

Syntax, Truth, and the Fate of Sentences

Abstract

Truth appears to be a predicate of sentence-like structures. This raises the question of what a sentence is (or what it is to be sentence-like) such that it is truth-apt. A natural move is to treat sentences and truth-aptness as somehow conceptually or metaphysical coeval, made for each other. This resolution conflicts, however, with now standard approaches in syntactic theory that treat sentences as mere epiphenomena. Siding with the developments in syntax, the paper argues that truth-aptness properly belongs, not to sentences, but to clauses as structures that can be selected by verbs that specify truth-apt states. It is further argued that this arrangement is perfectly consistent with truth-conditional semantics.

Keywords: sentences, syntax, truth

1. Introduction

On the standard conception, the task of a semantic theory for natural language is to assign truth conditions to sentences (relative to various parameters). Yet what is a sentence? One natural answer is that, to a first approximation, semantic theory treats a sentence *just as* whatever has truth conditions (or expresses truth conditions, or is usable to express truth conditions).¹ Gaskin (2021), as we shall see, expresses this view clearly, but, in essence, he is simply making explicit what is presupposed in much semantic theorising, where a language as a target of the theory just is a set of sentences that form the extension of the grammatical label ‘S’, which a grammar specifies without further specifying what being an S amounts to. The view is expressed in perhaps the two main semantics textbooks of recent years (Larson and Segal, 1995; Heim and Kratzer, 1998). On this view, there isn’t a significant truth-independent notion of a sentence, and so the question of what a sentence is such that it can be true is trivially resolved: truth and sentences are metaphysically coeval from the view of semantic theory. My contention is that this natural move is unavailable, for there just is no distinct syntactic category of a sentence

that semantics can help itself to or take to be at one with the notion of truth. In short, sentences are epiphenomena. This conclusion, however, will be shown to be compatible with truth-conditional approaches to semantics, but should lead to a changed perspective in that the kind of syntactic structures to which we attribute truth conditions are ones that may serve to express the contents of thoughts as complements of attitude verbs. Thus, truth is not essentially involved in the notion of a sentence as the object of semantic theory; rather, truth applies to structures apt to express thoughts, without any notion of a sentence being required.

Before beginning in earnest, we need to bracket three views according to which no problem appears to arise concerning the relation of sentences to semantic theory. First, there is the so-called ‘act-conception’ of propositions, most fully elaborated by Soames (2010, 2015) and Hanks (2015). The lead idea here is that *no* linguistic structure at all is essentially truth-apt. Truth applies to predication types, which must be cognitive events/acts of some kind, since a structure (syntactic, set-theoretic, or other) can only be said to express predication via an *interpretation* of it. There is no especial connection between truth and language on this approach, and so no pressing requirement to clarify the notion of a sentence for the purposes of semantic theory. A general worry for the act-conception, however, is that, since predication, if an act, is a certain kind of structural/conceptual act, the very ‘events/acts’ that are understood to be cognitive need to be individuated by the very conceptual and structural resources that enter into the specification of sentences or structured propositions (Author).² In effect, therefore, the problem of just what structures are truth-apt resurfaces as the question of what makes a certain kind of structure apt to individuate cognitive acts that can be said to be true/false.

Secondly, there is a range of views that take propositions to be the primitive truth bearers, with the propositions being unstructured, either as simples or sets of possible worlds (Stalnaker, 1984; Bealer, 1998; Merricks, 2015). The problem of what kind of linguistic structure is truth-

apt, however, remains, for the relation between a linguistic structure and the proposition it expresses, however conceived, cannot be adventitious or accidental. Thus, even granting that unstructured propositions are primitive truth bearers, a linguistic structure gets to be related to a proposition (structured or not) only in virtue of its structure, not by stipulation or some kind of direct referential relation. So, the question remains of what that structure is.

Thirdly, there is the view most forcefully advanced by King (2007, cf., King, Soames, and Speaks, 2014) according to which the structure of a proposition is syntactic. The consequence is an extremely fine individuation of propositions: any syntactic difference amounts to a propositional difference. So, from this perspective, there is no pressing question of what kind of linguistic structure is truth-apt, because propositions just have *whatever* structure sentences possess, no matter how initially counterintuitive that might be.³ I shall assume, however, that the very idea of a proposition is to enable certain generalisations over different means of expression. My concern, at any rate, is not for propositional structure—whether or not there is such thing, and if there is, what it is—but how best to think of sentences or some other linguistic structure as truth-apt. For example, *pace* King, one might think that sentences are many-one related to propositions. The question remains how any sentence or linguistic structure can be truth-apt. The question *could* be answered by explaining how propositions can be truth-apt and how sentences can express such things without assuming that any sentential difference amounts to a propositional difference (cf., Pickel, 2019).

Thus, I intend my discussion to be neutral over the question of whether propositions are structured, syntactically or not, and over whether the truth of sentences is inherited from the truth of propositions. For the purposes of the sequel, I shall simply assume that truth can be predicated of sentences or sentence-like structures, taking the nuanced matters just raised as read.

The next section will present the required background. The following section will explain why sentences are epiphenomena. The section after will explain why truth-conditional semantics of natural language remains in place, although the structures that have truth-conditions are just those apt to specify contents of attitudes. To end I shall consider some morals.

