
**Language, Perception, and the Conceptual Origins of
Arithmetic**

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Abstract: Humans have a unique ability to describe the world using large exact numerical representations like "57", which represent the positive integers. A prominent view in cognitive psychology, which I call the Approximate Origins hypothesis (Carey & Barner, 2019), is that these uniquely human concepts take their origin in an evolutionarily ancient "approximate magnitude system" that represents sets of things via in an analog format that obeys Weber's law. Against this view, evidence from human cultural history, child development, as well as a priori problems with this hypothesis suggest that the approximate magnitude system is not foundational to human representations of positive integers. Instead, I argue for the Exact Algorithms hypothesis, according to which integer concepts are constructed from procedures defined over a memorized count list, which critically rely on structures provided by natural language, including its combinatorial (and recursive) syntax.