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Predication and cognitive context: Between minimalism and contextualism

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Abstract

In this paper, we suggest a strategy for modelling cognitive context within a truth-conditional semantics, using Asher's model of predication. This allows us to introduce the notion of *type presupposition* intended as a lexical constraint to the composition of the truth-conditional content. More specifically, we suggest that this model of predication produces a notion of truth-conditional meaning where the cognitive context fixes a set of lexical restrictions and forced modifications. We conclude that this model might offer an intermediate position between Minimalism and Contextualism: an account that provides intuitive truth conditions within a formal semantic theory.

KEYWORDS
cognitive context, contextualism, minimalism, predication, semantics, typed lambda calculus

1 | A MODEL OF PREDICATION

Asher (2011) develops a formal model of predication[1] by adding new and elaborated equipment to the standard typed lambda calculus. Three important additional features of Asher's model of predication are *i*) more fine-grained subtypes of E (i.e. the type of entities), *ii*) complex dot types (or ● types) and *iii*) dependent types. These three features are particularly relevant for assessing both the formal representation of the cognitive context[2] and

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[1]*Predication*, here, is meant in a broad sense and includes – besides the predication of a verb to a subject or of a transitive verb to an object – adjectival modification, adverbial modification and other ways of putting words together.

[2]By the phrase *cognitive context*, we do not refer to Stalnaker's (2002) context set. Rather, we refer to 'mental representations [...], contextual assumptions which may vary in strength, and factual assumptions. Since cognitive contexts are anchored to an individual but are also required for a cognitively based outlook on communication, they must contain assumptions about mutual cognitive environments' (Fetzel, 2004, p. 11). So defined, the cognitive context also includes shared common-sense knowledge about the world.

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its role within a truth-conditional model theoretic semantic framework. First, it is worth saying from the outset that selectional restrictions of words in compositional processes are taken seriously in Asher's model. For this reason, predication is modelled as type restricted β-reduction and, accordingly, lexical entries are modelled as typed lambda terms. In non-technical parlance, predication is taken to be an instance of the logical procedure of restricted functional application. Let us see what *i)*, *ii)* and *iii)* are about.

Crucially, the introduction of subtypes of E is justified by the following semantic anomalies:

1a. # The number 2 weighs 1 kilogram.
1b. # John is divisible by 5.

If we assume that 'The number 2' denotes a particular abstract object and that 'John' denotes a concrete individual, then the predications in (1a-b) turn out to be malformed. The reason 'is that there is a conflict between the demands of the predicate for a certain type of argument and the type of its actual argument' (Asher, 2011, p. 6). In order to account for the anomalies in (1a-b), Asher provides an enrichment of the type system by adding a suitable collection of subtypes of E such as basic types like ABSTRACT-OBJECT (A) and PHYSICAL-OBJECT (P) – or even more fine-grained types like NUMBER – which are deemed to affect the semantic interpretation of sentences in the following way. 'Weighs 1 kilograms' takes physical objects as argument, and not abstract objects like numbers. Accordingly, the lambda term representing the predicate 'weighs 1 kilogram' imposes a *type presupposition* on the argument it combines with: it requires an argument of type P – which is in turn a subtype of E (P ⊑ E) – in order to yield a larger and well-formed unit of meaning under the operation of β-reduction. Otherwise, the predication fails in generating a truth-evaluable sentence. Indeed, we simply do not know under what conditions (1a) is true or false. Let us see a possible lambda term for 'weighs 1 kilograms':

2. $\lambda Q: E \rightarrow T \lambda x: P (W1kg(x) \wedge Q(x))$

Lambda terms impose restrictions due to the fact that they express type presuppositions on the arguments they combine with. As you can see in (2), such presuppositions are encoded in lambda terms via the standard colon notation. Numbers are of type A, and $A \cap P = \perp$;[3] but since (2) requires an argument of type P, (1a) results semantically malformed: an unresolvable type clash between the type presupposition of the verb and the type of the actual argument occurred during the β-reduction. *Mutatis mutandis*, the same considerations hold for (1b).[4]

To realize the importance of innovation *ii)*, let us consider the following sentences:

3a. My lunch weighs 1 kilogram.
3b. My lunch lasts two hours.

