FORMS, FACTS & TRUTH

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In his 1919 *Introduction to Mathematical Philosophy* Bertrand Russell said:

> …so long as names are used as names, 'Scott is Sir Walter' is the same trivial proposition as 'Scott is Scott.'"

This echoes the opening paragraph of Gottlob Frege's "*Sinn und Bedeutung*":

> If the sign 'a' is distinguished from the sign 'b' only as an object (here, by means of its shape), not as a sign (i.e. not by the manner in which it designates something), the cognitive value of $a=a$ becomes essentially equal to that of $a=b$, provided $a=b$ is true.

This postulate of *propositional sameness*[1] is a key unspoken premise of Russell's "On Denoting". Throughout their competing analyses of singular terms this postulate is common background for Frege, Russell and most all their successors, for they assume the basic Principle of Synonym Substitution that synonym substitution preserves sentence sense. The postulate has nothing going for it other than the seeming self-evidence of the general principle, which comes from the very meaning of the term 'synonymy'. Notoriously, synonym subbing might shift sentence sense and truth value when the resultant sentence refers to one of the terms in some way, either directly as in *'Greece' has three 'e"s/'Hellas has three 'e"s* , or indirectly when the term represents a semantic object -- the semantic content of speech or thought -- as in *He said (thought) that Greece is Hellas.* Elsewhere, synonym subbing can't affect a sentence's *factual content*. Necessarily, the same objects are denoted and the same properties are predicated of them; the same language-neutral reality is asserted. And for Frege, Russell, Quine, Kripke, *et al.*, the semantic content they care about -- an utterance's propositional content, its truth conditions -- just is or is wholly identified by its factual content.[2] For them, truths tell us only the facts they state.

Curiously, from "*Sinn und Bedeutung*" to Kripke's 'A Puzzle About Belief' and beyond, the literature on the semantics of singular terms has been peculiarly dominated by the postulated propositional sameness of self-identity sentences, form $a=a$, with true alter-identity sentences, form $a=b$. It seems assumed that the Synonym Substitution Principle has special import for singular terms, and especially in identity sentences. Yet, for all that gets said, we could just as well say that *Scott is dead or Sir Walter is not dead* is the same trivial proposition as *Scott is dead or Scott is not dead* -- or any other instance of nonuniform substituting of coreferential singular terms in a logical truth. Further, the Principle seems equally applicable to co-predicates so if *Grecian* and *Hellenic* have the same meaning, then the sentence, *If it's Grecian, it's Hellenic*, "expresses the same trivial proposition as" *If it's Grecian, it's Grecian.* Certainly their factual is identical. So how could their semantic content differ?

There seems no obvious way that substitution in self-identities could teach us anything more about singular term semantics than co-designator subbing in other logical

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[1] It would be better called a claim of *propositional identity* were this not likely to get confused with the entrenched talk of *identity propositions*: i.e., propositions expressed in sentences of the form $a=a$ or $a=b$.

[2] Facts can be individuated in various ways. One may say that 'Ted will arrive at 5:17' and 'Ted arrived at 5:17' state the same fact from different temporal perspectives. One may also say they state different truths. They are translated differently. And they differ epistemologically; with different justifications for asserting them and thinking them true.

truths would. Nor is it evident how the general Synonym Substitution Principle could have implications for singular term semantics that weren't also implications for the semantics of any term, or any word.

Actually, the salient semantic data and the deeper puzzles about them are much the same for any logical truth and what I call its *synomic interceptions.* An *interception* is the product (or process) of nonuniform substitution in a logical truth of a term or sentence *pivotal* to the original sentence's expressing a truth of logic. In the logical truth of $p\rightarrow(pvq)$ and $(p\&q)\rightarrow p$, 'p' is pivotal but 'q' is not. Nonuniform substitution of 'r' for 'p' alters the sentence's logical form; the necessity of the truth is preserved and explained by 'r' and 'p' being synonymous. In contrast, substituting 'r' for 'q' preserves logical form, and 'r's synonymy with 'q' is inessential for the interception's truth and irrelevant to its necessity. Notice: to be pivotal to a logical truth, what Frege calls the *sign* for a term or sentence must recur in the sentence. Interception substitution cannot be *nonuniform* unless the sign recurs in a truth secured by syntax alone.

