (21) is rarely available if reference-fixing descriptions rarely exist means that. But maybe we can live with that. It is (20) after all that gives the cognitive content. And it is still available for that purpose even in the absence of a simple articulation of what the *other* proposition is that has to be true in  $w$  for the cognitive content to be true there.

This in a nutshell is Stalnaker's diagonalization strategy.  $S$ 's customary or *horizontal* content is the proposition that holds at  $w$  iff  $S$  as uttered here in @ portrays  $w$  accurately. The proposition that holds in  $w$  iff  $S$  as uttered in  $w$  offers a correct description of  $w$  is  $S$ 's *diagonal* content. A name «n» does not need its reference fixed by description to make a well-defined contribution to the diagonal contents of «n»-sentences. It's enough that «n» picks out different objects on different hypotheses  $w$  about the world of utterance.

The reasons the reference varies are metasemantic, as in Kripke. The difference is that speakers are not expected to be in possession of a *formula* picking out the referent in each  $w$ , or even each  $w$  that might for all they know really obtain. A decent analogy is with demonstratives like «that». What determines which object(s) it refers to on different hypotheses about speaker intentions, which way they're pointing, the surrounding scene, etc? An explicit rule is too much to hope for, which is not to say we don't have a good

idea in many cases.<sup>10</sup> What determines which object «n» picks out on different hypotheses about our intentions, the referential traditions we're party to, etc.? Again an explicit rule is not to be expected.

## 7 Pragmatic Repair

What an asserted sentence  $S$  normally expresses is the horizontal proposition, sometimes called *what is said* after Kaplan. Explicitly it's the set of counterfactual  $w$  correctly described by  $S$  as uttered in  $@$ .  $S$  is assigned the diagonal proposition only as part of a pragmatic repair strategy. The strategy springs into action when something goes wrong — principles crucial to communication would be violated — if the horizontal interpretation is allowed to stand.

To see the kind of problem that can arise, we need to look briefly at Stalnaker's account of assertion as a move in the cooperative activity of conversation. The point of this activity is to whittle down bit by bit the set of worlds still in play — the so-called context set. "Still in play" here is shorthand for worlds that might, for all we know at a particular point in the conversation, be actual. A proposition is *presupposed* if it holds in all worlds in  $\Gamma$  = the context set.

To make an assertion is to reduce the context set in a particular way .... all of the possible situations incompatible with what is said are eliminated. To put it a slightly different way, the essential effect of an assertion is to change the presuppositions of the participants ... by adding the content of what is asserted to what is presupposed. ([Stalnaker, 1999], 88)

The horizontal content is contraindicated if adding it to what's presupposed is not, for reasons we're coming to, a sensible operation given the goals just outlined. We reach for the diagonal content in hopes that adding *it* is more in keeping with the conversational project that we are jointly engaged in.

How does the horizontal content reveal itself as unsuitable? Stalnaker has a wonderful story to tell. The following "can be defended," he says, as essential conditions of rational communication, as principles to

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<sup>10</sup> [Stojnić et al., 2017, Stojnić, 2021]

which any rational agent would conform if he were engaged in a practice that fits the kind of very abstract and schematic sketch of communication that I have given” ([Stalnaker, 1999], 86).

CONTINGENCY A proposition asserted is always true in some, but not all, of the possible worlds in the context set.

TOTALITY Any assertive utterance should express a proposition, relative to each ... world in the context set, and that proposition should have a truth value in each ... world in the context set.

UNIVOCALITY The same proposition is expressed relative to each possible world in the context set. ([Stalnaker, 1999], 88, labels mine)

If any of these is in danger of being violated, the search begins for an alternative content. There are at least two reasons, given this background, why an assertive utterance of «Hesperus = Phosphorus» cannot be taken at face value — two reasons why it cannot be the horizontal content that’s asserted.

First, the horizontal content is a necessary truth, hence necessary within  $\Gamma$ . To assert a proposition true in *all*  $\Gamma$ -worlds would be self-defeating; intersecting  $\Gamma$  with an always-true proposition does not cut it down any, which was the point of the exercise.<sup>11</sup>

Well, but what if we could arrange for «Hesperus = Phosphorus» to express *either* the necessary truth that Venus = Venus, *or* the necessary falsehood that Venus = Mars, depending on whether it is Venus or Mars that’s visible in the morning? Then our assertion *would* seemingly cut down the context set. Worlds  $w$  where the necessary falsehood is expressed are thrown out as misdescribed by what «Hesperus = Phosphorus» says in  $w$ .

A different problem now arises, however, to do with the third principle. If «Hesperus = Phosphorus» might express either that Venus = Venus or that Venus = Mars, then the audience can’t tell what the content is that the speaker is proposing to intersect with the context set. It is hard to see how in that case they’re to judge the advisability of such a move.

The diagonal proposition appears to help with both problems. CONTINGENCY is respected since

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<sup>11</sup> “[T]o assert something which is already presupposed is to attempt to do something that is already done.” “If the speaker says something that seems *prima facie* to be trivial, ... one may look for another interpretation of what he said.” (ibid., 89).

«Hesperus = Phosphorus» has a true horizontal content in some  $w \in \Gamma$  and a false one in others. As for UNIVOCALITY, the diagonal content is uniquely singled out, since we know more or less how the referents vary as we move through the context set.

Consider: *Hesperus = Phosphorus, it is now three o'clock, an ophthalmologist is an eye doctor.*

In each case, to construct a context which conforms to the first principle, a context in which the proposition expressed is neither trivial nor assumed false, one must include possible worlds in which the sentence, interpreted in the standard way, expresses different propositions. But in any plausible context in which one of these sentences might reasonably be used, it is clear that the diagonal proposition is the one that the speaker means to communicate (ibid., 92)

Let's grant for now that the diagonal proposition gives the intuitive cognitive content in cases where CONTINGENCY and UNIVOCALITY force us to look for an alternative to the horizontal proposition. Does this solve the cognitive content problem? That depends on whether it is *only* in such cases that the cognitive content comes apart from the horizontal content.

## 8 Trigger Problems

Stalnaker's strategy generates distinct cognitive contents just when diagonalization is triggered — that is, just when asserted sentences need to be reinterpreted on pain of violating principles like CONTINGENCY and UNIVOCALITY.<sup>12</sup> It is natural to wonder whether this gets us all the cognitive distinctions we need. There could *in principle* be cases where

1. two sentences differ in cognitive content, though
2. they share a horizontal content, and

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<sup>12</sup> TOTALITY can be ignored for now; it comes up later in connection with existence-claims.

3. diagonalization isn't triggered since the principles are not at risk of being disrespected.

Stanley raises this kind of worry in ([Stanley, 2010]). Imagine it is common ground in a certain community that Hesperus and Phosphorus are distinct objects **h** and **p**. They see a clear cognitive difference between

Hesperus is never far from Phosphorus, (22)

which is viewed with suspicion, and

Hesperus is never far from Hesperus. (23)

which is trivially correct. (22) and (23) agree in semantic/horizontal content, so (22) at least will have to be reinterpreted. But it is not clear reinterperatation is licensed:

Diagonalization does not enter the picture, because there is no room for uncertainty about meaning. Everyone is certain that «Hesperus» has a certain denotation and «Phosphorus» has a certain denotation, and that they are distinct (ibid.,110).<sup>13</sup>

Stalnaker responds that it's the theorist, not the community, who decides when diagonalization is called for.<sup>14</sup> From the theorist's perspective, there is a kind of equivocation occurring: between the sentences' "real" horizontal contents as delivered by the semantics, and the "fake" horizontals wrongly imputed by the community.

But how does this violate the principles as stated? If there is no "uncertainty about what is meant," rooted in uncertainty about which world is actual, then UNIVOCALITY is not genuinely under threat; rather a threat is drummed up to gain us access to diagonalization. Williamson in the course of beating some neighboring bushes has Stalnaker arguing as follows:

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<sup>13</sup> [Stalnaker, 2010] argues that a "derived" context set should be used relative to which (22) and (23) do differ in horizontal content. This raises large issues that cannot be discussed here. Another possible response is that contingency is threatened; but this calls at most for a change of example.

<sup>14</sup> Stanley remarks on this as well in raising a different problem.

