

## Ontology-Based Semantics

Sandro Balletta

Univerità di Genova  
*sandro.balletta@edu.unito.it*

**Abstract.** The present paper has a double purpose. Firstly, it attempts to illustrate how ontology enters the realm of truth-conditional model theoretic semantics. To this effect I will use Nicholas Asher's theory of predication and shall discuss some linguistic examples that are relevant for assessing this approach to predication. Secondly, the paper is intended to take into account the theory of predication so defined within the Minimalism/Contextualism debate. I shall conclude by arguing that we can envisage in such a theory a profitable position which shares characteristics from both Minimalism and Contextualism, that may be called Enriched Literalism.

**Keywords.** Predication, ontology, semantics, Minimalism, Contextualism, Nicholas Asher.

### 1. Introduction

Minimalists like Borg (2004, 2012) and Cappelen and Lepore (2005) argue that there is a crisp distinction between semantics and pragmatics, namely between literal meaning of linguistic items and speaker's meaning. Literal meaning, on this view, is given on the basis of the linguistic knowledge of speakers with respect to the context of utterance. Context is needed in cases where sentences contain genuine context-sensitive expressions like indexicals and demonstratives. This – along with pre-semantic pragmatic processes – is the only case in which pragmatics enters the realm of semantics. Importantly, literal meaning is not bound to be what we intuitively take the speaker to have asserted.

Consider the following sentences:

- (1) a. John enjoyed the cigarette.

- b. The bottle froze.
- c. John heard the piano.

Sentences (1a-c) have a literal meaning which is given by the truth conditions and which distances itself from the intuitive content we usually would attach to them. Thus, (1a) means that *John enjoyed the cigarette*, but what kind of eventuality links John to the cigarette is not part of the literal meaning of the sentence. (1b) means that *the bottle froze*, even if its intuitive truth conditions arguably regard the liquid inside the bottle. And (1c) means that *John heard the piano*, and not that John heard the sound emitted by the piano, like we would intuitively say. In other words, intuitive truth conditions and satisfaction conditions are not something semantics ought to account for (see Cappelen and Lepore 2005).

On the contrary, contextualists like Recanati maintain that “we should do our best to account for the 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 distinctions” (Recanati 2010, p. 43; my italics). Therefore, according to Recanati, we should consider (1a-c) as expressing an enriched meaning which contains that intuitive information minimalists typically reject. However, because of this enrichment, such a meaning is deemed to be affected by pragmatic processes even if the sentences do not contain genuine context-sensitive expressions: they are affected by free pragmatic processes. Pragmatics is needed since the only mastery of the language is viewed as being insufficient to produce such intuitive meanings. On this view, literal meaning has not intuitive truth conditions.

I want to suggest a way for having *both* a theory of literal meaning, namely a semantics disentangled from pragmatics, *and* a theory which accounts for intuitive truth conditions without blurring the semantics/pragmatics distinction. The result would turn out to be an Enriched Literalism which shares with Borg, Cappelen and Lepore the need of distinguishing semantics and pragmatics, and with Recanati the wish of accounting for intuitive meanings. To this effect, I take on an extended version of the typed lambda calculus for modeling predication.

## 2. Types and Predication

Let us consider a formal model of predication<sup>1</sup> which incorporates new and complex equipment to the standard typed lambda calculus (see Asher 2011). Three important features of this model of predication are i) more fine-grained subtypes of entities of type E, ii) complex dot types (or • types) and iii) dependent types. These three

---

<sup>1</sup> ‘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.

features are relevant for assessing how in a truth-conditional model theoretic framework literal meaning comes enriched. Let us see what i), ii) and iii) are about.

Firstly, it is worth saying from the outset that selectional restrictions of words in compositional processes are taken seriously in the theory, thus predication is modeled as type restricted  $\beta$ -reduction and, accordingly, lexical entries are modeled as typed lambda terms. The introduction of subtypes of E is justified by the following semantic anomalies:

