AMERICAN MUSEUM OF NATURAL HISTORY

THE BIG BANG

1. While the audience enters and surrounds the oculus, we see a fluctuating world of "quantum foam", from which shapes arise and transform and convolve into other dimensions. This mesmerizing activity loops during two or three minutes, until the doors close.

What happened *before* the birth of our universe?

Our laws of physics don't tell us. But many scientists imagine there was a void, existing by itself or within an older universe.

In that formless void, bubbles of space, far smaller than atoms, were coming into being and vanishing again.

2. One central fluctuation of the "foam" grows larger and detaches.

Thirteen* billion years ago, one of those tiny bubbles grew and suddenly ballooned out in a gigantic explosion, called the Big Bang.

3. We hear explosions as lighting effects flash all around us.

***Space itself* exploded in cosmic fire, giving birth to *all* the energy and matter in our universe.**

The expansion of space carried with it clouds of matter.

4. We see the formation of large-scale structure and proto-galaxies.

The universe *cooled* as it expanded. Gravity pulled together enormous clumps of matter . . .

. . . the seeds of what would become galaxies. Within them, the first stars formed.

5. We see the collision of proto-galaxies

As hundreds of millions of years passed, entire galaxies fell together, in a cosmic ballet.

Smaller galaxies combined to make larger ones.

6. Cross-dissolve to a slowly rotating spiral galaxy.

After a few billion years, our *own* Milky Way Galaxy took shape. It developed spiral arms, made of stars, and clouds of gas and dust.

Our Sun and Earth were born in this galaxy.

Eventually, life and intelligence arose on our planet. And *we* came to wonder how our universe began.

7. Go to black. Blocks of data appear and rapidly build up the Boomerang image of the Cosmic Microwave Background Radiation (CMBR). This is also the first image on the Cosmic Pathway.

Today, using *microwave* telescopes, we can still see the afterglow of the Big Bang, all around us.

Astronomers are mapping this faint glow. It is the *oldest* and most *distant* thing we can see, a relic of the fiery explosion that gave birth to our universe.

8. A schematic ring-shaped image of the Big Bang theater itself appears, showing the CMBR. The Cosmic Pathway spirals out from the ring, and a pulse of light moves along it, highlighting a sequence of images representing the events on the Time Ramp. The outer end of the spiral is labeled “now”.

You are about to embark on a cosmic timeline, and walk the history of our universe, from the Big Bang to the present day.

Every *step* you take will span about a hundred million years.

Look for the formation of our Milky Way Galaxy . . . the origin of our solar system and of life on Earth.

And don’t miss *all* of human history at the end of the ramp.

9. Reprise big bang explosion and boom from Scene 3.

Now, let’s begin at the beginning . . . of space and time.

10. Doors open to Cosmic Pathway.

END