Remarkably, (3a-b) are both felicitous, even if the two lambda terms of the predicates 'weighs 1 kilogram' and 'lasts two hours' require arguments of different and *incompatible* types. 'Weighs 1 kilograms', as we saw above, requires an argument of type P, whereas 'lasts two hours' requires an argument of type EVENT (EVT); and $P \cap EVT = \perp$. Accordingly, a complex type is introduced: the dot type $\alpha \bullet \beta$. Such a type is an underspecified type containing two incompatible types: 'which [one] is selected in a predication depends on the type restrictions imposed by the predicate on its arguments' (Asher, 2011, p. 131). Nouns like 'lunch' have two conceptualizations with different counting principles: lunches are typically events, but they are also meals and as such physical objects. Arguably, the metaphysical nature of lunches

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[3]This means that there are no objects of type A *and* P. In other words, such types are incompatible.

[4]Further evidence for considering linguistic expressions as selective devises come from determiners. For instance, 'much' typically collocates with mass nouns whereas 'many' with count nouns. MASS and COUNT are thus treated as basic types that can affect predication. In a nutshell: all words express selectional restrictions on other words they combine with via type presuppositions.

as events is different from the metaphysical nature of lunches as objects.[5] Hence, words like 'lunch' are conceived as logically polysemous words.[6] Thus, 'lunch' gets the type P ● EVT. In (3a) the predicate selects the P-aspect and in (3b) the predicate selects the EVT-aspect. The sentences in (3a-b) are therefore true or false in virtue of the different metaphysical status of the lunch. (3b), for instance, is true if it is the event of eating the lunch that lasts two hours, and not the lunch *qua* physical object. Importantly, the type checking is thus essential to the correct construction of truth conditions. Asher calls such a phenomenon *aspect selection* and nouns like 'lunch' *dual aspect nouns*.[7]

Finally, let us turn to consider the rationale behind feature *iii*): dependent types. Consider the following examples:

4a. Sheila enjoyed her lunch.
4b. Sheila enjoyed her new book.

Typically, 'enjoy' collocates with nouns that denote events; accordingly, it requires that its argument be of type EVT. Since 'lunch' is of type P ● EVT, the predicate 'enjoy' combines with 'lunch' selecting the EVT-aspect, and so the predication in (4a) succeeds: the type presupposition of the predicate is satisfied. However, verbs like 'enjoy' 'and other verbs that take syntactically given arguments of type E but that presuppose arguments of eventuality type sometimes force a predication over an eventuality that is related in some way to the denotation of the syntactically given argument' (Asher, 2011, p. 214). This is the case in (4b). 'Book' is not of type EVT, it is of type P ● INFORMATIONAL-OBJECT (see footnote 5). Therefore, the verb 'enjoy' forces the predication over an eventuality related to the book. (Which eventuality? Reading? Writing? We will answer in what follows.) As a consequence, the type presupposition of the verb is, in this case, justified (*not* satisfied): we have a type presupposition justification due to the coercion of the predicate 'enjoy'. Why do not we treat (4b) as an example of aspect selection? Because there are plausible reasons for not considering 'book' a sort of triple aspect noun of type P ● INFORMATIONAL-OBJECT ● EVT. First, because it is counterintuitive and misleading to consider books as having a third conceptualization in terms of events involving, for instance, their reading. Second, there is some compelling linguistic evidence (from Asher, 2011, p. 216):

5a. The lunch starts at 12:30.
5b. ?? The book starts at 12:30.

The verb 'start' requires an argument of type EVT, and the lunch – on one conceptualization – is indeed an event. Thus, if (5a) is felicitous on its own, (5b) needs an appropriate background of information in order to express an eventuality reading of 'book'. This is because books are different in nature from lunches. And this is speakers' shared knowledge.

Dependent types come to the aid exactly at this point. When 'enjoy' takes an argument of type P, a type conflict arises, and an adjustment in predication occurs. Therefore, verbs like 'enjoy' licenses a dependent type that is invoked when the direct object is not of type EVT. Such a type ensures the shift in the predication from the

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[5]By the words *metaphysical nature*, we refer to the most fundamental and general structures and features of reality.

