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Creation and Resurrection

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If I were to find myself resurrected after death, I might be surprised: "A miracle!" But I would be less surprised than I have already been by a miracle that I know has happened.

"Oh? What's that?"

"That I have been created in the first place. That's the really big miracle, and my continuing existence after death, however surprising, would be less miraculous." I often have this sort of conversation with my secular, scientific friends when asked about resurrection. They are almost always taken aback.

The story from science, I continue, is of a universe created from some fluctuation in a quantum vacuum, exploding into a huge cosmos, now thirteen billion years old. In that huge cosmos, life emerges on planet Earth, so far the only known planet with life, to generate billions of species over three and a half billion years. Among those species, one, and only one, *Homo sapiens,* has enough cognitive powers to marvel over this creation and to wonder whether there is resurrection. So here I am, made of quarks, generated from stardust, and worried about heaven to come. Our creation is the first staggering fact; life renewed after death would be continuing miracle, but, just that: *continuing* miracle.

My friends puzzle over my claim. "Well, I hadn' t thought of it like that. You could be right. I agree that *creation,* or (they may prefer to say) *nature* is surprising. Still, science leads us to think that nature is all there is. Resurrection is supernatural, and science doesn't allow us to believe in anything supernatural."

I here explore this further. Let me be clear about my argument. I make the case that, contrary to this seemingly scientific (or "scientistic") claim that science shuts out any possibility of resurrection, contemporary science leaves open such possibility. What we know from science about creation is compatible with faith in resurrection. I say nothing about "proof." The word "proof," many now think, belongs in the realm of mathematics. It doubtfully belongs even in natural science, where the most scientists can get is a well corroborated theory, supported by considerable evidence, coherent, and consistent with other theories. The better word is "plausible." So my argument is that nothing we know about "creation" (or "nature" if you prefer) makes resurrection implausible.

I do claim some theological ancestry. Recalling Ezekiel and the resurrection of the dry bones, Irenaeus remarks: "Surely it is much more difficult and incredible, from non-existent bones, and nerves, and veins, and the rest of man's organization, to bring it about that all this should be, and to make man an animated and rational creature, than to reintegrate again that which had been created and then afterward decomposed into earth."[1] Tertullian agrees: "On this principle, you may be quite sure that the restoration of the flesh is easier than its first formation."[2]

Resurrection, if true, is miracle. The classic evidence is the resurrection of Jesus Christ. Christians must pay careful attention to the evidence.[3] That faith does go beyond science. But as background to such faith, those who preach the resurrection

may take some comfort in signals of transcendence that can already be detected in creation.

(1) The Universe: Matter and Energy

There is creativity at the primordial big bang, which launches ongoing creativity in continuing expansion, at a critical rate. If the expansion rate of the universe had been a little faster or slower, then the universe would already have recollapsed or the galaxies and stars would not have formed. The various heavier elements (carbon, oxygen, sulphur, nitrogen, silicon, all of the elements heavier than hydrogen and helium) are forged stellar furnaces in proportions that make later planets and life possible. If the scale of the universe were much reduced (to galaxy size for instance), there would not have been enough time for stars to form and generate these elements. John Barrow, a mathematical cosmologist, surveys the universe: "Many of its most striking features—its vast size and huge age, the loneliness and darkness of space—are all necessary conditions for there to be intelligent observers like ourselves."[4]

John Wheeler, one of the most famous physicists since Einstein, has made a famous claim, enigmatically epitomized in his aphorism *"it from bit."* (The world of objects, "its," roots fundamentally in "bits," information units, a term borrowed from computer memories.) "It from bit symbolizes the idea that every item of the physical world has at bottom—at a very deep bottom, in most instances—an immaterial source and explanation, ... in short that all physical things are information-theoretic in origin and this is a *participatory universe"*[5] "The whole show is wired up together." "Will we someday understand time and space and all the other features that distinguish physics—and existence itself—as ... a self-synthesized information system?"[6]

In another metaphor, continuing the idea of a self-synthesized information system, the universe is sometimes described as a computer. The "computational universe" is programmed, as it were, to start simple and generate complexity, in the course of which it generates intelligent output, including life and mind.[7] If the universe is a machine, it is still more fundamentally a system tending toward generating information.

