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The habilitation committee of Luca Cilibrasi  
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**REF:** Review of the habilitation dissertation by Luca Cilibrasi (2022) entitled: “Language acquisition and the ontogeny of domain-specific cognition. Conceptual review and insights from English data”.

The habilitation dissertation by LC is concerned with the debate regarding the biological foundations of language. Psycholinguistic research in recent decades has been divided by scholars arguing in favor of these foundations being either (1) domain-specific or (2) domain-general. This work builds on an impressive body of evidence to offer a novel perspective, namely that (3) domain-specificity for language, while not innate, emerges early “because this is an efficient use of resources during development” (Cilibrasi, 2022:128).

The author arrives at this conclusion after dealing both with:

- account (1), often articulated by generative linguists (e.g., Fitch, 2017) who claim that language is independently implemented in the brain due to evolution, and
- account (2), frequently put forth by emergentists (e.g., MacWhinney, 2001), who rather claim that other skills can explain language and its acquisition without recourse to a language-specific module.

LC eloquently teases apart the predictions of these approaches over the course of his dissertation, articulated in two parts: one focusing on language acquisition and pathology, and

the other turning to the computational core of language, namely syntax and its potential link to cognition and evolution.

More specifically, the first two chapters of the book tackle domain-specificity in acquisition (typical and atypical, monolingual and bilingual) and in the brain (including for reading). In the last two chapters, the notions developed are those of the computational core in other domains to language (music and mathematics), as well as in the context of evolution (considering language as an adaptative skill during evolution and as a secondary skill). The evidence seems to converge to suggest that “language is a skill that partly relies on domain-specific circuitry, but that this circuitry did not evolve for language and is not specialized for language at birth” (Cilibrasi 2022:7).

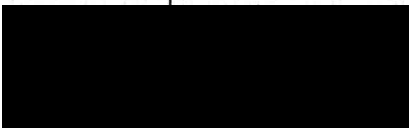
In most chapters of this dissertation, reference is made to experiments by LC which serve to illustrate the topic at hand, with the majority of these experimental endeavors having been conducted during LC’s post-doctoral research. These investigations include work on bilingualism and the age of onset effects in Czech-English bilinguals (Cilibrasi & Tsimpli, 2019), continuous versus categorical measures of reading skills in English speaking children as well as its role as a predictor of complex syntax (Cilibrasi et al., 2019; Cilibrasi & Tsimpli, 2020), and the comprehension of mathematical formulas translated into natural language (Cilibrasi & Pascucci, 2013). This body of post-doctoral experimental work contributes to confirm clear academic independence, a major criterion for a strong habilitation dissertation.

The careful review and subtle analysis of an extremely rich bibliography is another considerable strength of the work. LC provides a detailed yet remarkably accessible overview of the connections between language, on the one hand, and a variety of cognitive domains on the other, namely reading, mathematics and music. His insights throughout show the limitations of the accounts based on (1) and (2) and point rather towards a conciliatory view where domain-specificity, although not innate, emerges in the early phases of language acquisition as an effect of development. He draws a compelling parallelism with reading, for which the Visual Word Form Area of the brain is indisputably involved, yet could not have evolved specifically for this purpose given the recency of the invention of writing. Thus, along the lines of that proposed for reading (Dehaene & Coehn, 2007), ‘neuronal recycling’ is argued to also plausibly be responsible for brain regions being specialized for language as an effect of developmental experience. This fresh view is meticulously backed by converging empirical observations suggesting that the brain-specific circuitry that language relies on did not evolve for language and is not specialized for it at birth. The conclusion offered by this habilitation thus breaks away from the formerly established accounts of the biological foundations of language. Such ground-breaking, independent thinking is to be highly commended and is, like the post-doctoral experimental work, proof of academic excellence that is achieved without the guidance of a supervisor.

There are nevertheless a few points which would be interesting to expand further upon, as is always the case. For instance, in the discussion of the idea that the development of social skills may in turn be what would be responsible for the development of language, it would be interesting to discuss the findings that even in the presence of impairments in social skills, for instance in the case of Autism Spectrum Disorder (ASD), language may nevertheless successfully develop. Spectacular illustrations of language acquisition in noninteractive contexts in ASD are reported by Kissine et al. (2019) as well as Kissine (2021). Also, when assessing the idea that language would be a modular skill independent from other aspects of cognition, it could be relevant to consider the results of recent training studies which show

close relations between language and cognition, such as training language to have an effect on cognition (Durrleman et al., 2019; Durrleman & Delage, 2020; Durrleman et al., 2021; 2022) or work training aspects of cognition (e.g. working memory) to impact language (Stanford et al., 2019; Delage et al., 2021<sup>a,b</sup>). This said, these observations are only aimed to continue to fuel reflection on the themes considered, and do not in any way detract from the quality of the work. They are offered as food for thought to continue to improve the already excellent and innovative content of the dissertation.

In sum, the dissertation by LC is an important contribution to our understanding of the biological foundations of language. I have no doubt that for many years to come, this seminal and interdisciplinary work as well as its conciliating analysis will remain of significant interest for both budding and experienced scholars from a variety of fields, including but not limited to linguistics, psychology, cognitive neuroscience, anthropology and philosophy. Without any hesitation whatsoever, I strongly recommend the habilitation dissertation for further procedure, and remain at your disposal for any clarifications required.



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External examiner (opponent)

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