[6]Albeit the interpretations of the word 'lunch' differ, we easily detect that the two interpretations are somehow *logically* related. This is what is commonly called *logical polysemy*. In the cognitive tradition the term *conceptual polysemy* is often used: it 'occurs when a word form exhibits more than one distinct but related meaning conventionally associated with it' (Evans, 2009, p. 30). Clearly, there exist examples of *accidental polysemy* like in the case of 'bank', where the two different senses (*financial institution* and *river's edge*) are not logically related.

[7]'Book', for instance, is another dual aspect noun of type P ● INFORMATIONAL-OBJECT. Such aspects are selected depending on the selectional restriction of the predicate at issue (examples from Asher (2011, p. 86)):

3c. The book is interesting.

3d. The book weighs five pounds.

In (3c) 'book' expresses its informational aspect, whereas in (3d) its physical aspect. Clearly, there exist other ways in which a noun can be a dual aspect noun: KIND ● INDIVIDUAL and KIND ● MASS, for instance.

predication of a property to an object to the predication of a property to an eventuality related to the object justifying the type presupposition. This is known in the literature as *coercion*: 'A function from one semantic value or one type to another that is employed when some problem arises in the construction of meaning' (Asher, 2015, p. 66). This is to say that that there is sometimes room for a recovery from a type clash. The possibility of such a recovery, however, is determined by the existence of a metaphysical justification at the level of common-sense metaphysics. In other words, basic and fundamental metaphysical knowledge about the world constitutes the ground for aspect selection and coercion.[8] Namely, books are *not* events, but they typically involve the event of reading them. Lunches *are* (also) events instead.[9] However, the exact eventuality of (4b) might be sometimes underspecified. For instance, Sheila might have enjoyed reading or writing her new book. Nevertheless, the formal structure of the discourse context (Asher and Lascarides, 2003) and/or the information associated with the basic type of the arguments provide a specification:

6a. # Smith has begun the kitchen.
6b. The janitor has begun (with) the kitchen.
6c. The cleaners have started the suits.
6d. The exterminator has begun (with) the bedroom.
6e. The painters have finished the windows.

'Which eventualities end up being the internal arguments of the verbs *begin*, *start*, and *finish* in [(6a-e)] is not just a function of the direct objects or the coercing arguments themselves. The subject argument also plays an important role in determining the eventuality internal arguments' (Asher, 2011, p. 215). The eventuality of (6a) is not specified and the predication is thus not felicitous. Therefore, the sentence has no truth conditions whatsoever, since neither the arguments nor the discourse context (which is absent) suffice to specify the eventuality reading of 'kitchen'. In other words, the type presupposition of the verb is not justified.

2 | THE TRUTH-CONDITIONAL ROLE OF THE COGNITIVE CONTEXT

We have said that predications fail to result in a truth-evaluable sentence if a type clash with no coercing recovery occurs during the β-reduction. Importantly, we cannot say whether a given sentence is true or false if a type presupposition is neither satisfied nor justified. So sentences express truth conditions on the basis of a well-defined type checking. Hence, a truth-conditional model theoretic semantics needs types – or something similar – in order to fix truth conditions and construct linguistic meaning *if* we want to account for shifts in predication and subtle semantic anomalies of the type discussed above. Having said that, one might ask: what kind of truth-conditional content is such a theory able to construe? Before facing this question, the notion of *type* has to be scrutinized a bit further.

The enrichment of the type system with subtypes of the functional type E → T – like the type of physical property P → T – forces us to abandon the classical set theoretic interpretation of types due to Montague's influence (see Muskens, 2007 and Asher, 2014). Various models of complex-typed lambda calculus exist, and among them

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[8]'[T]here are no coercions for some things. For instance, there is no general map from a saturated abstract entity to a physical object'. That is why (1a) does not work. 'One could imagine the existence of such a map (many nominalists and physicalists try to specify such a map), but the map isn't well defined in our commonsense metaphysics. A coercion exists in a given typing context, if it can be established that a corresponding, well-defined map at the level of denotations exists, given the information in that context' (Asher, 2011, p. 320). For the present purposes, it is not important to delve into the more complicated aspects of metaphysical details.

