

A Universal Question

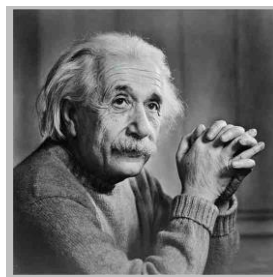
Henk Reints, MSc.

universe@henk-reints.nl

[Proper Dutch pronunciation of my name](#)

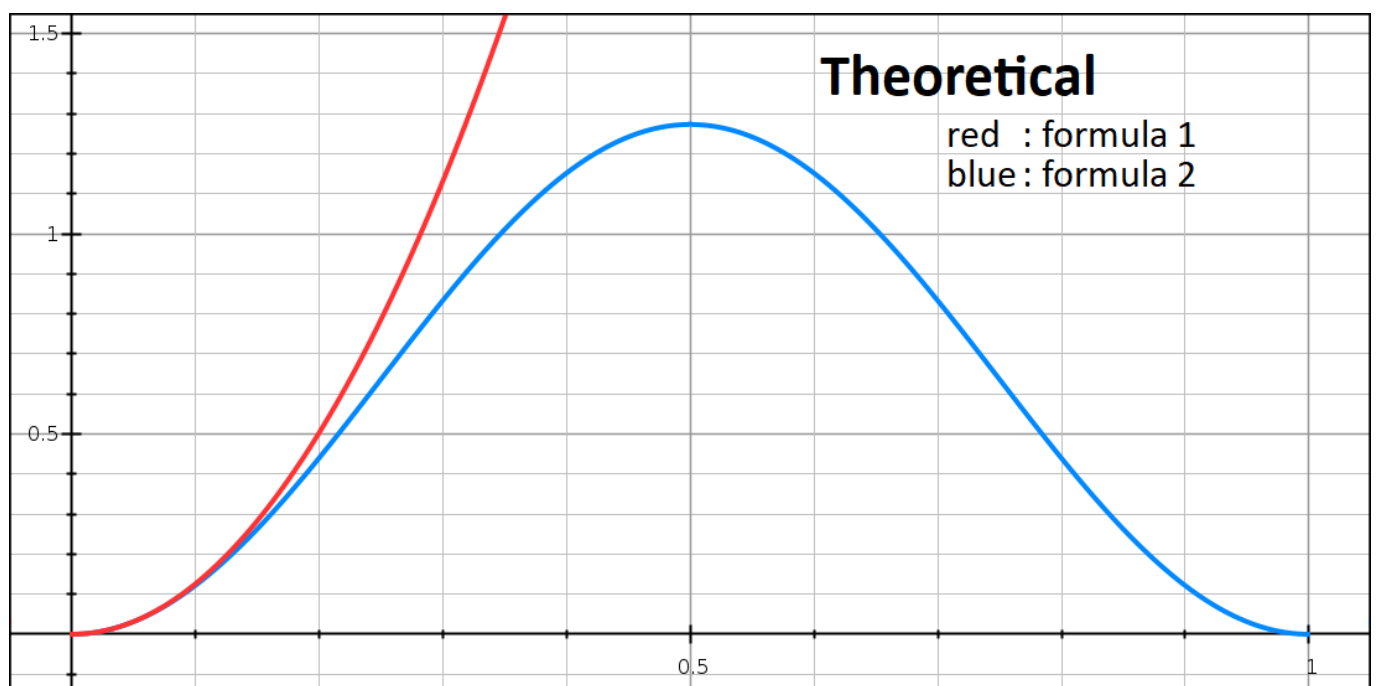
Last updated: 2018-12-14

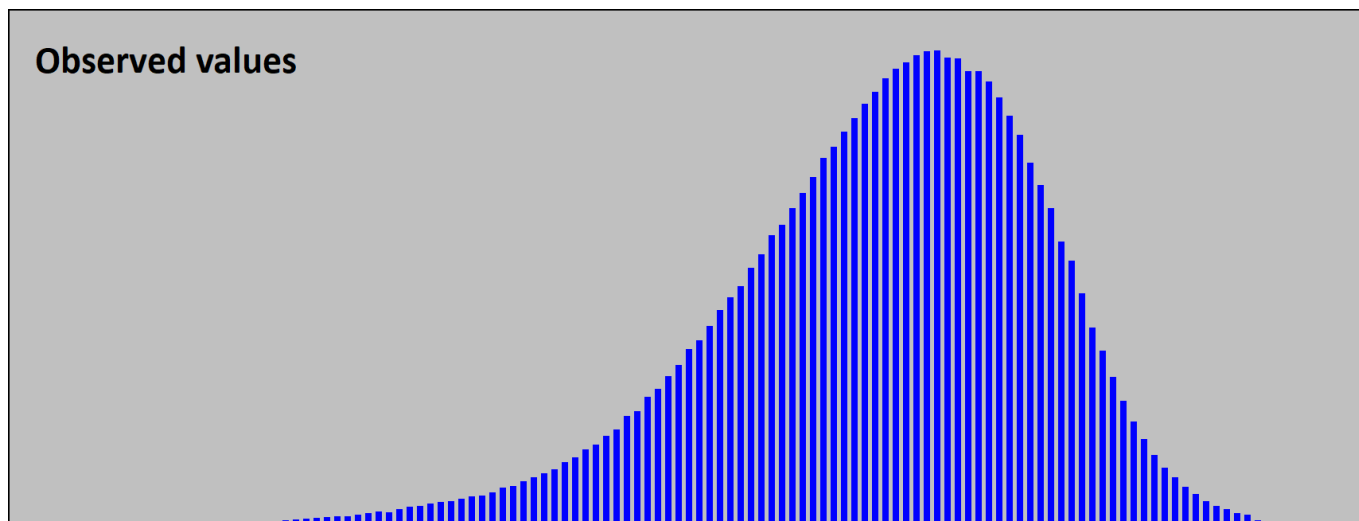
There are two formulas/assumptions, called formula 1 and formula 2, as well as two independent sets of observed (measured) data regarding different quantities. They are shown in the graphs below. Which of these formulas/assumptions has to your opinion the best correspondance to reality?



