

DO LINGUISTIC MEANINGS MEET LINGUISTIC FORM?*

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Abstract: In this brief note, I offer some considerations to the effect of arguing (i) that Duffley's criticism to formal semantics is based on a dogma about the proper nature of the linguistic sign, and (ii) that, even when I agree with the general spirit of his realizational theory of meaning, an explicit theory of how syntax affects meanings realization is missing.

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1. Introduction

Duffley's work could be read as an attempt to justify the following core thesis:

Core thesis: Linguistic meanings are non-mediated, positive concepts, fully encoded in linguistic signs.

The thesis is partially summarized in the title of Duffley's book and explicitly addressed in chapter 3, the heart of the entire book, in which Duffley analyzes several issues in English grammar guided by the idea that linguistic meanings do not need to be mediated by any interpretation function taking linguistic expressions as inputs and delivering meanings as semantic values. On this approach, meanings are, then, stable mental entities instantiated in actual utterances with different communicative ends. Once conceived of in this way, meanings are not directly accessible to the analyst, who must, consequently, recollect as many uses as she can in order to postulate the positive meaning of a given sign.

And so we find ourselves with respect to the meaning of *for* in somewhat the same situation as physicists are with respect to the electron: neither the electron nor the potential meaning of *for* can be observed directly; however, from the observation of the range of effects that they are observed to produce, one can infer that something very much like them must exist in order to cause such effects.

[Duffley 2020: 44, my underlining]

Methodologically, then, the analyst must pay full attention to two distinct types of cognitive objects: lexical meanings and intentions.

In this brief note, I offer some considerations to the effect of arguing that, once the epiphenomenal nature of meaning is put in its real empirical dimension, the argument against any *formal* theory of meaning (i.e., theories which use interpretation functions) vanishes, at least conceptually. My main point is that the linguistic reality of meaning does not support the classical view of the linguistic sign as a one-to-one correspondence between form and meaning. A more realistic view must be committed to the idea that the correspondence is not univocal but involves a *one-to-many* connection; concretely, it is usually the case that a linguistic form can have more than one meaning, along with more than one meaning dimension, in a sense to be explained in the next section. If this is correct, it seems to me that formal semantics, more specifically, *formal multi-dimensional semantics*, has better conceptual tools to offer. Second, I contend that there is another one-to-many connection that challenges at least one aspect of Duffley's thesis, namely, *syntactically conditioned polysemy* (i.e., *allosemy* as discussed in Myler 2014, Woods 2015, or Woods & Marantz 2017). As we will see in the last section, the fact that some particular instantiations of meanings require information of the syntactic context in which those meanings occur leads to the important conclusion that any *realizational* theory of meaning (and, as we will see, Duffley's is realizational in the relevant sense) requires something else than mere primitive lexical meanings and intentions. This "something else" is, of course, syntax.

2. Do we need interpretation functions?

One of the main targets of criticism in Duffley's work is what he calls *formal semantics*. The use of the term is potentially confusing. Let me, then, clarify what I understand by it, which I think makes justice to the use of the term made

by Duffley. Concretely, *formal semantics* will refer to any theory that characterizes meanings as mediated by an interpretation function. Such function takes linguistic expressions of different degrees of complexity as input and returns the meaning of such expressions. An accepted notational practice in contemporary formal semantics is using double brackets for the interpretation function:

$$(1) \llbracket \textit{linguistic expression} \rrbracket = \textit{meaning}$$

Depending on one's commitment to the object on the right-hand side of the equivalence, different sorts of formal approaches can be further characterized. So, depending on the varieties of views found in the semantic tradition (or traditions), the meanings that the interpretation function returns could be mental concepts, extralinguistic objects (e.g., individuals in this world), and so on. For instance, the meaning of a proper name like *Ann* can be the individual Ann, like in (2a), a predicate, or more properly, a one-place function taking an individual variable as argument, as in (2b), or a concept, like in (3):

- (2) a. $\llbracket \textit{Ann} \rrbracket = \textit{ann}$
 b. $\llbracket \textit{Ann} \rrbracket = \lambda x. \textit{Ann}(x)$
 (3) $\llbracket \textit{Ann} \rrbracket = \textit{ANN}$

