

Minimalist Semantics and Pre-Linguistic Intelligence

by Sasson Margalot
sasson@live.com

Linguistic Agents - Jerusalem, Israel

Abstract:

This article introduces an approach where the conceptual-intentional(C-I) system is split into two parts: Minimalist Semantics and pre-linguistic intelligence. Minimalist Semantics is a part of the human-specific faculty of language, whereas pre-linguistic intelligence is not. Minimalist Semantics is connected to two interfaces: (a) pre-linguistic intelligence, and (b) narrow syntax. In turn, narrow syntax is also connected to two interfaces: (a) Minimalist Semantics (as a part of C-I), and (b) the sensory-motor system (SM).

1. Separation of Concerns

Much of the recent research in the minimalist tradition seems to presuppose that the interpretation of the hierarchical syntactic structure generated by narrow syntax is delegated to the conceptual-intentional (C-I) system via a loosely defined “formal semantic” module. It remains to be determined if this formal semantic module is a part of the faculty of language (together with narrow syntax) or a part of C-I.

From the biolinguistic perspective, it would seem that the semantic module belongs in the faculty of language (in the narrow sense). After all, the contemporary formal semantic theory both (a) is using hierarchical structures (presumably generated by Merge), and (b) is clearly describing the capabilities of the mind/brain specific to humans.

I am suggesting a new approach in which a human specific semantic engine (which I call Minimalist Semantics) is connected to two interfaces: pre-linguistic intelligence and narrow syntax, just as narrow syntax itself is sandwiched between the two interfaces (C-I and SM).

Therefore, Minimalist Semantics is strictly a part of the faculty of language, and the rest of C-I (which I call pre-linguistic intelligence) serves as an interface layer for the Minimalist Semantics.

2. Functional and Structural Complexity of Logical Form

Traditionally, the hierarchical syntactic structure built by Merge, is understood to be shifted to the C-I, which in turn will perform the task of interpretation. If we are to consider Minimalist Semantics to be a separate module of the human language faculty, we need to specify its function.

Ideally, pre-linguistic intelligence should carry as much of the workload as possible. Since it is known that higher animals do possess the ability to maintain linear order, it's only natural to assume that pre-linguistic intelligence can handle *transitivity*, in general, and *logical implication* in particular.

Likewise, pre-linguistic intelligence should be able to handle *logical conjunctions* simply as a consequence of the fact that animals can recall and combine together multiple pieces of information related to a particular signal.

What is left for Minimalist Semantics is providing support for *quantifiers* and *negations*. Presumably, the human ability of working with *quantifiers* and *negations* is not shared with animals. Of course, pre-linguistic intelligence is not animal intelligence. It is the part of human intelligence that is more or less shared with animals, in distinction from Minimalist Semantics which is an innate ability unique to humans.

3. Artificial Pre-Linguistic Intelligence

In computer applications, these three parts (pre-linguistic intelligence, Minimalist Semantics, and narrow syntax) should be handled separately ("divide and conquer"). In practice, this is not yet the case, which would explain why the handling of natural language is thought of as being so difficult - machine learning algorithms cannot learn three separate systems as if it were just one.

The clear separation of pre-linguistic intelligence from more sophisticated considerations of both Minimalist Semantics and narrow syntax should help to avoid a lot of confusion. If future natural language applications will manage these sub-systems separately, most of the heavy lifting of information processing can be handled by pre-linguistic intelligence.

Artificial Intelligence was originally conceived as artificial human intelligence, which would imply artificial **linguistic** intelligence. So far we haven't even implemented artificial **pre-linguistic** intelligence.

References

Chomsky, Noam 2013 "Problems of Projection", *Lingua* 130: 33-49
Heim, I. and von Stechow, K. 2011 "Intentional Semantics", Manuscript, MIT