

Language at the mid-level of understanding: The curious case of linguistic representations

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Many disciplines, including (but not limited to) linguistics, psychology and computer science, share an interest in language. Yet, it remains unclear from an interdisciplinary point of view what the necessary and sufficient knowledge about language would be. Assuming that language is a complex system (cf., Beckner et al., 2009), we want to propose, taking Marr's (1982) argument, that there must be three levels of understanding of any system of considerable complexity as epistemological point of departure for a discussion. Marr's tri-level hypothesis distinguishes between

- I. The Computation: what does the system do (e.g., what problems does it solve), and why does it do these things?
- II. The Algorithm/Representation: how does the system do what it does; what representations and processes it uses?
- III. The Implementation: how is the system physically realized (i.e., neural structures and neuronal activities)?

It seems that linguistics, psychology and engineering all deal with the mid-level of understanding representations and algorithms. The time is right to acknowledge and to integrate independent efforts from other disciplines: downwards, to viable biological implementations; and upwards, seeking answers to teleological questions of why the system exists and what its purpose would be. Cognitive Linguistics is ideally placed to lead this knowledge-merger, as it has incorporated insights from all three aforementioned disciplines to study language as a usage-based instrument for organizing, processing and conveying information in all its cognitive and social complexity and with respect for individual differences.

A good starting point for a discussion on the necessary and sufficient knowledge about language is the issue of the 'units' used at the algorithmic/representational level. Are language 'units' intrinsic to the computational problem or emergent from it? And what kind of representations could be expected to be implemented biologically? Interdisciplinary endeavours require us to explicitly revisit the scope and nature of linguistic constructs and to determine what knowledge they are built on, and how they could be learned? In fact, Poggio (2010; 2012: 1018-1021) suggested a revision of Marr's levels of understanding, adding two levels at the very top, above the computational level: learning and evolution.

Our proposed session brings together a coherent set of six papers that all challenge the core problem of 'unit' along one or more dimensions of the Marr-Poggio knowledge space. This discussion-platform, we believe, will equip Cognitive Linguistics with a re-conceptualised cognitive commitment.

Selected References

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