2. Structure and Truth

Frege's (1884/1950, p. x) 'context principle' admonishes us to 'only ask for the meaning of a word in the context of a proposition'. Dummett (1973/81, p. 495) glosses this proposal as:

The sense of any expression less than a complete sentence must consist only in the contribution it makes to determine the content of a sentence in which it may occur.

I shall prescind from scholarly dispute concerning just what Frege intended, and take the principle, following Dummett, to be a metaphysical claim about meaning that entails a methodology as to how to approach logical and semantic questions. At any rate, there is something fundamentally correct about the principle that can be most simply expressed in terms of compositionality: whatever words are, they can be combinable to form complex symbols, and these symbols have whatever meaning they have in terms of the meanings of the words and how they are combined. In simple terms, meaning ought to be viewed through the lens of combination: the meaning of a word is whatever it contributes to the meaning of the host structures it can be combined in.⁴ What makes the 'sentence' fundamental here is that it is the smallest unit with which an agent can *say* something judgeable as true/false. Thus, starting with the sentence, as it were, offers the pivot on which language, meaning, truth, and thought might be balanced: a theory of meaning, *qua* a theory of sentence meaning, doubles as a theory of what can be literally said with our utterances. This position is fairly described as 'standard' within philosophy of language and a good portion of semantic theory (Lewis, 1970;

Davidson, 1984; Larson and Segal, 1995). Of course, there are familiar long-standing recalcitrant phenomena, but these are seen less as refutations of the programme and more as spurs to improved theorising.⁵

As so far explained, semantic theory aims to solve an equation with two unknowns. We know that the meanings complexes are a function of (options of) combinability of word meanings, but we don't know what the simple meanings and combinability are. A standard way the equation has been solved is to let the semantic variable be truth (–contributing) conditions and the combinability variable to be the syntax of the sentence, or some level of structure assigned to the syntax (logical form).⁶ On this model, the job of a syntactic theory is to deliver a set of structures for sentences, and the job of a semantic theory is to assign interpretations to such structures that will explain why a sentence has the truth conditions it has on the basis of the contribution of its parts. To be sure, the two projects are not necessarily autonomous; indeed, precisely the issue of autonomy has shaped much of the theoretical debate in both philosophy and linguistics, which will be key to the following discussion. *Pro tem*, simply assume that there are two programmes designed to meet a common goal.

As already intimated, treating meaning as truth conditions promises to link language with thought. Reciprocally, sentences appear to be what define a language. Thus, a grammar for *L* is readily conceived as a (recursive) definition of sentence-of-*L*. In this sense, a grammar amounts to a procedure for determining whether a symbol string counts as a member of *L* or not. If all that is so, then truth-conditional semantics and a grammar that delivers a specification of sentences for a language appear to be mutually supporting.

The problem I wish to focus on begins when we ask the seemingly banal question of what a sentence is. The quandary here is not metaphysical (are sentences abstract entities or should we go nominalist?), or merely descriptive (how do we identify a string of words as a sentence?), but linguistic: what counts as a sentence internal to a language, as it were, or even whether

there such things?⁷ The ground-level moral of the so-called ‘unity problem’ is that a sentence is not an aggregate or list of words; whatever a sentence is, it possesses a unity that is not reducible to its constituents or their mere aggregation.⁸ To see the problem, suppose one arranged A to utter *Bill*, B to utter *loves*, and C to utter *Mary*, in quick succession. A sentence has not been tokened (still less has a thought) save for in an extended sense, much as a parrot or the wind might ‘say’ something. It is not so much that a sentence requires a single agent, for there are sentences too long ever to be tokened; the issue is more that a sentence needs the right organisation or to be generated by the right kind of system such that any particular sentence belongs with other sentences as a class of things generable in the same way thanks to a shared structure.

The most basic way of approaching this issue is to think of what the category of a sentence is relative to a grammar. Consider the following re-write grammar of a kind that prevailed in syntactic theory up to fairly recently and is still presupposed in a lot of semantic and philosophical discussion, including principal textbooks:

(G)a. $S \rightarrow NP VP$

b. $NP \rightarrow (ADJ) N$

c. $VP \rightarrow V (ADV)$

d. N: ideas, dogs

c. ADJ: colourless, green, friendly, young

e. V: sleep, bark

f. ADV: loudly

We can generate sentences such as:

(1)a [S [N Dogs] [VP [V bark]]]

b [S [N Dogs] [VP [V bark][ADV loudly]]]

c [S [NP [ADJ Young][N Dogs]] [VP [V bark]]]

As far as the grammar goes, the category labels are read extensionally; for example, V just is {sleep, bark}.⁹ The same goes for S, but note a difference. A noun phrase and a verb phrase contain a noun and a verb, respectively, and it is them that determine that the phrases behave in a noun- or verb-like way, both with respect to meaning and syntax. This is left implicit, of course, but is nonetheless encoded in the rules. S, on the other hand, does not contain an S from which it inherits its sentence-like behaviour.¹⁰ In linguistics, this difference is expressed in terms of *headedness*:

(H) Every XP contains a head X from which XP inherits its grammatical status.

This says that any syntactic unit (a phrase) contains an item that determines the combinability options of the phrase. Sentences are thus exocentric outliers in comparison to the endocentric character of all other syntactic combinations. Of course, sentences can contain sentences. We could add a rule of, say, $VP \rightarrow V S$, to cater for verbs such as *believe*, *judge*, *say*, etc., but the contained sentence is not the head (the verb is). So, if S remains non-headed, it would seem as if a grammar doesn't tell us what it is to be a sentence or even for something to behave in an S-like way, not even implicitly.

