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Cora Waterman* (cwaterma@smith.edu), Box 8688, Smith College, Northampton, MA 01063,
and **Samantha Lowe, Elizabeth Cowdery** and **Sarah Costrell**. *A Paracomplete Logic and the
Sortanatural Numbers*. Preliminary report.

We describe a logic with infinitely many truth values in which statements may be neither true nor false. We derive properties of the logic, such as the failure of the Law of the Excluded Middle, and show that it resolves a number of paradoxes.

We then apply the principles of the logic to arithmetic to construct a number system with many curious properties and a provably strong but provably limited resemblance to the natural numbers. (Received February 12, 2011)