

Time passes

- 21 years ago my grand-daughter was born
- 230 Myrs ago dinosaurs walked on Argentina
- 3.0 Byrs ago fossil bacteria
- 3.9 Byrs ago Greenland rocks formed
- 4.6 Byrs ago Solar system began
- 13.7 Byrs ago "Big Bang"

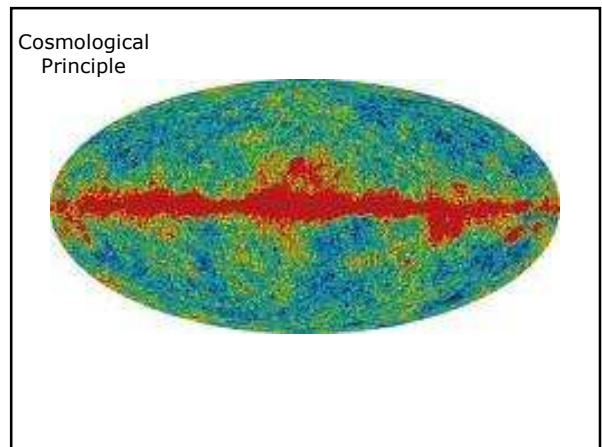
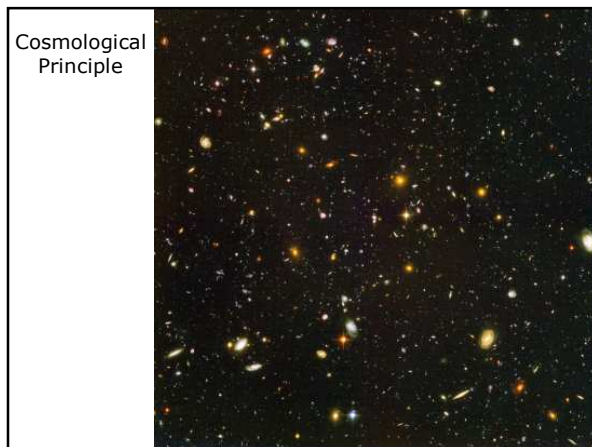
*Big Bang Theory Depends on*

*General Relativity*  
*Geometry of  $ST = \text{Matter} - \text{Energy Distribution}$*

*3 Parameters Involved:*  
*G is the Gravitation Constant (Newton)*  
*C is the speed of light*

*$\Lambda$  is the Cosmological Constant*

*Cosmological Principle*  
*Matter is distributed throughout the universe more or less uniformly.*



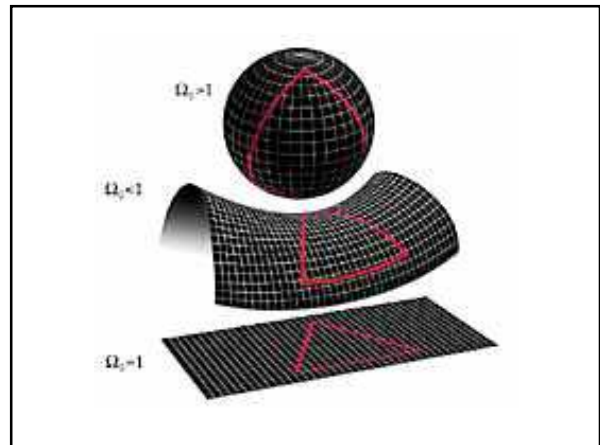
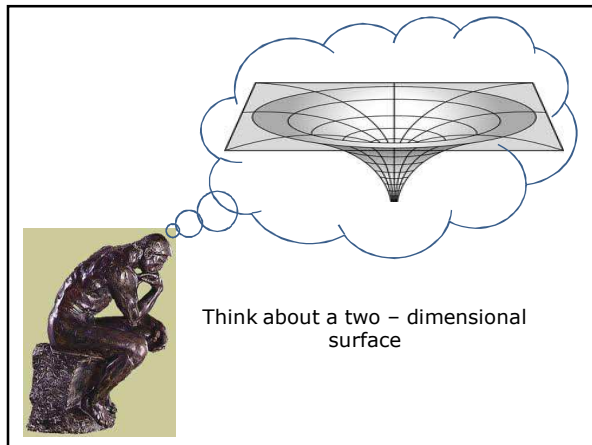
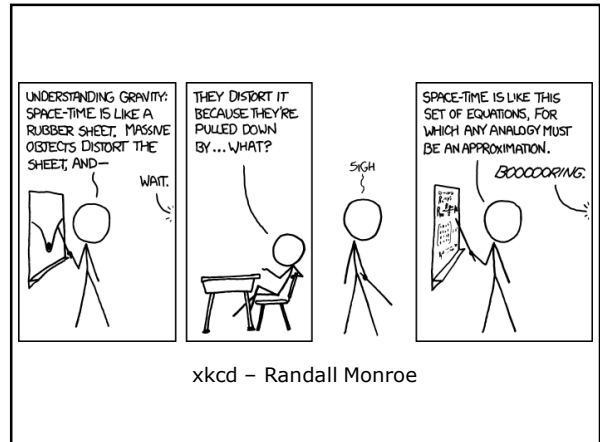
### The Theory of General Relativity

Modern theory of gravity introduced by Albert Einstein to replace Newton's Gravitation.

**Main Idea:**  
Replace the idea of force with curvature of space-time.

Matter distorts the space around it.

This distorted space affects the motion of particles nearby.



### Evidence for the Big Bang

- 1) Expansion of the universe,
- 2) Abundance of light elements,
- 3) Cosmic Microwave Background

and ... it is consistent with all current measurements