

A Possible Connection Between "Inflation" and the "Big Crunch"

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(Revised Nov., 2010)

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Abstract

In Alan Guth's theory of inflation, "repulsive gravity" is produced by the "negative pressure" of a supercooled "Higgs inflaton field" in a "false vacuum". This "repulsive gravity" drives the expansion of space (restoring the "true vacuum") during the brief period of inflation which initiates the Universe. There is a curious similarity between this conception of the mechanics of inflation and the notion of a "rebound" at the end of a cosmic life cycle or "Big Crunch" in a closed, cyclic Universe. This "rebound" is the explosion of a cosmic-sized black hole which has exhausted all external supplies of space, and so can no longer create the gravitational field and time dimension necessary to contain its energy content, which exists largely or wholly in the form of gravitationally bound light (due to proton decay within the black hole's event horizon). (See: "[Entropy, Gravitation, and Thermodynamics](#)".)

Repulsive Gravity and Black Holes

In the "[Tetrahedron Model](#)", *gravity is the spatial consequence of the intrinsic motion of time*; the one-way flow of gravity is likewise the consequence of the one-way flow of time, which in turn is required by the one-way flow of causality. "Repulsive gravity" could therefore only be produced by the reversal of time and its gravitational linkage - the gravitational equation would have to be reversible. Causality forbids such a reversal in a system of matter, but this is possible in an acausal and atemporal system of light. We see hints of this reversal in the gravitational conversion of bound to free energy (as in stars), and in the role of time as the *implicit* driver of light's intrinsic motion ("frequency") (see: "[The Conversion of Space to Time](#)"). Such a reversal is essentially what happens in the sudden explosion or "flash over" of the rebounding cosmic black hole, which is after all a time or temporal entropy surface bounding and containing a system of light - already a reversal of their usual positions and roles - while a black hole is a most curious "false vacuum" apparently composed of time rather than space. (See: "[A Description of Gravitation](#)".)

The sudden vanishing of time (for lack of space to resupply time and produce the gravitational containment effect) releases the free energy of the black hole. Light's own "intrinsic motion" drives the renewed expansion of spacetime (light is the only energy form capable of creating its own conservation/entropy domain wholly from its own nature). In effect, the usual relationship between time and gravity is reversed in this explosion, where the gravitationally bound energy of light is in the role of the "perched" or supercooled Higgs inflaton field - light "transformed to rest" but ready to escape at any time. Here the intrinsic motion (primordial entropy drive) of light is in the role of "negative pressure" which mimics "repulsive gravity".

Another "Scientific" Creation Story

In another version of this "scientific creation story" (which may not be as different as it seems), a quantum energy fluctuation in a *preexisting* (eternally existing) non-dimensional "vacuum" (the "Multiverse") materialized a particle so massive and long-lived that it needed a time dimension to satisfy its energy conservation account - requiring in addition the conservation of entropy, symmetry, and causality. Time is *implicit* (as "frequency") in light and simply becomes *explicit* when free energy is converted to bound energy (as by the weak force during the "Big Bang"). The intrinsic motion of the explicit time dimension produced a gravitational field whose negative energy exactly balanced the particle's positive energy, and together these two asymmetric forces (time and gravity) converted the symmetric non-dimensional vacuum into 4-dimensional spacetime. This conversion corresponds to the initial period of "inflation". Time is the positive driving force and gravity is the balancing negative force, both entropic in origin (adjuncts of energy conservation). Acting in concert and inducing each other in an endless cycle, time and gravity convert the non-dimensional vacuum into 4-dimensional spacetime, and in this symmetry-breaking process liberate vast quantities of vacuum energy in the form of particle-antiparticle pairs. The positive energy of these particles is exactly balanced by their negative gravitational energy. Most of these particle pairs annihilate each other, producing light. The gravitational field of these annihilated particles is destroyed along with their mass, so a residue of positive free energy is actually liberated from the vacuum by this creation process. It is perhaps analogous to a "heat of crystallization" produced by breaking the dimensional and energetic symmetry of the vacuum.

Due to the asymmetric interaction of the weak force with matter vs antimatter, a tiny residue of matter (about one part per ten billion) remains after the main annihilation event. (See: "[The Origin of Matter and Information](#)".) This residue is the atomic matter of our universe, and the positive energy of its rest mass remains balanced by the negative energy of its gravitational field. Symmetry conservation will eventually convert this matter residue to free energy (by a variety of processes, ultimately including proton decay and Hawking's "quantum radiance" of black holes). The net positive energy that has been liberated from the vacuum is in the form of light or free electromagnetic radiation, a form of energy which is both perfectly symmetric and perfectly conserved. Eventually, this radiation will cool and disperse, becoming indistinguishable from the cold and non-dimensional vacuum which produced it. (See: "[Symmetry Principles of the Unified Field Theory](#)".)

The Universe is a "dream" dreamed by the latent energy content of the vacuum (the "Multiverse"). The fact that this Universe is friendly to our life form is purely a matter of chance - the random happenstance of this particular "dream" episode. But all this has been foreseen by [Chardin and the Vedas](#).

Postscript: Recent Thoughts Concerning "Inflation" (July 2010)

I have always been suspicious of the concept of "inflation" (Alan Guth, et al), because of the bizarre manner in which it has been explained (supercooled "Higgs inflation field", "negative" gravity, "false vacuum", etc.).

Nevertheless, despite this off-putting and obfuscating descriptive nomenclature, recently it has occurred to me that "inflation" might reasonably describe an early time when our 4-D spacetime metric was simply torn apart by the extreme violence of the initial energy input of the "Big Bang", resulting in a runaway, uncontrolled vacuum state. This chaotic vacuum state persisted until expansion and cooling ("inflation") "tamed" the initial energy input to the point our ordinary 4-D spacetime metric could cope, at which point

inflation ceased and the familiar expansion of spacetime took over. This scenario seems to me a sensible interpretation of a possible "inflationary" era, including how it came to an end. How it began is another matter, but it could not have begun in our 4-D spacetime, since in this scenario our 4-D spacetime couldn't cope with such an intense energy density, and therefore certainly couldn't have created it. Hence the origin of the "Big Bang" energy must lie outside our dimensionality and universe, evidently in the "multiverse" and/or higher dimensionality (or a-dimensionality), the primal source of all energy ("God"). Curiously, this also squares with the biblical/mythological notion of an initial period of chaos ("wild and rude") before the actual creation, devoid of any law, even the metric of the vacuum. The Divine Energy is so potent and intense that not even the electromagnetic metric of spacetime can survive its creative touch; the initial energy input must first be tempered by a period of "inflationary" expansion and cooling before it can be harnessed and brought under the control of the metrics of electromagnetic energy, spacetime, and matter. Such an inflationary era would form an insulating barrier between the secular and divine realms; nothing of this world could possibly cross such a boundary.

I don't know if the inflationary era is real or not, but this is a scenario in which I could accept inflation as a logical/rational possibility with a sensible role to play, including a parallel mythological/religious expression in the metaphysical realm of human intuition and "ancient wisdom".

References:

Alan H. Guth: *The Inflationary Universe*. Helix Books, Addison-Wesley Pub. Co. Inc. 1997.
James Trefil: *Reading the Mind of God*. Charles Scribner's Sons 1989. Pages 209 - 215.

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