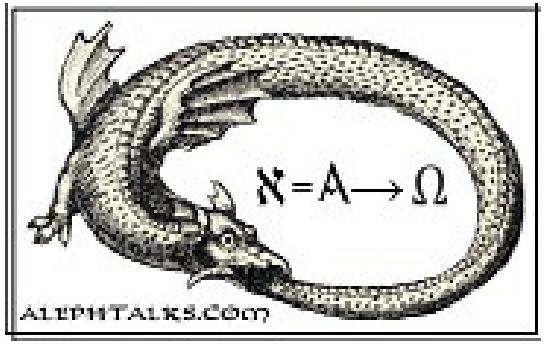
Is Mysticism Where Science, Art and Religion Meet?



Subject Seven
Astronomy and Cosmology

4 May 2022

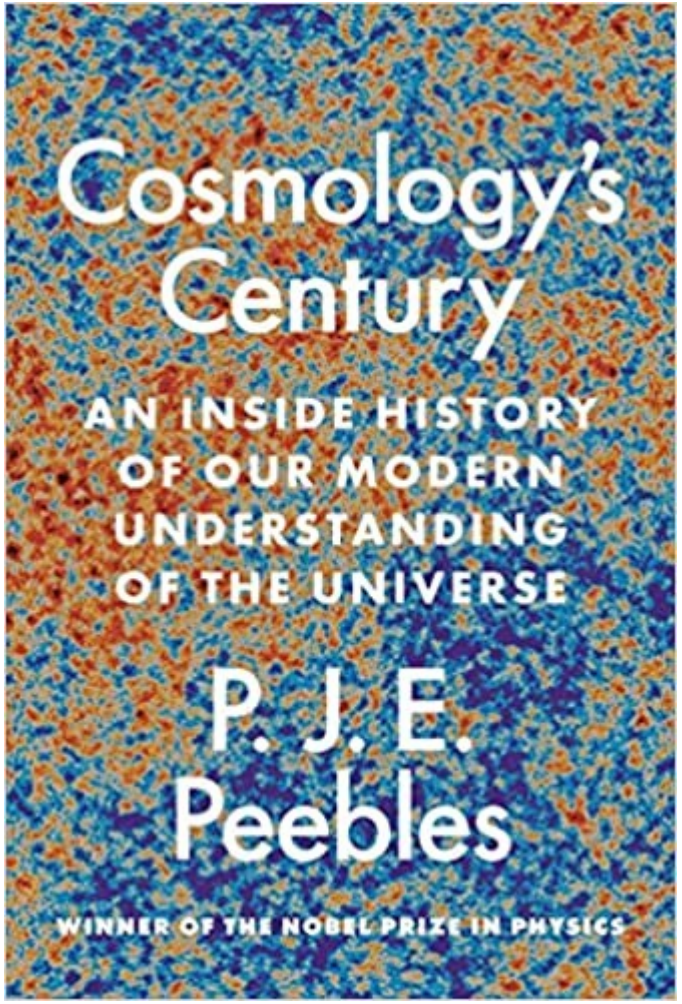
Autodidactic Universe

- Physics attacks the question of why these laws?
- Why these gauge groups, these fermion and scalar representations, the mysteries of chirality, CP violation (violation of the combined conservation laws associated with charge conjugation (C) and parity (P) by the weak force), and baryogenesis (the physical process that is hypothesized to have taken place during the early universe to produce baryonic asymmetry, i.e. the imbalance of matter (baryons) and antimatter (antibaryons) in the observed universe)? Why the vast hierarchies of scale and why the particular ratios of parameters of the standard model, setting the values of the masses and mixing angles?
- It is sobering to contemplate <u>that not one problem of this type has ever been solved, going all the way back to the measurements of the electron's mass and charge.</u>

Autodidactic Universe

- Roughly speaking, we are faced with a single stark choice:
- **Either**: There are no rational reasons for any of these choices. The universe might have been very different, but there will never be a reason why it took the path we observe it on.
- **Or**: There is at least one rational explanation - in which case we are obligated to find it. To ask the question is to suppose that, for instance, the constants could have been different, but not randomly so. A scientific explanation would suggest that their values are set as the result of a dynamical process, which means it can be modelled analogously to all the other time dependent processes we are familiar with.

Astronomy



"Your vision will become clear only when you can look into your own heart. Who looks outside dreams; who looks inside awakes." C G Jung

Astronomy is the study of the heavens

Cosmology is the study of the cosmos: how did it begin, where is it going, where will it end?

Astrology is a human endeavor derived from astronomy and cosmology.