If the sentence «Hesperus = Phosphorus» is true, it expresses a necessarily true proposition. If «Hesperus = Phosphorus» is false, it expresses a necessarily false proposition. But any necessarily true proposition is distinct from any necessarily false proposition. Thus the proposition «Hesperus = Phosphorus» expresses if it is true is distinct from the proposition it expresses if it is false. So what proposition «Hesperus = Phosphorus » expresses depends on whether it is true. Therefore not knowing whether «Hesperus = Phosphorus» is true involves not knowing what proposition «Hesperus = Phosphorus» expresses. ([Williamson, 2011], 519)

This line of thought proves too much, he suggests. One could argue with (almost) equal justice that uncertainty about whether «Venus is hot» is *true* involves, since true propositions are distinct from false ones, not knowing what proposition it expresses.

Stalnaker might think that this misrepresents his position. If someone wondering whether Hesperus = Phosphorus can't pick out the sentence's horizontal content, the reason is NOT that you have to know a content's modal status, or truth-value, to know its identity. It's that to know a content's identity, you should not be in the dark about what it *says*. And you are in the dark, if it might for all you know be a proposition about Venus, or Mars, or the two together.

The real problem it seems to me is as follows. Haziness about horizontal contents plays a crucial role in the mechanism pushing us onto diagonal contents. But when we look at Frege's original data point, the haziness isn't there. *He* was not in any doubt about Hesperus's identity with Phosphorus when he wrote, of «Hesperus = Hesperus» and «Hesperus = Phosphorus», that they are

obviously statements of differing cognitive value; [one] holds a priori and, according to Kant, is to be labeled analytic, while statements of the [second] form ... often contain very valuable extensions of our knowledge and cannot always be established a priori ([Frege, 1948])

If knowing the horizontal contents did not blind Frege (or his audience) to the difference in cognitive value, then it's hard to see how it could have been a difference in diagonal content he was picking up on. Diagonalization wasn't triggered.<sup>15</sup>

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<sup>15</sup> You might say it was triggered by CONTINGENCY. But we can change the example. «Hesperus tends to be visible in the evening» is of lower cognitive value than «Phosphorus tends to be visible in the evening». But neither has as its horizontal



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content a proposition true throughout the context set.

To be sure, «Hesperus = Phosphorus» was *in one sense* uninformative for Frege. It did not when he wrote “On sense and reference” tell him anything he didn’t already know. This just shows, however, that the notion of informativeness at work in that paper had not much to do with actual surprise value. «Hesperus = Phosphorus» packs an informational punch that does not greatly depend on whether the information was already in one’s possession.<sup>16</sup>

## 9 Pragmatic Enrichment

Diagonalization is one sort of pragmatic process that might be called on to generate distinctive cognitive contents. But it is not the only one. If diagonalization kicks in in only some of the cases where cognitive contents are needed, we ought to be on the lookout for alternative mechanisms that kick in more easily. Here we look at two enrichment mechanisms, one familiar and the other not, that seem to fit the bill.

The first is implicature. «S<sub>1</sub>» might convey more than «S<sub>2</sub>» because it implicates things that «S<sub>2</sub>» doesn’t — because, to put it another way, «S<sub>1</sub>»’s “enhanced” content, obtained by folding in implicatures, is distinct from the enhanced content of «S<sub>2</sub>». Why would this get us additional cognitive contents? Well, an implicature is generated when imputing a wish to convey that *P* helps to bring an utterance into line with Grice’s conversational maxims:

*Quantity* Make your contribution as informative as, and no more informative than, required for current purposes.

*Quality* Try to make your contribution one that is true; do not say that for which you lack adequate evidence.

*Relevance* Be relevant. Omit any information irrelevant to the current exchange.

*Manner* Be perspicuous. Avoid obscurity, ambiguity, prolixity. Be orderly.

The classic example is damning with faint praise. When someone writes in a reference letter that Smith has good handwriting and is highly punctual, this conveys that Smith is not such a great philosopher. One would not be dwelling on handwriting unless flattery more to the point would be false. Assuming that the

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<sup>16</sup> Perhaps «Hesperus = Phosphorus» only seems to pack an informational punch, because one remembers what it was like to learn it for the first time? (Compare Bayesians on the problem of old evidence.) Or perhaps a kind of reverse accommodation occurs in which the question is reopened. These are interesting possibilities but they will not be explored here.

same proposition (that Smith has good handwriting) is expressed throughout the context set, and that it draws a nontrivial line through that set, diagonalization gets no grip.

A problem may have occurred to you. Grice took implicatures to be on the whole *nondetachable* – if something is implicated by my assertive utterance of «S», then it will not generally be “possible to find another way of saying the same thing, which ... lacks the implicature in question” ([Grice, 1975], 39). Nondetachability tells us that «Smith has excellent penmanship» ought to share the bad-philosopher implicature, a prediction that’s borne out. Remember though that «S<sub>1</sub>» and «S<sub>2</sub>» were to differ in their implicatures despite saying the same; that’s how the distinctive cognitive contents are meant to be generated. The outcome we’re after here is what nondetachability says we can’t have.

This would be fatal if nondetachability were an ironclad rule. But Grice allows as well for implicatures turning on *how* a thing is said; these are the *manner* implicatures. «P or Q» tends for instance to implicate «Not both» hence our temptation to read «or» as exclusive. «P or Q or both» obviously lacks this implicature. The contrast is not because of what «(P∨Q) ∨ (P∧Q)» strictly says – it’s logically equivalent to «P∨Q»— but the way it is said, with «Both» explicitly listed as a possibility.

Implicature has long been a mainstay of Millian apologetics about cognitive significance. The implicature gambit is especially prominent in the work of Salmon and Soames.<sup>17</sup> The *Stanford Encyclopedia* introduces it as follows:

the theory that the meaning of a name is its referent entails that coreferential names are synonymous ... seems untenable in light of names like «Superman» and «Clark Kent». Millians have proposed that the source of these linguistic intuitions is a difference in implicature ([Salmon, 1986], [Soames, 1989], [Berg, 2012]). One hypothesis invokes metalinguistic implicature, noting that «Clark Kent can fly» implicates that a man called «Clark Kent» can fly ([McKay, 1981], [Berg, 1988], [Berg, 1998]) ([Davis, 2019])

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<sup>17</sup> [Salmon, 1986], [Soames, 2002]. Soames lays less weight on implicature in later papers ([Soames, 2005], [Soames, 2008]), partly for reasons we’re getting to.

The specifically metalinguistic version sits ill with the cognitive equivalence, already noted, of «Hesperus = Phosphorus» with «Espero = Fosforo». Another worry is that coreferential substitutions seem sometimes to turn truths into falsehoods, whereas statements with false implicatures tend to strike us as misleading rather than false.<sup>18</sup> A final, seemingly fatal, problem is that «S»'s cognitive content should often be *weaker* than, or *independent of*, its semantic content, rather than an *extension* of the semantic content. Otherwise «Hesperus isn't Phosphorus» would be cognitively absurd, by virtue of conveying in part that Venus isn't Venus.<sup>19</sup>

Diagonalization and implicature are the mechanisms that have attracted most of the attention. But they are not the only imaginable mechanisms. Here is one that's never been discussed to my knowledge, though it has an obvious intuitive appeal. «A»'s information value lines up on the face of it with the effects of «A»-testimony on the hearer's belief state. Some of those effects will be "direct," that is, we come to believe the statement's semantic content. Others will be mediated by collateral beliefs, say of the form «A→C». It stands to reason that «A»'s information value would be a function in part of the conclusions immediately falling out of it by arguments of the form

$$\begin{array}{l}
 A \\
 \hline
 A \rightarrow C \\
 \hline
 \therefore C
 \end{array}
 \tag{24}$$

This is not going to get us *distinctive* cognitive contents, unless different conclusions flow in this way from semantically indistinguishable premises «A<sub>1</sub>» and «A<sub>2</sub>». But if «A→C» is a standard issue indicative conditional, different conclusions will flow, for semantic equivalents are known not to be freely substitutable

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<sup>18</sup> The falsity of so-called "implicatures" may be another matter ([Bach, 1994]). See also the literature on intrusive implicature.

