

Review: Alex Williams and John Hartnett, *Dismantling the Big Bang: God's Universe Rediscovered*, Master Books, Green Forest, AZ, 2005 (Oct 2020 edn.)

Pages: 346

Big Bang Bust

This begins with a detailed history of solar system cosmology, from the ancient Greeks to the Christian-led Scientific Revolution. It then progresses into basic astronomy, physics, and cosmology before properly dissecting the Big Bang (BB).

Since cosmology is not an empirical science, and only the same light is available to study, many models are possible, which the authors cover in the appendices.

The Christian will come away with a solid understanding of the conceptual flaws of the BB, and a fair understanding of basic cosmology.

A Brief Overview (pp. 13-18)

The BB only produces an expanding cloud of gas.

The BB theory only works *after* all matter, energy, space, and time (MEST) has begun expanding from an infinitely dense point.

Introduction (pp. 19-20)

I) From the Backyard to the Big Bang: A Brief History of Cosmology (pp. 21-51)

At Midsummer dawn, Stonehenge, the sun rises directly over the “heel” stone.

Eratosthenes (276-196 BC) was librarian at Alexandria. He read that on June 21 in the Egyptian town of Syrene, a sun stick would show no shadow, however, sticks at Alexandria would cast one. Since the distance between locations was 800km and the angle about 7° , he calculated Earth's circumference as $\sim(360/7)*800$, 40,000 km.

Sun, moon, and planets follow the "Plane of the Ecliptic",

Pythagoras (580-500 BC) believed Earth was orbiting an unseen fire, and that the five known planets were arranged per a musical scale.

Plato (427-367 BC) thought Earth was stationary.

Eudoxus (408-355 BC) used a complex system of 33 spheres to account for planetary motion.

Aristotle (384-322 BC) was student of Plato and tutored Alexander the Great. He expanded Eudoxus' system to 55 spheres.

Ptolemy (AD 120-180) invented a geocentric system of 39 wheels within wheels.

The Moon cycle runs 29.53 days, with twelve per solar year.

Since the Julian year was 11min 34s longer than the solar year, Gregory XIII in 1582 dropped ten days and added a leap year to balance.

Nicholas Copernicus (1473-1543) revised Aristarchus' idea of heliocentrism.

Tycho Brahe (1546-1601) discovered comets followed highly elongated orbits and were much farther away.

Johannes Kepler (1571-1630) was Brahe's assistant and discovered elliptical orbits. He introduced algebra to cosmology.

Galileo Galilei (1564-1642) was first to use a telescope. His discovery of sunspots falsified the Greek idea of heavenly body perfection.

Isaac Newton (1642-1727) discovered gravity, the laws of motion, and the reflecting telescope.

William Herchel (1738-1822) discovered Uranus.

Parallax works by taking stellar angle measurements at six-month intervals during which time the Earth has moved to an opposite position in its solar orbit, then, using trigonometry to calculate distance to the body.

A *parsec* is an *arc second* that a star is displaced by parallax; 207,270 Astronomical Units (AU). One AU is ~149M km.

Earth-based parallax can measure distance out to 90 ly.

Since they travel at light, Einstein's theory implies photons are timeless.

II) Science, World Views and Cosmological Models (pp. 52-79)

The BB universe is simple, uniform and isotropic.

Gravity is necessary but not sufficient for star formation.

III) Tools for Explaining the Universe (pp. 80-114)

Chance is not a force, rather, a possible outcome of laws of physics in action.

Since entropy is always decreasing, the likelihood of *any* event happening in the future is decreasing.

Rogue gas molecules after the BB could only ever travel in straight line per the laws of motion, unless diverted by an external force.

Matter particles created in a lab are always matter/anti-matter pairs ("quantum pairs"). Such pairs are either fully formed or non-existent. The strong nuclear force stops outside the nucleus.

Astronomical body sphericity informs they are large enough for the power of gravity to pull them into shape.

Under star collapse, electrons are pressed with protons to form neutrons; at 50 solar masses a black hole forms.

The matter in a singularity is still there because of the strong gravitation, yet it cannot be detected. However, electromagnetic and strong and weak nuclear forces may have been destroyed.

Theorised Hawking radiation has not been detected.

Any 'bouncing' in a cyclical eternal universe scenario would consume energy and be fatal per the Second Law of Thermodynamics.

String theorists imagine invisible tightly-wrapped up dimensions.

"Branes" are multidimensional objects; a 2-dimensional brane is a membrane ("m-theory"). Brane collisions are said to be creation events ('Big Crashes').