Astronomy

- Beginning with optical telescopes and then moving into instrumentation in other frequency bands such as X-ray, infrared, ultraviolet, and microwave, astronomy has developed a body of data about the universe.
- The Earth is a planet circling in orbit around the Sun along with a number of other planets, asteroids, and debris. Over 99% of the mass of the Solar system is in the Sun, but over 99% of the angular momentum of the Solar system is in the planets circling the Sun.
- There are roughly one hundred billion stars including the Sun in the Milky Way galaxy; over eighty percent of these stars are double stars, and over eighty percent of these stars contain planetary systems.
- There is a black hole, Sagittarius A*,in the center of the Milky Way galaxy with a mass of over 4 million times the mass of the Sun.
- Roughly 5% of the mass of the universe consists of matter, roughly 27% of the mass of universe consists of dark matter scattered through interstellar space as well as in planets and stars and debris, and the remaining 68% consists of dark energy, the residual energy from the big bounce that led to the creation of the universe.
- There are estimated at least one hundred billion galaxies in the universe.

Astronomy

- Planets-Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus, Neptune
  - **Bode's law**, also called Titius-**Bode law**, empirical rule giving the approximate distances of planets from the Sun. It was first announced in 1766 by the German astronomer Johann Daniel Titius but was popularized only from 1772 by his countryman Johann Elert **Bode**.
  - A=0.4+0.3*2^m (m=-infinity for Mercury, m=0 for Venus, m=1 for Earth, m=2 for Mars, m=3 for Ceres, m=4 for Jupiter, m=5 for Saturn)
  - Holst The Planets https://www.youtube.com/watch?v=Isic2Z2e2xs
- Moons-Earth, Jupiter, Mars, Saturn
- Earth rotation, earth inclination to ecliptic plane, earth precession
- Eclipse of sun and of moon
- Stars, constellations of stars, zodiac and twelve major signs
- Oort cloud, Kuiper belt

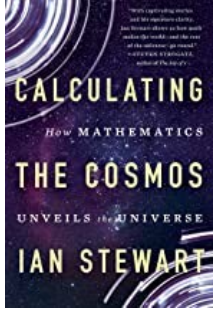
Orphic Egg

- The world egg, cosmic egg or mundane egg is a mythological motif found in the cosmogonies of many cultures that is present in proto-Indo-European culture and other cultures and civilizations.
- Typically, the world egg is a beginning of some sort, and the universe or some primordial being comes into existence by "hatching" from the egg, sometimes lain on the primordial waters of the Earth
- Eggs symbolize the unification of two complementary principles (represented by the egg white and the yolk) from which life or existence, in its most fundamental philosophical sense, emerges.

Cosmology

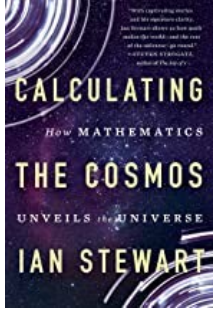
- Science, Religion and Big Bang
- Vesto Slipher (1912), Edwin Hubble (1924) observed all stars and galaxies are moving away from each other->they all started at a common point
- https://www.youtube.com/watch?v=q3MWRvLndzs
  - Singularity: The Part of the Everywhere Stretch
  - What happened before the Big Bang?
  - Not big, No bang
  - Inflation of space itself for a short period and then inflation stops
  - Universe may be eternal, not the words In the Beginning.
  - Roger Penrose, Cyclic Conformal Cosmology: mathematics of Big Bounce
- https://www.youtube.com/watch?v=dB7d89-YHjM

The Cosmic Egg



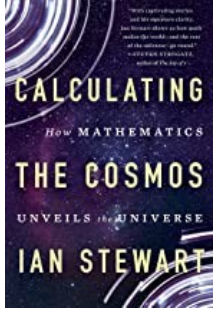
- In the beginning, there was nothing, which exploded—Terry Patchett, Lords and Ladies
- Most cosmologists today think the entire universe-space, time and matter-came into existence 13.8B years ago. A speck of spacetime appeared from nowhere and expanded with extraordinbary rapidity. After one billionth of a second, the initial violence tailed off enough for fundamental particles (quarks and gluons et al) came into being to form protons and neutrons, along with Higgs boson to set scale of masses of particles and fields
- It took a few more minutes for those particles to make simple atomic nuclei; atoms are nuclei plus electrons, and a further 380,000 years had to pass before electrons were thrown into the mix and atoms of the simplest elements, hydrogen, helium and deuterium, arose
- Only then could matter begin to form clumps under the influence of gravity, and eventually stars, planets, and galaxies appeared.
- Fred Hoyle, a renown British astronomer, coined the term Big Bang for this. He was a strong advocate of the steady state theory, where what happened didn't cause fundamental change: the universe gradually spreads out, gaining extra space as new partiles quietely appear from nothing in the voids between the galaxies