<sup>19</sup> Grice doesn't want the speaker's message to include the semantic content either, e.g., in cases of irony or hyperbole. He avoids it by postulating that the speaker only makes as if to say *S*. But, someone wrong about the identity facts is *really* saying *a ≠ b*, not only making as if to say it. It is for reasons such as this that Soames abandons his one-time view that "the semantic content of a sentence is always a complete proposition that is asserted and conveyed by normal utterances in every normal context" ([Soames, 2005], 256).

in indicative antecedents. Stalnaker made the point in his original paper on the topic ([Stalnaker, 1975]). His example involved empty names, but it holds for coreferential names too.

Take these in order. «Vulcan exists → Babinet was onto something» seems hard to argue with; it was Babinet who *conjectured* that there was such a planet as Vulcan. Certainly it's more plausible than «Sasquatch exists → Babinet was onto something». Yet the antecedents, to the extent they have a semantic content at all, have the same one given that the names are both empty.<sup>20</sup> Babinet being onto something figures in the inferential upshot of only one of the sentences, their semantic equivalence notwithstanding.

Now a coreference case. Paderewski<sub>1</sub>, the Polish pianist, is one and the same individual as Paderewski<sub>2</sub>, the statesman, but Al doesn't know this. Al finds «Paderewski<sub>1</sub> died in 1941 → Polish pianists have lived to over 80» plausible, Paderewski<sub>1</sub> being for him a pianist. «Paderewski<sub>2</sub> died in 1941 → Polish pianists have lived to over 80» does not share in this plausibility, since Paderewski<sub>2</sub> is not to his knowledge a pianist.

The Paderewski-sentences differ in their inferential upshot for Al, though semantically speaking they say the same thing. (They differ in their *immediate* inferential upshot even if Al knows of the identity.)

None of this is surprising on the view that indicatives are evaluated suppositionally — by imagining we have just been informed of the antecedent, and asking ourselves what we are now to think of the consequent.

Thus Ramsey:

If two people are arguing *If P, will Q?* and are both in doubt as to *P*, they are adding *P* hypothetically to their stock of knowledge and arguing on that basis about *Q*.<sup>21</sup>

The question is whether adding «a is thus and such» to one's knowledge base always prompts the same cognitive adjustments as adding «b is thus and such», given only that «a» and «b» corefer. Frege cases resolve this pretty decisively. We find different «Q»s plausible depending on the name employed in «P».

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<sup>20</sup> [Yablo, 2020], [Yablo, 2021], [Yalcin, 2021].

<sup>21</sup> Ramsey, "General Propositions and Causality," in [Ramsey and Mellor (ed.), 1990]. (Quine in the same spirit calls indicative if/then "a dramatic idiom," assessed by "feign[ing] belief in the antecedent and see[ing] how convincing we then find the consequent" ([Quine, 1960], 222).)

Should the oracle say, «Hesperus ≠ Phosphorus», we would likely conclude that one planet appears in the evening, a different planet in the morning. We wouldn't know what to think if it said, «Hesperus ≠ Hesperus», but certainly not that different planets appear early and late. «Hesperus ≠ Phosphorus → different planets appear early and late» strikes us accordingly as much more plausible than «Hesperus ≠ Hesperus → different planets appear early and late». «Different planets appear early and late» belongs to the indicative upshot of «Hesperus ≠ Phosphorus», but not to that (if we can even make sense of it) of «Hesperus ≠ Hesperus». This on the view we're considering is why the two differ in cognitive content. ( How it all plays out at a semantic level is not obvious, but there are proposals out there.<sup>22</sup>)

Stalnaker comes across as a fellow traveler, when he says that indicative suppositions are likelier to be diagonalized than counterfactual:

To interpret the statement *If Aristotle hadn't existed, the history of philosophy would have been very different from the way it was*, we do not need to diagonalize, since in any possible context appropriate to THAT statement, it will be presupposed that Aristotle does exist. ... It is interesting to note that if the conditional were in the indicative mood, the result would have been different. This is because an indicative conditional is appropriate only in a context where it is an open question whether the antecedent is true. So to say *If Aristotle didn't exist* is to suppose just what is asserted when one asserts *Aristotle didn't exist* ([Stalnaker, 1999], 94)

It's to suppose in other words the diagonal proposition. If indeed diagonalization more easily triggered when «A» is supposed than asserted, this could give the indicative-upshot strategy an advantage over the norms-of-assertion strategy.

Either way, we are still saddled it seems with a problem raised above for implicature. «A»'s cognitive content should sometimes be weaker than, or independent of, its semantic content. Adding «A»'s indicative upshot to its semantic content yields something stronger. There may be ways of getting around this, but it's a complication we would rather avoid. I want to move on to a mechanism that generates weakened/independent contents “naturally,” without special tinkering.

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<sup>22</sup> [Weatherson, 2001], [Santorio, 2012], [Glick, 2012], [Santorio, 2018], See also [Hintikka, 1970], [Lewis, 1983], [Stalnaker, 1986].

## 10 Presupposition Subtraction

Something is presupposed, for our purposes, if it's to be treated as true for conversational purposes, where this is understood all around. Presuppositions *P* are not known a priori; they may turn out to be false, and may even be (on the side, as it were) known to be false. Still they are a priori-like in the sense of being “already settled.” They lay down parameters for discussion rather than being up for discussion themselves.

Recall that reference-fixing descriptions were once thought to generate cognitive contents via associated a priori conditionals: «*n* is thus and so» conveys that the *F* (if anything is uniquely *F*) is thus and so, where «*n*» has its reference fixed by «the *F*». The idea has fallen on hard times, we saw in section 5, not least because ab initio referential stipulations are rare. A lot of the objections fall away, however, if reference-fixers are conceived instead as *presuppositions* about the kind of thing a word refers to. Garcia-Carpintero takes this line in [Carpintero, 2000]. Kripke explores it too in unpublished lectures,<sup>23</sup> though he speaks rather of *preconceptions* or *prejudices*.<sup>24</sup>

How would prejudices/presuppositions “about Hesperus” make their way into the cognitive content of «Hesperus»-sentences, as opposed to «Phosphorus»-sentences? Since we are trying to explain *to the Millian*, and to philosophers at large in a Millian-ly acceptable way, how «...Hesperus... » and «...Phosphorus...» can differ in cognitive content (to the point sometimes of disagreeing in intuitive truth value) despite saying the same thing at a semantic level, certain answers seem unavailable. We can't easily call. «Evening-appearing-ness is a preconception about Hesperus» true, and «Evening-appearing-ness is a preconception about Phosphorus» false, because this is precisely the sort of puzzling pair that Millians officially disallow, and that we are trying on their behalf to make room for.<sup>25</sup> Pending a theory of cognitive content, preconceptions (for the Millian) about Hesperus = preconceptions about Phosphorus = preconceptions about Venus.

There is I think a way around this problem. But it requires a subtler notion of presupposition than *whatever*

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<sup>23</sup> The lectures were on secondary properties. [Gomez-Torrente, 2011] is an excellent discussion. (I heard them at Michigan in 1989.)

<sup>24</sup> See [Swanson, 2006], [Swanson, 2012], for a metalinguistically flavored presuppositionalism.

<sup>25</sup> Compare Kripke's admission in [Kripke, 2013] that he is giving “proposition about Holmes” a special quasi-intensional use that he has no clear right to qua Millian.

*is common ground at a certain point in the conversation.* A distinction will be needed between *active* presuppositions — those we’re currently leaning on and expecting our audience to lean on as well — and the rest. Regular presuppositions don’t disappear on this view. But not all of them are drawn on by the machinery that wrings «S»’s cognitive content out of its semantic content. Let’s say, to have a word for this distinction, that speakers *pivot*, when uttering «S», on certain presuppositions but not others.

An example of Donnellan’s gives the flavor, though we’ll be interpreting it in our own way. Why do we hear «The guy drinking a martini is a philosopher» as carrying the information that *that* guy is a philosopher? The story we’re working up to points to the fact that we’re *pivoting* on the (shared) assumption that that guy is a martini-drinker (the only one around). An example Donnellan does not give, but could have, is the following. This time we are wondering, not about people’s professions, but which sorts of cocktail go with which areas of academic endeavor. Someone says, pointing at the martini-drinker, «Well, *that* guy is a philosopher». With the right sort of stage-setting, we can hear this as saying that the martini-drinker is a philosopher. We are pivoting, again, on the assumption that *that* guy is the martini-drinker — except now with a view to working martinis *into* the content of «He’s a philosopher». (Earlier we were pulling martinis *out* of the content of «The martini guy’s a philosopher».)

