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Chapter 7 - Knocking on Heaven's door: Russian and modern cosmism

In “*Transcendence*” [Goffman 2015], Ken Goffman (aka RU Sirius of *Mondo 2000* fame) and Jay Cornell define cosmism as:

“Cosmism is a sort of philosophically laid-back version of transhumanism. In a culture that tends to be argumentative and filled with people who like to insist that their views are correct, cosmism doesn’t care if you’re viewing the universe as information or quantum information or hypercomputation or God stuff or whatever. Nor does it ask anyone to commit to AGI or mind uploading or brain-computer interfaces or fusion-powered toasters as the best way forward.

Rather, it seeks to infuse the human universe with an attitude of joy, growth, choice, and open-mindedness. Cosmism believes that science in its current form, just like religion and philosophy in their current forms, may turn out to be overly limited for the task of understanding life, mind, society, and reality - but it teaches that, if so, by actively engaging with the world and studying and engineering things, and by reflecting on ourselves carefully and intelligently, we will likely be able to discover the next stage in the evolution of collective thinking.”

I totally agree. I prefer to lie back and contemplate the endless possibilities in a transfinite cosmos without obsessing about life extension, accelerated technology, or when the Singularity arrives, if ever. These things will come when they come.

“*Transcendence*” has also a chapter dedicated to the [Mormon Transhumanist Association], with excerpts from an interview with the ever cogent and inspiring Lincoln Cannon.

The Russian cosmists

The Russian cosmist scientific, philosophical, and spiritual movement of the late 19th and early 20th century, was not well known in the West until recently. Most cosmist

writings are not available in other languages, and many aspects of cosmist thinking were frowned upon in the Soviet Union before 1991.

Though Russian cosmism is one of my main inspirations and one of the foundations of my own worldview, I am unable to read the original texts because I don't know Russian. Fortunately, there are more and more popular and scholarly works dedicated to Russian cosmism.

A film, "*Knocking on Heaven's Door*" [Carey 2011], by George Carey, and a book, "*The Russian Cosmists*" [Young 2012], by George Young, make cosmism much more accessible to a Western audience.

I recommend watching George Carey's film "*Knocking on Heaven's Door*," aired by the BBC on the 50th "Yuri's Night," 50 years after Yuri Gagarin's pioneering flight to space, to all those who are interested in space, the history of the Russian space program, the amazingly beautiful philosophy known as Russian cosmism, our place and future in the universe, technological immortality, and resurrection.

Carey's thesis is that the cosmist movement has informed and energized the Soviet space program. The film captures the popular enthusiasm for space in the Soviet Union of the sixties. We had the same enthusiasm in the West at the time, and God knows we could use it now, all over the planet.

I think we can look, again, at the cosmist philosophy to renew our enthusiasm and drive with beautiful and energizing cosmic visions, and to remember that wonderful adventures are waiting for us in outer space. Konstantin Tsiolkovsky, the founding father of astronautics, was a brilliant scientist and engineer, but his motivation and drive came from his philosophical convictions, his belief in humanity's destiny to leave the Earth and colonize the universe, and his vision of deep unity between us and the cosmos.

Today, following the cosmist tradition, Russia has a lively transhumanist community and Singularity scene, with the only operational cryonics facility not in the U.S., and the Global Futures 2045 conferences dedicated to immortality and mind uploading.

Carey's film features Gagarin, Russian scientists and space engineers, Tsiolkovsky and many other cosmist thinkers, but the real protagonist is Tsiolkovsky's mentor, the cosmist mystic Nikolai Fedorov. He was one of the first modern thinkers who dared to

suggest that, one day, science and technology might be able to resurrect the dead and bring back to life every person who ever lived.

Fedorov suggested that science is a tool given to us by God to enable us to resurrect the dead and, as promised, enjoy immortal life. He added that because the Earth could not sustain a population that never died, we must first conquer space. His ideas about human evolution, and in particular the idea that humans should take control of the process and direct it towards their own goals, inspired generations of Russian scientists and led directly to contemporary transhumanism.

Fedorov thought that physical resurrection is to be brought about by restoring the body to a condition that existed prior to death. A person is made up of atoms, and when a person dies these (finitely many) particles are scattered. The physical resurrection of the original person will be achieved by restoring all these atoms to their previous arrangement. To carry out the resurrection it is necessary to determine what this arrangement was and then to reposition the particles. This is a problem to be solved by science rather than by appeals to an outside power.

Fedorov's resurrection theory reflects 19th-century models of the universe and seems naive today. New technological resurrection theories based on contemporary science have been proposed, for example by Michael Perry [Perry 2000] and [Frank Tipler] [Tipler 1994].

But Perry's and Tipler's approaches, and mine, will probably seem equally naive to future scientists. Fedorov must be credited for the idea of technological resurrection, and we, his followers, are happy to see that many people are warming up to his vision. Following Fedorov, future scientists will scan the fabric of spacetime to find the dead, and bring them back to life.

Of course the super-science of technological resurrection, perhaps based on weird quantum physics (the term "quantum archeology" is often used), might not be developed until a very far future - perhaps thousands of years or more. But why hurry? To us, subjectively, no time will pass between death and resurrection. In the meantime, the cosmist philosophy can give us the positive, solar optimism that we need.