An interception is *synomic* when the necessity of the interception truth is explained by the semantic equivalence of the signs exchanged. Securing the necessity of co-predicate interceptions requires sameness of intension as well as extension. To secure the necessity of co-designator interceptions suffice that the terms are co-extensive, so co-referent designators qualify as synomic. Interceptions of truths of sentential logic may be exchanges of synonymous sentences. The principles are the same but we'll simplify and speak only of substituting terms.[3]

Kripke takes some exception to this. He claims that denying the truth of a co-predicate interception betrays some conceptual or linguistic deficiency, whereas deficient extralinguistic, extra-conceptual knowledge may explain denials of co-designating proper name interceptions. Kripke's claim is curious in several respects. Kripke contrasts predicate vs. designator interceptions. He doesn't distinguish interceptions of self-identities from co-designator interceptions in other logical truths.

Further, his reliance on the rickety distinction between linguistic and conceptual knowledge versus other knowledge seems anachronistic and risky after Quine's critique. Anyway, accepting his categories, Kripke's claim is implausible when comparing predicates with their cognate common names. 'Azure is cobalt' (a=c) and 'Whatever is azure is cobalt' $(x)(A\rightarrow Cx)$ are mutually entailing and equivalently informative. Restricting Kripke's claim to proper names doesn't help, since they may have cognate or associated predicates. *Greece is Hellas*, *Being Grecian is being Hellenic and Greeks are Hellenes* are also mutually entailing and equivalently informative.[4]

Kripke's contrast is especially surprising since the generality of the Synonym Substitution Principle decisively makes his case that Frege's positing predicative senses

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[3] Caveat: Synomic truths are not analytical definitions. 'Equilateral rectangle' is a description of the defining features of a square, not another name like 'square', as 'Hellas' is another name like 'Greece'.

[4] Three points. First, *Being Grecian is being Hellenic* may be more informative than *Greece is Hellas* since being Grecian requires relating to Greece in only certain hard to specify ways. Second, the implicit reference to a concrete particular in the predicate sense of 'Grecian' and 'Greeks' may be less special than at first appears, since causal and historical theories of the reference of natural kind terms suggest that the predicate sense of most if not all natural kind term involves reference to some concrete particular, such as our planet. (That Kripke makes his contrast while advocating such a theory is another curiosity.) Third, while semantic ties like that of *Grecian* to *Greece* can break or dissolve so their senses drift apart, it suffices that such ties be possible (let alone common) for Kripke's contrast to be irreparably blurred.

for proper names does nothing to explain the semantic data. *Being Grecian is being Hellenic* is informative despite the co-predication of the same property, so why must – and how could -- the informativeness of *Greece is Hellas* be explained by some predicative nonsynonymy of proper names? Indeed, if *Grecian* and *Hellenic* predicate the same property, have the same connotation, same intension, shouldn't any predicate sense of *Greece* be the same for *Hellas*? Such synonymy seems entailed by the metalinguistic truisms that *Greece* means Greece and *Hellas* means Hellas, and necessarily Greece is Hellas, so necessarily the property of meaning Greece is the property of meaning Hellas. [5]

The fact is, despite the apparent self-evidence of the Synonym Substitution Principle, despite the synonymy of an interception's terms, and despite a logical truth having the factual content of its synomic interceptions, and thus the same truth value in all possible worlds, the sentences simply don't *sound* synonymous. And despite our befuddlement trying to identify the semantic difference or make good sense of there being a difference of sense, competent speakers distinctly sense a semantic difference. The sentences differ phenomenologically.

They do, for they differ behaviorally. These sentence pairs are not used interchangeably. First off, simple synomic interceptions like *Greeks are Hellenes* are commonly, naturally and properly used to communicate the semantic fact of term synonymy that explains the interception's truth. Only a recherché speech context could justify reading an utterance of a logical sentence as suggesting anything at all about its terms or their meanings.

