Mathematics 5
Winter Term 2011
The World According to Mathematics

Dwight Lahr

Weekly Schedule: Weeks #1 and #2

Readings:

Lahr's manuscript—From the beginning through beginning of 1.4

Exercises due* daily from material covered in week #1 (Wed 1/5, Fri 1/7):
* Only some of these will be handed in the next week on Friday 1/14 (see below).

Friday 1/7—due:	•Exercises 1.1: 1, 2, 4 and 1.2: 1-6
Monday 1/10—due:	•Exercises 1.3: 2dfh, 3, 4ac, 5, 6, 7, 8, 9 •Install Maple on your computer. •Start Maple: Download and try the examples in the worksheet in the Maple section of the m5 website.
Wednesday 1/12—due:	•Exercises: 1.4: 1, 2, 3, 5, 6 •Start Maple: type **?plot** You should get a help screen. Reading it, see if the syntax makes sense. Copy and paste one of the examples to plot it.
Friday 1/14—Hand in: —due: —Group Presentation	•Exercises 1.1: 3 ; 1.2: 7 ; 1.3: 2g, 4b ; 1.4: 4 ; 2.1: 3; 2.2: 3ac •Exercises: 1.4: 7, 8, 9, 11, 13

Friday discussion: (January 7, 2011)

The discussion will center around the following quote, as well as the homework from Lahr's manuscript. In particular:

- In the *Measure of Reality* by Alfred W. Crosby (Cambridge, 1997), the author discusses the shift from qualitative to quantitative descriptions of reality in the late Middle Ages and Renaissance. He says (p. 228):

> In practical terms, the new approach was simply this: reduce what you are trying to think about to the minimum required by its definition; visualize it on paper, or at least in your mind, be it the fluctuation of wool prices ... or the course of Mars through the heavens, and divide it, either in fact or in imagination, into equal quanta. Then you can measure it, that is, count the quanta.

> Then you possess a quantitative representation of your subject that is, however simplified, even in its errors and omissions, precise. You can think about it rigorously. You can manipulate it and experiment with it....
>
> Visualization and quantification: together they snap the padlock—reality is fettered (at least tightly enough and for long enough to get some work out of it...).

Think about the above description and critique it in light of how well it applies to today's world. Do you think that all of reality can be *fettered* according to the above approach? From your own experience, can you identify a field that takes a very different approach to gaining understanding through knowledge? Are you clear in your own mind about what constitutes reality? [Crosby says on p. 23: *Reality* [is] a word I will use to mean everything material within time and space, plus these two dimensions per se.]