One might think that this situation is exactly as things should be, for a grammar defines a language in terms of a set of sentences, so doesn't need to do more than specify the set. Still, one could go further and say that a sentence involves predication or the full saturation of a verb, and this just tells us that S is what is truth-apt. From this perspective, S precisely should be headless for it is what results from the predicative combination of words, and gives them a unity. Thus, it is truth-aptness that confers unity on words as a meaningful complex as opposed to a mere aggregate of words.

Gaskin (2021) expresses this line of reasoning with sensitivity to the syntactic issues. Let me quote him at length:

[T]he sentence exhibits *exocentricity*: its ability to be true or false, and so to make a distinctively sentential move in the language game, supervenes on the fully formed structure, and is not projected up the syntactic tree from any subordinate node. This fact has caused syntacticians some discomfort, and they have tried to get rid of the sentence's exceptional status, at least symbolically, by dropping the old 'S' label from their inventory of abbreviations—for that label, attached to the root node of the syntactic tree, appeared to pop up out of nowhere—and replacing it with an explicitly endocentric alternative, such as TP ('tensed phrase'), IP ('inflectional phrase'), or CP ('complement phrase'), dominating T, I, or C nodes. The idea in each case was that the rebranded sentence should inherit, and be seen to inherit, its tensed (inflected, complementary) status as a TP (IP, CP) from a component which possessed that property *de jure*, so to speak, and which then projected it up the tree to the root. (Remember that syntactic trees are upside down.) But this whole strategy is misconceived. The old approach, in which the label 'S' attached to the root node emerged suddenly and out of non-sentential inputs—there was no SP dominating an S node—was right, because the sentence *does* emerge suddenly from bits that lack its most vital semantic property, namely its taking a truth-value. The root of the tree *is* thus distinct from its subordinate nodes; its key semantic property is *unprecedented*. The old, unprojected 'S' label made that point clear; the projected replacements obscure it (op cit., pp. 12-3).

Gaskin mentions some central technical notions here, which I shall address in the next section. First, though, while we should grant that Gaskin paints an attractive picture, its strictly philosophical in ways that do not speak to the very developments in syntax Gaskin is decrying. To start, note that Gaskin's charge that the 'whole strategy is misconceived' presupposes a conception of what is being conceived. As Gaskin presents the situation, theorists felt a 'discomfort' at the exceptional status of 'S' as headless/exocentric, as if mere anxiety were the

motive for change. On the contrary, as we shall see, the motivation was for theoretical simplicity and explanatory pay-off, which are gained precisely by removing the exceptionality of ‘S’.

Secondly, Gaskin assumes that syntactic projection—the organisation of words into phrases and into larger phrases—is explanatorily subservient to semantic composition. Hence, he claims that ‘the sentence *does* emerge suddenly from bits that lack its most vital semantic property, namely its taking a truth-value. The root of the tree *is* thus distinct from its subordinate nodes; its key semantic property is *unprecedented*’. But the sudden emergence, as it were, of the sentence is not what theorists are interested to deny; they want the best generalisation, regardless of the fate of the colloquial notion of ‘sentence’. That is to say, if S does suddenly emerge, then that looks like a reason to eschew it for an understanding of projection, for sudden emergence is akin to stipulation. Furthermore, even if truth is unprecedented, that gives us no steer on how to understand projection, unless we assume that syntax and semantics are coeval or the latter explicates the former. That, at any rate, is a tendentious assumption, and one not shared by most relevant linguists. So, it is tidy for projection and composition to be in sync but the relation remains an interface one to be explained, not stipulated.

Thirdly, one might have imagined that uniform endocentricity was precisely what a marriage of composition with projection requires. As explained, a head X determines that its host phrase or projection behaves in an X-like way, so counts as an XP. That works as expected when nouns, verbs, prepositions, and adjectives are heads, but a problem arises for sentences. To behave in a sentence-like way, for Gaskin, amounts to a ‘distinctively sentential move in a language’, which is essentially associated with truth, such as with assertion and inference. But moves in a language game are not what syntax can accommodate, and not simply because of the inherently extra-linguistic factors in such a ‘game’, such as background knowledge of

interlocuters, context, speaker intention, etc. The problem is that syntax is essentially combinatorial not intentional. To behave in a sentence-like way amounts to entering into distinctive relations with other words and phrases; it does not amount to being used to some end. Thus, sentences (to speak with the naïve for the nonce) can be selected by certain verbs, but not others; need complementisers in some constructions, but not others; support certain adverbs, but not others; and so and so forth. Those are the phenomena that need to be caught. In this light, a marriage of projection and composition leaves it open how the distinctive property of truth should be accommodated.

In the next section, I shall spell out just why sentences, understood as a *sui generis* kind emerging from a combination of words is theoretically and empirically inadequate. Thereafter, we shall see how to resolve the problem of how to square the centrality of truth for semantics with the downgrading of the notion of a sentence to an epiphenomenon.

