
Mathematical Imagination
Imagination mathématique
(Org: **George Gadanidis** (Western))

ROBERT BILINSKI, Collège Montmorency
Realism as a source of mathematical imagination

We look at the role of realism in the mathematical imagination of students as shown in a secondary level school book in Quebec. Our thesis is that not all realism is good, and may in some cases backfire and cause students to lower their appreciation of mathematics.

CALCULUS: THE MUSICAL, Matheatre
Sadie Bowman & Mark Gutman

Calculus: The Musical! is a comic "review" of the concepts and history of calculus.

STEWART CRAVEN, Toronto District School Board
Creating Sculptures to Explore Mathematics

This talk will highlight how students (including struggling students) explore their own creative sculptures to learn mathematics. Several examples will be drawn from the work of George Hart (Compact Disc Truncated Icosahedron Sculpture) and Nat Friedman (Minimal Surface Soap Films) that students can use as catalysts for their own ideas.

WILLIAM HIGGINSON, Queen's University
The Mathematics of Paper Folding

What if we were to give children a lot of experiences with paper folding: what mathematical ideas could emerge from that? Are there interesting, powerful mathematical ideas that can be embodied by paper folding?

JOHN KEZYS, Mohawk College
Geometry from the Renaissance Artist's Eye

During the Renaissance, artists began to study the model of nature more closely and to paint with the goal of greater realism. This realism was achieved with the use of geometry. Join our sweeping trip through the Renaissance and learn the secrets of artists in their attempts to deceive the eye.

MICHELLE CORDY AND DONNA KOTSPOULOS, Thames Valley District School Board
Seeing And Squinting: Occasioning Imagination In Mathematics Learning

Our work is inspired by ideas outlined in the book *Imagining Numbers* (particularly the square root of minus fifteen), by Harvard University mathematics professor, Barry Mazur (2003). Mazur's work outlines and describes the imaginative work of mathematicians. Mazur's work led us to question whether the features and steps of his re-creation of imagination in his text could be appropriated as a pedagogical framework in a middle-school setting. Consequently, the research questions guiding this work are:

- (1) How might teaching and learning mathematics be structured as “a way of imagining”?
- (2) What are we attending to pedagogically when we are teaching mathematics as “a way of imagining”?

To examine these questions we collected data from a seventh-grade classroom. The students engaged in a task investigating the “Minimal Surface Theory” of bubbles (Taylor, 1993). In this talk, we present the “teaching mathematics as a way of imagining” framework, and some of our results.

MATH IMAGINATION MUSICAL PERFORMANCE, University of Western Ontario
Daryn Bee, Jenna Bee, George Gadanidis, and friends

Songs and performances to spark the mathematical imagination.

MATH-E-MOTION, Toronto District School Board
Stewart Craven

I will share a math performance that was part of the TDSB summer Math-e-Motion program.

PANEL DISCUSSION, William Higginson (Queen’s), Donna Kotsopoulos (Wilfrid Laurier), Immaculate Namukasa (Western), Peter Taylor (Queen’s)
Mathematical Imagination

The work “imagination” is a rare find in a mathematics curriculum document. What might we mean by “mathematical imagination” and what difference would it make for teaching, doing and learning mathematics?