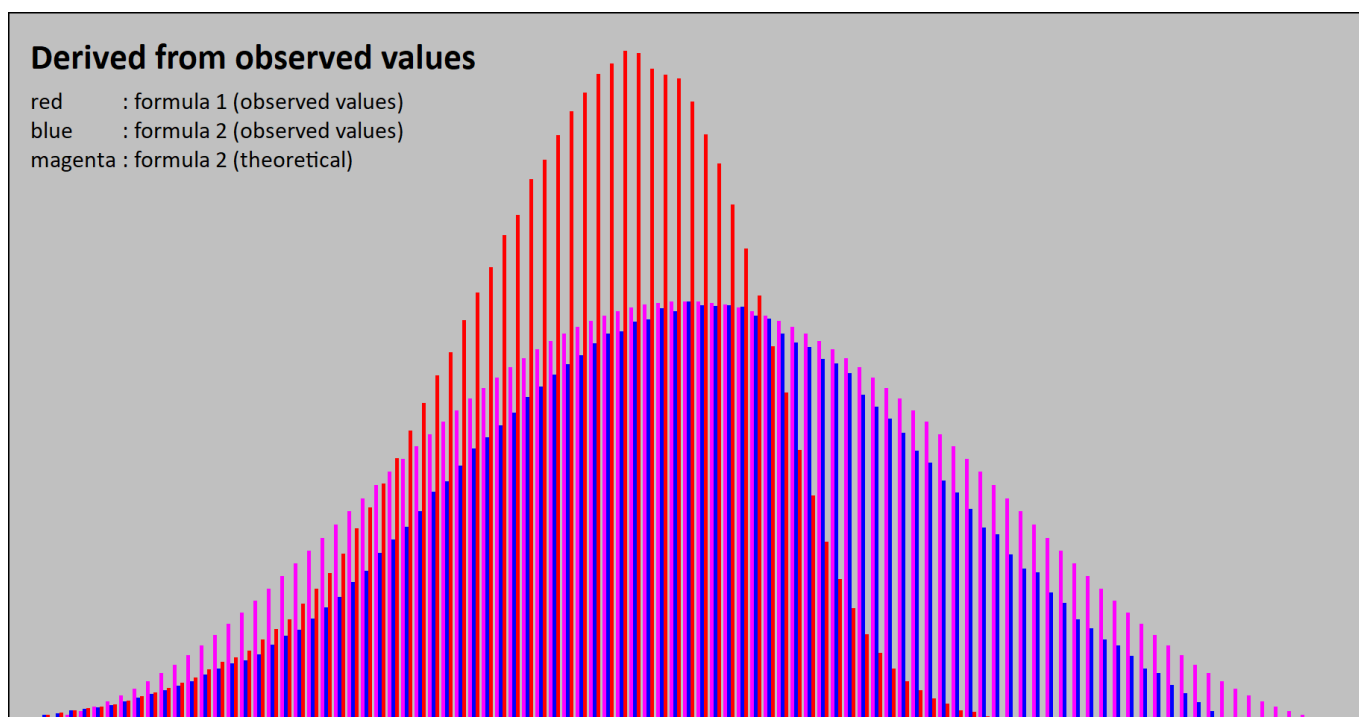
As far as the laws of mathematics refer to reality, they are not certain; and as far as they are certain, they do not refer to reality.