The interpretation function, of course, can be further parametrized in order to obtain meanings that do not follow from the function alone. For instance, if we want to obtain a (for the purposes of this brief note, *rough*) characterization of free variables in natural languages, we can restrict the interpretation function to *assignments*, i.e., to *partial functions* from the set of, say, numbers to the entity domain or, perhaps, to other more complex semantic domains. On this

(rough) characterization of free variables, we are able to say that in a sentence containing a free variable like

(4) She sings.

the context of utterance can make an assignment function of the following type available:

(5) $g = [1 \rightarrow \text{Ann}]$

in which case, the entire sentence, interpreted with respect to g , means that Ann sings:

(6) $\llbracket \textit{she}_t \textit{sings} \rrbracket^g = \text{Ann sings}$

By restricting interpretation functions to assignments, worlds, time intervals and even contexts (if, for instance, you do not believe in monsters), linguistic meanings can be, then, enriched, so as to allow us to characterize many aspects of sentence meanings, including the well-known *displacement* property of human languages, which essentially enables us humans to speak of events far away in time and space, or, at any rate, out of our reach (on *displacement*, see Hockett 1960, Fintel & Heim 2011, and Saab & Carranza 2021 for a discussion on how displacement is treated in contemporary formal semantics).

Now, formal semantics as characterized above only describes one aspect of linguistic meanings, namely, representational or truth-conditional meanings. Yet, human languages are much more powerful devices than mere representational tools for describing the world we live in, or the worlds we could live in. In Moro's words:

It took the revolution of the formal analysis of human languages, which essentially combined Montague grammar and generative grammar in a unified framework, to realize that human languages do not need to be rescued by logic. There is nothing to remedy; it is in fact quite the opposite: human languages are so rich that they can convey meaning with much more complex structures than those generated by logical expressions, and in a compressed fashion.

[Moro 2016: 111]

Among the myriad of non-representational meanings that languages conventionally encode, we have the ones corresponding to pure expressives, slurs, entire systems of addressee forms in different languages and, in sum, a complex and diverse spectrum of biased expressions which, rather than describing the world we live in, or the worlds we could live in, conventionally characterize the set of contexts in which those expressions are expressively correct (Kaplan 1999, Potts 2005, Predelli 2013, Gutzmann 2015, Orlando & Saab 2021, among many others). Now, all this expressive richness can also be conceived of as meanings mediated by “additional” interpretation functions. In other words, the limits of formal semantics should not be equated with all that is representational in human language. To the extent that any meaning can be functionally derived in the favored sense, we are still within the frontiers of formal semantics. In order to get a brief idea of what I have just said, consider a sentence containing a slur-word like *spic*, which is the loaded counterpart of the neutral word *Hispanic*:

(7) Juan is a spic.

Representationally, *spic* is equivalent to *Hispanic*, although the slur-word also characterizes contexts in which some negative attitude towards Hispanic people is in force. Orlando & Saab (2020) give the following semantic condition for *spic*:

‘Diego is a spic’ is expressively correct if it is uttered in those contexts in which a cultural stereotype associated with Hispanic-Americans, epitomised in the ‘spic’ semantic stereotype, is in force.

[Orlando & Saab 2020: ex. 8]

Now, this type of expressive meaning can be perfectly modeled as resulting from an interpretation function restricted to “use-conditional” meanings. Slightly modifying Caso’s recent approach to slurs, we only need to postulate two interpretation functions in order to get truth-conditions (indicated with the superscript *t*) and use-conditions (indicated with the superscript *u*), respectively:

- (8) a. $\llbracket \text{spic}(\text{Juan}) \rrbracket^t = \llbracket \text{spic} \rrbracket^t (\llbracket \text{Juan} \rrbracket^t) = \text{T/F}$
 b. $\llbracket \text{spic}(\text{Juan}) \rrbracket^u = \llbracket \text{spic} \rrbracket^u \cup \llbracket \text{Juan} \rrbracket^u = \{\text{STEREOTYPE}(\wedge \text{Hispanic}): u\}$
 [adapted from Caso 2021: 76]

Generalizing my point here, I then propose the following condition for *any* semantic theory to be characterized as *formal*:

- (9) Formal semantics: any semantic theory ST is said to be *formal* only if ST delivers meanings through interpretation functions taking linguistic expressions as inputs.