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

If we assume that ‘The number 2’ denotes a particular abstract object and that ‘John’ denotes a particular concrete person, then the predications in (2a-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 give an account of the anomalies in (2a-b) an enrichment of the type system with a suitable collection of subtypes of E is needed: basic types like ABSTRACT-OBJECT (A) and PHYSICAL-OBJECT (P) – or even more fine-grained types like NUMBER – are responsible for the anomalies in (2a-b). ‘Weighs 1 kilograms’ takes physical objects as argument, but 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 ( $P \supseteq E$ ) – in order to yield a larger and well-formed unit of meaning under the operation of  $\beta$ -reduction. Otherwise, the predication fails to result in a truth-evaluable sentence. We simply do not know under what conditions (2a) is true or false. Let us see a possible lambda term for ‘weighs 1 kilograms’:

$$(3) \lambda P : E \Rightarrow T \lambda x : P (W1kg(x) \wedge P(x))$$

It is said that lambda terms impose restrictions due to the fact that they express type presuppositions on their arguments. As it is clear from (3), such presuppositions are encoded in lambda terms via the standard colon notation. Numbers are of type A, and  $A \cup P = \perp$ ,<sup>2</sup> but (3) requires an argument of type P. that is why (2a) results semantically malformed: an unresolvable type clash between the type presupposition of the verb and the argument’s type occurred during the  $\beta$ -reduction. *Mutatis mutandis*, the same considerations hold for (2b).<sup>3</sup>

---

<sup>2</sup> This means that there are no objects of type A and P. In other words, such types are incompatible.

To realize the importance of innovation (ii) let us consider now the following sentences:

- (4) a. My lunch weighs 1 kilogram.  
b. My lunch lasts two hours.

Strangely, (4a-b) are both felicitous, even if the two lambda terms of the predicates require arguments of different and *incompatible* types. ‘Weighs 1 kilograms’, as we saw before, requires an argument of type P, whereas ‘lasts two hours’ requires an argument of type EVENT (EVT); and  $P \cup \text{EVT} = \perp$ . Accordingly, a complex type is introduced: the dot type  $\alpha \cdot \beta$ . Such a type is an underspecified type containing two incompatible types: “which 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. The ontological nature of lunches as events is different from the ontological nature of lunches as objects. Hence, words like ‘lunch’ are conceived as logically polysemous words.<sup>4</sup> So, ‘lunch’ gets the type  $P \cdot \text{EVT}$ . In (4a) the predicate selects the P aspect and in (4b) the predicate selects the EVT aspect. The sentences in (4a-b) are true or false in virtue of the different ontological status of the lunch; and selectional restrictions seem to suggest that language encodes such ontological patterns. Sentence (4b), for instance, is true if it is the event of eating the lunch that lasts two hours, and not the lunch as physical object. On this view, 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”.<sup>5</sup>

---

<sup>3</sup> Further evidences for considering linguistic expressions as selective devices 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 formula: all words express selectional restrictions on other words they combine with via type presuppositions.

<sup>4</sup> Albeit the interpretations of the word ‘lunch’ differ we easily detect that the two interpretations are somehow conceptually 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 are not logically related.

<sup>5</sup> ‘Book’, for instance, is another dual aspect noun of type  $P \cdot \text{INFORMATIONAL-OBJECT}$ . Such aspects are selected depending on the selectional restriction of the predicate at issue (examples from (Asher 2011, p. 86)):

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

- (6) a. John enjoyed his lunch.  
b. John enjoyed the cigarette.

Typically, ‘enjoy’ collocates with nouns that denote events; accordingly, it requires that its argument be of type EVT. Since ‘lunch’ is of type  $P \cdot EVT$ , the predicate ‘enjoy’ combines with ‘lunch’ selecting the EVT aspect, and hence the predication in (6a) succeeds: the type presupposition 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 (6b). The word ‘cigarette’ is not of type EVT, it is of type  $P$ . Therefore, the verb ‘enjoy’ forces the predication over an eventuality related to the cigarette. (In this case, the type presupposition of the verb is justified – *not* satisfied.)

Why don’t we treat (6b) as an example of aspect selection? Because there are compelling reasons for not considering ‘cigarette’ a dual aspect noun of type  $P \cdot EVT$ . Firstly, because it is unintuitive and misleading to consider cigarette as having a second conceptualization in terms of events. Secondly, there are some linguistic evidences (see Asher 2011, p. 16):

- (7) a. The lunch starts at 12:30.  
b. ?? The cigarette starts at 12:30.

If (7a) is felicitous on its own, (7b) needs an appropriate background of information in order to express an eventuality reading of ‘cigarette’. Cigarettes are different in nature from lunches. And the intuitions of native speakers seem to confirm that: if ‘cigarette’ “always has associated with it a possible event reading [i]t should then be possible to access that appropriate event reading with other predicates that take events” (Asher 2011, p. 15). But it is not so.

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.

- 
- (5) c. The book is interesting.  
d. The book weighs five pounds.

