Summer Immersion 2014: Algebra, Logic, & Topology

Tuition: $300.

First Meeting: 11:00-1:30 Saturday July 12, 2014; then three more Saturdays till Aug. 2.

Requirements: Open to the Public. The immersion is for all levels and requires no previous background in logic or mathematics. Class limited to first six applications (reception of tuition required to confirm registration).

Descriptive: The immersion will concentrate on developing a translation between Algebra, Logic, and Topology. It proceeds in the manner of an atelier in the sense that the participant will need paper, color pencils-pen, scissors to construct topological objects and images that conform to the writing of Logic and Algebra. The immersion is not a lecture, but is a collaborative effort in presenting constructions that responds to a problem posed during the course. The immersion is developed in the context of the recent 'Constructing Oedipus' course, especially the problem of symmetries and dualities in space. This much said, the immersion will not develop the translation into the psychoanalytic vocabulary, but will concentrate solely on the Algebra, Logic, and Topology.

Text: The immersion will use as its reference *Groups and Their Graphs* by Israel Grossman and WIlhem Magnus; American Mathematical Association, 1964.

Pre-immersion assignment: it is advised to read *Groups and Their Graphs* chpts. 1–4 with a focus on writing a presentation of a triangle in space (2 and 3 dimensions).

Plan of Immersion

I - July 12: Call for presentations and constructions of the Group of a triangle in space. Call for the presentation of the multiplication table of the Group for the triangle. Call for the presentation of the axioms of a Group. Discussion of problems/results: symmetries, rotations, identities, etc.

Assignment for July 19: Read Chpts. 5, 7,10. Focus: writing the presentation of a tetrahedron in space

II - July 19: Call for presentations of the graph of the group of a triangle. Call for presentations and constructions of the Group of a tetrahedron in space (3 dimensions and 4). Call for the graph of the group of a tetrahedron.

Assignment for July 26: Read 11,12, 13.

III - July 26: Call for presentations and constructions of the Normal Sub-group, Galois Groups, and Quarternions.

Assignment for August 2: Read Chpt. 14 on the Group of Links and handout of immersion on Groups of Knots and Logic. Focus on the Group of the Knot, Link, and Lock – with the translation in to Logic.

IV - Aug. 2: Call for constructions and/or presentations of the Group of the Knot, Link, or Lock. Call for a translation of the Algebraic (Group) notation into a Logic of the Knot. Concluding summaries from the participants (if they have one) and proposals for future work.