Albert Einstein

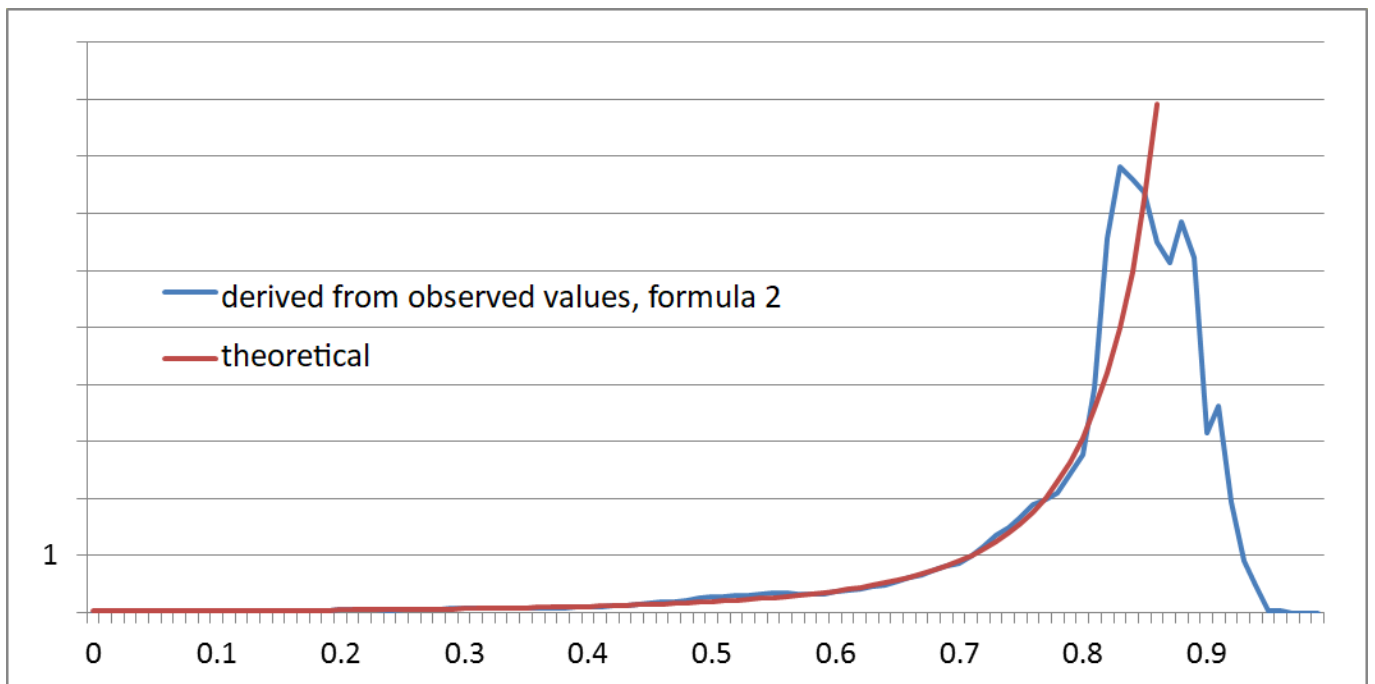
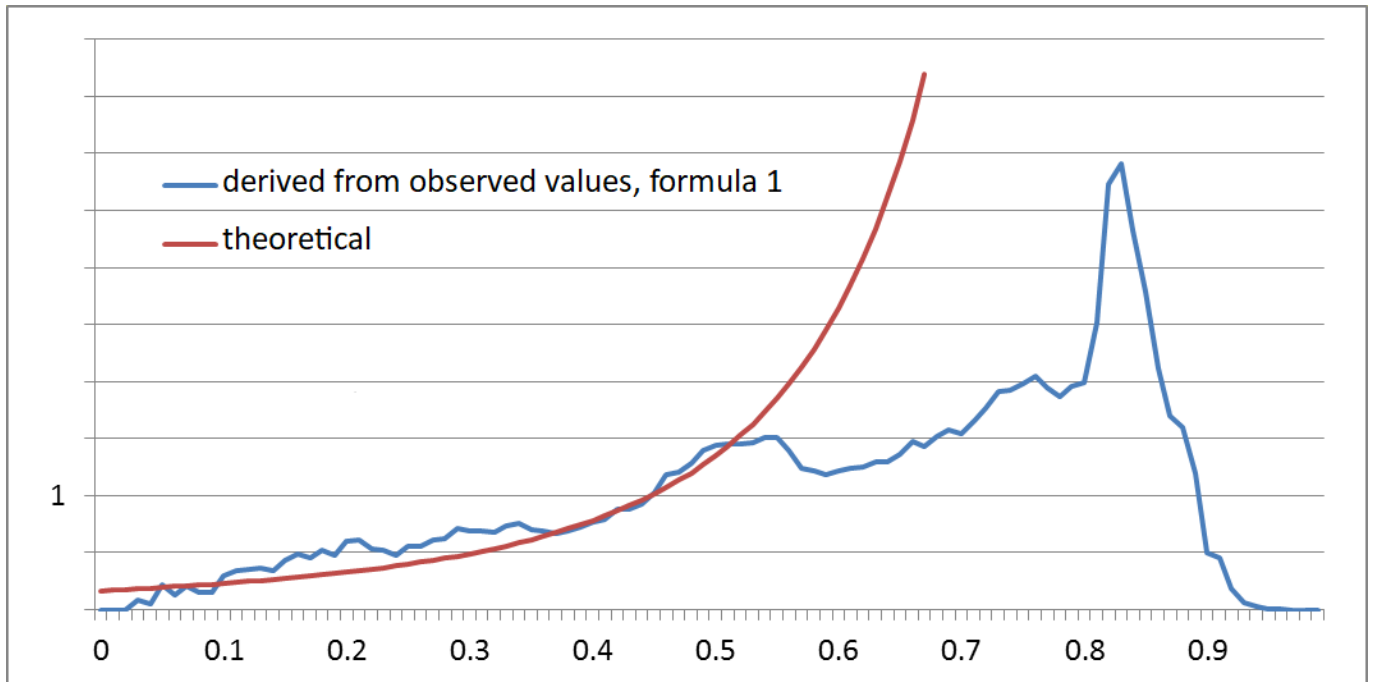


Data set 1:

This needs a horizontal correction in which the maximum obviously reappears for both formulas/assumptions.