In (5c) ‘book’ expresses its informational aspect, whereas in (5d) its physical aspect. There exist other ways in which a noun can be a dual aspect noun, like  $KIND \cdot INDIVIDUAL$  and  $KIND \cdot MASS$  (see Asher (2011, Chap. 5)).

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 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 means that there is sometimes room for a recovery from a type clash.

The possibility of such a recovery is determined by the existence of an ontological justification at the level of common sense. Basic and intuitive ontological considerations constitute the ground for aspect selection and coercion. Namely, cigarette are not events, but they typically involve the event of smoking them; and this is something which is deeply embedded in our common sense ontology we share as speakers of a language. Lunches *are* (also) events instead.<sup>6</sup> However, one could say, the exact eventuality of (6b) might be sometimes underspecified. For instance, John might have enjoyed smoking, watching or smelling the cigarette. Nevertheless, the ontological information associated with the noun usually provide a specification. The fact that cigarettes get smoked – which is the main event involving them – is shared among speakers as an essential fact about cigarettes. If someone does not share such a knowledge, it would be hard to admit he *really* knows what a cigarette is. Consider the following sentences for other clues (from Asher (2011, p. 215)):

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

“Which eventualities end up being the internal arguments of the verbs *begin*, *start*, and *finish* in [(8a-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 (8a) is not specified because the ontological information associated with the word ‘Smith’ are not sufficient to provide a specification, and thus the predication is not

---

<sup>6</sup> “[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 (2a) 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 common sense 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).

felicitous. This is not the case in sentences (8b-e). Therefore, sentence (8a) has not truth conditions since the arguments do not suffice to specify the eventuality reading of ‘kitchen’.

### 3. Ontology-Based Semantics

We have said that predications fail to result in a truth-evaluable sentence if a type clash with no coercing recovery occurs during the  $\beta$ -reduction. Importantly, we cannot say whether a given sentence is true or false if a type presupposition of one of its parts is not satisfied or justified (like in the case of coercion). On the other hand, we have also seen that sentences express truth conditions on the basis of a well-defined type checking. So, a truth-conditional model theoretic theory needs types – or something similar – to fix truth conditions and construct linguistic meaning if shifts in predication and semantic anomalies are to be accounted for. Having said that, what kind of truth conditions does such a theory express? Before answering this question the notion of type has to be scrutinized a bit further. Once we enrich the type system with subtypes of  $E \Rightarrow T$  (like the type of physical property  $P \Rightarrow T$ ), we are forced to abandon the classical set theoretic interpretation of types due to Montague’s influence (Muskens 2007, Asher 2014). Accordingly, types must be considered as hyper-intentional entities. In so doing, we can distinguish the intension of an expression from its type.<sup>7</sup> We may consider types to be reflections of mind-independent properties and individuals they are concepts of, in that they arise from the sensory interaction with things that exist independently in the world.<sup>8</sup> Types reflect our common sense ontology and form a well-defined hierarchy of common cognitive material people exploit in order to communicate. We may therefore suppose that types are a fundamental part of the common background or cognitive-lexical information 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 ( $\supseteq$ ), for instance, which is hyper-intensionally understood, is explainable through an intuitionistic notion of deduction,  $\vdash \Delta$ . And:

$$\alpha \supseteq \beta / \alpha \vdash \Delta \beta$$

---

<sup>7</sup> “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).

<sup>8</sup> See (Asher 2014) for a discussion about the notion of tracking in virtue of which types are reflections of properties and individuals.

Types therefore belong to the presuppositions that need to be shared for a sentence to be accepted in the conversation and, specifically, type presuppositions have to be satisfied or justified in order for a sentence to express truth conditions. Type presuppositions work in a way similar to the presupposition generated by a definite description (at least according to the presuppositional interpretations of definite descriptions, like Heim 1983 or Elbourne 2013): the sentence in which a definite description appears acquires truth conditions only if the presupposed content is bound or accommodated. Similarly for 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, accordingly, types, which are proof theoretic objects, affect the calculation of logical forms introducing new contents.<sup>9</sup> 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 sentence that generates them and 3) it is impossible to make discourse continuations on both type presuppositions and presupposed content. Both are *not* propositional contents of sentences, although they are essential to evaluate a given propositional content true or false.<sup>10</sup>

In this way our common sense ontology enters the realm of truth-conditional model theoretic semantics and allows us to calculate the shifts in meaning we have seen in dual aspect nouns and coercing predicates. (See Asher (2011, Chap. 4) for a technical demonstration).<sup>11</sup> The shifts in meaning of the sort discussed above are difficultly treatable in a pure model theoretic semantics. (Among other things, a serious weakness is the impossibility of distinguishing logical from accidental polysemy.) By contrast, logical forms are in the present framework more informative, enriched and contain fine-grained shifts in meaning due to the introduction of our common sense ontology via type presuppositions.