More, logical truths like *Six is six, Sechs ist sechs, 6 is 6, VI is VI* inter-translate only with each other, while their synomic interceptions like *Sechs is six,* and *6 is VI* don't translate each other or any logical truth.[6] The best translation of an interception is contextually variable and sometimes controversial, but -- despite all the many famous controversies about translations, including flat denials by famous logicians on this very point – it's a plain fact of standard translation practice that synomic interceptions don't translate logical truths.[7]

Indeed, sameness of factual content aside, by *every* test of synonymy, logical truths and synomic interceptions aren't synonymous. They're not even close. Their

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[5] Frege's reasoning requires us to say that '6' and 'VI' cannot be synonymous C and thus that *6=6* and *VI=VI* cannot be synonymous -- unless the latter sentences are synonymous with *6=VI*., which seems implausible since the self-identities are knowable without knowing the term meanings, whereas *6=VI* can't be true or knowable without the extralogical and extra-mathematical premise that these numerals are different names for the same number. Frege says that 'if what a definition has stipulated is subsequently expressed as an assertion, still its epistemic value is no greater than that of an example of the law of identity *a=a*.' Thus, in a formal system '3+1=4' could represent a (stipulative) 'definitional equation' and would have the same 'epistemic value' [=cognitive value (?)] as '4=4'. ('On the Foundations of Geometry: First Series' in Brian McGuinness, ed., *Gottlob Frege: Collected Papers* (Oxford: Blackwell, 1984) 274.) This leaves wholly opaque what he meant by *Sinn* and *in the same manner* and *epistemic value/cognitive value* , for how could the method of fixing reference and synonymy affect matters? It doesn't with In any case, the proof of a synomic interception needs a premise absent from a proof of its logical correlate. Equally opaque is how Frege would explain the difference in cognitive and/or epistemic value between *Greece is Hellas* and *Greeks are Hellenes* or between *Azure is cobalt*' and *Everything azure is cobalt.*.

[6] Translation, as I use the term, is a tighter relation than interchangeability. Given knowledge of the truth of *6 is six, VI is 6* and *VI is six*, the sentences may be informationally equivalent and thus pragmatically interchangeable, but only the latter translates *VI ist sechs*.

[7] *Pace* Alonzo Church, languages lacking a counterpart of the English 'fortnight' simply cannot translate the English sentence 'A fortnight is a fourteen day period', not unless they borrow the English word.

sentence meanings differ fundamentally and categorically. That difference is a constant whatever their terms may mean. The sentence nonsynonymy is entirely explained by the syntactic difference between a truth explained by logical syntax alone and a correlative truth explained by the semantic identity of the exchanged terms.

The sentences are not interchangeable or intertranslatable because they state distinct truths despite stating the same fact. They state the same fact, not because, as Frege, Godel, and Davidson imagine, there can be at most only one fact. Their slingshot arguments with that conclusion are reduction's of their supposition that synomic interceptions have the semantic content of a logical truth. Instead the point is that truths and facts differ metaphysically. Expressions of truths differ syntactically from expressions of facts.[8] Although *That S is true* mutually entails *That S is a fact*, these *that-S* complements differ syntactically. *That NP VP is true* transforms into *'NP VP' is true* but not the ungrammatical **NP's VPing is true*, while *That NP VP is a fact* transforms into *NP's VPing is a fact* but not the ungrammatical **'NP VP' is a fact*.[9] Sentences, statements, and truths are in one language or another, and are translatable into others. Facts are language-independent,[10] language-neutral entities, not themselves *in a language* or translatable. Facts mean, imply, entail, explain, prove, and justify things, but they do none of that in a language[11]. We can infer from the truth of *Greece is Hellas* that the terms *Greece* and *Hellas* corefer, but the fact of Greece's being Greece is the fact of Greece's being Hellas, and that fact is language-neutral, so no semantic facts are inferable from it, but only from the distinct truths stating it.

To elaborate this explanation of the sentence nonsynonymy, semantic content should be distinguished from the subsidiary issue cognitive content. A theory about languages fit for science needs to take words, sentences and their meanings to be social constants, shared abstractions.[12] Unlike its meaning or semantic content, a sentence's informativeness -- its cognitive content or cognitive value -- varies in degree and kind with the sentence meaning and varies further with each person's own cognitive history with the terms of the sentence. Put in the common parlance: the *connotations* of words and sentence vary even among people who state the same facts with the same words and sentences. Some interceptions are alleged to be uninformative to any competent user of the terms. But such competence comes in kinds and degrees, and varies with what you know or believe about the terms' extensions. What is informative for one competent speaker may seem uninformative to another depending on their linguistic, conceptual and empirical beliefs.[13]

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[8] Frege assimilated facts to propositions. Russell effectively did the same by assimilating propositions to facts, by conceiving of propositions as being constituted by the objects and properties they were about.

[9] For further syntactic data, see Peterson, *Fact Event Proposition.*

[10] Only facts about language can be called language dependent.