[9]Truth to tell, one might argue that the semantic behaviour of 'lunch' and 'book' is not so different after all. It is possible to think that lunches – like books – are not genuinely events. One might contend that they are physical meals which typically involve the event of eating them. Following this line of reasoning, we may treat (4a) as an example of coercion like (4b). However, the compositional machinery here addressed is sensible to conventions, and since the noun 'lunch' *conventionally* denotes an event – contrary to 'book' that does not –, we better treat it as a dual aspect noun.

even set-theoretic ones (see Sato and Garrigue, 2016). However, set-theoretic models although provided with richer types are at odds with intuitive desiderata:

> It is intuitively obvious that the type of physical properties is a subtype of the type of all first-order properties. But if we think of types as sets and identify the relation of subtyping with the relation of subset, then this intuitive connection is lost: the set of functions from physical objects to truth values is disjoint from the set of functions from entities generally to truth values, as long as there are some entities that are not physical objects (Asher, 2011, p. 35).

Accordingly, types must be considered as hyper-intentional entities. In doing so, we can distinguish the intension of an expression from its type.[10] Types are thus treated as concepts of mind-independent properties and individuals. Types, arguably, arise from the sensory interaction with things that exist independently in the world (see Asher, 2014 for a discussion about the notion of *tracking* in virtue of which types are reflections of properties and individuals). On this view, types as concepts form a well-defined hierarchy of common cognitive material people exploit in order to communicate. For instance, to say that 'wedding' is of type EVT amounts to say that humans deploy the salient concept EVENT when mastering, conveying and receiving the meaning of 'wedding'. We conceptualize things outside our mind and hence build a framework of concepts grounded in the external world. Such a framework, in turn, is believed to affect the way language and predication work.

Having said that, we may therefore suppose that types are a fundamental part of the common background or cognitive context speakers share in conversation. Since types are hyper-intensional entities, they have a proof theoretic semantics and not a model theoretic semantics; namely, their content is expressed in terms of introduction rules and inference rules: the subtyping relationship ($\sqsubseteq$), to name but one example, is explainable through an intuitionistic notion of deduction, $\vdash_\Delta$. And:

$$\frac{\alpha \sqsubseteq \beta}{\alpha \vdash_\Delta \beta}$$

Put in another way, type presuppositions and type presupposition justifications are instances of combining types and concepts. As Asher claims, 'linking concepts and types together helps us understanding both: concepts get a rigorous framework from type theory, while types are now linked to the agent's sensory interactions with his environment and as well as the interactions between other concepts/types in the linguistic system' (Asher, 2014, p. 80). Then, it may be said that types constitute the common cognitive context in which predications are processed and understood in communication. Type presuppositions have to be satisfied or justified in order for a sentence to express truth conditions.

According to Asher, type presuppositions work similarly to the presuppositions generated by a definite description (at least according to the presuppositional interpretation of definite descriptions, i.e. Heim, 1983 or Elbourne, 2013): the sentence in which a definite description appears acquires truth conditions only if the presupposed content is satisfied or accommodated. Similarly, in the case of type presuppositions, the satisfaction or the justification of type presuppositions is essential for the expression of truth conditions; and since truth conditions are model theoretic objects, types then affect the calculation of logical forms introducing new contents.[11] There is some evidence that type presuppositions and presupposed contents (like presuppositions given by definite descriptions) work similarly: 1) both project out of modal operators, 2) both are not redundant if stated within the

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[10]'We can even distinguish between different conceptualizations of the same physical object or of the same property, so in some respects the structure of types has the capacity to make finer distinctions in meaning than intensional semantics can' (Asher, 2011, p. 44).

[11]'Viewed from this perspective, coercion in not really a problem about meaning change in the lexicon; it's a problem about compositionality' (Asher, 2011, p. 18). More on this in section 4.

sentence that generates them and 3) it is impossible to make discourse continuations on both type presuppositions and presupposed content.[12]