Data set 2:



Please look at all graphs once again
and draw your own conclusion
before you continue reading.

Legend

Data set 1 is the collection of *magnitudes* of 949 508 galaxies in the [Subaru Deep Field](#), a patch of the sky a bit larger than the full moon that was observed from 2002 to 2004 with the 8.2 m [Subaru Telescope](#) at Hawaii, operated by the [National Astronomical Observatory of Japan](#) (NAOJ). The data set was downloaded from <http://soaps.nao.ac.jp/SDF/v1/index.html>.

Its first graph shows the *galaxy count per magnitude* with a resolution of 0.1 mag.

Its second graph shows the *galaxy count per distance interval* with a resolution of 1/100 of the *Hubble distance*. The *distance* is calculated from the *magnitude*, where *intergalactic attenuation* was taken into account including the apparent densifying of intergalactic matter as a result of the *Lorentz contraction* due to the *Hubble velocity* at each *distance*, and also including *relativistic dimming* due to *time dilation*.

Data set 2 is the list of 525 928 quasar redshifts contained in https://data.sdss.org/sas/dr14/eboss/qso/DR14Q/DR14Q_v3_1.fits from the [Sloan Digital Sky Survey](#) (SDSS). It covers a part of the sky of 9376 square degrees = 23% of the total sky.

The graphs show the *quasar density at a distance* with a resolution of 1/100 of the *Hubble distance*. The *distance* was directly derived from the *redshift* using the *relativistic Doppler effect* only. Seen from right to left they show the *quasar density over time* since the big bang. The theoretical curve is $1/t^3$ (right to left), scaled to the *average quasar density* which was normalised to 1. It would be proportional to the total *object density* of the universe in case of an exactly linearly expanding homogeneous universe.

Formula/assumption 1 assumes a Euclidean ("flat") geometry of the universe.

Formula/assumption 2 assumes a 3-spherical geometry of the universe, i.e. the universe is considered a 4-dimensional hypersphere with half its *circumference* (i.e. the *distance* from an observer to his antipodal point) equal to the *Hubble distance*. Since the latter grows at the *speed of light*, the 3-sphere's *hyperradius* grows at c/π which implies it cannot be Minkowski's *ict* coordinate because that grows at the *speed of light* like the *Hubble distance*.

The *galaxy count* at a *distance* r is proportional to the *surface area* of a ball around us. In Euclidean geometry that equals $4\pi r^2$, 3-spherically it is proportional to $\sin^2 \pi r$.

Conclusion 1:

THE UNIVERSE IS A 3-SPHERE

WITH HALF THE *CIRCUMFERENCE* EQUAL TO THE *HUBBLE DISTANCE*
AND THE CMB SOURCE AROUND THE ANTIPODAL POINT.

Ex observatis phænomenis immediate deductum est.

It has directly been deduced from observed phenomena.

Conclusion 2:

The extension of the universe is as linear as can be.

Ex observatis phænomenis immediate deductum est.

Therefore the concept of **dark energy** is unnecessary and should according to Occam's razor be abandoned.

Please read:

- <http://henk-reints.nl/astro/HR-shape-of-the-universe.pdf>
- <http://henk-reints.nl/astro/HR-dark-matter.pdf>
- <http://henk-reints.nl/astro/HR-on-the-universe.php> (not .pdf but .php)
- <http://henk-reints.nl/astro/HR-on-the-universe-contemplations.pdf>

Slideshow:

- <http://henk-reints.nl/astro/HR-A-Universal-Question-slides.pdf>