Duffley's antiformalism is argued for both on empirical and conceptual grounds. Conceptually, Duffley's claim seems to be that formal semantics, more implicitly or explicitly, is committed to some version of the autonomy of syntax. But, if language is essentially a communicative tool, i.e., a mean of externalizing thoughts and other speaker's attitudes, it makes no sense to postulate meanings that are derived from interpretation functions taking "autonomous" linguistic expressions as inputs:

The postulate that syntax is an algorithmic system in which the computations allowed by the system are unaffected by factors external to it leads to a view of semantics as interfacing with syntax only once the latter has generated a full sentential sequence, which is sent out to the semantic component for interpretation [...]. Since only sentences are true or false, this ipso facto situates semantics on the level of propositions and the truth-conditions associated with the latter, giving rise to the adoption of a logical approach to meaning. While this hypothesis has the advantage of providing linguists with a ready-made toolkit of logical concepts and formulae for their analyses, I will argue that it misrepresents the way meaning is related to form in natural language, as it is generally not the case that a stable meaning is paired with a stable linguistic form on the level of the sentence.

[Duffley 2020: 1]

According to Duffley, this approach to linguistic meaning has no cognitive plausibility, in part because "the desire to express meaning is what causes the speaker to construct an utterance in the first place" (Duffley 2020: 19). I find this argument unpersuasive: our "desire" to express meaning is to a great extent independent of the means we use to express those meanings. In any case, the conceptual argument is not

developed with the detail it deserves. But it does not matter. What I do find extremely interesting, at least from a cognitive point of view (or *points* of view), is the critical finger ostensibly pointing towards any version of formal semantics as stated in (9). Indeed, other cognitive points of view, which are radically different from Duffley's proposal, have also raised the same suspicion. In a recent interview, Chomsky has suggested that *any* version of formal semantics, as derived from (9), introduces additional complications that, in principle, could be avoided if we allowed semantic theories to operate on the concepts encoded in lexical items:

Noam Chomsky: It seems to me that the theory T of language use/interpretation can operate directly on the LI/concept. That includes *London is big, I'll visit London in its new location and explore the different design, buildings, etc.* It seems you [Chris Collins, AS] are proposing that additional apparatus is needed: operations that map the LI/concept to a value that is one-one associated with it, with T then operating on the value -- the image.

[...]

The question for me is why we need the extra syntactic apparatus that you are proposing -- with a purely syntactic analogue of the traditional semantic relation *denote*, here holding between an SO and a value that is an image of it.

[Chomsky & Collins 2021: 7, my underlining]

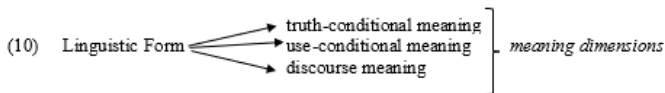
I think that both Duffley and Chomsky's claims deserve careful examination. Of course, the suspicion only makes sense from a cognitive point of view, according to which the theory of any aspect of human language must tell us something about the nature of human cognition. Therefore, this type of criticism should particularly affect those

committed to a certain cognitive framework who also ascribe to a version of formal semantics. What this formalist should show is that interpretation functions are in a sense empirically forced or, to put it differently, that the “extra apparatus” is unavoidable. I do not know whether any argument to this end has ever been provided. Not an easy task, in any case, although there are some conjectures that could be useful for setting the discussion within the reasonable limits of a plausible scientific agenda. In this respect, I see at least two areas of inquiry that are particularly relevant to the present discussion.

