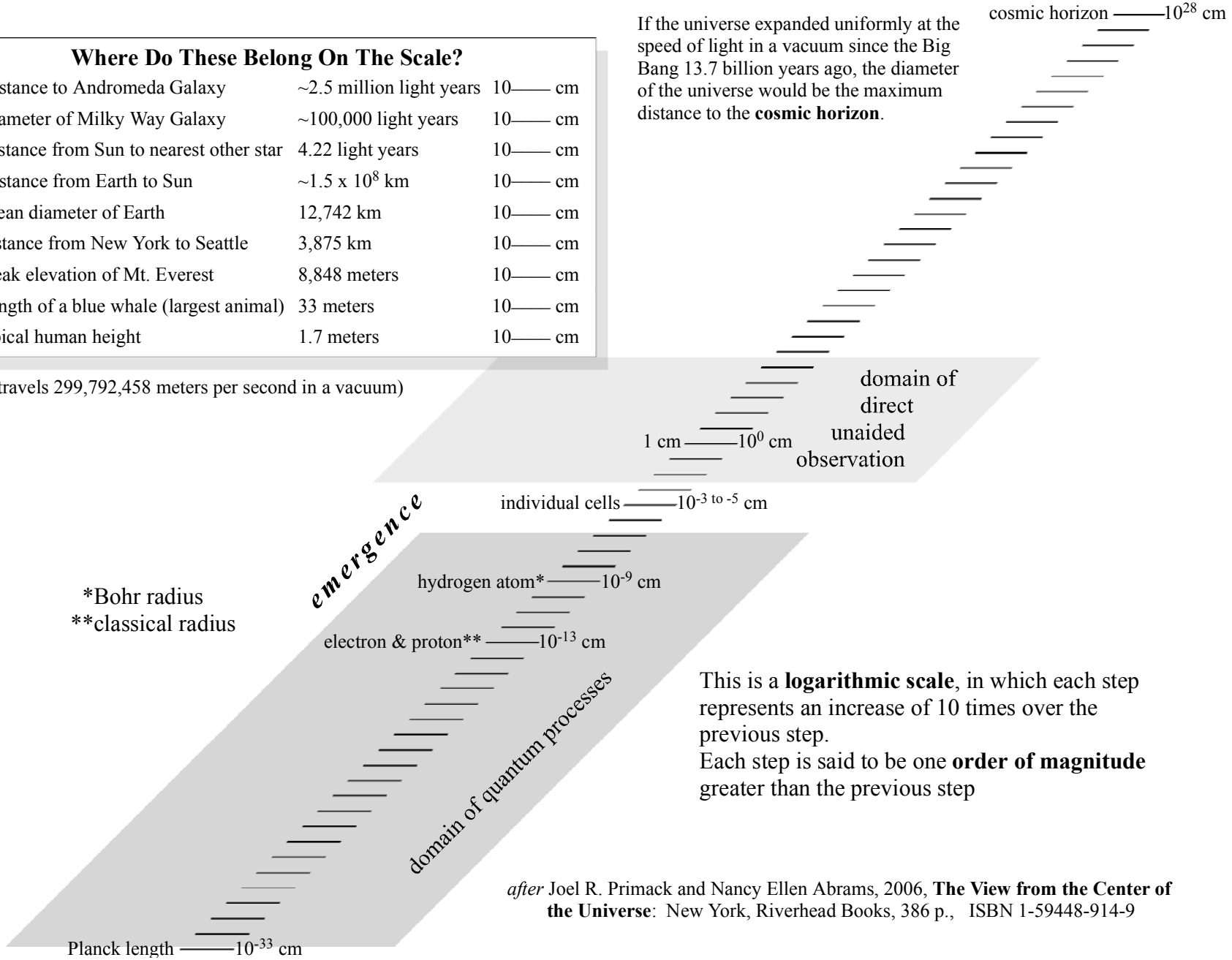
Comparison of Lengths Relevant to Our Universe

Where Do These Belong On The Scale?		
A. distance to Andromeda Galaxy	~2.5 million light years	$10^{\_\_}$ cm
B. diameter of Milky Way Galaxy	~100,000 light years	$10^{\_\_}$ cm
C. distance from Sun to nearest other star	4.22 light years	$10^{\_\_}$ cm
D. distance from Earth to Sun	~1.5 x 10^8 km	$10^{\_\_}$ cm
E. mean diameter of Earth	12,742 km	$10^{\_\_}$ cm
F. distance from New York to Seattle	3,875 km	$10^{\_\_}$ cm
G. peak elevation of Mt. Everest	8,848 meters	$10^{\_\_}$ cm
H. length of a blue whale (largest animal)	33 meters	$10^{\_\_}$ cm
I. typical human height	1.7 meters	$10^{\_\_}$ cm

(light travels 299,792,458 meters per second in a vacuum)

If the universe expanded uniformly at the speed of light in a vacuum since the Big Bang 13.7 billion years ago, the diameter of the universe would be the maximum distance to the **cosmic horizon**.



*Bohr radius
**classical radius

This is a **logarithmic scale**, in which each step represents an increase of 10 times over the previous step.
Each step is said to be one **order of magnitude** greater than the previous step

after Joel R. Primack and Nancy Ellen Abrams, 2006, **The View from the Center of the Universe**: New York, Riverhead Books, 386 p., ISBN 1-59448-914-9

The **Planck length** is defined by three physical constants that are fundamental to the classical and quantum models of gravity and that combine in a dimensional analysis to yield a distance. The three constants are the Planck constant, the speed of light in a vacuum, and the gravitational constant. The Planck length is thought to be the smallest meaningful length in Nature, corresponding to the smallest distance over which quantum gravity operates.