In the last half century, cosmologists have found dramatic interrelationships between astronomical and atomic scales that connect to make the universe "user-friendly." These discoveries are commonly gathered under the name "the anthropic principle." Cosmologists Bernard J. Carr and Martin J. Rees conclude: "The possibility of life as we know it evolving in the universe depends on the value of a few basic physical phenomena—and is remarkably sensitive to their numerical values." They find it "remarkable that the relationships dictated by physical theory happened also to be those propitious for life."[8]

Paul Davies, a cosmologist, claims that we hit "the cosmic jackpot," a universe "just right for life."[9] How the various physical processes are "fine-tuned to such stunning accuracy is surely one of the great mysteries of cosmology." "Extraordinary physical coincidences and apparently accidental cooperation ... offer compelling evidence that something is 'going on.'... A hidden principle seems to be at work."[10]

For example, the rate of expansion of space in the universe depends on the cosmological constant, usually symbolized by the Greek letter lambda, which is quite small (nearly zero, but not zero). This minute constant, expressed in natural units, is less than 10^{-120}. If written as an ordinary decimal this would be:
0.00000000000000000000000000000000000000000000000000000000000000000-
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Within conventional big bang cosmology, it has proven to be very difficult to understand why it is so tiny. By some accounts, the expected value today is 10^{60} to 10^{120} higher than its tiny life-permitting value. Martin Rees, prominent British astronomer, comments: 'The cosmic number lambda—describing the weakest force in nature, as well as the most mysterious—seems to control the universe's expansion and its eventual fate....Our existence requires that lambda should not have been too large."[12]

Change slightly the strengths of any of the binding forces that hold the world together, change critical particle masses and charges, and the stars would burn too quickly or too slowly, or atoms and molecules (including water, carbon, and oxygen) or amino acids (building blocks of life) would not form or remain stable.

The charges on the light electron and on the vastly more massive proton are exactly equal numerically. A fractional difference and there would have been nothing. John D. Barrow and Joseph Silk calculate that "small changes in the electric charge of the electron would block any kind of chemistry."[13] In this universe at least, these forces, and the particle masses and charges involved, have to be about what they are if matter is to become more complex, a prerequisite for anything still more complex developing.

A good planet is hard to find, and Earth is something of an anomaly, so far as we yet know. On Earth, complexity increases again, by (so to speak) many more orders of magnitude. Most planets, even though they contain suitable elements, will not be in a habitable temperature zone. Located at a felicitous distance from the sun, Earth has liquid water, atmosphere, a suitable mix of elements, compounds, minerals, and an ample supply of energy. "It appears that Earth got it just right," conclude Peter D. Ward and Donald Brownlee.[13]

So one of the surprises of contemporary physics is that the human person is composed of stardust, fossil stardust! Stephen M. Barr, a theoretical particle physicist, comments: Physicists "cannot get around the fact that our universe is a special kind of place—indeed, doubly special."[14] Roger Penrose, a cosmologist, concludes that ours is "an extraordinarily special Big Bang."[15] Martin Rees concludes: "We should surely probe deeper, and ask why a unique recipe for the physical world should permit consequences as interesting as those we see around us."[16] The start up looks like a set up.

(2) The Earth: Life

Nature on Earth has spun quite a story, going from zero through several billion species. M. J. Benton concludes: "Analysis of the fossil record of microbes, algae, fungi, protists, plants, and animals shows that the diversity of both marine and continental life increased exponentially since the end of the Precambrian."[17] Andrew H. Knoll celebrates "Earth's immense evolutionary epic": "The scientific account of life's long history abounds in both narrative verve and mystery."[18]

In the astrophysical universe, there were two metaphysical fundamentals: matter and energy. Einstein reduced these two to one: matter-energy. The biologists also claim two metaphysical fundamentals: matter-energy and information. The latter is radically novel. There appears proactive information about how to compose, maintain, communicate, and elaborate vital structures and processes. This is information about directed use, coded in the DNA, which is not present in the previous physico-chemical results of the big bang.

The critical difference is the information breakthrough with resulting capacity for agency, for *doing* something. Something can be discovered, learned, conserved, reproduced on Earth, but not on the moon. These achievements are, if you like, fully natural—they are not unnatural; they do not violate nature. But they also are novel achievements of "know-how," of agentive power. Something higher is reached, something "super" to the precedents, something superimposed, superintending, supervening on what went before.

Biologists need to be alert to this. George C. Williams, a theoretical biologist, is explicit: "Evolutionary biologists have failed to realize that they work with two more or less incommensurable domains: that of information and that of matter....The gene is a package of information."[19] James A. Shapiro, an evolutionary geneticist, concludes: "Thus, just as the genome has come to be seen as a highly sophisticated information storage system, its evolution has become a matter of highly sophisticated information processing."[20] A genome conserves a form of life, but a genome is equally a search program.