As Penco (2015, p. 421) maintains, “what is required by a semantic theory is [...] 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”. I want to try to suggest here that coercions are parts of semantics.<sup>12</sup> In doing so, we can keep together two requests: the semantics/pragmatics distinction and the intuitive truth conditions. Fodor

---

<sup>9</sup> “Viewed from this perspective, coercion is 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.

<sup>10</sup> I am not claiming that type presuppositions are identical in all respects with presupposed contents. I am suggesting to consider both type presuppositions and presupposed contents as belonging to a more inclusive superordinate common background.

<sup>11</sup> The proof theoretic semantics of types integrates the model theoretic semantics of intensions. (A similar point is made in (Luo 2014).)



and Lepore (1988), Borg (2004), Cappelen and Lepore (2005), Recanati (2010), Jaszczolt (2016) and many others claim that shifts in meaning like that of dual aspect nouns and coercing predicates belong to pragmatics and therefore a great deal of contextual knowledge is needed in order to perform such inferences. On the contrary, I claim that coercions and aspect selections are inferences based upon our linguistic mastery of the language, and putting them on the side of semantics has many advantages. Firstly, because speakers are often able to distinguish an automatic interpretation like that of coercion from an inferential process of more complex nature like conversational implicatures. Secondly, another important suggestion for considering aspect selection and coercion part of semantics comes from the fact that such processes are systematic, namely they occur following regular patterns. (Patterns that can be modeled formally using, for instance, typed lambda calculus.)

Apart from these clues, there are interesting linguistic tests supporting the idea that certain information belong to the language itself. Coercing inferences are tied to particular predicates and they are not always available:

- (9) a. The painter enjoyed his brush.
- b. ?? The brush has just started.

The eventuality reading of ‘brush’ is available in (9a), and not in (9b). This is a good reason for believing that the information is tied to the verb ‘enjoy’: it a matter of conventional, linguistic meaning. If in (9b) the word ‘brush’ has not an eventuality reading is because the linguistic environment, which is driven by the type presuppositions, does not allow for it. The same holds for the sentences we started with:

- (1) a. John enjoyed the cigarette.
- b. The bottle froze.
- c. John heard the piano.

In (1b) the predicate ‘froze’ coerces the meaning of the sentence into *the liquid inside the bottle froze*. That is because ‘freeze’ requires an object of type liquid, and since bottles are ontologically associated to their liquid contents, we can derive an enriched interpretation of (1b) which belongs to the language system itself – if we agree on the fact that language relies on ontological features of reality speakers tend to presuppose in conversation. Also in (1c) the literal meaning turns out to be enriched. Given the ontological nature of the event of hearing and the object piano, we derive the intuitive

---

<sup>12</sup> Until recently, there has been little interest in such a view. The research has tended to focus on the pragmatic explanation.

meaning according to which *John heard the sound emitted by the piano*. Only sounds can be literally heard, and since ‘piano’ is something essentially emits sounds, the selectional restrictions of the language operate to yield the intuitive meaning autonomously. Other readings are derivative and belong to side of speaker’s meaning.

Let me now go back to the above question: what kind of truth conditions does such a semantic theory express? Arguably, they are richer and more fine-grained. They are intuitive, like Recanati justly requires them to do, in the sense that they match our intuitions. In such an approach, however, logical polysemy and coercion is formally treated and subtle meaning shifts are accounted for in a crisp and profitable way. Semantics turns out to be beefed up. The common sense ontology behind the language increases the explanatory capacity of model theoretic semantics.

#### **4. Enriched Literalism: Between Minimalism and Contextualism**

In this fourth section I turn to consider a metatheoretical question: where does the perspective here presented stand with respect to the Minimalism/Contextualism debate?

Minimalism and Contextualism are two big opposing research programs with several different approaches inside them. However, for clarity’s sake, it is possible to single out the pivotal points of disagreement. The dispute between Minimalism and Contextualism centers on the scope of a theory of linguistic meaning and on the notion of *truth conditions* (see Recanati 2004, Peter and Preyer 2005, Domaneschi and Penco 2013, Jaszczolt 2016). As I said above, from a minimalist point of view there must be 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 linguistic meaning via pragmatic processes of different nature. From a contextualist point of view this distinction is deemed to be illusory, since truth-conditional content is considered to be affected by pragmatic processes that are not linguistically and automatically triggered.

