TSG 60  
SEMIOTICS IN MATHEMATICS EDUCATION

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Semiotics is the study of signs and their use in all realms of life. The aim of the TSG 60 at ICME-14 - Semiotics in Mathematics Education - is to explore the significance of semiotics by understanding better the use of signs in the teaching and learning of mathematics at all levels. The importance of semiotics is reflected in a large body of literature in mathematics education, an overview to be found in the ICME-13 monograph “Signs and Signification: Semiotics in Mathematics Education Research.” TSG 60 will expand on this, addressing relevant themes including the following:

- **General Topics of Semiotics in Mathematics Education:**
  - Semiotic perspectives within mathematics education, including teacher education;
  - Sign use and mathematics meaning-making processes;
  - Modes of mathematical narrative through different sign systems;
  - Relationships between sign systems (e.g., natural language, diagrams, pictorial and alphanumeric systems) and transformations between sign systems in mathematics thinking and learning;
  - Inventing and generalizing with visual, alphanumeric, and other sign systems;

- **Sub-themes:**
  - Semiotics and Technology  
    (e.g.: Design of activities and tasks based on visual-kinesthetic interactions; interplay between physical manipulatives and virtual entities, and roles of diagrams, animations, and video as instructional tools)
  - Semiotics in Specific Areas of Mathematics  
    (e.g. Episodes of sign-use in calculus, geometry, algebra, arithmetic, etc.)
- Semiotics Inside and Outside Mathematics Education
  (e.g. differences and similarities between semiotic usages in art, linguistics, or cinema, and mathematics)
- Semiotics in Relation to Feeling and Expression
  (e.g. gestures, embodiment, more-than-human agencies, affects, aesthetics, and rituals)