

The Mathematical Experience

Seminar/Reading Group

Spring quarter 2008 and 2010.

The seminar explored the human side of mathematics - the culture of mathematicians and the experience of doing mathematics. We used recent texts from experts in various fields - cognitive science, philosophy, sociology - as well as the writing of practicing mathematicians, to ground our discussions. We had weekly meetings for an hour or two, with participation from grad students, faculty, undergraduates, and staff.

The aim of the seminar was to bring awareness to the personal process of doing math, and to take a critical look at the culture of math. The hope was that by understanding how we do math, we can understand how we do our best math, and thereby become better mathematicians.

Sample topics:

1. **Math culture.** *What social norms define the math community, and why might they have come to be? How does our way of doing math affect the evolution of mathematical knowledge? In what ways is math an art, and what role does aesthetics play in mathematics? What is good and bad about the way that mathematicians fit into the larger society? How could we communicate better?* We read sociological accounts from both inside and outside the math community.

Some authors: White, Davis and Hersh, Thurston, Jaffe and Quinn, Tymoczko, Dyson, Enzensberger

2. **Humanist philosophy of math.** *What is math? What is the nature of mathematical objects? Is math created, discovered, or both?* We'll read about recent attempts to found mathematical philosophy in mathematical practice, and thereby move beyond the stalemate of the a priori philosophies of Platonism, Formalism, and Intuitionism.

Some authors: Lakoff and Nunez, Hersh, Renyi, Cellucci, Lakatos, Wales, Borel.

3. **The experience of mathematics.** *How do our brains process abstract math, and what does this say about the future development of the subject? What does it feel like to do math, and why might it feel this way? How do we do our best math, and thereby become the best mathematicians we can?*

Some authors: Byers, Pickering, Polya, Hadamard.

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December 2010
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