The Rise of Contemporary Fictionalism
(Spring 2001)

Fictionalism in the philosophy of mathematics is the view that mathematical objects (as opposed to physical objects) are fictional. This view was long held to be a non-starter, based on the widely-approved indispensability arguments, now fallen into some disrepute. We'll return to the roots of those arguments to set the stage.

The first flowering of indispensability came from Quine in response to Carnap and Putnam in response to Putnam:

Carnap, 'Empiricism, semantics and ontology'

Ayer, 'The a priori'

Quine, 'On what there is'
      'Two dogmas of empiricism'

Putnam, 'The thesis that mathematics is logic'
      'Philosophy of Logic'
      'What is mathematical truth?'

(For an overview, see Maddy, *Naturalism in Math*, §II.2.) For some time after these exchanges, much of the philosophy of mathematics was generated by realists who used indispensability as a support and nominalists who tried to show math is dispensable. For example, Maddy, *Realism in Mathematics*, falls in the first bin. The most widely discussed in the second bin is Field's nominalism:

Field, 'Realism and anti-realism about mathematics'

Shapiro, *Thinking about Mathematics*, 226-237.

Burgess and Rosen, *A Subject with no Object*, pp. 190-196.

Urquhart, 'The logic of physical theory'.

Field's book, *Science without Numbers*, appeared in 1980, and a series of deep technical and philosophical objections were debated over the next decade. (For an overview, see Burgess and Rosen, *A Subject with no Object*, pp. 190-196.)

In the early 90s, the debate shifted from -- are mathematical things dispensable or not? -- to -- does their indispensability have the ontological consequences the indispensability argument claims?:

Maddy, *Naturalism in Mathematics*, §II.6

Sober, 'Mathematics and indispensability'

The debate on this topic continues to this day, but we'll learn more about that when Colyvan and Leng visit in the fall of 2001. For now, let's take it for granted that the indispensability arguments are defunct. In this context, fictionalism appears:

Balaguer, *Platonism and Anti-Platonism in Mathematics*, chapter 7.

Yablo, 'Go figure'

Rosen, 'Nominalism, naturalism, epistemic relativism'

Fictionalism as stated seems not to do much good for the purposes of metaphysics naturalized, which motivated Quine, but let's leave the question of what mathematized science tells us about physical ontology for our discussion of applied mathematics next fall. Let's think now about the methodology of pure mathematics:

Balaguer, 'A theory of mathematical correctness and mathematical truth'

Maddy, *Naturalism*, §III.4

Yablo, 'The myth of seven'