

Babylon to the Big Bang: The First Billion Miles

Peter Watson

This series of talks will explore many areas of astronomy. The theme throughout will be our drive to understand how the universe works. The talks will be illustrated by many images, and whenever possible I will use simulations to show how complex ideas can often be simply visualized. Statutory warning: the talks will follow the broad outline below, but topics may flow into the following time-slot. To find slides for the talks go to LinR's class notes page.

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I am hoping to arrange for the use of the observatory on at least one evening in October/November. I will have a sign up sheet for this. Given the unpredictability of the weather, if you sign up for it you will get a email late in the day giving you a time and place on the day that we will be having it (probably 7:30 p.m. in the Herzberg foyer).

1. **The Birth of Astronomy: Stonehenge to Babylon.** We will start with what we see in the sky, and why it presented such a problem to early cultures. The Mediterranean is not just the Cradle of Civilization, it is the cradle of astronomy. The Babylonians had the first Creation myth that we have recorded. They could predict eclipses, The Greeks not only knew the world was round 1500 years before Columbus, but even measured how big it was.
2. **The Birth of Astronomy: Greece and Alexandria.** The Greeks even understood how the axis of the Earth changes over time, and could build complex computers to predict how the planets moved. Their discoveries culminated in Ptolemy's Almagest: the first theory of the universe, one that lasted 1300 years.
3. **The Death of Astrology.** For the whole of the Dark Ages, there was almost no new ideas in astronomy. But beginning with Copernicus all of the old ideas fell apart, to be replaced with a new view of the universe. Modern astronomy can be dated back to Jan 7th, 1608, when Galileo first looked at Jupiter with his new telescope. Seventy years later we knew how the solar system worked, and could even start imagining how big the universe was.
4. **Farewell to Earth.** For thousands of years, people have speculated about leaving the earth, so nothing has caught the imagination like the exploration of the solar system. The first satellite was launched just 50 years ago: since then we have stood on the moon and looked out over utterly alien worlds.
5. **Comets and the Death of the Dinosaurs.** The dinosaurs disappeared 70 million years ago. It seems almost certain that their demise was due to the collision of an asteroid with the earth. What is the evidence, could it happen again, and what else is there in the solar system?
6. **The Sun.** All life on earth depends on the sun. What do we know about it? Has it actually changed over historical times, and can we predict how long it will last? And why did it provide a Nobel Prize for Canada in 2015?