Despite the sophistication of the genome as a search program, contemporary biologists are divided across a spectrum whether this creative evolutionary history is entirely contingent or quite probable, even inevitable. At one end, famously, Jacques Monod, Nobel prize-winner, insists: "Chance *alone* is at the source of every innovation, of all creation in the biosphere." Evolutionary history is "the product of an enormous lottery presided over by natural selection, blindly picking the rare winners from among numbers drawn at utter random."[21]

But Christian De Duve, also a Nobel prize-winning biologist, concludes: "Life was bound to arise under the prevailing conditions, and it will arise similarly wherever and whenever the same conditions obtain. There is hardly any room for "lucky accidents" in the gradual, multistep process whereby life originated.... I view this universe [as] ... made in such a way as to generate life and mind, bound to give birth to thinking beings."[22]

Stephen Jay Gould, Harvard paleontologist, argued for forty years that evolutionary natural history was quite contingent. "Almost every interesting event of life's history falls into the realm of contingency."[23] "We are the accidental result of an unplanned process."[24] Life evolves by stumbling around.

But again, there is radical disagreement. One of the more philosophically remarkable happenings in contemporary paleontology is the way in which Simon Conway Morris, eminent Cambridge University paleontologist who did the detailed work on the fossil animals in the Burgess Shale which Gould uses, draws conclusions that are the "exact reverse."[25] We almost get slapped in the face with what radically different metaphysical frameworks eminent biologists can read into, or out of, the same evolutionary facts.

Conway Morris thinks he can discern "the inevitable and pre-ordained trajectories of evolution." "Life... is full of inherencies." "Life shows a kind of homing instinct... given enough time, the inevitable must happen." "Something like ourselves is an evolutionary inevitability, and our existence also reaffirms our one-ness with the rest of Creation."[26] Many classical biologists have believed that there is some tendency toward increased complexity across the millennia of natural history and that this is some sort of advance. William Day, a biologist, concludes that "as we arrange the sequences of evolution's advance, we discover an unsettling implication": "Each step

is an evolutionary curve; all steps together outline an accelerating advance for all biological evolution.... We are in the middle of something momentous taking place."[27]

Stuart Kauffman, a theoretical biologist, finds himself amazed at life, at agency: "It is utterly remarkable that agency has arisen in the universe—systems that are able to act on their own behalf; systems that modify the universe on their own behalf. Out of agency comes value and meaning." "Life is valuable on its own, a wonder of emergence, evolution and creativity. Reality is truly stunning."[27]

Momentous in this evolutionary natural history is the appearance of neurons, brains, with the emergence of consciousness. The appearance of sentience is the appearance of caring, when the organism is united with or torn from its loves. The earthen story is not merely of goings on, but of "going concerns." The evolutionary story could be titled, "The Evolution of Caring."

(3) Human Mind: Cognitive Spirit

Edward O. Wilson remarks of human brain evolution: "No organ in the history of life has grown faster."[29] Steve Dorus and a team of neurogeneticists conclude: "Human evolution is characterized by a dramatic increase in brain size and complexity."[30] J. Craig Venter and more than two hundred geneticist co-authors call the human brain "a massive singularity."[31]

Bruce Lahn, a neurogeneticist, puts it pointedly: "Human evolution is, in fact, a privileged process....To accomplish so much in so little evolutionary time—a few million years—requires a selection process that is perhaps categorically different from the typical processes of acquiring new biological traits....It required a level of selection that is unprecedented.... Humans occupy a unique position in the tree of life."[32]

Some trans-genetic threshold seems to have been crossed. The human brain is of such complexity that descriptive numbers are astronomical and difficult to fathom. A typical estimate is 10^{12} neurons, each with several thousand synapses (possibly tens of thousands). Each neuron can "talk" to many others. The postsynaptic membrane contains over a thousand different proteins in the signal receiving surface. "The most molecularly complex structure known [in the human body] is the postsynaptic side of the synapse," according to Seth Grant, a neuroscientist.[33] The result is a mental combinatorial explosion. The human brain is capable of forming thoughts numbering something in the range of $10^{70,000,000,000}$ thoughts, a number that dwarfs the number of atoms in the visible universe (10^{80}).[34] On a cosmic scale, humans are minuscule atoms, but on a complexity scale, humans have "hyperimmense" possibilities in mental complexity.[35] In our hundred and fifty pounds of protoplasm, in our three-pound brain, is more operational organization than in the whole of the Andromeda galaxy.

Human beings have ideational uniqueness that makes cumulative transmissible culture possible. Acquired knowledge and behavior is learned and transmitted from person to person, by one generation teaching another. Ideas pass from mind to mind, in large part through the medium of language. The human transition into culture is exponential, non-linear, reaching extraordinary epistemic powers. The determinants of animal and plant behavior are never anthropological, political, economic, technological, scientific, philosophical, ethical, or religious.

