SYMMETRY blink GRAVITY

Before the shiny worms did writhe and wriggle in the mud,
before that mud was muddy and before the putrid slime,
before the seas receded and the land stretched out in light,
before the Earth was formed 'round searing sun,
before ignition of the sun shot forth the blinding light,
before the elements were brewed in hot primordial stars,
way back when there was no "before," and time had just been born,
And likewise space was bursting into being,
'twas then that *dot*, the universe, had symmetry so grand,
and brought forth from its energy a joyous multitude
of particles.

And many types of particles cavorted in that space,
And there were quarks and there were leptons, zooming here and there,
And they were always interacting with the spin-one ones.
(Some say they were not particles at all,
but strings minuter than minute vibrating on their own,
that look like particles from far, and *far* we'll always be.)
Some spin-one ones were gluons, and the photons were there too
and W's and B's* were all around,
and also others with no names, who've hidden from our view.
But all obeyed the symmetry as space flung out and out,
and cooled.

It was a symmetry so grand that reached to every spot,
and treated all those quarks and leptons equally to joy
of interaction with the spin-one ones pervading space.
With perfect rhythm, they all gaily swayed.
No mass was there, as spin-one ones would nakedly cavort
among themselves, and with the other particles they danced.
The quarks and leptons flew so wild for they were massless points
and reveled in the spin-one ones' delights.
And of disaster, devastation soon to burst the scene
no hint right then, 'midst all the fun, though there's no doubt that 'twas
surely predestined!

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*B is the name given to the gauge particle of the U(1) of hypercharge.

They reveled in their freedom — yes, unfettered, unrestrained —
but all the while the universe unfurled in fur(i)ous haste.
And it did cool and cool and cool to Higgses' great delight,
for they, in turn, could *thicken* all of space.
And that is how they plucked brute "mass" right out of space itself,
thus breaking down the symmetry as "mass" came into being
and splattered on the spin-one ones with horrible, hot spite.
At first small symmetries remained unbowed.
But then that 'lectroweak one was most cru-e-lly untwined
by Higgses flinging "mass" about, like mudballs that then smashed
and spin-one ones defiled!

The bits of shattered symmetry that still reigned on stood tall,
their pride shined faintly 'mid the shards that lay there all around.
Electromagnetism did survive along with Strong
the brutal chaos of the sudden fall.
Their spin-one ones, the photon and strong-colored gluons pure,
remained untouched, unsullied by debilitative "mass."
The quarks were all consoled that color-charge was still conserved,
ignoring warnings of those gluons' might.
And so they gathered in small groups to celebrate that strength,
extolling with conceit and such proud haughty arrogance
the power of "color."

But then those quarks could not resist the gluons rav'nous grasp.
And so their liberty was lost, despite their plaintive cries,
their freedom gone as they were all entombed in gluon bags,
no more to roam, no more to dance about.
But gluons' powerful crushing grips turned on themselves as well —
no *single* gluon could exist though two would clench entwined
and hide their color from the world as glueballs they did form.
Thus color-charge of quarks' and gluons' pride
in glueballs and quark-hadron bags are hidden from our view.
Most hadrons then decayed away, just protons 'n neutrons left,
later to be cooked together.

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But leptons are all colorless, immune to gluons' songs,
so they could still fly here and there with full impunity.
And free most are today as well, except for those with charge.
For photons' songs enchant all charge e'en now,
with their bewitching, 'xotic tunes that do both pull and push
electrons, protons and the rest, beguiled by wistful strains.
Some charge was minus, some was plus frustrating each's effect.
Most 'lectrons were enticed by nuclei
and that embrace did form the atoms 'n molecules, uncharged.
Thus charge was by and large erased, though easily brought forth,
but *mostly* hidden.

Well when that blink* of time was gone, grand symmetry undone,
just colorless and neutral dust and splinters then remained.
And lo the weakest force of all stood out above the rest;
'twas gravity that then held sway o'er all.
Its subtle secret 's that it never can be neutralized.
The "power" is that it just pulls, no pushes canceling.
It can't be hidden, can't be quenched and so it reigns supreme.
And all the teeming galaxies of searing stars that be,
and crunching great black holes of song and verse,
are glor(i)ous children of its loins as now it does dictate
the order of our universe.

*The time for the grand symmetry to be broken and hadrons to be formed is thought to have been extremely short, but the time for neutral atoms to dominate is estimated to be roughly 400,000 years. However, the universe is roughly 14 billion years old (14×10^9), so that the time it took was about 3 one-hundred-thousandths (3×10^{-5} or .00003) of the age of the universe, about the same ratio as the blink of an eye to an entire day — with poetic license, it is surely a blink of time.