The Cosmic Egg



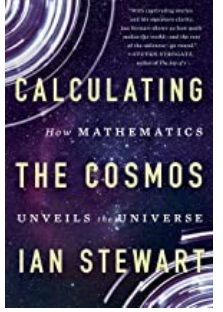
- Where did the Big Bang come from? In 1900, the prevailing wisdom in cosmology was very simple: our galaxy contained all the matter in the universe, outside was an infinite void
- The Galaxy did not collapse under its own gravity because it rotated and so was stable
- In 1915 Einstein published general relativity, but realised the model of the universe was not stable: gravity would cause this model to collapse, rotating or note, assuming a spherically symmetrical universe (but intuitively the same problem would afflict any other static model)
- In 1917 Einstein added an extra term the metric multiplied by a constant later called the cosmological constant which causes the metric to expand,so by adjusting the constant the expansion cancels out the gravitational collapse
- In 1927 Lemaitre used Einstein's equations to deduce the geometry of the entire universe, and discovered this model shows the universe is expanding at a constant rate

The Cosmic Egg



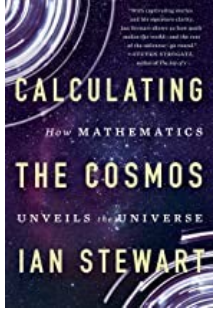
- If you believe the universe is eternal and immutable, an expanding universe is hard to accept
- Everything there was had to be turning into increasingly more everything: where did this new stuff come from?
- Evidence emerged to vindicate Lemaitre: Hubble and his colleague Leavitt, cataloging the brightness of thousands of stars, noticed a mathematical pattern in one particular type of star called a cxepheid variable: the intrinsic brightness, or luminosity, is related, in a specific mathematical manner, to the period over which the brightness repeats. Astronomers call Cepheid variable stars standard candles, whose apparent brightness can be compared to their actual brightness, telling us how far away they must be
- In 1924 Hubble used Leavitt's distance-luminosity relation to estimate the distance to Andromeda galaxy M31; his estimate was 1M light years, the current estimate is 2.5M light years
- Vesto Slipher and Milton Humason discovered the spectra of many galaxies are shifted towards the red end of the spectrum, due to Doppler shift; Hubble took 46 galaxies known to contain Cepheids, making it possible to infer their distances, and plotted distance vs amount of redshift, coming up with a straight line, so galaxies reces with a speed proportional to distance (Hubble's Law, or roughly 70 km/sec per megaparsec today)

The Cosmic Egg



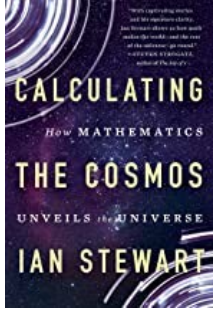
- Hubble's discovery was evidence for Lemaitre's cosmic egg: if you run an expanding universe backward in time, it all condenses to a point. The universe does not emerge from an egg: it is an egg. The egg appears from nowhere and grows. Both space and time spring into existence from nothing, and once they exist, today's universe evolves
- Hubble's observations convinced Einstein that Lemaitre had been right all along; Einstein realized he could have predicted cosmic expansion, by modifying his static solution into an expanding one, and the expansion would prevent gravitational collapse. The cosmological constant was not necessary, so Einstein removed it, calling it his greatest blunder.
- The result is a standard model of the spacetime geometry of the universe, the Friedmann-Lemaitre-Robertson-Walker metric, put together in the 1930s. It is a family of solutions, each giving a possible geometry (curvature can be zero, positive, or negative) and each universe is homogeneous (same at every point) and isotropic (same in every direction)
- Because time comes into existence with the Big Bang, there is no logical need to say what occurred before, there was NO before

The Cosmic Egg



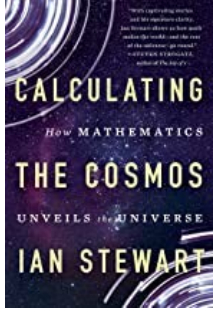
- Three things seem to be wrong with all of this
- Since the universe is only 13.8B years old, how can stars be 14.7B light years away, based on actual astronomical observations? To do so, the stars would have to move faster than the speed of light, which contradicts relativity theory
- For the same reason, galaxies cannot now be exceeding the speed of light
- If galaxies were exceeding the speed of light, we would not see them
- How to fix these problems:
- Relativity does not forbid space moving faster than light, so a region of space could exceed lightspeed, while matter within it would remain below lightspeed relative to the space it is in
- The light which we observe these distant galaxies isn't the light they are currently emitting: it is light they emitted in the past, when they were closed