3. Sentences are epiphenomena

The syntax depicted in our toy grammar in the last section is explanatorily inadequate, precisely, in part, because S is headless. The relation of truth to syntax thus becomes a problem, for it turns out that there is no syntactical or structural correlate for truth-aptness. This is a puzzle that needs resolving *if* we are to continue to think of truth as the central explanatory concept for meaning and to treat sentences as the basic or smallest units of meaning.

The conception of a language as a set of sentences and so the conception of a grammar as a (recursive) specification of the set cannot be faulted on simple descriptive or formal grounds. According to this conception, a headless S makes perfect sense. If, however, a grammar is to be explanatory and offer insight into the design of natural language and, ultimately, why language is the way it is, then the approach is very impoverished, even if descriptively accurate. This is to say that while, in principle, a grammar that trades in headless

‘S’ might include all and only those strings we would count as sentences of some language for the typical speaker of the language, the grammar, without further ado, offers no explanation of the relations between sentences (interrogative vs. declarative, active vs. passive, etc.), why some are ambiguous, why some strings are ill-formed, and so on (Chomsky, 1957).

First off, note that a grammar such as G is simply a stipulation as to the membership of the set $\{S\}$, which might initially seem fine, but the theorist is aiming to capture whatever procedure or understanding the speaker-hearer possesses. In this light, there must be some properties of the structures that make them available to the speaker-hearer whereas other potential structures are excluded. A re-write grammar of the form of G , however, cannot, in principle, be constrained in this way. A rewrite grammar can be formulated for word salad as much as it can be for English. Indeed, the fact that S is headless is just an option such a grammar provides, for rules of the following form are equally well-formed:

(2)a $VP \rightarrow N \text{ Adj}$

b $NP \rightarrow V$

We don’t consider such rules because they produce gibberish, but nothing in the form of the grammar precludes them save for our stipulation against them. Restricting ourselves to such grammars, then, is effectively to close off any explanation as to why certain kinds of structures but not others are available to the speaker-hearer. A step in the direction of genuine explanation was taken by Chomsky (1970), although its full impact wasn’t felt until some years later.

The move is to say that all structures are endocentric, i.e., all structures are headed. This makes perfect sense, on the assumption that it is the properties of a structure that determine its interpretability and grammaticality for a speaker-hearer, and this assumption must be correct if we are in the business of explaining the agent’s capacity with language as opposed to stipulating a set of symbol strings independent of the speaker-hearer.

The radical insight here is that, strictly speaking, there are no sentences; they are mere epiphenomena as regards cognition. What ‘looks’ like a sentence must be a certain kind of XP. But what is the X? It is now standard to think of the X as Tense, or in morphophonemic terms, the item that expresses agreement of number and tense between a subject and verb, although for some constructions the item is covert. Sentences give way to TPs. Thus:

(3)a [TP [NP Bill] [T' [T is] [AdjP asleep]]]

b [TP [NP Bill] [T' [T -s] [VP sleep]]]

In the (3a)-kind of case, the copula or auxiliary carries tense, so is the head of the phrase. In the (3b)-kind of case, there is a dissociation between syntax and the morphophonemic ‘surface’ form. The tense affix heads the phrase, but is spelt out (pronounced) as a verb ending in agreement with the subject.

This approach has two nice pay-offs as regards theoretical simplicity. First, as already indicated, it enshrines the idea that all phrases are headed. Secondly, it allows us to understand all ‘branching’ as binary; that is, each syntactic unit or phrase consists of two members. On the view that S is headless, there is nothing to preclude *n*-ary branching, since ‘S’ is just a label for some number of items that meet some stipulated condition for being a sentence. To insist that all phrases are headed is effectively to insist that all units are defined by a binary relation between a head and some other item or unit. Thus, the head always projects and all other items of a structure must relate to the head.¹¹

None of the above should be read as suggesting that there is a consensus within generative linguistics, still less syntactic theory more generally, of what the best account of headedness and syntax is. Nonetheless, there are a number of clear empirical reasons for why Tense is the item that projects in sentence-like structures and so renders epiphenomenal a primitive notion of headless S. This is so regardless of the theoretical virtues of uniformity and simplicity.¹²

First, consider polar interrogatives ('yes/no' questions). In such cases, one finds tense isolated and occurring in the clausal head position. Thus, where the declarative features a copula or auxiliary, in the corresponding interrogative it occurs as a clausal head:

(4)a Mary is blonde—Is Mary blonde?

b Bill should leave—Should Bill leave?

Significantly, the same pattern is witnessed where tense is spelt out on the verb:

(5)a Mary loves Gary—Does Mary love Gary?

b Gary left Simon—Did Gary leave Simon?

Here, the tense morpheme, qua affix, is supported by dummy *do*, as it cannot occur alone.

This pattern is smoothly explained by the TP-hypothesis, which separates Tense from the verb, and so allows the tense morpheme to attach either to the verb or to dummy *do*.¹³ Treating S as the headless category offers no insight into the pattern, with all cases simply stipulated to be sentences with the syntactic relation between interrogative and declarative left opaque.

Secondly, the same pattern occurs with *wh*-interrogatives:

(6)a Mary loves Jane—Who does Mary love?

b Mary painted in the studio—Where did Mary paint?

The significance here is that the movement of Tense appears to be *how* interrogatives (in English) are syntactically constructed, regardless of how they may be answered. Again, taking the sentences to be headed by tense independent of the verb explains the pattern in a way headless S does not.

