

*Remarks for first class 8/31/2016*

Welcome again to the 2016-2017 *Core Human Questions (CHQ) Cluster* of Montserrat. At our “Meet and Greet” on Monday afternoon, the CHQ faculty introduced ourselves so you would start to get to know all of us; you’ll get to know me and the other students in our seminar even better over the next few days.

As you know, I’m excited to be teaching the seminars called *Mathematical Thinking* this fall, and *Thinking About Mathematics* next spring. And as I said the other day, the main reason that I love teaching in this program is that while I *am* a mathematician, I am not *only* a mathematician. So our Montserrat seminar will do some interesting mathematics, but we’ll not be doing *only mathematics*. Like all the CHQ seminars, we’ll be reading four common texts:

1. *the curious incident of the dog in the night-time* by Mark Haddon,
2. sections of *The Histories* by Herodotus,
3. *Othello*, by William Shakespeare, and
4. *Flatland*, by Edwin Abbott

and working on writing assignments based on them. Some of these common readings will also have strong mathematical themes so mathematical thinking will be “right in the thick of” coming to understand them. We will also do mathematical problem sets and group projects that the other seminars do not. I’m excited to get started and I hope you feel the same way!

To set the stage for some topics we will get to later in the semester and then in more detail next semester, let me add that as a teacher of mathematics, I am also very concerned that the way mathematics is often taught today at the elementary and secondary levels in the US doesn’t show students what mathematics is “really about.” It doesn’t show how widespread mathematical thinking is in human experience, and it doesn’t do enough to encourage young people to exercise their innate mathematical creativity. To me, *figuring things out in creative ways* is the real purpose and point of mathematical thinking. Not seeing that because of an over-emphasis on acquiring rote skills for high-stakes tests can tend to kill any interest students might have in mathematics or any satisfaction they might get from studying the subject.

I’m also very interested in how mathematics connects with other areas. That’s not just the “obvious” connections with the physical, biological, or social sciences, where mathematics serves as a language and a tool for modeling the “real world,” describing relationships, and predicting the behavior of systems. I’m also very interested in the more subtle connections between mathematics and art, mathematics and music, in the ways we can see the creativity of human minds working along parallel tracks, some we explicitly label mathematical and some where that identification might be less immediate, but where I would say the same kinds of thinking are taking place.

This semester, we will examine various sorts of (what I will claim is) mathematical thinking from the experience and knowledge developed in a wide range of different human societies. We will begin by casting our net wide across cultures and through time and looking at how this way of seeing and understanding the world can be found in perhaps unexpected places:

- in the ways people have developed number (counting) systems for measuring *space* and recording the passage of *time*,
- in the ways people have conceptualized their *family and kinship relationships*,
- in the ways people have created *games and puzzles* to challenge their minds, and
- in some of the ways people have used ideas of symmetry and other mathematical structures to create *decorative elements in architecture, textiles and other everyday artifacts* to add beauty and harmony to their physical surroundings.

I think the examples we will look at will be pretty strong evidence for accepting the following basic premise from one of our course text books (G.G. Joseph, *The Crest of the Peacock*, p. 512):

*No society, however small or remote, has ever lacked the basic curiosity and “number sense” that is part of the global mathematical experience.*

But at some point you may be inclined to disagree and say, in effect, “no, that is not mathematics, or even mathematical thinking, at all.” If you think that way, then of course you are creating a *border* around what you think of or define as mathematics, and in truth you would not be alone in doing that. Some people claim that mathematics is actually the (*almost*) *exclusive creation* of particular societies, especially the ancient Greeks. This connects with our cluster theme because we must ask what it is that causes people to create those borders, and how (or whether) we should try to transcend them. This will get us into considering where the mathematics you have learned comes from historically and who should get credit for discovering (or inventing) it. As with many such questions, the proposed answers can get quite controversial, and different people have different opinions about who deserves the credit. We’ll look at this in much greater detail next semester!

- Demo Moodle, course homepage, point out various types of information there
- Remind about introduction/reflection papers due no later than Friday
- “Housekeeping” details from syllabus
- We’ll discuss *the curious incident* next week – please read the whole book to prepare for Monday’s class