

The First Ten Million Millennia or So

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THE FIRST TEN MILLION MILLENNIA OR SO

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In the "beginning," nothing
No time, no space, no matter.
No energy, no strings
nothing
not even a point, not even a void
nothing

No laws of physics
no myths, no gods;
nothing, absolutely nothing

Then, a singularity . . .
Call it a bang, call it a Big Bang, call it light, call it God.
Perhaps a thought.
In the beginning, the Laws of Logic begat the Laws of Physics.
The rules.
From Nothing, expansion,
false vacuums, phase changes, beginning of time, and space.
Potential for something, Everything.
Energy, potential.
Waves, strings;
vibrating strings
monopoles, sheets, threads
webs.

From the void, chaos
out of vacuum, Genesis.
Condensation, knots,
cosmic freezing,
wrinkles in time, defects, domains,
Bubbles, foams. A detergent universe.
Strong force, weak force,
symmetry breaking; machos, wimps,
tubes of energy, gigantic loops.
A pasta universe.

Plasma mist, quarks, gluons, muons
nuclei, electrons
protons
collisions, bouncing
binding
Deuteronomy.

Add neutrons—
Tritium;
plus proton, Transmutation!
Helium 3, Alchemy.
Tritium swallows proton

Helium 4!
3 billion degrees or more.

A helium universe
three minutes gone.
Aeons more to go
before the Rest.

A Quantum world. The Dreams that Stuff are made of.
4 minutes into it
mostly light, photons swarm; electrons,
positrons annihilate
positrons gone.
A proton-electron world
of ghostly neutrinos and their anti's.

Lots of light, but no where to go; opaque.
Universe rests at helium,
but time goes on,
cooling the first millennium,
space expanding,
great attractors,
gravity.

Still opaque
300 000 years
3000 degrees
electrons and protons
hydrogen and photons
atoms
protons and electrons unite
mate.

Create, annihilate
create, annihilate
cooling universe, changing color.

In the beginning, lurid gamma, off the spectral scale;
shades to x-ray
fades to UV, then violet and blue
3000 degrees, yellow.

Visible matter, not the half of it,
dark matter, the cosmic glue . . .
dark invisible matter, holds the cosmos together
not baryonic
but what?
gravitino, photino, axion faith?



Invisible dark matter
closes the universe
gas and dust and that. Clumps.

Then, The Stellar Delivery Room
The crucibles of elements, the "metals."
Mostly nothing, a few dense spots,
patches made of "less nothing"
in a spider web of strings,
galaxies
clusters of galaxies,
150 million years into it.

Translucency;
light moves off.
Dense clumps
nebular womb
globules
embryos
Star birth! Here and there.
Condensing, collapsing, heating.

Hydrogen, helium fuse
150 million years into it
Matter everywhere, Energy (kinetic)
Flat whirling disks
Black holes
The Whole Shebang
Quasars
Ellipticals
Spirals

Space, flat and isotropic and clumpy,
burning stars
the Philosophers' Stones
hydrogen coal to helium gas
helium coal
carbon coal
coal coal
real coal for middle-aged stars.

Silicon cores
Finally, iron
The end of the road.

Superstars
Collapse, rebound
Supernova!

All the rows and columns of Mendeleev's Table
Periodic.
Stable, unstable.
Scattered to space.

The stuff of fable
two millennia ago, at 3 BC
a beacon in the east.

Cobalt, nickel, xenon
strontium, platinum, uranium and the rest
blasted to space
Stuff of Stars.
Building blocks of us

Movie Stars and railway cars
blown to a distant eddy
a new congealing gas-dust cloud,
on the edge of a spiral,
gravity attracts
rotation shapes
knots and eddies
a central star seed
ignites, lights
driving off its dust.

A disk
a gassy ring
condensing, cooling
Ice at edges.
In bulbous middle
gas balls grow,

The Giant Gods of Legend
Jovial, Neptunian, Saturnalia.
Uranian.

Fe and Ni to dense cores of embryo planets, proto Earth
Then rocks, oxygen, silicon, aluminum
A growing world,
Dante's Inferno, layer by layer.

Earth emerges, Gaea
Bright it gleams, molten,
heated by energy within and without
Uranus and Thor's Daughters,
Alpha and Beta,
And stoned by Jove and Oort,
Pebbles from space.

A hot birth
volatiles boiled off, gone
blown away by sunlight
rarely, giant impacts
towering walls of ejected lava,
liquid craters
magma oceans
Dante's nightmare
violent rebirths, Begin again.

Time . . .
cooling, congealing
. . . heals all
rafts of rock, floating under
a moonless sky.
a cinder, healing,
a cooling lump.
A lonely sky.

Another world, passing by
Perturbed, no doubt, closes in
smashes, crashes,
splashes molten mantle to orbit.
A moon made out of Earth
drying out our planet,
already bone dry.

All gases, long gone; never there.