Thirdly, Tense is distinct from the verb outside of interrogatives, such as with emphasis:

(7)a Bill left—Bill did leave

b Bill writes all day—Bill does write all day

Fourthly, treating Tense as a head allows for a proper generalisation as regards embedding. Embedding by itself appears to be independent of the issue of whether S is headless, for one

can easily formulate a rule that S can contain S; indeed, this was exactly what was done (the embedded case distinguished as S´). But the very same verbs and adjectives may also take non-finite TP as complements, which are not sentences (neither true nor false):

(8)a It is likely that Bill will leave

b Bill is likely to leave

c It is believed that Mary is lost

d Mary is believed to be lost

The generalisation is that the verbs/adjectives take TPs as complements, which obviously fits the broader phenomena that some verbs/adjectives take one or the other form. That is, the sameness is that the verbs/adjectives take TP complements; the difference is that the complements can be finite or non-finite. If we assumed a headless S as a complement, we would still need another category of S´ to capture the non-finite complementation. Of course, if S´ in turn is headless, we would have two headless categories. In either case, we miss the generalisation that all the relevant verbs/adjectives take a TP complement. If we assume S´ to be headed, we are lumbered with the oddity of a sentence-like thing (something that can be true/false) being headed when embedded but never when not.

Fifthly, TPs interact with complementisers (*that, if, whether, since, because, unless*):

(9)a Bill knows that/whether/if Mary left

b Bill wondered whether/if (*that) Mary left

c Bill believes that (*whether)/(*if) Mary left

That can only take finite complements, whereas *whether* can take both finite and non-finite complements:

(10) Bill wondered whether to leave

Again, as in the previous point, the generalisation is that complementisers take different TPs (finite or non-finite) as complements. Adopting headless S we are back to the problems

rehearsed above: a missed generalisation (non-finite complements are not sentences) and a sentence-like thing being headed only when embedded.

In sum, here we have nice concord between the capture of empirical phenomena and the theoretical desiderata of simplicity and uniformity. Little wonder that the approach is widely endorsed. The result, however, is that sentences are epiphenomena. Neither the description nor explanation of linguistic structure need make recourse to the notion of a sentence, and if it is employed, we miss generalisations and have an unprincipled distinction between the embedded and non-embedded cases.

4. Whither truth?

The consequence of the proceeding is that the intuitively attractive picture of headless S that is presupposed in much semantic theory and philosophical discussion is untenable. There are a host of reasons, internal to syntax, to reject ‘S’ as a headless category. This tells us something significant about the design of language.

For many, generative linguistics and long-standing philosophical ambitions happily coincide: the former makes good on the latter’s promise to reveal the logical form of natural language, the structure that encodes what a sentence literally means, which just is truth conditions.¹⁴ Something must be amiss, it seems, if it turns out that truth has no structural correlate, such as a grammatical notion of a sentence. In this section, I shall show how we may live without truth having any such correlate. In this sense, syntax is *radically* autonomous of semantics. Before that, though, here are three reasons not to expect syntax to encode a notion of truth or even be sensitive to such notion in general.

First off, it bears emphasis that the syntactic notion of LF was never intended to be exactly what philosophers traditionally conceived of as logical form. LF was intended to capture certain semantic significant relations, especially the scope of quantifiers and *wh*-questions, by means that are otherwise witnessed in syntax; that is, it is no cost to the syntax to

accommodate the semantic relations (Chomsky, 1981; May, 1985). Centrally, this meant that quantifier scope is accommodated by the movement of the relevant phrase into a higher position in the structure, and such movement is already witnessed. It was never envisaged, at least not in syntactic theory, that LF will accommodate *whatever* is semantically relevant, even if the syntax lacks the antecedent resources. In other words, LF is not a structure determined by semantics or coeval with it. It is an autonomous system that might capture some semantic features but not others. Of course, theorists are free to be more or less hopeful as to the breadth of features that will be structurally caught while all equally subscribing to the LF hypothesis.¹⁵

Secondly, it might seem that truth *must* be encoded given that inference relations are encoded. Even if we grant that inference is a truth-involving notion, the thought is misplaced, precisely because not all inferences judged to be valid are syntactically explicit or otherwise licensed. For example, there are lexical inferences:

(11)a If *x* killed *y*, then *x* caused *y* to die

b If *x* chased *y*, then *x* followed *y*

c If *x* is red, then *x* is coloured

All such inferences might be judged to be valid, analytical even, but they trade upon word meaning or conceptual content, which is not, without further ado, syntactically encoded.

Similarly, even simple Boolean relations expressed by co-ordinators (*and*, *or*) are constrained by lexical content. For example, (12a) appears valid, but not (12b-c):

(12)a The men and women drank tea → The men drank tea

b The men and women lifted the piano → The men lifted the piano

c The men and women surrounded the boy → The men surrounded the boy

Similarly, we witness exclusive or inclusive readings of *or* relative to the predicate:

(13)a Sam is angrier than Bill or Jane [inclusive]

b Sam is angry at Bill or Jane [exclusive]

Of course, none of this is to suggest that there is no logic here, only that it is the logic of natural language, not reflective of a general logic independent of natural language, of the kind suitable for science or mathematics (see Chierchia, 2013). The underlying algebra of quantification, for example, appears to be constrained in ways unmotivated from a general mathematical perspective, but there is an algebra still (see Peters and Westerståhl, 2003). We can observe the logic of natural language in two cases where valid inference is underwritten. First consider:

(14)a Jane kissed Mary in the garden at midnight

b Jane kissed Mary in the garden

c Jane kissed Mary

(14a) entails (14b) and (14c), and (14b) entails (14c). The inferences appear to be cases of conjunction elimination. The syntax caters for this insofar as the prepositional phrases are adjuncts, and adjuncts are projected outside of the argument structure of nouns, verbs, and adjectives. Thus, adjuncts can be eliminated without a change of interpretation of the clause. In effect, then, adjunction is interpretable as conjunction *because* the adjunct phrase can be dropped without change in the semantics of the clause, thus mirroring conjunction-elimination.

