

# Sharon M. Guten Colloquium Series

Thursday, October 12th at 4:00pm in Brogden 338



## Stella Lourenco

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**Emory University**

### **Numbers in Mind: A Novel Theory of Perceptual Number Encoding**

There has long been interest in how the mind represents numerical magnitude, particularly in the absence of symbols. The long-standing view is that our 'number sense' is supported by a domain-specific system, often referred to as the Approximate Number System (ANS), specialized for processing non-symbolic number. Although proponents of this view readily acknowledge the covariance between number and other magnitudes in the physical environment, they argue for an abstraction of number from non-numerical magnitudes from early in perceptual processing. In this talk, I will present evidence for a novel 'Perceptual Interdependence' account in which the visual encoding of number is not abstracted from co-occurring non-numerical magnitude (e.g., cumulative surface area), nor privileged by default. I will draw on different types of data (neuroimaging, computational modeling, visual illusions, and psychophysics with adults and children) to argue that (1) number and non-numerical magnitudes interact within visual perception; (2) the multidimensional representation of number and non-numerical magnitude is integral in nature; and (3) the functional isolation of number may depend on attention (which increases over development). On the basis of this evidence, I claim that number perception is neither abstract nor primary. Instead, perceived number is interdependent with non-numerical magnitude (akin to classic integral dimensions) and the so-called primacy of number reflects selective attention to number that may be task-specific and dependent on experience with symbolic numerals.

Talks generously funded by Sharon M. Guten Donor Advised Fund



**All talks held on campus at 4:00 p.m.**  
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