[11] We say: *The fact that it's raining means that the river will rise,* but not **In English, the fact that it's raining means that the river will rise.*

[12] A theory of the language of science needs to conceive of terms, sentences and their meanings as having enough constancy for our utterances to have logical inter-relations, formal entailments and contradictions, so what you assert I may affirm or deny, prove or disprove.

[13] Understanding comes in kinds and degrees, so requirements for understanding are problematic. A speaker needs beliefs about her terms, their line of usage, the type they token. She needs no knowledge or *de re* belief about a term's denotation, not *per se*. Her key semantic beliefs about a term may be merely that someone uttered it and she uses it as they do, to say (designate or predicate) whatever they do. But she can't much mimic another's meanings without beliefs about what they might be. And if no one harbors *de re* beliefs about a referent, there's no meaning for anyone to mean. So, the reference of our terms is tied, directly or indirectly, to beliefs about their referents. No term can be competently used without a great

Still, any synomic interception is somewhat informative if only because its truth evidences and is explained by the fact of term synonymy, a contingency not knowable *a priori*. Here it matters not whether the term synonymy qualifies as a linguistic rule, or how speakers learn the fact of term synonymy, or how much extralinguistic knowledge is involved. Suffice that the semantic fact behind the synomic interception be a empirical contingency knowable only *a posteriori* while the counterpart semantic identity within a logical truth is itself a logical truth, like *The meaning of 'Greeks' is the meaning of 'Greeks',* a truth knowable *a priori*, without knowing the meaning of *Greeks* or *the meaning of 'Greeks'*.[14]

All the informativeness of *Being Grecian is being Hellenic* is explained by the informativeness of its implicit contingent term synonymy claim. That's because the semantic fact is evidenced by and entirely explains the truth and necessity of interceptions having this syntax. Some kind of understanding and knowledge of the semantic fact and its explanatory role is essential and enough for understanding and knowing the interception's truth.

Yet, synomic interceptions have the grammar of objectual truths. Their terms must function and refer as elsewhere if *Hellenes are mortal* is formally deducible from *Greeks are Hellenes* and *Greeks are mortal*. So the *fact* the interception states cannot in any way imply the semantic fact or any linguistic fact. Still, the interception neither states nor implies any extra-linguistic fact beyond those implied by the semantic fact of term synonym. Given the contingency of the semantic fact and the necessity the interception states, the truth of the biconditional:

For Greece to be beautiful is for Hellas to beautiful iff

the meaning of 'Greece' is the meaning of 'Hellas'

may seem an impossibility, when actually it's a metalinguistic or metalogical necessity. It is so on its standard default reading which demands that each displayed term be a replica of its undisplayed instance in the sentence, so the possibility of either symbol meaning something else elsewhere is irrelevant. However the world might have been, necessarily, Greece is Hellas and necessarily *Greece* means Greece, and *Hellas* means Hellas, so the meaning of *Greece* must perforce be the meaning of *Hellas*.[15]

Principles like, *The expression, 'E' means E*, are basic necessary truths. Put aside whether this is a metalogical necessity explained by the sentence representing the peculiar logico-syntactic form of semantic statements or it is another kind of

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network of beliefs about the world, and no principled distinction between linguistic and extra-linguistic beliefs explains your own usage of 'Greece' and 'Hellas' or 'Greeks' and 'Hellenes', let alone our common usage of those terms. Yet Quine was Kripkean in thinking that the informativeness of alter-identity truths is measured by the extralinguistic knowledge required for their verification (see *Methods of Logic*).

[14] This holds however tight an interception's term synonymy, which may be that of a term and its abbreviation, which, by definition, is simply a shorter symbol assigned the very same meaning. Frege used the epistemic difference between the *a priori* 'Ateb is Ateb' and the *a posteriori* 'Ateb is Afla' as *evidence* of a semantic difference, but not as a prerequisite of it. He recognizes that despite being synthetic *a priori*, a geometric interception differs semantically from its logical correlative. The arithmetic interceptions he thinks are analytic, *a priori* truths especially press the puzzle upon Frege. In any case, the semantic identity of an interception's terms is knowable only *a posteriori*.