Consider the more complex case of ergative verbs:

(15)a Bill broke the vase

b The vase broke

(15a) entails (15b), but this is not licensed for just any transitive:

(16)a Bill painted the fence

b *The fence painted

(17)a Bill shaved the dog

b The dog shaved

In (16), the verb *paint* can only occur intransitively, if the subject is agentive, and so (16b) doesn't merely fail to be entailed, but is unacceptable. With (17), since *the dog* can be read agentively, (17b) is acceptable, but it cannot follow from (17a), since the dog in (17a) is non-agentive. In short, the inference exemplified in (15) only holds for ergative verbs, i.e., ones where the subject in the intransitive and the object in the transitive can be interpreted in the same way. This is a syntactically encoded matter, and allows for the inference in (15).

Thirdly, it will not do to say that truth is encoded via predication. The simple reason is that predication occurs where truth is not applicable as in the nominal domain with both adnominal predication (*red car*) and relative clauses.¹⁶

Given all this, one may be reconciled to the autonomy of syntax vis-à-vis truth. The question remains what the connection is. If we look to syntax first, then we see that it is not TPs that are truth-apt, but clauses (CPs) headed by complementisers that take TPs as complements. We see this in two respects. Firstly, non-finite TPs are not truth-evaluable, for they appear on the 'surface' to be lacking a subject (e.g., *to leave* in *Bill wanted to leave*) and cannot be selected by a complementiser (e.g., **Bill wanted that/if/ to leave*). Secondly, it is only the clause (CP) that can be predicated of truth:

(18)a That bill is the thief is true

b *Bill is the thief is true

c It is true that Bill is the thief

d *It is true Bill is the thief

(18b, d) can be rescued, but only by interpreting the clause directly, as if it were quoted, or paratactically, as if there were two sentences. Why should truth be associated with clauses rather than TPs? Because clauses specify or serve as complements for verbs that pick out acts or states assessable for truth or correctness (*believe, say, judge, claim, assert, etc.*). In this light, to think of sentences (or TPs) as true or false independent of a clause that can be selected by a

relevant verb is essentially a derivative notion or abstraction from such complement cases. In opposition to this thought, it might be protested that TPs can stand alone ‘at the surface’ as truth evaluable because they feature a covert complementiser or have assertoric force. On the first option, it is not unreasonable to hypothesise covert complementisers, but that would hardly recommend sentences to us things are truth evaluable, given the postulation of an additional covert structure. On the second option, it is difficult to see how force could do the required work, if we are imagining it to be an extra-syntactic feature associated with a speaker’s intent, for while a complementiser is optional with propositional attitude verbs (e.g., *Bill believes/hopes (that) Sally is OK*), they are required for the truth predicate, as (18) makes clear.¹⁷

If this suggestion is on the right lines, then truth is not encoded by any particular kind of syntactic structure, let alone a headless S. It is simply a property of clauses understood as potential complements of verbs. In this sense, it is not the structure of the clause that makes it truth-apt, but that it serves to determine the kind of state or action the relevant class of verb picks out. For example, many attitude verbs can select non-TPs while still being truth evaluable:

(19)a Sam believes [sc Bill to be an idiot]

b Sam judges [sc Sally wealthy]

c Sam regards [sc Laura as his best friend]

Sam’s attitudes can be true or false, depending on how things stand between the subjects and predicates of the so-called small clauses (the material in brackets), but the small clauses as stand-alone material cannot be said to be true or false, or even to be well-formed. To be sure, we can paraphrase small clause constructions into full TPs (sentences), but no such relation appears to explain why (19) attribute truth-evaluable states to Sam.¹⁸ It appears to suffice that there be a subject and a predicate in the complement clause, and a relevant selecting verb.

The proposal on offer, then, explains the truth-aptness of sentences via the truth-aptness of clauses as structures that can be selected by verbs that specify states that can be evaluated for truth. It is not explained why there is this arrangement between truth-evaluable states and clause-selecting verbs that specify such states. I assume, however, that the explanation will devolve onto the facts concerning human cognitive development and evolution. That is to say, I don't think there is any kind of deep conceptual or metaphysical necessity that underlies the arrangement, but merely the way our minds happen to do things in the linguistic realm. Thus, there is no kind of incoherence in the thought that VPs or NPs or even TPs can be ascribed truth without something sentence-like being implied, but that is not the way language works.

