1056-R5-1268   **Ami Mamolo*** (`amamolo@yorku.ca`), Mathematics and Statistics, York University, 4100 Keele Street, Toronto, Ontario M3J 1P3, and **Walter Whiteley** (`whiteley@mathstat.yorku.ca`), Mathematics and Statistics, York University, 4700 Keele Street, Toronto, Ontario M3J 1P3. *Visualizing the Popcorn Box.*

We describe a visual and manipulative approach, with concrete materials, to a classical 'optimization' problem: "The Popcorn Box Problem".

Our visual-kinaesthetic approach to finding the (popcorn) box of maximum volume allows students to: (i) develop geometric reasoning for the rate of change of volume; (ii) develop geometric reasoning for where the optimum must be, and why; (iii) visualize geometric optimization and rates of change in a way that precedes, and complements, the work with formulae and calculus techniques.

Our approach to the Popcorn Box Problem highlights 'big ideas' which are hidden in the usual calculations, but which can be recognized when the student looks back with fresh eyes. We propose this as a valuable engagement for high school students, pre-calculus and calculus students, as well as prospective and practicing Mathematics teachers. (Received September 22, 2009)