No doubt one would like to know more about how pivot-presuppositions are singled out on particular occasions. Certainly though *how* one says a thing — the sentence «S<sub>1</sub> » one hits on to express the semantic content |S<sub>1</sub>| (= |S<sub>2</sub>|) — has a crucial role to play. «S<sub>1</sub> » acquires a cognitive content by raising certain presuppositions to prominence, which then reshape its semantic content according to principles we are still getting to. This is part of the story of how «Hesperus is thus and so» and «Phosphorus is thus and so» associate themselves with different cognitive contents. They do it by feeding different presuppositions into the content-generation machine. «Hesperus is thus and so» feeds in what I will unhelpfully call presumptions “about Hesperus” while «Phosphorus is thus and so» feeds in presumptions “about Phosphorus.”

What could it mean for a presumption *P* to be “about Hesperus” or “about Phosphorus”? More is required than for *P* to attribute a property to Hesperus (Phosphorus). Property-attributions don’t divide up along the contemplated lines, as the properties *P* attributes to Hesperus are attributed also to Phosphorus, and vice versa. How are presumptions pertaining specifically to *Hesperus* marked off from those pertaining specifically to *Phosphorus*?

The answer partly turns on the contexts in which a given *P* is *activated*, that is, called up for duty from the reserve army of possible pivots. *P* is to a first approximation “about Hesperus” if it is activated by the



use of «Hesperus » as opposed to «Phosphorus ». Timidity is a presumption “about Clark Kent,” because he presents himself as timid when the name «Clark» is used. X-ray vision is a presumption “about Superman,” because it leaps (noninferentially) to mind when that’s how he’s picked out. That Superman can be timid is not news exactly, but it takes some remembering when he’s going under that name. That Clark can fly is not news either; we already knew it, or were in a position to figure it out. What makes it a presumption not specifically “about Clark” that we have to reason our way to it from the corresponding presumption “about Superman.”

More needs to be said, obviously, about how we tell that it is  $P$  (rather than  $Q$ ) that is activated by a particular choice of words. I don’t have a proper test to offer; we will have to get by with the following.  $P$  is activated to the extent that « $P$ , don’t forget» is in order – think of it as a whispered, off-stage prompt – when someone is processing  $S$ . The prompt is especially appropriate when it serves to ward off misunderstanding, as, e.g., when Hesperus is “confused” with the Morning Planet. To run it from the processor’s perspective, « $P$ , right?» is an appropriate check to run when  $S$  has been given in testimony. The speaker should welcome this query and answer in the affirmative. By contrast « $Q$ , right?» might be found alarming («Hesperus is the Morning Planet, correct? ») – the more so so if  $Q$  is inconsistent with  $P$  («Hesperus is seen only in the evening, yes?»).

I want to move on, however, to a different question: supposing that  $P$  is indeed activated, how does it make its mark on  $S$ ’s cognitive content  $[[S]]$ ? Cognitive contents are found by asking what  $S$  adds to  $P$ .<sup>27</sup>  $[[S]]$  in other words is the proposition  $\Delta$  that “completes the enthymeme”

$$\begin{array}{l}
 P \\
 \underline{\Delta} \\
 \therefore S
 \end{array}
 \tag{25}$$

$S$ ’s cognitive content becomes then a kind of incremental content  $S \sim P$ ; it is what remains of  $S$  when  $P$  is subtracted.<sup>28</sup> Definitions are given elsewhere; the idea though is that

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<sup>27</sup> [Yablo, 2012a, Yablo, 2014]

<sup>28</sup> The label “that which remains” works best if  $P$  is implied by  $S$ , which is not always the case. *The king of France is in that chair* implies *France has a king*; what remains is, for one thing, that the chair is non-empty, which is itself implied. But suppose  $S$  and  $P$  are

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*The guy with the martini is a philosopher* and *That guy is drinking a martini*.  $S$  implies neither  $P$  nor  $S \sim P = \text{That guy is a philosopher}$ . That that guy is a philosopher is not (as) happily described as “what remains of *The guy with the martini is a philosopher*” given that it is logically independent of *The guy with the martini is a philosopher*. Note that we can obtain something in the vicinity of Stalnaker’s diagonal proposition by letting  $P$  be the T-biconditional ‘ $S$  is true iff  $S$ ’. The present approach can be seen as extending the diagonalization strategy to presuppositions not of that precise form.

$S \sim P$  is the proposition  $\Delta$  that is

(i) true in  $w$  iff  $P \supset S$  has a gap-bridging truthmaker in  $w$  (and  $P \supset \neg S$  doesn't) (26)

(ii) false in  $w$  iff  $P \supset \neg S$  has a gap-bridging truthmaker in  $w$  (and  $P \supset S$  doesn't)

— where

A gap-bridging truthmaker for  $B \supset A$  is a fact  $\tau$  compatible with  $B$

that combines with  $B$ , using as much of it as possible, to imply  $A$ . (27)

Now we begin to see how it can figure in «Hesperus is thus and so»'s cognitive content that a certain *evening*-visible planet is thus and so, whereas it's the thus-and-so-ness of a *morning*-visible planet that's imparted when «Phosphorus» is plugged in.

*Hesperus is the first evening-visible planet*

$\Delta$  (28)

$\therefore$  *Hesperus is thus and so.*

What goes in for  $\Delta$  is clear: the first evening-visible planet is thus and so. You might wonder why evening-visibility doesn't *also* worm its way into the cognitive content of «Phosphorus is thus and so», given that this enthymeme

*Phosphorus is the first evening-visible planet*

$\Delta$  (29)

$\therefore$  *Phosphorus is thus and so*

is “solved” by the same  $\Delta$ . The answer is that (29) is the wrong sort of enthymeme. The right sort, for any given  $S$ , will be of the form  $P, \Delta \therefore S$ , where  $P$  is activated in context by  $S$ . The evening-visibility prejudice pertains to Hesperus, not Phosphorus. It is activated by «Hesperus»-talk;  $S$  in (29) (*Phosphorus is thus and so*) is a piece of «Phosphorus»-talk.

Here then is a first-pass account of how «Hesperus is thus and so» and «Phosphorus is thus and so» can differ in cognitive content despite saying the same. Part of the story is that swapping one name out for another in  $S$  changes the sort of  $\Delta$  needed to make  $P, \Delta \therefore S$  a valid argument (a first-order valid argument, to fix ideas).  $\Delta$  in (28) can be trivial if  $S$  is «Hesperus is identical to Hesperus». Should the conclusion be «Hesperus is identical to Phosphorus», something more like «The first evening-visible planet is Phosphorus» is called for. Another thing coreferential substitutions can change in  $P, \Delta \therefore S$ , beyond the argument’s logical validity, is its *relevance in the first place* to  $S$ ’s cognitive content.  $P, \Delta \therefore S$  bears on  $S$ ’s cognitive content only if  $S$  makes  $P$  a suitable thing to pivot on. «Hesperus is thus and so» brings evening-ish assumptions to the fore, while morning-ish assumptions are activated by «Phosphorus is thus and so»

## 11 Subject Matter

The definition of  $S \sim P$  has been sketched, but not fully spelled out. One reason for not going into details is that they are given elsewhere.<sup>29</sup> A more important reason is that there is *another* way of conceiving incremental contents, developed by Daniel Hoek, that makes those details less relevant ([Hoek, 2018]). The new approach has moreover a number of *advantages* over the old: explicitness, compositionality,<sup>30</sup> and less reliance on newfangled machinery, to mention three.

Hoek’s idea is to shift some of the content-determination work onto a new parameter: subject matter **m**. The parameter is called for anyway if  $S$  can convey different things as we vary the **m** under discussion.<sup>31</sup> An example from Soames to get us started; subject matter will not be involved at first but it soon works its way

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<sup>29</sup> [Yablo, 2012a, Yablo, 2014]. See also [Yablo, 2012b], [Yablo, 2016], [Yablo, 2017]. For other views of subtraction see [Fuhrmann, 1996], [Humberstone, 2011]: 677-707, [Fine, 2017], [Fine, 2020].