Minimalists maintain that every sentence says something which is truth-conditional (after linguistically triggered saturations), whereas contextualists maintain that no sentence says anything which is truth-conditional, only the speaker does. Accordingly, two different notions of *truth conditions* have to be disentangled. Minimalism accounts for liberal truth conditions, which are separated from speakers’ intuitions; whereas Contextualism accounts for intuitive truth conditions, which, on the contrary, express speakers’ intuitions.

Accordingly, besides the two notions of *truth conditions*, two different notions of *what is said* emerge from such a picture. A contextualist, typically, means by *what is said* something like *what has intuitive truth-conditional content (WISint)*. And such a truth-conditional content is deemed to be affected by free pragmatic processes which

are not linguistically triggered. On the other hand, a minimalist refers to another notion of *what is said*, namely *what is literally said without intuitive contents* (*WIS<sub>min</sub>* with liberal truth conditions).

For Borg and Cappelen and Lepore there is a sharp distinction between semantics and pragmatics, and a semantic theory is deemed to account for liberal truth conditions: “the constraint we want are pretty minimal” (Borg 2005, p. 3). Semantics is disentangled from both metaphysical constraints and communicative skills. On the contrary, for contextualists like Recanati and Jaszczolt our theory has to account for intuitive truth-conditions of utterances. To that effect, they add, we may have to abandon the notion of literal meaning and weaken the semantics/pragmatics distinction.

We have here a methodological alternative: if a theory of meaning accounts for liberal truth conditions (*WIS<sub>min</sub>*), then it allows for a theory-internal distinction between semantic, literal meaning and pragmatic, speaker’s meaning. On the contrary, if a theory of meaning accounts for intuitive truth conditions (*WIS<sub>int</sub>*) such a distinction is doomed to fail, since every intuitive, truth-conditional content is affected by pragmatic processes which are not linguistically triggered. I argue that this is not the case and that the alternatives presented by Recanati are not so as binding as they seem. Indeed, I 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 present proposal.

The introduction of the ontology-based approach inside the model theoretic conception of meaning allows us to construct enriched logical forms which include intuitive contents derived by the conceptual structure embedded in language. Words which express type presuppositions sometimes force interpretations and language itself provides to give enriched meanings. Therefore, this does not prevent us from considering such a theory overtly a theory of literal, encoded, linguistic meaning of sentences. As far as this fact is concerned, I 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 enriched meanings, *de facto* expresses intuitive truth conditions, as spelled out by *WIS<sub>int</sub>*: coercion and aspect selections can be considered to be part of semantics.<sup>13</sup>

---

<sup>13</sup> Such a theory works insofar as words are linked to conceptual material speakers share as essential ontological features of reality. Consider the following sentences:

- (10) a. John is ready.  
b. The shooter is ready.

As we have seen, different ways of conceptualizing the same object are deeply interwoven with semantics and predicational processes. What derives from this perspective is thus a wide idea of semantics: a semantics that spells out intuitive, rich contents and encodes conceptual patterns. However, we may keep a useful distinction between semantics and pragmatics. It looks as though we have found an Enriched Literalism between Minimalism and Contextualism.

## 5. Conclusion

The considerations in the this paper have led me to some conclusions. As we saw discussing an extended version of the typed lambda calculus for predication, the mechanism of compositionality has to be enriched and transformed in a sophisticated device capable of spelling out subtle shifts in meaning formally. I contend that the semantic approach to aspect selection and coercion fares better than the pragmatic one. Cheaply, I claim that the pragmatic approach fails to give the right importance to crucial intuitions of common speakers. The sole relation of words within sentences could be the sole cause of an intuitive truth-conditional shift in meaning produced in an automatic and systematic fashion. We do not need to trot out complex pragmatical explanations here.

Crucially, this implies the 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 (Recanati 2010, Chap. 1). As I have shown, this is not entirely true. I claim – following Asher’s insights – 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.

Coercions and aspect selection are examples of lateral influences that seem to compel us to give away the classical principle of compositionality. The account of subtypes, dot types and dependent types in structuring the meaning of our words permits to organize a formal treatment of subtle semantic contents that are strongly tied to sentences within a sophisticated principle of compositionality.