The Cosmic Egg



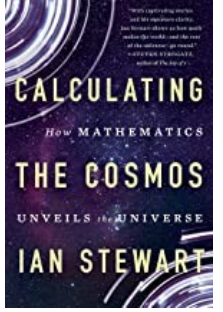
- According to Hubble's law, distant galaxies have greater redshifts, so they must be moving faster
- At first sight, this is inconsistent with general relativity, which predicts the expansion rate should slow down as time passes, but wait, we must think relativistically: the furthere away a galaxy is, the longer its light has taken to reach us, so its redshift now indicates its velocity then
- Hubble's law implies the further into the past we look, the faster space was expanding: the expansion was initially rapid, but then slowed in accordance with general relativity
- If the expansion of the universe was due to the initial Bang, as the universe began to grow, its own gravity started to pll it back again. Observations indicate that until about 5B years ago this is what happened, based on the expansion rate growing by 218 km per second for every million light years of distance, so equivalently it has decreased by 218 km per second for every million years after the big bang.
- New observations suggest this slowdown in expansion seems to have been reversed!

The Cosmic Egg



- In 1948 Ralph Alpher and Robert Herman predicted the Big Bang ought to have left an imprint on the background radiation level of the universe: a uniform cosmic background radiation CMB
- In 1960 Yakov Zel'dovich and Robert Dicke independently discovered the same result
- In 1960 David Wilkinson and Peter Roll started to build a Dicke radiometer to measure this
- In 1965 Arno Penzias and Robert Wilson used a Dicke radiometer to construct one of the first radio telescopes and discovered a persistent background noise that was cosmological in origin
- The CMB is a relic of the universe when it was 379K years old, when its temperature dropped to 3000K making it possible for electrons to combine with protons to form hydrogen atoms. The universe became transparent to electromagnetic radiation: let there be light
- CMB is not exactly uniform in all directions: there ought to be very small fluctuations, on the order of 0.001% to 0.01%. In 1992 Cosmic Background Explorer (C)BE) mission measured these inhomogeneities, and was confirmed by WMAP probe.

The Cosmic Egg



- The most recent measurements from WMAP that the CMB isa almost uniform; computer simulations of Big Bang suggest these fluctations are TOO small, so small that the current clumpinessof the universe has not had sufficient time to evolve
- One way to fix this is to modify the theory so the early universe is clumpier to begin with, so today matter is too clumpy to fit the standard Big Bang, but spacetime is near flat (not clumpy enough)
- The horizon problem is that standard Big Bang predicts parts of the universe that are too far apart to have real causal effect on each should nevertheless have a similar distribution of matter and a similar CMB temperature: how is this possible?
- In 1979 Alan Guth solved both issues, making spacetime flat while allowing matter to stay clumpy, and solving the horizon problem
- Suppose the universe undergoes a rapid expansion(inflation) so nearby pieces suddenly are quickly separated, and everything becomes homogeneous
- Basic problem: how do you turn inflation off?

Cosmology: Big Bang vs Bible

The big bang is diametrically opposed to the supernatural creation described in the Bible. Furthermore, there are many other differences between the Big Bang and the Biblical account of origins, for example

- The Bible tells us that God created heaven, earth, and everything within them in the span of six days (Exodus 20:11) and rested on the seventh day. This is the basis for our work week (Exodus 20:8). In contrast, the big bang model claims that the universe and earth formed over billions of years.
- Genesis tells us that God created the stars on the fourth day—three days after the earth was created. In contrast, the big bang model claims that stars existed billions of years before the earth.
- The Bible tells us that the earth was made from water (2 Peter 3:5; Genesis 1:2–9; Psalm 24:2), but the standard secular model teaches that the earth began as a molten planet which cooled over millions of years, and that the oceans were the result of asteroid or meteor impacts, or from dissolution of comets as they entered earth's atmosphere.

How Did the Big Bang Theory Become Dominant Secular Model of Cosmology?

- The big bang model predicted that the universe ought to be filled with radiation in the microwave part of the spectrum having a temperature of only a few Kelvin (K). This radiation, referred to as the Cosmic Microwave Background, supposedly comes from a time a few hundred thousand years after the big bang.
- When the Cosmic Microwave Background (often abbreviated CMB or CBR) was then discovered in 1964, and which was now a successful prediction of the big bang. Other cosmologies like the steady state model fell out of favor and the big bang assumed the position as the most popular of the naturalistic cosmologies. Ironically, it was a staunch opponent (and steady state proponent) of the Cosmic Egg hypothesis, who gave it the name we use today. Sir Frederick Hoyle mockingly nicknamed it the big bang and the name stuck.
- As it turns out the CMB was the one successful prediction of the big bang model, but there are many problems with it. But for every problem that crops up, a new addition to the model is proposed which rescues the paradigm. But there is no proof for any of these rescuing devices; and no real empirical data to refute the following problems with the big bang.