[15] In other words, if the singular descriptions of *The meaning of 'Greece' is the meaning of 'Hellas'* are read, not as predicates but as rigid designators so the sentence has the form, $g=h$, the sentence states a necessary truth, a synomic interception of the logical truth, *The meaning of 'Greece' is the meaning of 'Greece'.*

metalinguistic necessity explained another way. In any case, we may reserve the term *entailment* for implications between object level statements explained by their grammar, and thus we may deny that the interception's truth *entails* the semantic fact. Let's call the implications between an object level sentence and its metalinguistic correlatives *metailments*. We may say that the fact of term synonymy metails that nonuniform substitution of the terms in a logical truth yields an extralogical necessary truth. In any case, for you to mean or state that Greece is Hellas by uttering, *Greece is Hellas*, you must mean Greece by 'Greece' and Hellas by 'Hellas'. You must in some sense mean that those terms are coreferential.

Again, logical truths and their synomic interceptions differ in logical form, so their metailments differ in their logical form and in their modality, so their semantic content differs, and with that their cognitive content. So their translations differ. Again, forget all the many doubts surrounding translation. Such complexities as the inter-language use of proper names don't matter. Suffice that interceptions aren't translated by logical truths. Also irrelevant are Quinean cavils about translation. The translation issue here concerns replicating a sentence's logical form in another language, and Quine concedes that a sentence's logical form is identifiable with that of a sentence of another language. Otherwise inter-language sentence translation couldn't proceed at all.

The Langford-Church prohibition of translating displayed material (what theorists have mislabeled *quotations*) would be relevant only if sentence-embedded displays were singular terms, but as explained in my paper for the Society of Exact Philosophy meeting, they aren't, so Church's strictures are unsustainable. It is formally permissible and normally mandatory to translate *'Blood is red' says that blood is red* as *'Blut ist rot' ist sagt dass Blut ist rot.* Church's denials of this are refuted by their own translations, which become unintelligible if rendered according to his rules.

Confusing displays with singular terms, facts with truths, and factual content with with semantic content are among the many confusions sustaining the Frege-Russell postulate of propositional sameness of logical truths and their synomic interceptions. Perhaps the deepest confusion is that of regarding logical form as an attribute of propositions and facts rather than sentences. Frege sorely suffered from the confusion he faulted others for, the confusion of sign and signified, expression and expressed. He conceived of the logical structure of a sentence as serving to picture a logical structure we discover in a language-independent thought (proposition). His *Begriffsschrift* aspired to be but a means of perspicuously *representing* the form and content *already existing* in abstract, pre-notational propositions. Accordingly, if 'a' and 'b' represent the same thought content, the logical form of the thought represented by the sentence *a=b* must be *a=a*.

Frege's *Begriffsschrift* 'Preface' announces, without comment, his abandoning the classical notion of logical truth as *formal* in the sense of *independent of term meanings*, and replacing it with the formally far thinner notion of *independence of 'the particular characteristics of things (Dinge)*.'[16] He never retracted this conception of logical form, so never recognized the semantic import of logical syntax. He and Russell and others haven't appreciated that the distinctive form of logical truths cannot be represented or exemplified except by sentences with recurring signs. Any other means of securing recurrence of symbol

[16]Cf. 'Compound Thoughts' in Brian McGuinness, ed., *Gottlob Frege: Collected Papers* (Oxford: Blackwell, 1984) 390.

meaning is extra-syntactical. His conception cannot make sense of logical truth, and if logical validity is the logical truth of a conditional it cannot make sense of logical validity.

Recognizing the significance of sign recurrence is essential, but it's not enough. Making good sense of sentence nonsynonymy here requires rethinking our ideas of sentence meaning and semantic content. Despite their great attractions, analyses of sentence meaning as conditions of truth or verification or assertability are unsatisfactory for various well known reasons. In particular, they don't well explain how, in telling you *Greece is Hellas*, I can mean to tell you that these terms are coreferential and succeed in telling you precisely that, whereas in telling you 'Greece is Greece', I don't tell you or mean to tell you that the two replicas of the term are coreferential.

An alternative worth considering is to emphasize the correlativity of sentence meaning as correlative with understanding, and thereby to link meaning with what provides understanding: to wit, an explanation. Elsewhere and in general, understanding -- why this happened, how that is done, where things went wrong -- comes by grasping an explanation of the matter. 'Explain' and 'understand' are syntactic correlatives: their primary objects are interrogative Wh-S complements. When we understand a sentence, when we grasp its meaning, what we grasp is an explanation. What we grasp is not just the statement a sentence makes -- indeed we dont much talk of grasping statements per se -- but an explanation of the sentence's making that statement. We grasp a construction of the truth evaluable content from the syntactically structured semantic components. The constructional facts explain what is asserted and may be metailed by the assertion but aren't stated in or entailed by what is asserted.

