

DISCUSSION GROUP SEMIOTICS IN MATHEMATICS EDUCATION

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Mathematics Education is a unique field in which philosophy, psychology, anthropology, sociology, and numerous other fields find a place alongside education and mathematics. Each of these fields provides a different perspective on teaching and learning of the subject matter. A recent addition to this interdisciplinary list is semiotics, which is the science of signs, signification, and sense-making. Mathematics and the teaching and learning of mathematics make use of different sign systems to encode and decode concepts. It is through a constant interpretation of conventional and non-conventional signs that one comes to construct personal mathematical meanings. Researchers in mathematics education, all over the world, are trying to incorporate semiotic perspectives to shed light on classroom teaching-learning processes and learners' interpretations of mathematical concepts.

The purpose of the group is threefold: (a) to foster interaction among researchers using or wanting to use semiotics in the analysis of classroom data; (b) to share and discuss different semiotic perspectives; and (c) to share papers and analysis of data. The following contributions will be presented in the meetings to stimulate discussion and interaction.

First session

- I) *Mathematical epistemology from a semiotic point of view*, Michael Otte, Germany. (20 minutes)
- II) *Euclid's signs: A cultural-semiotic analysis of the theory of even and odd numbers*, Luis Radford, Canada. (20 minutes)
- III) *Cognitive analysis of comprehension problems in the learning of mathematics*, Raymond Duval, France. (20 minutes)
- IV) *General audience participation and discussion*. (30 minutes)

Second session

- I) Summary of the first session. (20 minutes)
- II) *Progressive mathematizing using semiotic chaining*, Norma Presmeg, USA. (20 minutes)
- III) *Classroom discourse as an evolving interpreting game*, Adalira Sáenz-Ludlow, USA. (20 minutes)
- IV) *General audience participation and discussion*. (30 minutes)

Presentations will be both theoretical and empirical in nature, and will include examples to elucidate semiotic perspectives. Participants are also invited to bring classroom episodes and share their work with the group. Each session will end with a discussion about the advantages of semiotics as a theoretical framework, its potential for analysis of data, outlets for dissemination, and partnerships for research.