Problem with Big Bang: Missing Monopoles

- A ***monopole*** is a hypothetical massive particle that is just like a magnet but with only one pole. So a monopole would have either a north pole or a south pole, but not both.
- Particle physicists claim that the high temperature conditions of the big bang should have created magnetic monopoles.
- Since monopoles are predicted to be stable, they should have lasted to this day. Yet, despite considerable searching, monopoles have not been found.
- The fact that we don't find any monopoles strongly suggests that the universe never was that hot. This indicates that there never was a big bang. But the lack of monopoles is not problematic for the Bible's account of creation because the universe did not start at extremely high temperatures.

Problem with Big Bang: Too Little Antimatter

- The big bang model proposes that matter (hydrogen and helium gas) was created from energy as the universe expanded. However, experimental physics tells us that whenever matter is created from energy, such a reaction also produces antimatter. Antimatter has similar properties to matter, except the charges of the particles are reversed.
- The big bang should have produced equal amounts of matter and antimatter. Thus, if the big bang were true, there should be an equal amount of matter and antimatter in the universe today. But there is not. The visible universe is comprised almost entirely of matter—with only trace amounts of antimatter.

Big Bang Problem: No Population III Stars

- The big bang model by itself can account for the existence of only the three lightest elements (hydrogen, helium, and trace amounts of lithium). This leaves the other naturally occurring elements unexplained. Since the conditions in the big bang model are not right to form these heavier elements, secular astronomers believe that stars have produced the remaining elements by nuclear fusion in their cores, which then distribute the heavier elements into space when they exploded (went supernovae).
- Second- and third-generation stars are thus “contaminated” with small amounts of these heavier elements. If this were true, then the first stars would be comprised of only the three lightest elements (since these would have been the only elements in existence initially). Some such stars should still be around today since their lifespans are supposed to exceed the 13.8 billion years that has elapsed since the big bang. Such stars would be called “population III” stars. Amazingly population III stars have not been found anywhere. All known stars have at least trace amounts of heavy elements in them.

Big Bang Problem:
No Evidence for Cosmic Inflation

- According to the big bang model, the universe suddenly appeared 13.8 billion years ago in a very dense, hot state that expanded into the universe that we see today. But cosmologists realized that there were problems with the CMB.
- One of these was the horizon problem: the CMB observed from opposite parts of the sky had precisely the same temperature. But how could that be? Those positions opposite one another had never had a chance to exchange heat, so how could they have come into thermal equilibrium.
- A theoretical physicist named Alan Guth suggested cosmic inflation to solve the horizon problem. According to the theory of cosmic inflation, 10-34 seconds after the big bang the universe briefly and rapidly expanded, or inflated, to a much larger size with a velocity far faster than the speed of light.
- This would allow the entire universe initially to be in thermal contact so that it could come into the thermal equilibrium before being pulled out of thermal equilibrium by inflation. The only problem with inflation? There's absolutely no evidence for it, and attempted "proofs" have been proposed and then bit the dust.

Big Bang Problem:
Twofold Hot and Cold Problem with Regions of CMB

- The Axis of Evil is a large region of the mapped CMB that has hotter than expected temperatures (below the ecliptic plane) than the Big Bang would allow for. The Cold Spot is a smaller circular region which has colder than expected temperatures. Both were first detected by the WMAP (Wilkinson Microwave Anisotropy Probe) launched in 2001. Rather than confront the problems, scientists ascribed it to lack of precise data and hoped they would go away.

- But in 2009 the Planck probe was launched and has provided the most detailed data on the CMB to date. Both the Axis of Evil and the Cold Spot were still there in the data. There are two major problems with the axis of evil. The axis of evil extends over too large an area to be due to primordial density differences. There are many properties of the CMB that the big bang model can account for, such as a slightly warmer and cooler directions in space that are diametrically opposite. However, there is no known effect that can explain the axis of evil. Second, the axis of evil aligns with the plane in which the earth and the other planets orbit the sun. If the CMB truly is cosmological, this makes no sense—why would some huge structure in the universe align with the plane of the solar system? This alignment to the plane of the solar system suggests that the axis of evil is locally generated rather than cosmically generated.

Big Bang Problem:
Twofold Hot and Cold Problem with Regions of CMB

- The cold spot is about 10 degrees in diameter, and it has an average temperature of 70 μK (0.00007 K). In contrast, the temperature fluctuations attributed to density variations in the early universe extend over much smaller parts of the sky and typically differ by only 18 μK from the average CMB temperature. Furthermore, some portions of the cold spot are 140 μK cooler than the average CMB temperature. Not only that, but the Cold Spot is below the ecliptic plane, which typically has higher temperatures than areas above the ecliptic plane. This result is puzzling to cosmologists. There have been several proposed explanations for the cold spot. One suggestion is that it is the result of a supervoid in direction of the cold spot. A more fanciful proposal is that this is the signature of another universe that left its imprint on our universe during cosmic inflation that hypothetically happened shortly after the big bang. But most cosmologists seem to be content to ignore the cold spot too.

