

# Where is the center of the Universe?

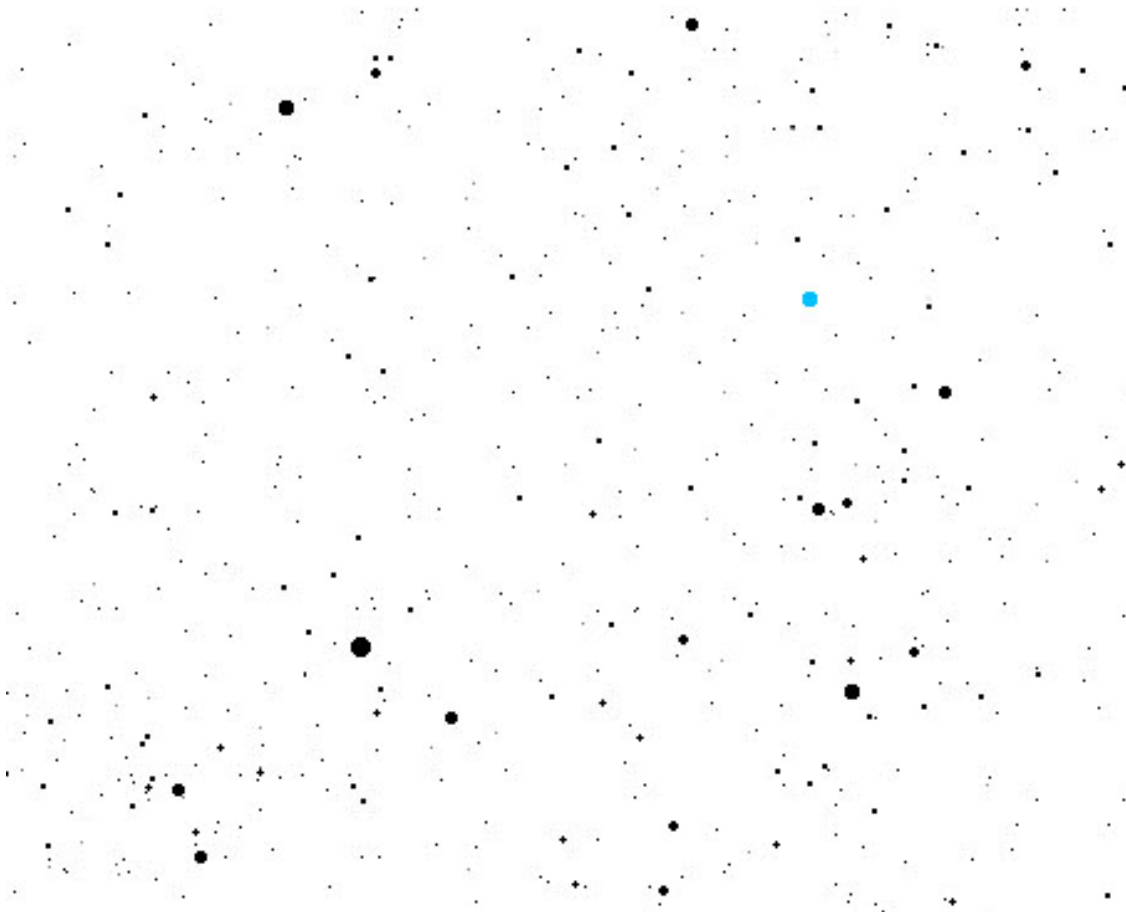
Here, there, and everywhere.  
by Paul Doherty, Exploratorium Teacher Institute

Online at <http://www.exploratorium.edu/origins/hubble/tools/center.html>

When astronomers look at distant galaxies to determine how fast they're moving, it looks like they're all moving away from us. Does that mean we're at the center of the universe? Well, no. It turns out that every point in the Universe sees itself as the center! You can show yourself why with this activity.

## What's going on?

The top layer (the Universe today) was made by enlarging the bottom layer (the universe 1 billion years ago) by 5% percent. That means every space on the top layer is enlarged by 5 percent. The real Universe is the same: in a billion years all of the spaces between galaxy clusters has expanded by about 5 percent. Viewed from any point, the Universe seems to be expanding about that point.



**Directions: Try this!**

- This picture has two layers-- the bottom layer (the other sheet) represents the Universe a billion years ago. The top layer (this sheet) represents the Universe today, expanded 5% from its size a billion years ago.

- Move the top layer randomly over the bottom one; the difference between the two is hard to see. But if you place the top layer so that the grey dot lines up with the same dot on the bottom layer, you'll notice a pattern.

- Now choose a different dot on the top layer and line it up with its corresponding dot on the bottom layer.

*What are 3 observations you can make about the pattern of the positions of the dots?*