<sup>30</sup>  $A \wedge B$ ’s new-style content will for instance be the conjunction of  $A$ ’s with  $B$ ’s

<sup>31</sup> While holding  $P$  fixed.

in:

I am in an auditorium, attending a lecture. Two university officials enter the room, interrupt the lecturer, and announce, “There is an emergency. We are looking for Professor Scott Soames. Is Professor Soames here?” I stand up, saying, as I do, “I am Scott Soames.” My intention in saying this is to indicate that I am the person they are looking for. Although this is not the semantic content of the sentence I uttered, they immediately grasp this, and the three of us leave the auditorium. Later, another member of the audience reports what happened to a third party. He says . . . “Professor Soames said [told them] he was the person they were looking for, and the three of them left.” ([Soames, 2002], 74-75)

This can be explained by the subtraction method without subject matter getting involved. The pivot-presupposition  $P$  is *They are looking for Scott Soames. I am Scott Soames’s* incremental content relative to this  $P$  is the  $\Delta$  that completes the enthymeme

*You are looking for Scott Soames*

$\Delta$  (30)

$\therefore$  *I (the man calling attention to himself) am Scott Soames*

The thing to put in for  $\Delta$  here is what Soames would express by saying *I (the man calling attention to himself) am the one you’re looking for.*

Imagine now a variant of the case where Soames on account of his rare blood type is used to being sought out as a donor. The officials are wearing Red Cross hats so it’s clear what they want him for. It is not too much of a stretch, against this background, to hear him as saying, *I (the man calling attention to himself) am the one you’re looking for to donate blood.* If on the other hand the visitors are in fire gear, while an app on his phone is telling him that smoke alarms are going off at home, we might hear him as saying, *I (the man calling attention to himself) am the one you’re looking for re the fire.* A tempting account of these variant cases is that Soames is speaking in them to different issues: **where is the individual with the special blood ?** in

the first, **where is the individual with the burning house?** in the second.<sup>32</sup>

I called the **m** parameter “new,” but subject matter has made several appearances in this paper already. We started with Frege’s complaint about his *Begriffsschrift* theory that it turns «Hesperus = Phosphorus » into a claim about words rather than planets. (*Begriffsschrift* fans like to point out that identity-claims *are* sometimes about words, as when I ask you what «barrister» means, and you tell me, wrongly, that barristers are just lawyers.) *S*’s implicatures are sensitive in some cases to what we were talking about when *S* was produced. I was taking a lot of Oxy at that time normally implicates that I’m not taking much now.<sup>33</sup> The implicature goes away when the issue is a class-action suit against Purdue Pharma based on marketing practices at the time in question. Martinis were worked into the cognitive content of «That guy’s a philosopher» by letting the question under discussion be **how cocktail preferences line up with field of expertise**. Even the proposed account (26) of subtraction, notionally subject-matter-free, gets into this neighborhood if a sentence’s aboutness-features bubble up from its truthmakers. (A truthmaker  $\tau$  for  $B \supset A$  uses “as much of *B* as possible” iff  $\tau$  minimizes the extent to which  $C \supset A$  is also verified, *C* ranging over parts of *B*. *C* is part of *B* only if its subject matter is included in *B*’s subject matter – which involves at least that each *C*-verifying  $\gamma$  is contained in a *B*-verifying  $\beta$ .)

## 12 Conversational Exculpature

Next is to explain how  $A \sim B$  gets relativized to a choice of **m**, so that  $A \overset{m}{\sim} B$  becomes a distinct proposition from  $A \overset{\sim}{\sim} B$ . Let a subject matter **m**, following Lewis, be an equivalence relation on worlds, or what comes to the same, a partition of logical space into **m**-cells.

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<sup>32</sup> Hoek gives the example of a myth-invoking sentence conveying that the sun has set in Tripoli, if we’re talking about Tripoli, or that it has set in Alexandria, if it’s Alexandria we’re talking about.

<sup>33</sup> As in the Mitch Hedberg joke: “I used to do a lot of drugs ... I still do, but I used to as well.”

$S \stackrel{\text{m}}{\approx} P$  is the set-of-worlds proposition that is

- (i) uniformly true in  $\mathbf{m}$ -cells containing  $P \wedge S$ -worlds, but not  $P \wedge \neg S$ -worlds
  - (ii) uniformly false in  $\mathbf{m}$ -cells containing  $P \wedge \neg S$ -worlds, but not  $P \wedge S$ -worlds
  - (iii) uniformly gappy in  $\mathbf{m}$ -cells containing both sorts of worlds.
- (3)

Note that  $S \stackrel{\text{m}}{\approx} P$  so defined is wholly about  $\mathbf{m}$ ; its truth-status never varies within an  $\mathbf{m}$ -cell.  $P$  we'd prefer to be not as little about  $\mathbf{m}$  as possible, to the point ideally that

$P$  has no bearing at all on how things stand  $\mathbf{m}$ -wise; the  $P$ -region overlaps every  $\mathbf{m}$ -cell. (32)

Call that the *Independence* condition. To assume, for instance, that it's a martini the guy is drinking leaves it entirely open what his academic field may be. Assuming that he's a metaphysician, by contrast, fixes his field as philosophy – with the result is that  $S \stackrel{\text{m}}{\approx} P$  is necessarily true, making it useless as a source of information about actuality.<sup>34</sup>

The talk of “pivoting” on a presupposition is to indicate that  $P$  stakes no claim. Its job is purely expressive. All that we ask of  $P$  is to set the stage for  $S$ 's depiction of actual  $\mathbf{m}$ -conditions as the ones obtaining in  $S \wedge P$ -worlds as opposed to  $\neg S \wedge P$ -worlds. That job is made more difficult if  $P$  takes a stand of its own on  $\mathbf{m}$ :

The fact that contextual presuppositions  $P$  are often irrelevant [to how matters stand  $\mathbf{m}$ -wise] is essentially connected to their role as a bridge from the speaker's claim  $S$  to the question  $\mathbf{m}$  under discussion ([Simons, 2005]). Where  $P$  is compatible with a certain answer to  $\mathbf{m}$ , there is a question as to whether adding  $S$  to  $P$  still leaves the answer open. But if  $P$  rules out a certain answer to  $\mathbf{m}$  already, there is nothing to test. Thus contextual presuppositions  $P$  can play their

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<sup>34</sup> Hence the strangeness of *The metaphysician over there is a philosopher*, even on a referential use of the definite description.

bridging role only because they have little or no bearing on **m**. They owe their ability to make the speaker's utterance relevant in part to their own irrelevance. ([Hoek, 2018]: 172-3, with notational tweaks)

*Independence* has a lot to be said for it.<sup>35</sup> The attraction for us is that (31) takes an especially simple form when *Independence* and one other condition (*Aboutness*, coming next) are satisfied.

A total proposition is wholly about **m** iff its truth-value in **m**-equivalent worlds is the same; it is true in both, or false in both. For a *partial* proposition to be wholly about **m** is similar, except we focus on worlds where it *has* a truth-value.<sup>36</sup> Writing  $S\uparrow P$  for the partial proposition that is true/false in the same *P*-worlds as *S*, and otherwise undefined, *Aboutness* says that

$S\uparrow P$  is wholly about **m**; if true (false) in  $w$ , it's not false (true) in any **m**-equivalent of  $w$ . (33)

The promised simplification, premised on these two conditions' holding, is this:

$S \stackrel{m}{\approx} P$  = the prop<sup>n</sup> true (false) in worlds **m**-equivalent to worlds where  $S\uparrow P$  is true (false). (34)

$S \stackrel{m}{\approx} P$  comes into clearer focus when developed graphically, stage by stage. This is attempted in the next section, and applied to examples in the sections after that.

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<sup>35</sup> Full independence may be too much to hope for in some cases, as Hoek discusses.

<sup>36</sup> Thus a partial proposition is wholly about **m** if it never flips from true to false between **m**-equivalent worlds .