Nikolay Fedorov was the illegitimate son of a Russian nobleman called Gagarin. Pavel Gagarin, Fedorov's father, was not related to Yuri Gagarin the first cosmonaut, but this is an interesting coincidence, to say the least. Carey's film shows many aspects and protagonists of the Soviet space program, including of course the young icon and folk

hero Yuri Gagarin, but is centered on Fedorov's ideas and legacy. In his "cosmic garden" Valery Borisov, a colorful cosmist with a cowboy attire and an encyclopedic knowledge of Fedorov's life and times, explains Fedorov's ideas in a nutshell:

"Fedorov believed that science must help realize God's plan for man's salvation and for the resurrection of mankind. Christ said: what I have created, you must create too - and go further. What was it that Christ did? He rose from the dead. Literally, Christ was telling us to accomplish our own resurrection. Not to wait for some mystical event but to meet God halfway. Fedorov said if we resurrect everybody, they won't all fit on Earth. And he said wisely: 'In the Cosmos, abodes aplenty will appear.' That's why we need the Cosmos. The Cosmos offers empty planets where resurrected people will settle, and from there, direct the workings of the universe."

We follow Carey to ISRICA, the Institute for Scientific Research in Cosmic Anthropoecology in Novosibirsk, and follow experimental sessions in a "Kozyrev Mirror" built to test the controversial theories of astrophysicist Nikolai Kozyrev - technology aided meditation may unlock the latent shaman in us, and let us communicate with the cosmos.

This part of the film shows the spiritual, New Age component of cosmism, strongly emphasized by many cosmist thinkers, but condemned by the Soviet regime. On the opposite side of the Cosmist galaxy, Danila Medvedev, the young transhumanist director of the cryonics provider Kriorus, proposes a hardline materialistic approach to immortality, based on advanced technologies and mind uploading, with no concessions to spirituality.

George Young's book "*The Russian Cosmists*" [Young 2012] is a very intense mini encyclopedia with a lot of short biographical, literary and philosophical entries about main and lesser known cosmist thinkers, all influenced by Fedorov's seminal work.

Fedorov himself published almost nothing, but his most important works were collected by his followers and published after his death as "*The Philosophy of the Common Task*" [Fedorov 1990]. Young, a professor of Russian language and literature, dedicated decades of research to his book, a complete and authoritative reference that, I hope, will make cosmism much better known in the Western world.

Young emphasizes the Russianness of cosmism, the vastness of Russian land and history as a unique stage for the emergence of a system of thought so vast and daring to

encompass both science and religion in a synergistic whole. The Russian cultural identity is part of the common ground that holds cosmism together.

Surprisingly, even Soviet bureaucrats were intrigued by Fedorov's ideas on technological resurrection. Young says:

“Revolutionary immortality meant that individuals would die, but The People for whom the individual died would live on forever, and through inevitable progress in science and labor, The People of the future would eventually restore life to the sacrificed individuals... Lenin, waiting in his glass coffin, would be the first resurrected by science.”

Like Carey, Young shows the diversity of the cosmist galaxy, and the many co-existing scientific, philosophical, religious, spiritual, as well as esoteric, shamanistic, gnostic approaches:

“Main themes in Cosmist thought include the active human role in human and cosmic evolution; the creation of new life forms, including a new level of humanity; the unlimited extension of human longevity to a state of practical immortality; the physical resurrection of the dead; serious scientific research into matters long considered subjects fit only for science fiction, occult, and esoteric literature; the exploration and colonization of the entire cosmos; the emergence on our biosphere of a new sphere of human thought called the 'noosphere'; and other far reaching 'projects:' some of which may no longer seem as impossible or crazy as they did when first proposed in the late nineteenth and early twentieth centuries.”

Young notes that, in her introduction to a valuable anthology of cosmist thought published in 1993, contemporary cosmist Svetlana Semanova identifies the core cosmist idea, active evolution:

“This is the idea of active evolution, i.e., the necessity for a new conscious stage of development of the world, when humanity directs it on a course which reason and moral feeling determine, when man takes, so to say, the wheel of evolution into his own hands... Man, for actively evolutionary thinkers, is a being in transition, in the process of growing, far from complete, but also consciously creative, called upon to overcome not only the outer world but also his own inner nature.”

Active evolution, taking the future of our species in our hands and steering it toward cosmic transcendence, is also the core idea of transhumanism, of which the Russian cosmists must be considered as direct precursors.

Critics say that active evolution is “against God's will,” but the cosmist insight is that, on the contrary, radical active evolution IS God's will. One of Fedorov's favorite Bible passages was: “Truly, truly I say to you, he who believes in me will also do the works that I do; and greater works than those will he do.” Young refers to “Fedorov's active, forceful, masculine Christianity” - a Christianity of action, which leads to trying to become more like God.

The collection “*Russian Cosmism*” [Groys 2018], edited by Boris Groys, includes crucial texts, “many available in English for the first time, written before and during the Bolshevik Revolution by the radical biopolitical utopianists of Russian Cosmism.” The collection includes essays by Fedorov, Tsiolkovsky, and many other thinkers.