It should also be noted that rendering sentences as epiphenomena does not decide against any view on the nature of truth. Some theorists, to be sure, take sentences to be primary truth bearers (Quine, 1960, 1970; Field, 1994). I assume, though, that the choice of truth bearer is not essential to any wider view of truth. For instance, the kind of disquotational view Quine and Field favour can be defined for sentences, as they commend, or for propositions as potential contents of agents' attitudes (Gupta, 1993; Soames, 1999; Author). There might be substantive reasons to favour one view over the other, but they appear not to relate to different conceptions of truth.¹⁹ What is affected by sentences being epiphenomena, of course, is the view that sentences are primary truth bearers. This cannot be correct, if one hopes for a substantive linguistic account of what sentences are. Likewise, if the present view is correct, then truth is understood via agents' potential sayings or other attitudes (i.e., via clauses that can specify the contents agents express), and so not via language alone in abstraction from agents. This might seem to create a problem for semantic theory, which appears to treat sentences in abstraction from any agent's use of a sentence. The next section will seek to defuse the apparent problem.

5. Whither truth-conditional semantics?

As previously noted, truth-conditional semantics traditionally helps itself to the notion of a sentence (S), a notion that is, if I am right, essentially redundant for linguistic theorising, epiphenomenal at best. Moreover, semantic theory itself appears neither to entail nor to presuppose the view elaborated of the relation between truth and syntax. Indeed, such a semantics is designed to interpret syntactic structure (or some formal structure associated with the syntax) independent of the mental states of speaker-hearers as specified by clause-taking verbs. This is not to take a stand on whether semantics is a branch of psychology or more akin to mathematics or just *sui generis*. Whatever one's take on that foundational question is, semantic theory deals with language in abstraction from any stripe of psychologism. In this light, even if one thinks of semantic theory as concerned with what a competent speaker-hearer knows or cognizes, the object of the theory is conceived independently: semantics is about *what* is known, not the state of knowledge itself. This stance is reflected in the standard 'relational' view of propositional attitudes, under which the verb specifies a relation that holds between an agent and an independent proposition or meaning, however conceived.²⁰

One can be variously sceptical of aspects of this package of assumptions. All I want to do here is to spell out how accepting truth-conditional semantics is perfectly consistent with the conception of the relation between syntax and truth elaborated in the previous section.

Consider a toy fragment of a theory (unnecessary detail elided), where we presuppose S:

(20)a. $\mathbf{v}[\alpha, [N \text{ Sam}]]$ iff $\alpha = \text{Sam}$

b. $\mathbf{v}[\alpha, [V \text{ walk}]]$ iff α walks

c. $\mathbf{v}[\text{True}, [S \text{ NP VP}]] = T$ iff $(\exists x)(\exists y)[\mathbf{v}(x, \text{NP}) \ \& \ \mathbf{v}(y, \text{VP}) \rightarrow x \subseteq y]$

We get the desired consequence:

(21) $\mathbf{v}[\text{True}, [S [N \text{ Sam}][VP \text{ walks}]]]$ iff Sam walks²¹

The information here is highly 'partial' (Glanzberg, 2014). There is no conceptual analysis of any sort: a lexical item is just 'disquotationally' mapped onto a corresponding metalinguistic

term *in use*. An expression simply picks out (refers to/is true of) what it picks out, as opposed to something else. Indeed, the theory itself does not presuppose a world to be referred to, but merely treats world-related information disquotationally. What the theory does capture is compositional structure both with respect to syntactic structure and adicity, i.e., *walk* is a 1-place verb, and such a verb taking an argument expresses a containment relation. But what of truth? If truth is not a mere structural relation, then the theory does not inform us of what makes a sentence true; at best, it leaves the question in schematic form, abstracting from any specification of the content of the sentence's expressions beyond those properties that are structurally significant.

We can think of a semantic theory, therefore, as recording invariant constraints on what can be literally said with a clause taking a TP, constraints issuing from the language alone independent of a speaker's wider intentions or beliefs. So viewed, a theory specifying when sentences will be true is specifying the contribution from language alone to what makes a saying true in abstraction from any particular saying (of a sentence). A truth-conditional semantics, therefore, is not only consistent with, but makes best sense of, the view that truth associates with clausal complements rather than sentences as *sui generis* stipulations. Abstract constraints on what can be said are neither true nor false, but it is a convenience to treat a theory that specifies such constraints as a truth-conditional one, precisely because the constraints pertain to sayings, which can be true or false.

If we want the theory to have ultimate fidelity to syntax, then we can dispense with S entirely and treat of TPs as specifying events or states with respect to time. If so, then truth will pertain to the obtaining of states or events. Still, the perspective truth offers will remain, for such specifications of events or states are just what clauses select, whether intuitively thought of sentences (finite clauses) or not (infinitive clauses). My present point is simply that appeal to headless S in much semantic theorising is innocent, so long as it is understood how it is to

be read via clauses selecting TPs, and so how it can be discarded without the essential business of semantics being affected, i.e., the specification of constraints from language alone on what can be literally said.

A general benefit of this view is that it makes clear why some long-standing quandaries in the philosophy of language are really orthogonal to truth-conditional semantics. For example, the question of the semantics of fiction really doesn't pertain to semantic theory, unless it is suggested that fictional names are somehow structurally distinct from other names (Author). Similarly, the level of pragmatic involvement in literal meaning can be massive or minimal, without truth-conditional semantics being molested, for the semantics only specifies invariances due to language alone, which every party must accept (Author).