The BB has no power to create energy and no explanation of where it came from.

"How did the universe get so far from equilibrium?"

Once a closed universe reached maximum size, it would immediately collapse, and an open universe would rapidly disperse (a 'Big Chill').

IV) The Big Bang Model (pp. 115-162)

All BB descriptions begin *after* the singularity.

In Stage B of the BB subatomic particles form ($T+10^{-43}s$). At $T+10^{-36}s$, it suddenly inflates 10^{30} times. The purpose of Cosmic Inflation is to homogenise the CMBR.

In Stage C ($T+1s$), stable atomic nuclei appear, and for 100Ky the radiation expands.

In Stage D ($T+300Ky$), the radiation fog clears and H_2 and He gas lights up.

In Stage F (T+1Ga), stars and galaxies form.

Quantum event duration is inversely proportional to object mass.

The high-energy initial BB environment is thought to be similar to that inside particle accelerators.

The BB Horizon problem is that it didn't stay small enough long enough for light to travel around it.

When COBE (**C**Osmic **B**ackground **E**xplorer) was first built its detection capability was above the actual level; a very costly mistake.

The Wilkinson Microwave Anisotropy Probe (WMAP) was designed with 30X the sensitivity of COBE. It discovered a cosmic north and south pole, and an equator.

A 3D world on the surface of a large enough 4D hypersphere would appear 'flat' to a large degree.

The 'missing mass' problem exists since outer galaxy arms rotate at the same speed as inner arms; cosmic mass density must be seven times greater than observed. Also, there is no way to account for them having remained in form for billions of years.

To solve the missing mass problem, MACHOS (**M**Assive **C**ompact **H**alo **O**bjects) like brown and black dwarfs, and WIMPs (**W**eakly **I**nteracting **M**assive **P**articles) are proposed. Neither has been found.

Another theory is **M**Odified **N**ewtonian **D**ynamics (MOND); that gravity falls off linearly with distance. However, gravity seems the same in the outer arms.

Galaxy dynamics are based on the mass/luminosity (ML) ratio; some rich clusters have MLs of 200-400.

Population I stars are the most common; II are metal poor so claimed to be 'young'; and III the very first stars of only H₂ and He, but they have never

been observed!

The BB 'secret' to galaxy formation is "density fluctuation".

Gas clouds of 0.1 to 100 solar masses are too small to collapse under their own gravity.

Planetary cores are said to also generate heat from radioactive decay.

Asteroids travel at $18,000\text{km hr}^{-1}$ on average.

It is claimed that Jupiter and Saturn managed to collect enough gas before the solar wind from the young sun blew them away. The gas planet "sticking problem" (where gas particles come together under gravity) has no solution.

Λυσοῦ is to loosen or dissolve.

V) Time Scales (pp. 163-203)

The 1m Pt-Ir bar in Paris was superseded in 1960 by the vacuum wavelengths of light from electron transition of ^{86}Kr (1,650,763.73). Since 1983, the metre is distance light travels in $1/2.99792458 \times 10^{-8}\text{s}$ in a vacuum, and the second is the transition frequency of energy of the ground state of a ^{133}Cs atom.

Sun photons take thousands of years to reach the surface due to the strong magnetic field and turbulence.

In 1986, Norman and Setterfeld proposed the 'tired light' theory of c -decay. The Harris model starts with an infinite c at creation.

Tidal forces near a black hole decrease at $1/r^3$.

White hole cosmology predicts large blueshifts in nearby galaxies, and it fails to account for 100Ka's passed inside them.

John Hartnett's model has the "waters above" at the perimeter of the solar system (like an Oort Cloud).

Atomic clocks are periodically adjusted to match earth's rotation (1s every 500 days).

Any clock must have: a known starting point; reliable rate; and no interference.

VI) The Biblical Model (pp. 205-258)

VII) The Scoreboard (pp. 259-263)

VIII) Future Trends in Cosmology (pp. 264-269)

Epilogue: The Choice (pp. 270-272)

Appendices (pp. 273-330)

Halton Arp's Universe holds that quasars are new 'infant' galaxies ejected from 'parent' galaxies. Since they have little mass, their redshift is high, and over time this would decrease. Therefore, quasar redshift is a measure of age rather than recession velocity. His universe is non-expanding, unbounded, and eternal.

In the **Quasi-Steady State Universe** new matter is continually created in the hearts of existing galaxies a-la-Halton Arp.

Carmeli's Cosmological General Relativity holds the universe is made of space-*velocity* not space-time.

Van Flandern's Meta Model has meta-gravity as an attractive but not repulsive force.