In this way the cognitive context gets a formal representation and enters the realm of truth-conditional model theoretic semantics. And this allows us to represent possible shifts in meaning (*viz.* aspect selection and coercion) within a formal model. This is clearly first evidence that the proof theoretic semantics of types may integrate the model theoretic semantics of intensions – a similar point is made in Luo (2014). The shifts in meaning of the sort discussed above are difficulty treatable in a pure model theoretic semantics à la Montague, since the latter does not provide formal tools accurate enough in order to account for the specific informative contribution at the lexical level. By contrast, in the present paper we suggest a way to make logical forms more informative and enriched by fine-grained shifts in meaning. Cognitive context may contribute to represent semantic details at the predicational level by creating a third level in semantics: extensions, intensions and, importantly, types (see Jespersen, 2010 for similar considerations). Intensions, as explained above, are model theoretic objects modeled after the type checking, and, accordingly, after the assessment of the cognitive context. As Penco (2015, p. 421) maintains, 'what is required by a semantic theory is what can be shared among speakers and how cognitive significance may affect our way of expressing and understanding thoughts and thought components', however, 'whether to treat these procedures as part of pragmatics of semantics is still an open question'.

Asher claims that procedures like coercions and aspect selections are parts of semantics.[13] Such procedures are defeasible but a priori inferences based upon our linguistic mastery of the language. Namely, in (7a) below, the inference that the painter enjoyed *painting* with her brush, is given a priori on the basis of our linguistic knowledge; however, such an inference is defeasible, since the painter might have enjoyed, say, looking at her brush. Fodor and Lepore (1988), Borg (2004), Cappelen and Lepore (2005), Recanati (2010), Jaszczolt (2016) and many others – although in different ways – claim that shifts in meaning such as aspect selection and coercion belong to pragmatics, since semantic theories are not fine-grained enough; and therefore a great deal of contextual knowledge is believed to be needed in order to perform such inferences. On the contrary, we claim that it is possible to put aspect selection and coercion on the side of semantics provided an appropriate implementation given by cognitive context. To begin with, consider the following facts: *i*) speakers are often able to distinguish an automatic interpretation like that of coercion from an inferential process of more complex nature such as conversational implicatures, and *ii*) processes like coercions are systematic, i.e. they occur following regular patterns. Of course, these are *not* conclusive arguments, since there might be pragmatic regularities (see Carston, 2002). Nonetheless, apart from these clues, there are interesting linguistic tests supporting the idea that certain inferential information belongs to the language itself. Coercing inferences are tied to particular predicates and are not always available:

7a. The painter enjoyed her brush.
7b. [??] The brush has just started.

Arguably, the eventuality reading of 'brush' is available in (7a), and not in (7b). And this seems a good reason for believing that the information about the eventuality is tied to the verb 'enjoy': it is a matter of conventional, linguistic meaning. If in (7b) the word 'brush' has not an eventuality reading is because the linguistic surrounding material, which is driven by the cognitive context, does not allow for it.

Let us now go back to the above question: what kind of truth-conditional content is such a theory able to construe? Arguably, they are richer and more fine-grained than Montague's truth conditions. In such an approach, logical polysemy is formally treated, and subtle meaning shifts are accounted for in a crisp and profitable way.

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[12]Importantly, we are not claiming that type presuppositions are identical in all respects with presupposed contents. We are suggesting considering both type presuppositions and presupposed contents as belonging to a more inclusive, superordinate common background: the cognitive context. Clearly, there are differences between type presuppositions and standard presupposed contents; however, they both share a presuppositional status and belong to a set of shared cognitive material.

[13]Until recently, there has been little interest in such a view. The research has tended to focus on the pragmatic explanation.

Semantics turns out to be beefed up and the cognitive context increases the explanatory capacity of truth-conditional model theoretic semantics. Particularly, deep metaphysical aspects are now accounted for within logical forms. What are the consequences of this enrichment in terms of metatheoretical issues? We will try to answer in what follows.

3 | A MIDDLE PATH BETWEEN MINIMALISM AND CONTEXTUALISM

In this third section, we turn to consider a foundational and metasemantical question: where does the perspective presented above stand with respect to the Minimalism/Contextualism debate? Nota bene: we would like to clarify that the present investigation constitutes a general analysis of an old and vexing topic with an extensive literature. And the solutions presented exploiting type presuppositions and cognitive material should count as an endeavour for fostering an alternative, or – as we put it – *intermediate* positions between two prominent semantic frameworks.