## 13 Pictures

Take first the subject matter  $\mathbf{m}$  that the speaker means to be addressing when  $S$  is uttered.  $\mathbf{m}$  like any subject matter is a partition of logical space — the grey rectangle in Figure 1 — into pairwise disjoint and mutually exhaustive cells — the nine columns. Also depicted in Figure 1 (as a pink wave) is the  $S$ -region. Clearly  $S$  is not itself about  $\mathbf{m}$ ; its truth-value varies as we move around in a given  $\mathbf{m}$ -cell. We will need to restrict  $S$  to obtain a basis for extrapolating to a proposition wholly about  $\mathbf{m}$ . This is where the pivot-presupposition  $P$  comes in, represented in Figure 2 as the blue bar.  $S$  is better-behaved within the  $P$ -region, so much so that  $S$ 's behavior there can serve as a model for  $S \stackrel{\mathbf{m}}{\approx} P$ 's behavior in the rest of logical space.

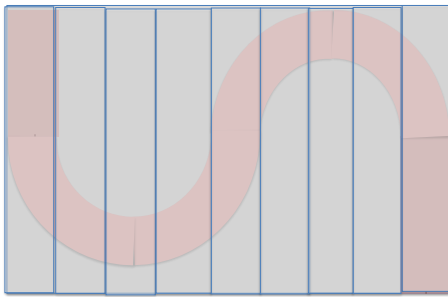


Fig. 1:  $S$  (pink wave) over  $\mathbf{m}$  (gray columns)

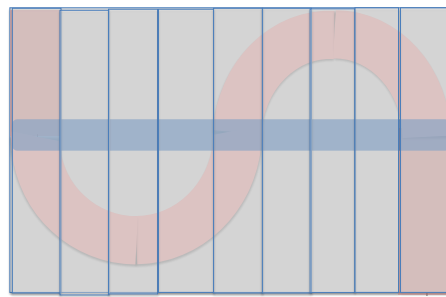


Fig. 2:  $P$  (blue bar) superimposed

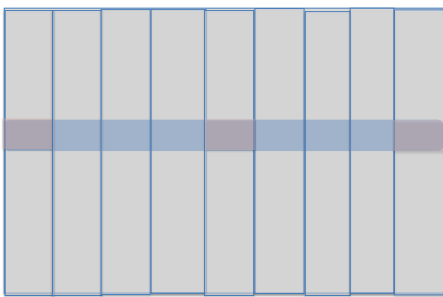


Fig. 3:  $S \upharpoonright P = S$  restricted to the  $P$ -region

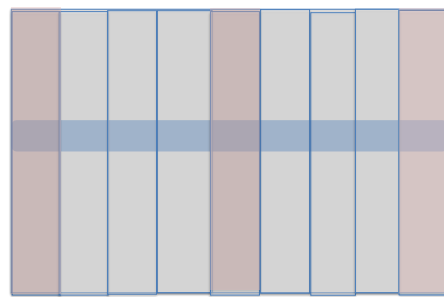


Fig. 4:  $S \stackrel{\mathbf{m}}{\approx} P = S \upharpoonright P$  extended along  $\mathbf{m}$  lines

<insert Figures 1, 2, 3, 4 – captions in figures doc>

The pink wave ( $S$ ) is restricted in Figure 3 to the  $P$ -region.  $S \uparrow P$  is true in the pinkish  $P$ -bricks (the first, fifth, and ninth) and false in the others (the blue  $P$ -bricks). Figure 4 extrapolates  $S \uparrow P$  to the rest of logical space along lines laid down by  $\mathbf{m}$ . We get as desired a proposition  $S \stackrel{\mathbf{m}}{\approx} P$  that is (i) wholly about  $\mathbf{m}$ , while (ii) taking its cue in each  $\mathbf{m}$ -cell from  $S$ 's truth-value in that cell's  $P$ -worlds.

## 14 Leverage

This gives us something like a proof of concept for the  $P/\mathbf{m}$  cognitive-content-generation machine. Next is to try it out on examples. Take «The Earth will explode tomorrow» and «Terra will explode tomorrow». Though semantically equivalent, they are not equally terrifying; the *Earth*-ian formulation has an apocalyptic feel that its *Terra*-ian counterpart can't match.<sup>37</sup> Why would this be? It is not as if we're in any real doubt about Terra's identity with the Earth.

The theory advises us to look first for a difference in topic. Someone uttering «The Earth will explode tomorrow» is telling us what will happen to *us* tomorrow. «Terra will explode tomorrow» sounds more like something a theoretical geologist would say, on being presented with data about the third planet from Sol. The sentences differ too in the assumptions they raise to prominence. It's a preconception about the Earth (but not Terra) that it is this very planet. Which means (we said) that speaking of a planet as *the Earth* raises to pivot status the fact of its being the planet beneath our feet.

But, why would these topical and presuppositional differences endow one of the sentences with a more alarming cognitive content than the other? If one is looking for a proposition about our immediate future that's equivalent in *The Earth is this very planet*-worlds to *The Earth is about to explode*, the obvious candidate is that this very planet is about to explode. Whereas if one is looking for a theoretical-geological proposition that's equivalent in *Terra is the third planet from Sol*-worlds to *Terra is about to explode*, the obvious candidate is that the third planet from Sol is about to explode.<sup>38</sup>

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<sup>37</sup> Likewise «The Sun will burn out tomorrow» vs «Sol will burn out tomorrow».

<sup>38</sup> The *de se* aspects are not of the essence. They serve mainly to make the example more gripping. (That the sole inhabited planet is about to explode is bad news too.)

Consider next an example of Stalnaker's: «My cousin is not a boy anymore». This would normally be heard to say that my cousin (*Cuz*, for short) is now a man, albeit its literal content allows for various other possibilities. How do we get *Cuz* now being a man out of «*Cuz* is not a boy anymore»? Well, the sentence semantically presupposes that *Cuz* was a boy: a young, male, human being. *Cuz* is pragmatically presupposed, in the absence of indications to the contrary, to be still a male human being. *Independence* would fail if the matter under discussion were my cousin's gender; the presuppositions already answer that. Probably then we are talking about another condition of boy-ness, being of a certain age. The one and only proposition about **my cousin's age** that agrees in *He's still male-worlds* with *My cousin is not a boy* is that my cousin is now grown up.

Now let's vary the case a little. We are watching your still visibly 10-year-old cousin doing skateboard tricks in the park. The issue can't be his/her age, because we know it, well enough anyway to see that *Cuz* is young enough to be a boy. Presumably then we talking about another condition on boy-ness, being of a certain sex. The one and only proposition about **my cousin's sex** that agrees in *My cousin is 10-worlds* with *My cousin is not a boy any more* is that my cousin is now a girl.

This hardly scratches the surface of what *My cousin is not a boy anymore* (henceforth *C*) can be made to convey. With enough ingenuity regarding *P* and *m*,  $C \stackrel{m}{\approx} P$  can represent *Cuz* as leaving the boys' room through any number of doors: surgery, deification, evolution into a higher species, and so on. The sentence can, in a context where enough other doors are blocked, "say" that my cousin was transformed like Lot's wife into a pillar of salt, or by a malfunctioning Parfitian teletransportation device into five boys.

## 15 Implication and Validity

The big enchilada of course is *Hesperus = Phosphorus*. What astronomical information does it convey, relative to assumptions like  $P_h = \textit{Hesperus is the first evening-visible planet}$  and  $P_p = \textit{Phosphorus is the last morning-visible planet}$ ? The answer we're hoping for is: *the first evening-visible planet is the last morning-visible planet*. Whether this is the answer we get depends on (i) the matter *m* under discussion, (ii) what precisely is presupposed, and (iii) the value the theory assigns to *Hesperus = Phosphorus*  $\stackrel{m}{\approx} P$ .

A natural choice of  $\mathbf{m}$ , for  $P_h$  and  $P_p$  to be  $\mathbf{m}$ -independent, is **which planets thus and so specified are identical to which otherwise specified.** (*Independence* would be at risk if  $\mathbf{m}$  were **which planets thus and so specified are identical to which named planets: Venus, Mars, etc.**) The  $\varphi$ -planet might for all  $P_h$  ( $P_p$ ) tells us be either identical to the  $\psi$ -planet or distinct from it. Various  $\mathbf{m}$ -conditions are also possible compatibly with the conjunction of  $P_h$  with  $P_p$  ( $P_{hp}$  call it).  $P_{hp}$  takes no stand, for instance, on whether the currently fastest-moving planet is the currently brightest one.