First, we should ask whether there are “other” interpretation functions that deliver meanings taking *non-linguistic* expressions as inputs. If this were indeed the case, and it could be shown that at least certain properties of those meanings are in a sense similar, if not identical, to linguistic meanings, then an argument to the effect of showing the independence of interpretation functions from linguistic objects could be made. Are, for instance, the stereotypes conventionally encoded in our ways of walking, eating or dressing obtained as “meanings” in a sense similar to the way in which we obtain proper linguistic meanings? Or, are the representational meanings that we assign to artworks at least partially guided by interpretation functions? The idea that there are positive answers to these questions was part of the structuralist project, prominently represented by some of the works by Roland Barthes in France. The tradition of formal semantics, as far as I know, has clearly not taken this route of thinking yet, and the reasons for that are, though, far from obvious. As we have seen, any theory with (9) at its core is committed to the idea, at the heart of Duffley’s criticism, that interpretation functions manipulate symbolic objects (lexical items or phrases composed of lexical items) that must be “translated” precisely by those interpretation functions.

There is *a priori* no reason to suspect that interpretation functions only operate on those symbolic objects that we call *linguistic expressions*.

Second, I have the impression that the issue cannot be seriously addressed unless we abandon the idea that meaning is a one-dimensional object. I have briefly commented that semantic theory is not about meaning, but about *meanings*. Once the plurality of linguistic meanings is put on the semantic agenda, then the question of whether we need interpretation functions takes on another, perhaps more interesting, form. Restricting attention to the representational aspects of meaning was an auto-imposed dogma in the tradition of formal semantics inaugurated by Frege. Again, there is no reason to think that use-conditional meanings (and not only those meanings: I also have in mind information discourse ones) are not linguistic meanings in their own right. But then, if this is on the right track, and words, and phrases made of words, are meaningful in this multidimensional way, then our critical finger should be redirected towards the classical notion of linguistic sign as being a stable one-to-one association between form and meaning, as claimed by Duffley. What I am suggesting in this paragraph can be put in the following schematic way, in which one linguistic form is associated to many meaning dimensions:



It is crucial to insist on the importance involved in the notion of *dimension*, in particular, when it comes to looking at interactions between well-established cases of use-conditional meanings and truth-conditional ones. Put differently, some sorts of meaning simply do not interact with each other. The crucial prediction is known as *hyper-*

projectability or *scoping-out*, i.e., the fact that operators belonging in the truth-conditional dimension cannot affect use-conditional meanings. Take as an illustration the case of the honorific *don / doña* in Spanish in basic cases like the following one (see Saab 2021):

- (11) Vi a *doña* Ana.
 saw.PAST.1SG TO HON.FEM Ana
 ‘I saw Ms. Ana.’

As is well-known, the honorific *doña* only encodes respect for the referent of the proper name on the speaker’s part. Therefore, the truth-conditions (or choose here your favorite theory of representational meaning) of the sentence in (11) are identical to the truth-conditions of the following non-expressive counterpart:

- (12) Vi a Ana.
 saw.PAST.1SG TO Ana
 ‘I saw Ana.’

Now, there is something else in (11), namely, the use-conditional meaning that the honorific conventionally encodes, which essentially reduces to the set of contexts in which the speaker of the utterance respects the referent of the proper name. As above suggested in relation to slurs, a plausible formal account of these two dimensions of meaning involves postulating two dimensions of meaning in which each kind of content is properly evaluated:

- (13) a. $\llbracket \text{Vi a doña Ana} \rrbracket' = \llbracket \text{I saw doña Ana} \rrbracket' = \text{T/F}$
 b. $\llbracket \text{Vi a doña Ana} \rrbracket'' = \llbracket \text{I saw doña Ana} \rrbracket'' = \{\text{RESPECT}_{\text{speaker}}(\text{Ana}): u\}$

This way of modeling parallel meanings directly captures hyper-projectability, i.e., the fact that truth-conditional operators cannot affect use-conditional meanings. For instance, in the negative counterpart of (11),

- (14) No vi a doña Ana.
 not saw.PAST.1SG TO HON.FEM Ana
 ‘I did not see Ms. Ana.’