6. Conclusion

We started with a puzzle of how to think about sentences in relation to truth, if the former turn out to be epiphenomena in relation to syntax that should determine what is and isn't a sentence. It turns out that not only is this problem resolvable, but it is predicated upon a deeper misconception of the relation between syntax and semantics, as if syntax must cater for semantics rather than playing a mere constraining role.²²

Notes

¹ From the perspective of semantic theory, the status of non-linguistic truth bearers vis-à-vis sentences is left open.

² See Author for an elaboration of this criticism, but also see Hodgeson (2021) for a proposal for an answer.

³ Thus, $a = b$ expresses a different proposition from $b = a$. King is sanguine, for, on his view, a theory of propositions is not constrained to capture intuitions about 'same-saying'; its task is

to offer an ontology that may serve as bearers of truth/meaning and be the objects of the attitudes. For critical discussion, see Hodgeson (2013) and Author.

⁴ Here I park thorny issues on the proper characterisation of compositionality and whether word meaning might be atomic in the sense of contributing all of its meaning to its potential hosts, not merely determining the hosts' meaning. I merely assume that compositionality entails a substitutivity condition: the meaning of *S* is unaltered if a constituent *a* is substituted for *b*, where *a* and *b* mean the same. In this sense, word meanings are made to be combinable into complex meanings, however the proper story goes.

⁵ Most attention has been paid to the problem of intensional contexts. Latterly, the context-sensitivity and polysemy of many words have been recognised to also pose problems. For example, at a first pass, the meaning of *book* appears to differ between *a heavy book* and *a fascinating book*. For present purposes, I take no position on this complex matter. Some seek to deflate the problem so that polysemy is in no sense inconsistent with standard semantic assumptions (Liebesman and Magidor, 2017; Devitt, 2021). I think a more radical response is required, albeit one that does not challenge compositionality (Author).

⁶ The fundamental insight of the analytical tradition is that the relevant structure or logical form differed from the 'surface form' of a sentence. Yet the relation between the two cannot be adventitious: there *must* be some systematic relation given that speaker-hearers produce and consume 'surface forms' but intend or recover the relevantly structured meaning. Generative grammar offered an answer by showing how properties traditionally associated with logical form could be syntactically realised in natural language. This view has become the standard textbook approach (Larson and Segal, 1995; Heim and Kratzer, 1998; Chierchia and McConnell, 2000). The issue of the relation, however, is somewhat complicated. See §3.

⁷ The point here is that we can readily go wrong about what is a sentence, and so however we identify a string as a sentence is not, ipso facto, definitive of what a sentence is. For example, *Dogs dogs dog dog dogs* is a perfectly grammatical sentence, but few would recognise it as such.

⁸ The unity problem is really a gaggle of problems concerned with how a collection of simples may count as a unified whole to support truth conditions or content. For background, see Gaskin (2009) and Author.

⁹ Of course, one might read the categories as functions from words or categories to other categories. This construal is not explicit in a re-write grammar, but is supported by it.

¹⁰ For example, just as a nominal like *Bill* is substitutable for *he*, so is the NP, *Bill, who I met last night*. In general, wherever a noun might occur in a sentence, an NP might too with the same semantic relations preserved.

¹¹ The methodological precept here is to analyse whatever looks non-binary into a binary structure consisting of a head and its complement and any projection from that, such as the inclusion of an adverb, which joins with the head+complement. So, endocentricity offers a structural implementation of uniform binary branching. Ternary structures, say, could be headed too, but there could be no unique relation between the head and whatever it combines with, for there would be two other items to which it relates.

¹² See syntax textbooks, such as Haegeman (1994) or Carnie (2021). The examples to follow are restricted to English, but the same morals apply cross-linguistically. Besides, for my argumentative purposes, it is enough to show that S is epiphenomenal for English, which establishes that the notion of a sentence is unrequired grammatically speaking.

¹³ This kind of phenomenon is referred to as head movement, where the tense head moves from a TP projection to a CP projection. There is controversy over whether this is a syntactic or

phonological operation. For present purposes, the answer does not matter, for both views presuppose a TP projection at the expense of ‘S’.

¹⁴ This was Davidson’s (1984, p. 30) initial thought of a ‘rapprochement’: truth-conditional semantics and generative syntax approach the same peak from different directions. See Larson and Segal (1995) and Heim and Kratzer (1998) for textbook treatments.

¹⁵ For example, Reinhart (1997) influentially argues that the peculiarly wide-scoping of indefinites cannot be accommodated in LF, but requires a pragmatically interpreted choice function (see Author for discussion).

¹⁶ As mentioned above, the moral here is that there is no uniform syntactic structure for predication. See Author for discussion.

¹⁷ The point is perfectly general for adjectival forms:

(i)a *It’s alleged Bill is the thief

b *Bill is excluded is justified

¹⁸ The syntax of small clauses remains a live issue (see Citko, 2011), but a paraphrastic account is a non-starter, for not every verb that takes a small clause can take a clause with a full TP (witness *regard*, *name*). We cannot think of the small clause constructions, therefore, as just loose talk.

¹⁹ For example, so-called ‘T-equivalences’, defined for sentences, are contingent, depending upon facts of language, whereas those for propositions are necessary.

²⁰ For clear expressions of this view, see Soames (1984) and Devitt (2006).

²¹ The so-called ‘absolutist’ rendering of the example is irrelevant to the points at hand; so, feel free to substitute your favoured model.

²² Thanks...

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