Boundary Number Systems -- ToC

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ABSTRACT

Boundary mathematics represents abstract mathematical concepts using empty and full containers, as opposed to tokens in conventional systems. We examine several boundary number systems in depth. *Conway numbers* are bootstrapped into existence by the act of partitioning the void. They form a comprehensive system spanning all conventional types of numbers. As well, they provide sufficient structure to define algebraic transformations of infinities. *Spencer-Brown numbers* confound operations and objects, representing both by configurations of a single type of container. This was the first system based entirely on boundary concepts. *Kauffman numbers* use depth of nesting of containers as a type of positional notation. Algebraic operations are trivial; addition is sharing a space, multiplication is direct substitution of one form into another. Computational effort occurs after all operations are completed, in the course of standardizing forms to a canonical ground, which is then interpreted as a number. *Bricken numbers* convert Kauffman numbers into graphs that permit parallel processing. *James numbers* use three types of containers to represent algebraic and transcendental forms. The concepts of cardinality and inversion are simplified and generalized. A new imaginary, *In-1*, provides access to new computational tools.

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The James Imaginary