---

If in (10a) words do not suffice to determine intuitive truth conditions – we do not know what John is ready for – in (10b) things change. Due to the ontological nature of shooters, who essentially shoot, language forces the interpretation over such an event, since ‘is ready’ requires an object which is ready for doing something. Of the name ‘John’ we do not share enough information for determining what John might be ready for. On this view, semantics comes maximalized.

To sum up. Words exhibit pre-conditions which produce presuppositions. Type presuppositions are ontological features words deploy in order to collocate in well-formed predications. The meaning which emerges from a predication is affected through restrictions and forced modifications by the shared cognitive material which reflects our common sense ontology. The main consequences of this are the supplementation of the classical Minimalism/Contextualism debate with Metaphysical Semanticism and the enrichment of the classical principle of compositionality with lateral influences of type presuppositions. A new scenario with new equipment seems possible. It takes the best from both Minimalism and Contextualisms, and represents a valid alternative for the study of meaning in composition.

## References

- Asher, N.: *Lexical meaning in context. A web of words*. Cambridge University Press, Cambridge (2011)
- Asher, N.: Selectional restrictions, types and categories. *Journal of Applied Logic* 12(1), 75-87 (2014)
- Asher, N.: Types, meanings and coercion in lexical semantics. *Lingua* 157, 66-82 (2015)
- Asher, N., Lascarides, A.: *Logics of conversation*. Cambridge University Press, Cambridge (2003)
- Borg, E.: *Minimal Semantics*. Oxford, Oxford University Press (2004)
- Borg, E.: *Pursuing Meaning*. Oxford, Oxford University Press (2012)
- Cappelen, H., Lepore, E.: *Insensitive Semantics: A Defense of Semantic Minimalism and Speech Act Pluralism*. Oxford, Wiley-Blackwell (2005)
- Domaneschi F., Penco C. (eds.): *What is Said and What is Not*. Stanford, CSLI (2013)
- Elbourne, P.: *Definite Descriptions*. Oxford, Oxford University Press (2013)
- Evans, V.: *How Words Mean: Lexical Concepts, Cognitive Models, and Meaning Construction*. Oxford, Oxford University Press (2009)
- Fodor, J., Lepore, E.: The emptiness of the lexicon: Critical reflections on J. Pustejovskys the generative lexicon. *Linguistic Inquiry* 29(2), 269-288 (1988)
- Heim, I.: On the projection problem for presuppositions. In: Barlow, M., Flickinger, D., Westcoat, M. (eds): *Second Annual West Coast Conference on Formal Linguistics*, pp. 114-126. Stanford, Stanford University Press (1983)
- Luo, Z.: Formal semantics in modern type theories: is it model- theoretic, proof-theoretic, or both? In: Asher, N., Sergei, S. (eds.): *Logical Aspects of Computational Linguistics*, pp. 177-188. Springer (2014).
- Jaszczolt, K. M.: Contextualism. In: Jungbluth, K., Da Milano, F. (eds): *Manual of Deixis in Romance Languages*, pp. 407-424. Berlin, Mouton de Gruyter (2015)

Jaszczolt, K. M.: *Meaning in Linguistic Interaction: Semantics, Metasemantics, and Philosophy of Language*. Oxford, Oxford University Press (2016)

Jespersen, B.: How hyper are hyperpropositions?. *Language and Linguistics Compass* 4(2), 96-106 (2010)

Kaplan D.: An Idea of Donnellan. In: Almog, J., Leonardi, P. *Having in Mind.: The Philosophy of Keith Donnellan*, pp. 176-184. Oxford, Oxford University Press (2012)

Muskens, R.: Intensional models for the theory of types. *Journal of Symbolic Logic* 72(1), 98-118 (2007)

Penco, C.: Context Dependence, MOPs, WHIMs and Procedures. In: Christiansen, H., Stojanovic, I., Papadopoulos, G. (eds.): *Modeling and Using Context*, pp. 410-422. Springer (2015)

Peter, G., Preyer, G. (eds.): *Context-Sensitivity and semantic minimalism. New essays on semantics and pragmatics*. Oxford, Oxford University Press (2005)

Recanati, F.: *Literal Meaning*. Cambridge, Cambridge University Press (2004)

Recanati, F.: *Truth-Conditional Pragmatics*. Oxford, Oxford University Press (2010)

Recanati, F.: *Mental Files*. Oxford, Oxford University Press (2012)

Strawson, P. F.: *Individuals. An Essay in Descriptive Metaphysics*. London, Methuen (1959)