Minimalism and Contextualism are two big opposed research programs involving different approaches about the semantics/pragmatics boundary. The dispute between Minimalism and Contextualism focuses on the notion of what is said, i.e. how the truth conditional meaning expressed by an utterance is determined (see Domaneschi and Penco, 2013; Jaszczolt, 2016; Peter and Preyer, 2005; Recanati, 2004). From a minimalist point of view, there exist an important distinction between semantics and pragmatics, namely between a theory of linguistic meaning – which is truth-conditional (after linguistically triggered saturations) – and a theory of speaker's meaning – which is inferred from sentence meaning via pragmatic processes of different nature (Borg, 2004). From a contextualist point of view, on the contrary, such a distinction is deemed to be illusory, since every truth-conditional content is considered to be affected by pragmatic processes that are both linguistically and *not* linguistically triggered. Minimalists maintain that every sentence in isolation expresses a truth-conditional meaning (after linguistically triggered saturations); whereas contextualists maintain that no sentence expresses a truth-conditional meaning out of the context, only utterances do. Accordingly, two different notions of *truth conditions* have to be disentangled. Minimalism accounts for liberal truth conditions, which are separated from speakers' intuitions and from metaphysical constraints; whereas Contextualism accounts for intuitive truth conditions, which, on the contrary, express speakers' intuitions and include metaphysical constraints. Jaszczolt (2015, p. 408, emphasis ours) puts it thus:

> *Either* one dissociates conversational practices from a theory of meaning and takes the latter to pertain only to the language system and to sentences as abstract units, *or* one opts for a theory of meaning that captures speakers' intuitions about meaning in communication, at the same time retaining the commitment to the underlying compositionality of meaning so understood. Semantic minimalists opt for the first, while contextualists opt for the latter.

Accordingly, besides the two notions of *truth conditions*, two different notions of *what is said* emerge from such a picture. Contextualists, typically, mean by *what is said* something like *what has intuitive truth-conditional content* (WIS_{int}) (see Recanati, 2004). And such a truth-conditional content is deemed to be affected also by free pragmatic processes which are not linguistically triggered. On the other hand, minimalists refer to another notion of *what is said*, namely *what is minimally said without metaphysical or communicative commitments* (WIS_{min} with liberal truth conditions).

For minimalists like Borg (2004) and Cappelen and Lepore (2005) there is a sharp distinction between semantics and pragmatics, and a semantic theory is to be construed to account for liberal truth conditions: 'the constraint we want are pretty minimal' (Borg, 2004, p. 3). In this sense, semantics is disentangled from both metaphysical constraints and communicative skills. On the contrary, for contextualists like Recanati and Jaszczolt 'we should do our best to account for intuitive truth- and satisfaction-conditions of utterances, and to that effect we

may have to liberalize the notion of meaning/content to the point of blurring the semantics/pragmatics distinction' (Recanati, 2010, p. 43). We have here a methodological alternative: if a theory of meaning accounts for liberal truth-condition (WIS_{min}), then it allows for a theory-internal distinction between semantic, linguistic meaning and pragmatic, speaker's meaning. On the contrary, if a theory of meaning accounts for intuitive truth conditions (WIS_{int}) such a distinction is doomed to fail, since every intuitive, truth-conditional content is affected by pragmatic processes which are not linguistically triggered. We argue that this is not necessarily the case and that the alternative presented by Jaszczolt is not as binding as she claims. In fact, we maintain that the distinction between semantics and pragmatics is still tenable in a theory of meaning that addresses intuitive truth conditions, provided some constraints given by the model of predication assessed above.