Big Bang with Inflation

- **The Flatness Problem:**
  Imagine living on the surface of a soccer ball (a 2-dimensional world). It might be obvious to you that this surface was curved and that you were living in a closed universe. However, if that ball expanded to the size of the Earth, it would appear flat to you, even though it is still a sphere on larger scales. Now imagine increasing the size of that ball to astronomical scales. To you, it would appear to be flat as far as you could see, even though it might have been very curved to start with. Inflation stretches any initial curvature of the 3-dimensional universe to near flatness.

- **The Horizon Problem:**
  Since Inflation supposes a burst of exponential expansion in the early universe, it follows that distant regions were actually much closer together prior to Inflation than they would have been with only standard Big Bang expansion. Thus, such regions could have been in causal contact prior to Inflation and could have attained a uniform temperature.

- **The Monopole Problem:**
  Inflation allows for magnetic monopoles to exist as long as they were produced prior to the period of inflation. During inflation, the density of monopoles drops exponentially, so their abundance drops to undetectable levels.

Cosmology: Big Bounce

- The **Big Bounce** is a hypothesized cosmological model for the origin of the known universe. It was originally suggested as a phase of the cyclic model or oscillatory universe interpretation of the Big Bang, where the first cosmological event was the result of the collapse of a previous universe. It receded from serious consideration in the early 1980s after inflation theory emerged as a solution to the horizon problem, which had arisen from advances in observations revealing the large-scale structure of the universe. In the early 2000s, inflation was found by some theorists to be problematic and unfalsifiable in that its various parameters could be adjusted to fit any observations, so that the properties of the observable universe are a matter of chance. Alternative pictures including a Big Bounce may provide a predictive and falsifiable possible solution to the horizon problem, and are under active investigation
- https://www.quantamagazine.org/big-bounce-models-reignite-big-bang-debate-20180131/,
- https://www.quantamagazine.org/big-bounce-simulations-challenge-the-big-bang-20200804/

Cosmology: Big Bounce and Roger Penrose, 2020 Nobel Prize in Physics

- Infinite Cycles of the Universe
- https://www.youtube.com/watch?v=K_FUlo8BF9Y
- The Beginning of the Universe: Conformal Cyclic Cosmology
- https://www.youtube.com/watch?v=h-ZmwHOUAlw
- On Cyclic Cosmology
- https://www.youtube.com/watch?v=JeahffPMR5c
- Why Explore Cosmos and Consciousness?
- https://www.youtube.com/watch?v=dlv8DVb6e0Q
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Cosmology: Multiverses

- **Quilted multiverse**: an infinite patchwork in which any region has a nearly exact copy somewhere else
- **Inflationary multiverse:** whenever eternal inflation blows up the television and the cat, a new universe with different fundamental constants bubbles off
- **Landscape multiverse**: a network of alternative universes linked by quantum tunnelling, each obeying its own version of string theory
- **Quantum multiverse:** a superposition of parallel worlds, each with its own separate existence.

Cosmology: 26 Real Dimensional Universe

26 REAL DIMENSIONAL SYMPLECTIC[1] UNIVERSE	
10 Matter Dimensions	**10 Dark Matter Dimensions**
Space-Time 4 Dimensions (x,y,z,ict^2)	Space-Time 4 Dimensions $i * (x,y,z,ict) = (ix,iy,iz,-ct)$
Symplectic Calabi-Yau Manifold 6 Compactified Dimensions 3 Holes – Genus 3 Hodge Diamond (9,11,6,7)	Symplectic Calabi-Yau Manifold 6 Compactified Dimensions 4 Holes – Genus 4 Hodge Diamond (17,12,21,12)
Symplectic Calabi-Yau Manifold 6 Synchronizing Compactified Dimensions 8 Holes – Genus 8 Hodge Diamond (8,23,21,17)	

[1] Symplectic = real and imaginary pairs.
[2] ict = √(-1) * speed of light * time.