the use-conditional meaning remains unaltered. On this account, the honorific is a pure expressive in Potts’ (2005) sense, i.e., it only contributes to the use-conditional dimension. Yet, there are words, like slurs (see (7)), which are hybrid in the sense that they conventionally encode both truth- and use-conditional meanings. Beyond slurs, there are also some words that are biased with respect to register. In Spanish, *birra* is the informal version of *cerveza* [‘beer’]. Like slurs, this type of word is particularly informative regarding the putative need for interpretation functions. In the formal approach I am describing here, we have one dimension introducing representational content and another one introducing the biased meaning. Crucially, there is no way to represent both meanings in one meaning scheme as proposed in Duffley’s work. In terms of an example,

- (15) *birra* → [beer + informal]

would predict that in a sentence like (16) the informal bias of the word is negated together with the truth-conditional meaning, something which clearly makes no sense.

- (16) Eso no es birra.
 that not is beer
 ‘That is not beer.’

It means: That is not beer and the speaker is in an informal context.

It does not mean: That is not beer and the speaker is not in an informal context.

The bidimensional approach captures this behavior straightforwardly through the application of two different interpretation functions:

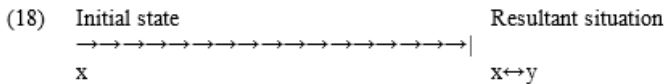
- (17) a. $\llbracket \textit{birra} \rrbracket^t = \lambda x. \text{beer}(x)$
 b. $\llbracket \textit{birra} \rrbracket^u = \{\text{INFORMAL}(e); u\}$

On this account, words and phrases are used by systems of thought and context to produce conventional meanings on the basis of the linguistic form of those words and phrases. Careful examination of this type of fact would contribute to reaching an answer to the question of the need for interpretation functions. In principle, multidimensional meanings seem to make sense of the idea that linguistic forms are interpreted in the way predicted by the formal approach to meanings and, in addition, to cast some doubt on the conception of linguistic signs as one-to-one associations between one stable form and one stable meaning.

3. On allosemy: the role of syntax in the realization of meanings

There is another crucially different, and also more common, sense in which multiple meanings are associated with one linguistic form: *polysemy*, i.e., the fact that one linguistic form can have many different meanings in the *same* dimension. Duffley claims that taking linguistic meanings to be very schematic concepts encoded in the linguistic sign not

only is theoretically superior to formal semantics but also empirically superior, since, among other alleged advantages, it allows for a more parsimonious account of polysemy. For instance, the variety of actual meanings that the preposition *for* conventionally encodes in English are derived from a stable and very general meaning “whereby some entity x moves from an initial state in which it is not in contact or relation with another entity y into a new situation, which is the result of the movement or change, and in which x is closely associated or bonded with y ” (Duffley 2020: 38):



[Duffley 2020: 38]

According to Duffley, at least the twelve distinct senses that the *Oxford Dictionary of English* attributes to *for* can be understood under the scheme in (18) without the need for any interpretation function. Now, since, in addition, this type of approach accounts for polysemy without multiplying lexical entries, it must be considered to be superior to other possible competitors, and not only the ones coming from formal traditions. Many arguments in chapter 3 are constructed in this way. My reaction is that the facts are fully independent of the main topic of the book, for the simple reason that the meaning in (18) is tractable both by formal semantics and other kinds of semantic theories. Put differently, the idea that meaning can be encoded in the way proposed by Duffley for cases like (18) is compatible with almost any extant semantic theory. Certainly, many versions of formal semantics have the controversial habit of multiplying lexical entries without empirical justification, but this is not a path that the formal semanticist is forced to take,

and, for sure, not an advisable one either. I really concur with Duffley in the idea that a good account of polysemy, one that does not multiply lexical entries in unjustified ways, is preferable to homonymy alternatives. But note now that *any* theory of polysemy along the general lines proposed by Duffley is also committed to a *realizational theory of meaning*. This commitment is explicitly acknowledged by Duffley, who, quoting Evans (2009), makes an analogy between semantics and phonology to the effect of showing that meanings, just like phonemes, which are never directly accessible to perception, are only accessible through their concrete manifestations in utterances, i.e., through their *allosomes*. As already mentioned, on Duffley's conception, the meaning theorist must focus on the recognition of meanings as codified in linguistic signs, on the one hand, and on speakers' intentions, on the other:

Linguistic analysis must therefore do two things: firstly, it must try to identify the contextual and situational factors that the speaker was counting on the hearer to utilize in inferring the intended message; secondly, it must try to reconstruct as faithfully as possible the meaning-potential of the linguistic forms actually uttered by the speaker.