The inclusion of the cognitive context inside the model theoretic conception of meaning allows us to construct enriched logical forms which include metaphysical information derived from the conceptual structure embedded in the language. However, this does not prevent us from considering such a theory overtly a theory of literal, encoded, linguistic meaning of words and sentences. As far as this fact is concerned, we agree with minimalists, since a theory of linguistic meaning separated from a theory of speaker's meaning is achievable in the way proposed above in section 2. At the same time, a theory of linguistic meaning, expressing metaphysical constraints, de facto expresses intuitive truth conditions, as spelled out by WIS_{int}: coercions and aspect selections can be considered to be part of semantics. As we have seen above, different ways of conceptualizing the same object are deeply interwoven with semantic and predicational processes. And, importantly, such conceptualizations involve metaphysical constraints: 'I will argue that this kind of predication [*viz.* aspect selection] requires a special metaphysical conception of the objects. [...] The type adjustment with dual aspect nouns is, in some sense, just a shifting of emphasis or a reconceptualization of the very same object' (Asher, 2011, p. 23). Such metaphysical differences 'are reflected in our conceptual scheme, that is, in the system of types. This is one principal motivation for introducing a complex type ● for such objects' (Asher, 2011, p. 135). In a formula, in the sentence 'The book is red', for instance, it may well be semantics, and not pragmatics, that tells us that 'book' is to be conceived as a physical object.

Metaphysical constraints seem to be widespread in meaning variations of every kind. What derives from this perspective is thus a wide idea of semantics: a semantics that spells out intuitive, rich contents and encodes conceptual patterns. Nonetheless, we may keep a useful distinction between semantics and pragmatics – and the latter might be understood simply as an inferential theory for cashing out implicatures and other traditional pragmatic contents. Or, interestingly, pragmatics may contribute to select the relevant reading in a given context cancelling the a priori inference based on the semantical type checking. It looks as though we have found the middle path between Minimalism and Contextualism: a position that accounts for intuitive truth conditions within a semantic theory disentangled from pragmatics.

4 | CONCLUSION

Our aim was not to present a complete and detailed solution to the classical conflict between Minimalism and Contextualism. Rather, as far as semantics and pragmatics are concerned, we suggest that their interface is better understood as fluid and as a moving target. As suggested by Asher's model of predication, the mechanism of compositionality can be enriched and transformed into a sophisticated device capable of spelling out subtle shifts in meaning in formal terms. We have tried to show how the semantic approach to aspect selection and coercion needs an enrichment at the level of compositional machinery. The sole interaction of words within sentences may well be the cause of an intuitive truth-conditional shift in meaning produced in an automatic and systematic fashion. And we do not necessarily need to trot out complex pragmatical explanations.

Crucially, this implies a partial reformulation of the classical principle of compositionality. A widespread belief within the contemporary philosophy of language is that the linguistic meaning of a complex expression is function of the meanings of its parts and depends on the way they are structured. Therefore, the meanings of the parts,

whatever they are, do *not* change depending on the elements they combine with (see Recanati, 2010). One might argue that this is not entirely true. We suggest that the linguistic meaning of a complex expression is function of the meanings of its parts and depends *both* on the way they are structured *and* on the type checking they undergo.

Consider the following predications from Asher (2011, p. 34):

8a. Red meat.
8b. Red shirt.
8c. Red pen.
8d. Red wine.

Even if they are not cases of coercion, it is clear that the adjective 'red' in (8a-d) has slightly different meanings. It gives different contributions to the intuitive truth conditions of the phrases. In (8b) 'red' means 'red coloured', but not in (8a); and one could say 'The red meat is not red' without any problem. Thus, it would appear that in each phrase 'red' is somehow adjusted in order to be appropriate. Briefly, we may sketch the fact by saying that a general predicate P applied to an argument a changes slightly its meaning in P' if applied to an argument b related to but distinct from a. Adjectives like 'red' also exhibit lateral influences, and arguably they are not only elements of bottom-up processes. Coercions and aspect selection are other examples of lateral influences that seem to compel us to adjust the classical principle of compositionality. The introduction of subtypes of E, dot types and dependent types in structuring the meaning of our words permits to organize a formal treatment of subtle semantic contents that appear to be strongly tied to sentences and to meaning composition driven by a fundamental part of the cognitive context: types.

To sum up. Words exhibit compositional preferences which produce type presuppositions. Type presuppositions are cognitive features words deploy in order to collocate in well-formed predications. Thus, the meaning which emerges from a predication is affected by the cognitive context via restrictions and forced modifications. The main consequences of this model are *i*) the supplementation of the classical Minimalism/Contextualism debate with a third methodological alternative and *ii*) the enrichment of the classical principle of compositionality with lateral influences of type presuppositions. A new scenario with new equipment might be possible. It takes the best from both Minimalism and Contextualism representing a valid alternative for the study of meaning in composition.

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