

DESCRIPTION OF BLOCK LOGIC

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Mathematics, and mathematical errors, is dominated by textual symbols. Block logic is a demonstration that the foundations of mathematics can be expressed visually and experientially rather than textually. Block logic provides a computational foundation for spatial interaction with mathematical abstractions in virtual environments. The representation of logic and deduction as stacks of blocks provides more than a visual metaphor: computation in block logic is more efficient than traditional techniques. The improvement is fundamental, block logic uses a basis of one object, the block, rather than the (formerly) minimal basis of two tokens in textual logics. A more minimal basis implies that our cultural understanding of natural reasoning and valid argumentation is encumbered by baroque and needless complexity introduced by the linearity of written and spoken languages. Spatial representations use empty space semantically, so that much of the redundancy of textual logic is literally cast into the void. Spatial representations are naturally parallel, since objects in space do not require ordering, grouping, or binary pairing. And spatial representations provide a diversity of topological transformations into new spatial languages.