Components of 26 Dimensional Universe

- **Space Foam Compartment**
  - Twenty six dimensional with information (algorithms and data)
- **Fermion Matter**
  - Ten dimensional with ten strings per subquark
  - Electron (torus shaped) covered with information
  - Obeys exclusion principle
- **Fermion Dark Matter**
  - Ten dimensional with five strings per subquark and no electron
  - Obeys exclusion principle
- **Bosons**
  - Twenty six dimensional with no exclusion principle

Components of 26 Dimensional Universe

- **Fermion Matter**
  - Subquarks and components of atoms live forever
  - Life is created out of fermion matter and fermion dark matter/soul and evolves
- **Fermion Dark Matter**
  - Subquarks live forever, quiescent with no kinetic energy forming tubes in interstellar space thousands of kilometers long, or active when close to kinetic energy (in stars, in core or surface of planets)
  - Fermion dark matter links with fermion matter to incarnate at birth and to disincarnate on death
  - Fermion dark matter is sentient and continually evolves mental/spiritual capabilities
  - Fermion dark matter creates archetypes of planets linked to astrology

Big Bounce

- All Matter Is Converted to Dark Matter
  - No electrons, only subquarks in space compartments
- Bounce Occured When Space Foam Compartments Collapse then Bounce
  - Inflation is expansion of collapsed space foam compartments
  - Dark energy is energy generated from bounce
  - This occcured several trillion years ago with creation of two Higgs bosons, one for dark matter and one for matter, to handle scaling of masses et al
  - Dark matter combined and evolved to create sentient creatures/souls
  - Much later after bounce, matter was created
  - After expansion, universe begins to collapse to start cycle over again
- Other universes/multiverses are also extant and going through cyclical bounces

Esoteric Cosmology

- In esoteric cosmology expansion refers to the emanation or unfolding of steadily denser planes or spheres from the spiritual summit, what Greek philosophy called The One, until the lowest and most material world is reached.
- Rosicrucianism arose in Europe in the early 17th century after publication of several texts purporting an esoteric order to the world that had ties to Kabbalah, Hermeticism, alchemy and Christian mysticism and gnosticism. According to Rosicrucians, there is no such thing as empty or void space. Spirit impaled on the cross of matter is the Human Condition.
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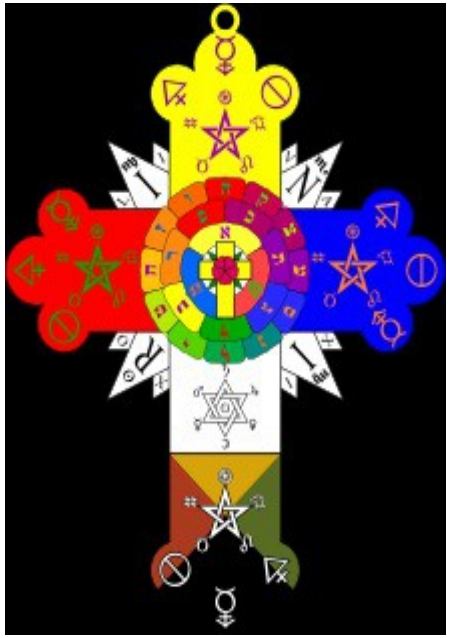
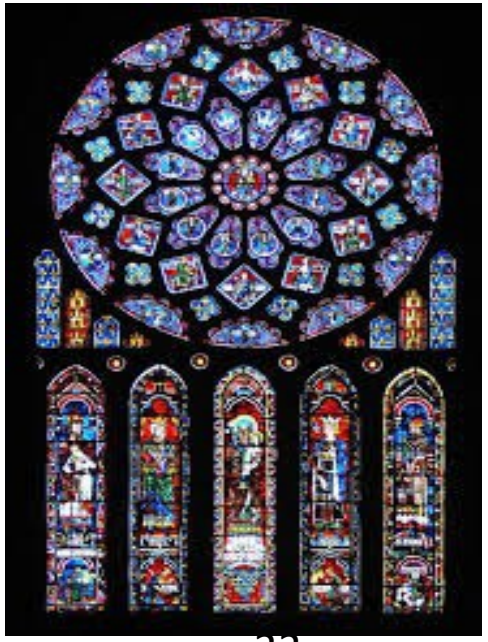
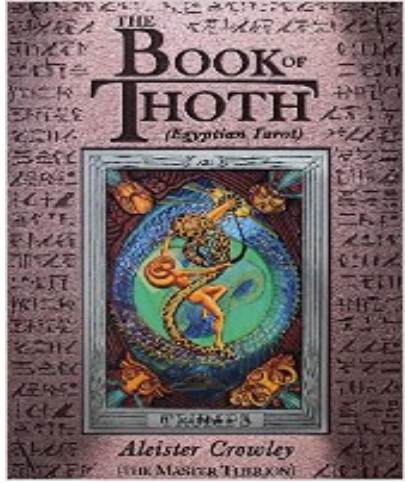




Aleicester Crowley: The Book of Thoth



The Book of Thoth: A Short Essay on the Tarot of the Egyptians is the title of The Equinox, volume III, number 5, by English author and occultist Aleister Crowley. The publication date is recorded as the vernal equinox of 1944 (an Ixviii Sol in 0° 0' 0" Aries, March 21, 1944 e. v. 5:29 p.m.) and was originally published in an edition limited to 200 numbered and signed copies.

