The analysis presented in the article *Big Bang* can be supplemented by further information. The justification for the Big Bang Theory comes from the observation that stars appear to be receding from us in all directions as we look into the sky around us. Red shift data is the mechanism used to specify this recession. Assume the Big Bang theory is correct, then do a simple analysis of the observations that would result. See Figure 17, which is a picture of an object (planet or galaxy) traveling away from the center of the Big Bang with a velocity v.

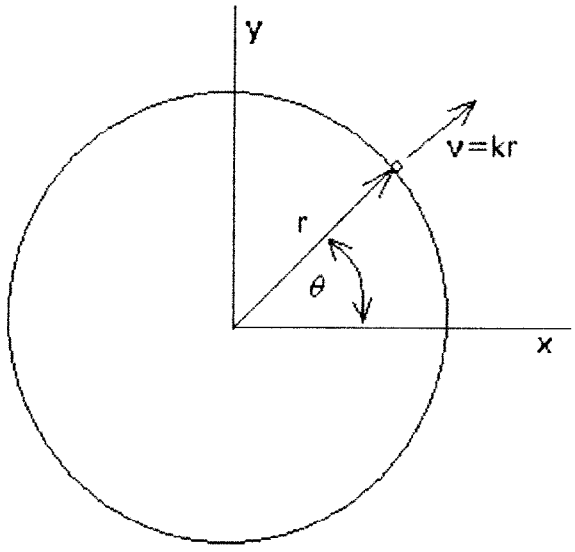

Figure 17

The origin of the coordinate system is the original center of the Big Bang, and all objects in the universe are traveling outward from this location at various velocities. For this simple analysis, suppose the distribution of velocities is a simple linear function kr. This means that at any point in time, an object at distance r from the center of the Big Bang has a velocity of kr. Those objects with larger values of r will have relatively larger velocities. This is a simplified picture of the assumptions central to the Big Bang Theory and apparently supported by the red shift data.

The velocity of the object can be expressed as a vector V:

$$\vec{V} = kr\cos(\theta)\vec{x} + kr\sin(\theta)\vec{y} \tag{72}$$

Unit vectors $\vec{x}$ and $\vec{y}$ correspond to the x and y axes as shown in Figure 17. Since r and θ can point to any object in the universe, two object velocities can also be described at

any one instant. The first object will be described by r_1 and θ_1, and the second object will be described by r_2 and θ_2. To simplify the analysis, the coordinate system axes can be rotated so that θ_1 can be set to zero. The relative velocity difference of these two objects can be described by the equation:

$$\Delta\vec{V} = (kr_2\cos(\theta_2) - kr_1)\vec{x} + kr_2\sin(\theta_2)\vec{y} \tag{73}$$

This vector describes the velocity of object 2 as seen by observers on object 1. The magnitude of this velocity vector is given by:

$$\Delta V = k\sqrt{(r_2\cos(\theta_2) - r_1)^2 + (r_2\sin(\theta_2))^2} \tag{74}$$

Assuming the object at r_1 is Earth, the red shift observed for other randomly selected objects is a function of (74). The quantity ΔV will vary dramatically as the people of earth shift their observations to other objects around them. For example, if r_1 is 2 units of length and r_2 is three units of length, both in line along the x axis, then ΔV will have a value of k. If the radii are the same but θ_2 is 90 degrees (e.g. located on the y axis), then ΔV has a value of 2.24k. If θ_2 is 180 degrees (e.g. located on the negative x axis), then ΔV has a value of 5 k.

Plugging other values into (74) gives similarly varying results. Red shift data could only be uniform in all directions if r_1 was zero. This would be the statistically unlikely case where the Earth is located at the center of the Big Bang, even after all the time that has gone by since that event occurred. Therefore, if the Big Bang Theory were true, then our observations of red shift should vary dramatically for stars located at various values of θ_2 around us. Since red shift data produces a uniform picture of the universe with varying values of θ_2, it must be assumed that the red shift data specifically voids the Big Bang Theory.

The Real Structure of the Universe

Actual observation of the stars has led to an impression of the structure of our universe. Current thinking is that our real universe has a form like a mass of soap bubbles. This means there are relatively dense strings of galaxies forming the lines of interface between bubbles, and large volumes of empty space are the actual bubble volumes between these strings of galaxies. At length scales above 70 mpc/h (roughly, the average diameter of the bubbles), the universe starts to look homogeneous.

But, a homogeneous distribution of stars throughout our known universe is inconsistent with a bang of any kind. No other explosion phenomenon distributes matter in this way.

Other Thinking

Also puzzling are results such as recently announced galaxy UDFy-38135539 being located 13.1 billion light years from earth, while the Big Bang supposedly occurred 13.7 billion years ago. The light we are receiving now from this galaxy is said to have been emitted only 600 million years after the Big Bang. But if that light has been traveling to us for 13.1 billion years, then galaxy UDFy-38135539 was already 13.1 billion light years away from us when that light was first emitted. How did it get that far away in only 600 million years? It's materials would have traveled at speeds many times the speed of light and then magically slowed to its currently observed velocity. And, in the short time period after this violent journey, this galaxy would still have had to form into a normal galaxy held together by weak gravitational forces.

The Solution

Our own Local Group (of galaxies) is a very small collection of galaxies compared to most galactic clusters and the more famous Superclusters from which we gather most of our data. From the article *Big Bang* equation (68), it is easy to see why larger clusters and Superclusters would be red shifted as observed by our Local Group. This is due to their larger mass, a type of red shifting that is also evident from current methods (using equation (61)).

But this red shifting should also be taken in context of Figure 16. What happens when the M_{ei} planets of Figure 16 are Superclusters surrounding a smaller emitter cluster, M_e. The Superclusters would cause the red shifting of M_e even if the emitter M_e was smaller than our Local Group.

And this effect would also be present regardless of red shifting. The farther away galaxy clusters are from us, the larger they will have to be if we are to see them, and they will wash out traces of any smaller clusters in front of or behind them.

Summary

There are a number of fantastic explanations for the problems brought about by the Big Bang theory. Theories on the metric expansion of space and dark energy are examples, but have not been seen or measured in any quantitative way. I do not know how the universe began and do not know how it will end. I do not know the structure or contents of space in the vast voids between the galaxies or in any other location in the distant cosmos. Neither does anyone else. But since all this theory depends on red shift data, I think that a close examination of red shift theory is in order.