[Duffley 2020, 43, my underlining]

The reconstruction step must, in addition, meet the challenge of modeling potentials of meaning through actual meanings. In different terms, in order to model the meanings encoded in signs, we must provide an exhaustive list of all the *allosemes* that concretely realize those more abstract meanings. Now, continuing with exactly the same *phoneme-allophone* analogy, the reconstruction must be also done on the basis of the recognition that in many cases the procedure

that combines meanings in phrases conditions the realization of those meanings (Myler 2014, Woods 2015, or Woods & Marantz 2017). In other words, some *allosemes* are syntactically determined; therefore, the methodological step in Duffley's work is simply not enough. What is missing is an explicit theory of this combinatorial mechanism, i.e., a theory of syntax. In principle, the point is independent of one's commitment to the thesis of the autonomy of syntax: even if one is willing to assume the idea that syntax is completely or partially determined by both semantics and, why not, pragmatics, one is forced to make one's syntactic theory explicit: lexical / sign theory + pragmatics only leads to a partial characterization of the linguistic reality. I do not know why Duffley has not offered an explicit syntax (of course, one consistent with his assumptions), but, in my opinion, such a decision makes his overall theory hard to evaluate in its real dimension. That certain meaning realizations depend on syntactic, not pragmatic, context is beyond doubt, in particular, for any theorist committed to what is, in my opinion, the best approach to meaning, i.e., the realizational approach. For instance, Lo Guercio & Saab (2020) have argued that the well-known polysemy of proper names, in particular, the referential / predicative division (compare (19) and (20) below), follows directly from the syntactic positions in which proper names can concretely occur in the nominal phrase (see Saab & Lo Guercio 2020).

- (19) Ann saw Alfred.
- (20) a. Alfreds are usually good filmmakers.
 b. The Orson who filmed *A Touch of Evil* is a good filmmaker.
 c. The studio hired an Orson and an Alfred.
 d. Every Alfred in the studio is a valuable employee.
 e. There are two Alfreds in the studio.

Roughly speaking, the idea is that both uses of a proper name have exactly *one* general meaning, denoting essentially a kind of entity, which has, however, at least two different *allosemes* conditioned by the syntactic context, concretely, the predicative meaning is realized provided that there is a constituent expressing number in the syntactic context.

$$(21) \quad [\text{proper name}] \left\{ \begin{array}{l} \llbracket \text{referential meaning} \rrbracket \\ \llbracket \text{predicative meaning} \rrbracket / \text{ ___ } [\text{NUM}] \end{array} \right\} \text{allosemy}$$

I refer the reader to Saab & Lo Guercio for empirical and conceptual considerations in favor of this way of approaching the polysemy of proper names. For my purposes here, it is enough to stress that there is an aspect of this analysis that definitively concurs with Duffley's idea that a good theory of polysemy must assume that linguistic meanings are very schematic properties, whose specific contents depend on patterns of realization. Now, on occasions, those patterns involve syntagmatic relations, i.e., syntax.

In summary, I celebrate the way in which Duffley brings up many crucial issues that are at the heart of linguistic theory, in particular, of the theory of *meanings*. Concretely, I celebrate the way in which at least some aspects of meanings are modeled, i.e., as non-mediated concepts. However, I think that the argument against the use of interpretation functions is not supported on sufficient evidence. Besides, although I agree with the general thesis that polysemy can be understood under the *meaning-alloseme* connection, I fail to see what we gain by renouncing the proposal of an explicit theory of syntax and its connections with other aspects of our linguistic cognition.

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