This book describes the philosophy and the use of Aleister Crowley's Thoth Tarot, a deck of Tarot cards designed by Crowley and co-designed and painted by Lady Frieda Harris. The Thoth Tarot has become one of the best-selling and most popular Tarot Decks in the world

Aleicester Crowley: Thoth Tarot

Rosicrucian Cosmology

- "The space is Spirit in its attenuated form; while matter is crystallized space or Spirit. Spirit in manifestation is dual, that which we see as Form is the negative manifestation of Spirit--crystallized and inert.
- The positive pole of Spirit manifests as Life, galvanizing the negative Form into action, but both Life and Form originated in Spirit, Space, Chaos!
- On the other hand, Chaos is not a state which has existed in the past and has now entirely disappeared. It is all around us at the present moment.
- Were it not that old forms--having outlived their usefulness--are constantly being resolved back into that Chaos, which is also as constantly giving birth to new forms, there could be no progress; the work of evolution would cease and stagnation would prevent the possibility of advancement."

Freemasonry

Freemasonry or Masonry consists of fraternal organisations that trace their origins to the local fraternities of stonemasons that from the end of the 14th century regulated the qualifications of stonemasons and their interaction with authorities and clients. Freemasonry has been the subject of numerous conspiracy theories throughout the years. Modern Freemasonry broadly consists of two main recognition groups:

Regular Freemasonry insists that a volume of scripture be open in a working lodge, that every member profess belief in a Supreme Being, that no women be admitted, and that the discussion of religion and politics be banned.

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Continental Freemasonry is now the general term for the jurisdictions that have removed some, or all, of these restrictions.

The basic, local organisational unit of Freemasonry is the Lodge. These private Lodges are usually supervised at the regional level (usually coterminous with either a state, province, or national border) by a Grand Lodge or Grand Orient. There is no international, worldwide Grand Lodge that supervises all of Freemasonry; each Grand Lodge is independent, and they do not necessarily recognise each other as being legitimate.

Knights Templar

The Poor Fellow-Soldiers of Christ and of the Temple of Solomon (Latin: Pauperes commilitones Christi Templique Salomonici), also known as the Order of Solomon's Temple, the Knights Templar or simply the Templars, were a Catholic military order founded in 1119, headquartered on the Temple Mount in Jerusalem through 1128 when they went to meet with Pope Honorius II. They were recognized in 1139 by the papal bull Omne datum optimum. The order was active until 1312 when it was perpetually suppressed by Pope Clement V by the bull Vox in excelso

The Templars became a favored charity throughout Christendom, and grew rapidly in membership and power. They were prominent in Christian finance. Templar knights, in their distinctive white mantles with a red cross, were amongst the most skilled fighting units of the Crusades. Non-combatant members of the order, who made up as much as 90% of their members, managed a large economic infrastructure throughout Christendom, developing innovative financial techniques that were an early form of banking, building its own network of nearly 1,000 commanderies and fortifications across Europe and the Holy Land, and arguably forming the world's first multinational corporation.

Tikkun Olam

Tikkun olam (Hebrew: תיקון עולם, lit. 'repair of the world') is a concept in Judaism, interpreted by some within Orthodox Judaism as the prospect of overcoming all forms of idolatry, and by other Jewish thinkers as an aspiration to behave and act constructively and beneficially.

Documented use of the term dates back to the Mishnaic period (ca. 10–220 CE). Since medieval times, kabbalistic literature has broadened use of the term. In the modern era, among the post-Haskalah movements, tikkun olam is the idea that Jews bear responsibility not only for their own moral, spiritual, and material welfare, but also for the welfare of society at large. For many contemporary pluralistic rabbis, the term refers to "Jewish social justice" or "the establishment of Godly qualities throughout the world".

Lurianic Kabbalah dwells on the role of prayer and ritual in tikkun of the upper worlds. According to this vision of the world, God contracted part of God's infinite light (Ohr Ein Sof)—concealing Himself—to create the world. The vessels (kelim) of the first universe—Olam HaTohu, i.e., the "world of chaos"—shattered (Shevirat HaKelim) and their shards became sparks of light (neẓuẓot) trapped within the next universe—Olam HaTikun, i.e., "the world of rectification." Prayer, especially contemplation of various aspects of the divinity (sephirot), releases these sparks of God's light and allows them to reunite with God's essence. The “rectification” is two-fold: the gathering of light and of souls, to be achieved by human beings through the contemplative performance of religious acts. The goal of such repair, which can only be effected by humans, is to separate what is holy from the created world, thus depriving the physical world of its very existence, destroying the material universe. This restores all things to a world before disaster within the Godhead.