From the Big Bang to the Big Crunch

I proceed from the dialectical view that the ontological essences *finite* and *infinite* are mutually defining. In one of the finitenesses of the infinite space, there emerged our universe, with its beginning and inevitable end. Beyond our universe there exists the metaverse, consisting of different universes, or of at least *something*, if its laws and constants are cardinally different from ours. We are not likely to be able to understand this metaverse, at least in the next million years or two. Nonetheless, we must admit its existence, if only to avoid falling into the trap of space–time. This inseparable pair inevitably exists in the metaverse since, just like our universe, it *a priori* cannot be nonmaterial. This means that on the ontological level, there does not exist any zero in principle since the metaverse, which includes our universe, is eternal. By zero I mean a conditional point where the count starts from a certain event, which in our case is the birth of the universe. Although some theories assert that other universes may be located within our own—hence the term *mega-* or *multiverse* being applied to our universe—I believe that it is a single wholeness. I proceed also from the assumption that the universe is three-dimensional (plus time), while suggestions about the multidimensionality of certain sections of the universe are, though plausible, hypothetical for the time being. At least so far, neither microphysics nor cosmogony have presented convincing evidence in favor of multidimensionality.

Therefore, a tiny wholeness—let us call it *the cosmic Crumb*[[1]](#footnote-1)—formed in some location in the metaverse and exploded for some reason. The fact of the explosion itself is no longer in doubt thanks to the practical research work of physicists and cosmogonists. But it is still unclear of what the Crumb consisted and the reasons for its explosion.

On the philosophical level, the answer presents no great difficulty. Whichever theory or model of the Big Bang one may follow, none deny the existence of an original (even if in the form of a quantum field) material substance, however superdense or energetically rich it may have been. In Chapter I, I defined force as an attribute of matter, and, therefore, force must be inherent in any initial state of the universe.

Now let us recall Hegel and other philosophers who wrote of force. In all matter, there exists an internal and an external force. Their contradictory interaction causes matter to move. That is, since “force is the self-repelling contradiction; it is *active*.” Thus, the *external force* is active, aggressive, and seeks to close with another external force (in other words, it seeks to manifest itself externally), whereas the internal force, on the contrary, seeks to constrain the external one, i.e., preserve the whole. Hegel called this stage the “negative unity or essential being-in-itself.” However, the development of the contradiction leads to immediate Existence, and “force, then, as the determination of the reflected unity of the whole, is posited as becoming existent external manifoldness *from out of itself*.”[[2]](#footnote-2)

The Big Bang occurred as a result of internal contradictions of forces inside protons or other particles, leading to an “external variety” of a sort that hardly could have occurred to any kind of Designer. Even though “the properties of substance” of that matter are unknown, this could not prevent *force* as an attribute of matter from functioning because force is the cause of the motion of matter. It appears that this is how the problem of the Big Bang can be resolved on the philosophical level.

It is perfectly clear that this is not likely to satisfy cosmogonists. Let me, therefore, attempt to fill in the above reasoning with “physics” content.

Cosmogonists claim that in the pre-explosion state (for example, in the singularity), the Crumb contained a certain physical substance—infinitesimal mass—for example, protons and/or energetic vacuum with some virtual particles, perhaps quintessences. It seems to me that protons should be excluded from the primary state since otherwise we would have to admit the presence of nuclear forces in them and the corresponding gluons and quarks. Astrophysicists themselves admit their formation only after the explosion beyond the Planck time limits. It is therefore more logical to postulate that this infinitesimal mass was represented by some other particle—let us call it the *initial (i)*. The virtual particle of the energetic vacuum we shall call the *deion (d)*. Compressed into the Crumb by events in the metaverse, the density of mass and vacuum reached unimaginable magnitudes, say, the previously mentioned figure of 10120.

Within this Crumb, motion took place, together with all its attributes: space, time, and the forces that corresponded to the spatio-temperature scale of that integrity. We cannot say anything about the laws of matter’s motion in the pre-explosion state of the Crumb, but that does not mean that there were no such laws. Since the integrity was material—no matter what its size—all attributes of matter were inherent in it, including the laws to which it gives birth. Perhaps some things will become clearer once scientists manage to reproduce this state artificially, although that is a very doubtful proposition (considering the substance density); it would likely not be safe for our universe itself. Perhaps if we were to capture an initial (i) as a leftover particle in some other galaxy.

Gunzig’s conception does without the initial; in it, vacuum itself gives rise to matter. However, as far as we know, the virtual particles of vacuum cannot come into being without interaction with real particles. The role of the latter in this conception is played by space–time. This is possible, in principle, from the perspective of dialectics, but I am not sure that it is possible from that of physics. Since Gunzig is a physicist, I leave this topic for them to discuss. My approach, after all, is different.

The virtual particle *d* interacted with the real particle *i*, increasing the latter’s quantity and energy. This process led to the formation of fluctuations in the joint force field of initials and deions. However, the Crumb did not exist in “airless” space; it was surrounded on all sides by the metaverse and its force fields. At some moment, there occurred a violation of the “balance” of forces both within the Crumb and outside it, i.e., the balance between the total force of the Crumb (which was the rolled-tight cosmobia) and the external forces of the metaverse. This double violation of the balance of forces led to an explosion-jump, as a result of which the initial was either totally annihilated or some of it transformed into quanta—antiquarks (a quark–gluon soup)—with the ensuing chain of emergences—atoms, molecules, gravitational force, matter, and so on, all the way to galaxies and galactic clusters. It is conceivable that part of it remained in its original form, hidden in dark matter in the form of the above-mentioned axion.

As for the vacuum, its density fell abruptly almost to zero or at least below the current magnitude of the cosmological constant (0.7), which enabled gravity to form solid substances in the form of galaxies, stars, and planets. For a certain time period, until the abrupt expansion of the universe took place, the deion, as it were, “stepped aside,” only to reproduce itself later in the form of the constant λ. It is C (cosmobia), the rolled-up cosmic force—of which the deion was the main component—that played the crucial role in the emergence of the universe, and it is C—when it untwists and occupies most of the universe—that will play a key role in the Big Crunch, the heat death of the universe. This approach should have satisfied John Taylor and his theory of endless returns since it borders on one side on the already known theories of the post-explosion period, and on the other side, it abuts the unknown metauniverse.

I do not claim that my purely logical version is flawless. It does not pretend to that distinction, but on the metaphysical level, at least, it “allows” matter to stay “eternally alive”; the death of the universe means only a change in the content and form of matter. This naturally will lead to changes in the laws of force that will correspond to the new state of matter. At the same time, ***my conception assumes that not four but five forces are inherent to our universe, the fifth being the cosmic force with its deion particle, which appears as the antagonist of the graviton.*** Its presence leads me to the conclusion that the creation of a theory of super-grand quantum unification of forces is impossible without taking into account this fifth force. It appears that it is the gravitational and cosmic forces that must be unified to begin with on account of the approximately equal order of magnitude of their manifestation. This fifth force, C, while itself being in need of physical–mathematical understanding, must play a roll in any all-encompassing theory of the quantum field.

1. Do not be confused with the theory of “Cosmic Egg to the Big Bang” suggested by Belgian priest and astronomer Georges Lemaître. [↑](#footnote-ref-1)
2. *Hegel’s Science of Logic*, 520. [↑](#footnote-ref-2)