Yes, but *Independence* requires  $P_{hp}$  to be compatible with *all*  $\mathbf{m}$ -states. And here we seem to run into trouble. Assuming with Kripke that *Hesperus = Phosphorus* holds necessarily,  $P_{hp}$  (*Hesperus = the first EVP  $\wedge$  Phosphorus = the last MVP*) implies, it would seem, that the first EVP = the last MVP. But now let  $w$  be a world where the first EVP is Venus and the last MVP is Mars; and let  $\mathbf{m}(w)$  be its  $\mathbf{m}$ -cell.  $P_{hp}$  cannot as a *First EVP = last MVP*-implier be consistent with every  $\mathbf{m}$ -cell, for in  $\mathbf{m}(w)$  the Morning and Evening Planets are distinct.

You can guess our response from the stress laid earlier on logical necessity, as opposed to metaphysical.  $P_{hp}$  does imply *The first EVP = the last MVP* in a sense. But it doesn't imply it logically. Students who reckon

$a = \text{the } \varphi$

$b = \text{the } \psi$

So,  $\text{the } \varphi = \text{the } \psi$

a valid form of argument will be asked to repeat the course. A further premise is needed:  $a = b$ . The argument *would* be valid, if  $a = b$  were a logical truth. But it isn't; there are countermodels. Which gives us a way out.  $P_{hp}$  is NOT in the relevant sense inconsistent with  $\mathbf{m}$ -states where the first EVP  $\neq$  the last MVP, since it does not in the relevant (logical) sense imply that the two are identical.

This may seem at odds with the logical space diagrams in section 13. It all depends, though, on how the diagrams are interpreted. We are back in business if logical space is made up of *logically* possible worlds, a proper subset of which are metaphysically possible. (Worlds may be identified for these purposes with

maximal consistent sets of interpreted sentences.)  $P_{hp}$  is again  $\mathbf{m}$ -independent, and the construction can proceed as before.

Let's try it.  $Hesperus = Phosphorus \stackrel{\mathfrak{M}}{=} P_{hp}$  is  $w$ -true, according to (34), just when  $w$  is  $\mathbf{m}$ -equivalent to a  $Hesperus = Phosphorus \uparrow P_{hp}$  - world. The characteristic feature where  $\mathbf{m}$  is concerned of these latter worlds is that the planet, be it Venus, Mars, or whatever, appearing last in the morning turns up again first in the evening. (It's always Venus as it happens but  $\mathbf{m}$  takes no notice of that.)  $Hesperus = Phosphorus \stackrel{\mathfrak{M}}{=} P_{hp}$  is true, then, just where the first EVP = the last MVP. It is false in worlds  $\mathbf{m}$ -equivalent to  $Hesperus \neq Phosphorus \uparrow P_{hp}$  - worlds. What these latter have in common  $\mathbf{m}$ -wise is that first EVP (be it Venus, Mars, or whatever) is distinct from the last MVP; so we're talking about the worlds where different planets appear early and late. Whereupon  $Hesperus = Phosphorus \stackrel{\mathfrak{M}}{=} P_{hp}$  comes out just as we'd hoped. It's true where the Evening Planet is the Morning Planet, and false where they're distinct.

You might still be unsatisfied. The whole idea was that «Hesperus = Phosphorus» should differ cognitively from «Hesperus = Hesperus», despite agreeing with it semantically. They don't agree even semantically, however, if worlds are maximal consistent sets of sentences (maxisets). «Hesperus = Hesperus» is consistent with «Hesperus is  $\phi$  but Phosphorus is not- $\phi$ »; «Hesperus = Phosphorus» by the indiscernibility scheme for identity is not consistent with «Hesperus is  $\phi$  but Phosphorus is not- $\phi$ ». But then the two belong to different maxisets. Insofar as «S»'s semantic content is the set of «S»-containing maxisets, the semantic contents are going to be different.

Reply: Don't forget that we have two versions of logical space up and running. There's the set  $\Lambda$  of logical possibilities, and the subset  $\Omega$  of  $\Lambda$  that throws out the  $\Lambda$ -worlds that aren't metaphysically impossible. We have accordingly two candidates for the role of «S»'s semantic content.  $|S|^\Lambda$  and  $|S|^\Omega$  (=  $|S|^\Lambda$  intersected with  $\Omega$ ). You're right that  $|Hesperus = Phosphorus|^\Lambda \neq |Hesperus = Hesperus|^\Lambda$ . But the metaphysically possible «Hesperus = Phosphorus»-worlds take up all of  $\Omega$ , just like the «Hesperus = Hesperus»-worlds that are metaphysically possible. More generally if semantic contents are  $|S|^\Omega$ s (as you've probably been assuming all along!), they're quite often coincident, precisely as the traditional problematic assumes.

A second objection now suggests itself, this one on the cognitive side. There may indeed be worlds ruled out by the *extended* cognitive content of «Hesperus = Phosphorus», made up of logically possible  $w$ s. This hardly explains why the sentence should strike us as informative, for the ruled-out worlds might not have

had any genuine (metaphysical) chance of obtaining. If «Hesperus = Phosphorus» is to provide real, actionable, information, a cognitive content is needed that fails in *metaphysically* possible worlds.

Reply: Much as «S»'s semantic content can be conceived as the set  $|S|^\Omega$  of metaphysically possible  $S$ -worlds, its cognitive content can be conceived as the set  $\llbracket S \rrbracket^\Omega$  of metaphysically possible  $S \stackrel{m}{\approx} P$ -worlds.

$\llbracket \text{Hesperus} = \text{Phosphorus} \rrbracket^\Omega$  is the set of metaphysically possible worlds whose Morning and Evening Planets are identical. This set falls well short of  $\Omega$ , by virtue of excluding (metaphysically possible) worlds where, e.g., the last morning-visible planet is Venus and the first evening-visible planet is Mars. «Hesperus = Phosphorus» is cognitively non-trivial, then, even in its import for metaphysically possible worlds.

## 16 More Pictures

The mechanism at work in these examples might remind us of something from high school physics (Figure 5) — the sort of arrangement that Archimedes was talking about when he said, “Give me a lever long enough and a fulcrum on which to place it, and I shall move the world.”

The fulcrum role is played in our system by the pivot-presupposition  $P$ ; see Figure 6.<sup>39</sup> Where the pink ball in Figure 5 uses the fulcrum as a force modifier — a force *multiplier* in the usual case (“multiply your output,” the sign says),  $S$  in Figure 6 uses  $P$  as a *content* modifier. This in two ways. Pivoting on a fixed  $P$  gets  $S$  to express a modified content, influenced by but distinct from but  $S$ 's semantic content. Pivoting also multiplies, if we allow  $P$  to vary, the *range* of contents  $S$  can be used to express. As for the green ball (the world, for Archimedes), this becomes an arc made up of the ways worlds can be, or be said to be, where a given subject matter is concerned. The arc if  $\mathbf{m}$  has  $k$  cells is made up of  $2^{k-1}$  propositions, one for each non-trivial union of  $\mathbf{m}$ -cells. The lever, finally, becomes in Figure 6 a *pointer* indicating which such union — which wholly-about- $\mathbf{m}$  proposition — is expressed in the relevant context by  $S$ .

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<sup>39</sup> Fulcrums in physics are sometimes called pivot-points.