The nature and origins of language is proving, according to some experts in the field, "the hardest problem in science."[36] When knowledge becomes "ideational," these "ideas" make it possible to conceptualize and care about what is not present to

felt experience. Humans can produce arguments about ideals in the face of the real. The linguistic ideational uniqueness involves complex use of symbols. Ian Tattersall concludes: "We human beings are indeed mysterious animals. We are linked to the living world, but we are sharply distinguished by our cognitive powers, and much of our behavior is conditioned by abstract and symbolic concerns."[37]

Molecules, trillions of them, spin round in this astronomically complex webwork and generate the unified, centrally focused experience of mind. This is a process for which we can as yet scarcely imagine a theory. Life starts up, and, as we already recognized, on many of its trajectories, it smarts up. Blaisé Pascal's "thought" at the start of the Enlightenment is still true: "But, if a universe were to crush him, man would still be more noble than that which killed him, because he knows that he dies and the advantage which the universe has over him; the universe knows nothing of this. All our dignity consists, then, in thought."[38]

Spirited persons are the ultimate marvel. We humans are at once "spirited selves," enjoying our incarnation in flesh and blood, empowered for survival by our brain/minds, defending our personal selves, and yet transcending ourselves and our local concerns. *Homo sapiens* is the only part of the world free to orient itself with a view of the whole. We are not free from either the worlds of nature or culture, but free in those environments. That makes us, if you like, free spirits; it also makes us self-transcending spirits. We alone can wonder where we are, who we are, and what we ought to do.

A frequent way of reading the history of science is the displacing of humans from central focus. Earth is a lonely planet, lost out there in the stars; humans are late-comers on Earth, arriving in the last few seconds of geological and astronomical time. We are cosmic dwarfs, trivial on the cosmic scale. Copernicus dealt a cosmological blow: humans do not live at the center of the universe. Darwin struck an evolutionary blow: humans are not divine but animals. Watson and Crick struck a molecular biology blow: humans are nothing but electronic molecules in motion on atomic scales. Freud struck a psychological blow, the most humiliating of all: we persons are not masters of our own minds.

But with a gestalt switch, one can read the same natural history to find cosmic genius in humans. In astronomical nature and micronature, at both ends of the spectrum of size, nature lacks the complexity that it demonstrates at the mesolevels, found in our native ranges on Earth. Perhaps we humans are cosmic dwarfs; perhaps we are molecular giants. But there is no denying our mid-scale complexity. We human beings do not live at the range of the infinitely small, nor at that of the infinitely large, but we may well live at the range of the infinitely complex.

Terrence Deacon concludes: "Hundreds of millions of years of evolution have produced hundreds of thousands of species with brains, and tens of thousands with complex behavioral, perceptual, and learning abilities. Only one of these has ever wondered about its place in the world, because only one evolved the ability to do so."[39] The natural forces, thrusting up the myriad species, produced one that, so to speak, reached escape velocity, transcending the merely natural with cares superior to anything previously natural. A complement of this eternal mystery is the possibility for better and worse caring, for noble and for misplaced caring, for good and evil.

The embodied story is the human legacy of waking up to good and evil (as in Genesis 1-2), or the dreams of hope for the future (as with visions of the kingdom of

God). This, as much as logic and love, may be the *differentia* of the human genius. The generation of such caring is as revealing as anything else we know about natural history. The fact of the matter is that evolution has generated ideals in caring.

The singularities, if we may use a theological word, might also be "revealing" not simply about human spirit, but about divine spirit, about "Presence." Science gives us three principal data points: matter-energy, life, and mind. The first is universal, the second is rare, and the third is single and we are it. Is there a subtending field, a deeper source?

One conclusion is inescapable: what is "in our heads" is as startling as anything else yet known in the universe. We will be left wondering if this is a key, at cosmological and metaphysical levels, to what is going on "over our heads." Are we detecting Mind in, with, and under it all? We humans are spirited presence. Are we an icon of deeper Presence, Spirit suffusing the universe story?

My secular scientific colleagues will reply again that even if science does not give answers, we should still be naturalistic. Nature proves richer, more fertile, brooding, mysterious, than was recognized before. Such nature is a supercharged nature, but still nature. There is no Supernature, but nature is super. But Christians may want still deeper explanations: a Transcendence in which this self-transcending nature is embedded, a Ground of all Being. Supercharged nature signals Transcendent Presence.

There are forces at work that transcend the physical, the biological, the cultural. These spiritual forces sway the future because they have for millennia been breaking through and infusing what is going on. This detects from our present vantage a fourth dimension (Spirit) when three dimensions (matter, life, mind) are already incontestably evident and the fourth is secretly and impressively also at work.

Almost anything can happen in a world in which what we see around us has actually managed to happen. The creation has never yet proved simpler or less mysterious than we thought. We wonder if there is a "Logos" in, with, and under the logic of such nature. Maybe our presence is embraced by another Presence. To have faith in resurrection is not, in this view, to be naive, but rather to be realistic.

Notes

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