The semantic content of a synthetic predication explains its factual content but not its truth value. The linguistic facts explaining what statement is made don't imply the statement's truth, let alone explain why it is true. Here truth is consequent upon an extrasentential, representation-independent reality. So stating the fact asserted suffices for stating the sentence's meaning. Semantic content may here be identified with factual content.

Logical truths and synomic interceptions are grammatically no less objectual, but while objectual reference remains, here it idles. In synomic interceptions, the explanatory import of objectual representation is preempted by the fact of synonymy. The extra-linguistic, language-independent features of the terms' extension are rendered irrelevant to the truth and necessity of the interception, as are all the extralinguistic facts of the world.

Logical truths are characterized by a third kind of explanation, truth solely by logic-syntactic form As in synomic interceptions, the term meanings fix the sentence's objectual reference, but the explanatory import of such reference is pre-empted by the sentence's syntax. So, unlike synomic interceptions, here the contingencies of term semantics are also irrelevant. Suffice that tokens of a sign are synonyms. That condition is no semantic contingency or extra-syntactic assumption. This helps explain why metalogical or metalinguistic truths like *'Blood is red' says that blood is red* are properly translated by '*Blut ist rot' sagt dass Blut ist rot.* The apparent shift in objectual reference is insignificant, for here the essential determinant of objectual reference is that the displayed expression replicate its undisplayed version to preserve logical form.

We all experience a profound alteration of our understanding of an utterance when we see it is no substantive synthetic statement but rather a logical truth or a synomic interception. If it's a logical truth, what it says about its subject is equally true of anything, so

it doesn't distinguish that subject from anything else. If it's a synomic interception, what it says about its subject is true only because of the terms used, so it doesn't state any language-independent features of its subject. Conversely, we experience no less a conceptual gestalt switch when we see that a seeming logical truth or synomic interception is actually a synthetic claim – when, for example, we realize that a seemingly valid deductive argument is a conditional whose consequent might be false despite its antecedent's truth.

Consider: All of our statements are subject to the principles of modal logic and must be understood accordingly. We hear modality in utterances like *If you're a Greek you must be a Hellene*, and also, if less plainly, in utterances like *To be Grecian just is to be Hellenic.* We may hear a claim of necessity even in utterances like *Everything Grecian is Hellenic* but here a speaker may or may not mean to be making any claim of necessity. When someone means to be uttering a logical truth or synomic interception, she means to be asserting a necessity – and she is. A semantic theory might assign such matters to the speaker's utterance meaning, something distinct from the abstract sentence meaning. Still, we might best regard sentences lacking explicit markings of modality as having an unspecified modality. Perhaps utterances of *You will leave this house immediately* have a default reading as statements of flat actuality, and any compulsion or necessity we sense is inserted by the speaker. Suffice that in all or most languages, taken abstractly such sentences have available alternative modal readings.

An utterance's semantic content alters when read as a necessity, and alters further with the kind of necessity intended, for that fixes the intended range of possible objects of reference, and thus the factual content. The necessities of logical truths and synomic interceptions aren't distinguished extensionally, for their correspondent fact is the same, but their semantic contents differ categorically because the explanations of those necessities differ categorically.

There is of course lots more that needs saying to make satisficing sense of a notion of sentence meaning as explanation. For one thing, synomic interceptions differ from interceptions by analytical definitions. The informativeness of synomic interceptions is explained by a notational coincidence, by another term naming the same concrete or abstract thing, so translations must use one of those terms. An analytic definiendum is no abbreviation of its analytic definiens, for the definiens analyzes and describes the property the definiendum names. Analytic definitions are fully translatable, notationally neutral substantive statements. Mathematical truths are still another separate category wrongly assimilated to synomic interceptions or interceptions of analytic definitions. The explanation of mathematical necessity is neither syntax, nor notational contingency, nor conceptual analysis.

While much, much more is needed, perhaps enough has been said to begin to see some ramifications, for example some reasons for respecting the oft-repeated and routinely flouted linguistic intuition that sentence meanings are not properly called true or false. If sentence meanings explain a sentence's making a specific truth claim they can't well themselves be that truth value bearer, so if propositions are truth bearers they can't well be sentence meanings.