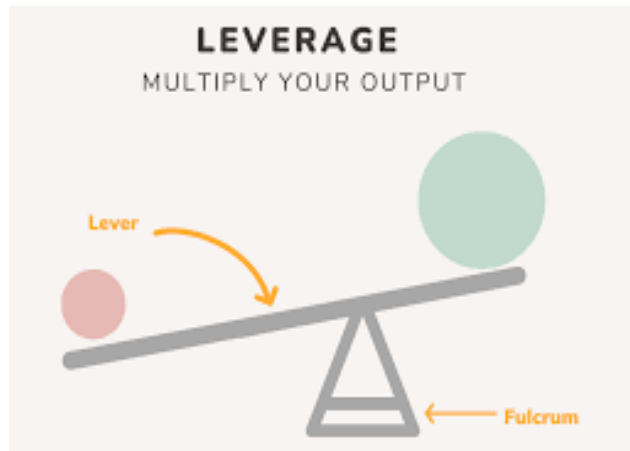


Fig. 5: Lever/fulcrum arrangement

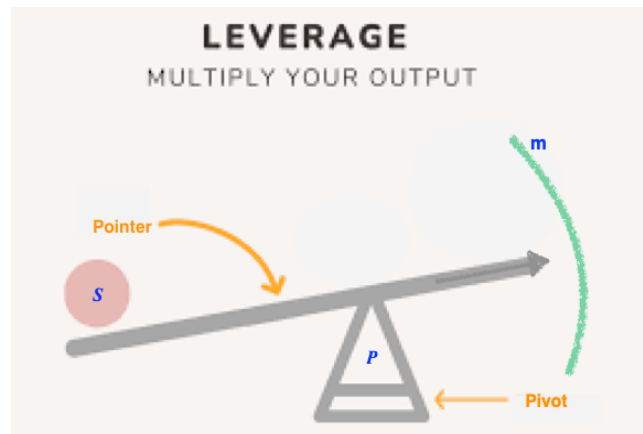


Fig. 6: Pointer/pivot arrangement

<insert Figure 5>

Fig. 5: Lever/fulcrum arrangement

<insert Figure 6>

Fig. 6: Pointer/pivot arrangement

## 17 Non-Semantic Content

A lot of the above machinery was developed by fictionalists, instrumentalists, if-thenists, and figuralists of various stripes. Some of it traces back to work in aesthetics on metaphor, irony, hyperbole, and truth in a story.<sup>40</sup> These are not mainstream analytic topics, obviously, though the reasons aren't always clear.

Hyperbole has a lot in common with loose speech, which is on everyone's radar lately. Be all that as it may, cognitive significance is as mainstream as topics get. You can find it in some of the field's founding documents ("The Thought," "On Sense and Reference," "On Denoting").

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<sup>40</sup> See for instance [Walton, 2005], and the last few chapters of [Yablo, 2014].

<sup>41</sup> [Crimmins, 1998] attempts to bring Waltonian make-believe to bear on content-attribution; it anticipates in some ways what we are trying here. [Richard, 2000] responds from an orthodox perspective.

Should it bother us if tools made for metaphor are brought into the inner sanctum, where the serious philosophy is supposed to be done?<sup>41</sup> Frege did not think of cognitive content as *additional* to first meaning; he thought it was *part* of first meaning. Add to this his determination to keep color, tone, register, secondary sense, and the like out of scientific semantics, and one suspects he would have *hated* the present project.

A lot has changed since 1892. Most of us want nowadays to link cognitive content to the information imparted by a sentence, and to resist any simple reduction of information imparted to literal semantic content.

Thus Soames:

the relationship between the semantic content of a sentence and what the sentence is used to say, or assert, is looser than commonly thought. ([Soames, 2005], 260)

The difference is that where he wants to get this result by making semantic contents schematic — capable of being filled out in more than one way — we have sketched a more flexible, productive, arrangement. Semantic contents generate cognitive contents by operating levers in a larger piece of machinery, involving also the presupposition  $P$  being leveraged and the subject matter  $m$  one is addressing.

Not all of the contents  $S \overset{m}{\approx} P$  obtainable in this way are the kind of thing Frege would have wanted to count into  $S$ 's sense, or the thought expressed. This could be seen as a problem. It could be, however, that the time has come for cognitive content to take its place alongside other forms of non-semantic content that have traditionally been accorded less respect. What sets it apart from these other forms is a fair question. It's a question the leverage model invites but does not take a stand on.<sup>40</sup>

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<sup>40</sup> Huseyin Gungor, Sally Haslanger, Mark Richard, Justin Khoo, Mark Crimmins, Kit Fine, and many others — thanks!!



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Extra, ignore:

Complete independence is in fact undesirable when  $S$  is a necessary truth (like *Hesperus = Phosphorus*).  $S \vDash P$  as (34) defines it will itself be necessary if the  $P$ -region overlaps every  $\mathbf{m}$ -cell, because  $S \uparrow P$  is true wherever it's defined.

But although (34) is a bad fit for *Hesperus = Phosphorus*  $\vDash (P_h \wedge P_o)$ , we still have (31). And it is (31) we should be using anyway, given that  $P_h \wedge P_o$  is inconsistent with  $\mathbf{m}$ -cells where the last morning-visible planet is distinct from the first evening-visible planet.

What is *Hesperus = Phosphorus*  $\vDash (P_h \wedge P_o)$  according to (31)? It is true (by clause (i)) in cells where the same planet appears early and late; for they contain  $(P_h \wedge P_o) \wedge \textit{Hesperus} = \textit{Phosphorus}$  -worlds but no

$(P_h \wedge P_o) \wedge \text{Hesperus} \neq \text{Phosphorus}$  -worlds. It is false ((by clause (ii)) in cells where different planets appear. Such cells don't contain any  $(P_h \wedge P_o) \wedge \text{Hesperus} = \text{Phosphorus}$  -worlds, by virtue of not containing even  $(P_h \wedge P_o)$  -worlds. But then  $\text{Hesperus} = \text{Phosphorus} \stackrel{\text{m}}{\approx} (P_h \wedge P_o)$  comes out just how we wanted. It's a proposition true where the Evening Planet, so to speak, is the Morning Planet, and false when the Evening and Morning Planets are distinct.

. The  $\text{Hesperus} \neq \text{Phosphorus} \wedge P_o$ -worlds. These are precisely the **m**-cells where *the first EVP = the last MVP*. (E.g. worlds where both the Mars will be in there.).  $\text{Hesperus} = \text{Phosphorus} \stackrel{\text{m}}{\approx} P$  is true in **m**-cells containing  $(\text{Hesperus} \neq \text{Phosphorus} \wedge P)$ -worlds but free of  $(\text{Hesperus} = \text{Phosphorus} \wedge P)$ -worlds. These are precisely the **m**-cells where *the first EVP  $\neq$  the last MVP*.

. *Independence* is said to “crash” if  $P$  is not even partly independent of **m**, that is, there is only one  $P$ -compatible way for matters to stand **m**-wise.

A subject matter **m** will be needed such that  $P_h$  and  $P_o$  are compatible with each of the ways  $\mathbf{m}_k$  that matters are capable of standing **m**-wise. **Which planets are identical to which** is not a promising candidate given the necessity of identity and distinctness; there is just one way for matters to stand identity-wise. **Which planets thus and so specified are which otherwise specified** does better in this respect. Compatibly with  $P_h (P_o)$ , various answers are possible; in particular the last morning-visible planet might be the first morning-visible planet or it might not. If this is our **m**, what does the theory identify as  $\text{Hesperus} = \text{Phosphorus} \stackrel{\text{m}}{\approx} (P_h \wedge P_o)$ ? It should be in the first place a proposition that matches  $\text{Hesperus} = \text{Phosphorus}$  in  $P_h \wedge P_o$ -worlds — which means (since  $\text{Hesperus} = \text{Phosphorus}$  is true everywhere) a proposition *true* in all such worlds. It's in the second place a proposition holding in  $\neg(P_h \wedge P_o)$  worlds  $w$  just if  $w$  resembles a  $(P_h \wedge P_o)$ -world  $u$  on matters such as: **whether the first evening-visible planet is the last morning-visible**

**planet.** Since they *are* the same in  $(P_h \wedge P_o)$ -worlds, Hesperus being Phosphorus, we're talking about a proposition that is true precisely if the Evening Planet, so to speak, is the Morning Planet.

$IP$  is the kind of thing audiences are expected to bear in mind when they're processing an  $S$ -utterance.  $S$ -users are apt to resent audiences that are unaware of this requirement, or not heedful of it when interpreting the utterance. Inattention to  $P$  is the kind of thing that makes an  $S$ -user wonder if they've been understood. It's the kind of thing that leads to casting about for another way of getting the point across.

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