The essays of Alexander Agienko (“Svyatogor”), the founder of the Biocosmist movement, are especially interesting. Svyatogor’s Biocosmism is a hardcore, secular version of Fedorov ideas. Young astutely notes that [Young 2012]:

“Svyatogor and the Biocosmists anticipated not the Cosmist tendency as a whole, which still treats science and religion as parts of a holistic unity, but the transhumanist, cryogenic, cyborgianist, and other branches of technological immortalism that have emerged both in Russia and internationally in recent decades. These latter groups customarily grant Fedorov a tip of the hat but do not attempt to defend or follow him.”

This shows that the tension between secular and religious transhumanism was already evident at those times.

Svyatogor was an anarchist-futurist poet and agitator who embraced the Russian revolution.

The Soviet state was, according to Svyatogor, needed to destroy the old and establish the new. What is the new? “The most important thing for us is the immortality of the individual and its life in the cosmos,” answers Svyatogor: Man, under the Soviet state, is to become physically immortal and conquer the cosmos. Then, the resurrection of the dead envisioned by Fedorov will follow. But [Svyatogor criticized Fedorov from a secular, pre-transhumanist perspective]:

“Fedorov, who adheres to a religious and platonic dualism that is alien to us, affirms the existence of two worlds: a perfect, divine world, and a human world... But recognizing one, real, infinite world, we start by realizing the personal immortality of the living and interplanetaryism, on which our “common task” is based, with resurrection being relegated to third place...”

“Our third task is the resurrection of the dead. What concerns us here is the immortality of the individual in the fullness of his spiritual and physical powers. The resurrection of the dead involves the full reconstruction of those who are already dead and buried. That said, the quagmire of religion or mysticism is not for us. We are too grounded for that and are in fact in the process of waging war on religion and mysticism.”

A review of “Russian Cosmism” [Winslow 2018] introduces Svyatogor’s ideas as:

“Svyatogor goes on like this in one breathless sentence after another as he lays out a vision of art and revolutionary politics that demands ‘victory over space,’ immortality, and the resurrection of the dead. Svyatogor, as both a writer and a revolutionary, advocated for full-throttle luxury space communism, and he wanted it right this very second.”

One difference between Fedorov and Svyatogor is that, while Fedorov’s writings are often complicated and difficult to understand, Svyatogor wrote simple and crystal clear manifestos “to create an awareness of our ideas in their most basic form, as close as possible in format to slogans, to express our scientific or philosophical ideas in a nutshell.”

Focused on achieving physical immortality and space travel as soon as possible, Svyatogor seems more realistic than Fedorov, because the resurrection of the dead is a greater technological challenge, by orders of magnitude, than physical immortality and space travel.

Not that Svyatogor was always realistic: He thought that the Soviet regime was to inevitably embrace his Biocosmist philosophy... but the same Soviet regime eventually condemned him a labor camp.

The resurrection of the dead is likely to require “magic,” transcendent ultra-technology based on science vastly more advanced than ours. It seems plausible that [beings able to resurrect the dead would be practically indistinguishable from God].

This is, I think, a synthesis of Fedorov and Svyatogor, a fusion of religious and secular approaches to cosmism: The boundary between secularism and transcendence is not a sharp line, but [a space-filling fat fractal]. You can consistently choose to be on one or the other side, or on the fractal boundary itself.

While Fedorov interpreted resurrection as restoration, Svyatogor interpreted it as recreation with improvements. Here, Svyatogor’s ideas tunnel through the fractal boundary between secularism and transcendence, approaching the central Christian concept of resurrection in a new body and a new world, perfected by God.

Modern cosmism

Goffman and Cornell note [Goffman 2015] that the term “cosmism” was “borrowed by Ben Goertzel and Giulio Prisco in 2010 to denote a futurist philosophy more tailored for the modern era,” and introduce modern cosmism as:

“Today’s cosmism posits a positive, far-reaching, blatantly transhumanist attitude toward science, technology, life, the universe, and everything. As summarized in Goertzel’s 2010 book *A Cosmist Manifesto*, contemporary cosmism is less an analytical philosophical theory, and more an everyday sort of philosophy, focused on enthusiastically and thoroughly exploring, understanding, and enjoying the cosmos, and being open to all the possible forms life and mind may take as the future unfolds.”

Ben Goertzel’s “*A Cosmist Manifesto*” [Goertzel 2010] is the Bible of modern cosmism. Ben’s book is a practical philosophy primer that blends science and spirituality, established science and awesome speculative ideas, futurism and compassion, technology and art, life strategies and cosmic visions - a must-read book where every reader will find snippets of spiritual wisdom and practical advice.

One of the first chapters of Ben’s book, to which I contributed, is titled “Ten Cosmist Convictions.” Ben says that the Ten Cosmist Convictions may serve as a reasonable preface for his book, and I add that they may serve as a reasonable preface for this book as well. Here they are:

1) Humans will merge with technology, to a rapidly increasing extent. This is a new phase of the evolution of our species, just picking up speed about now. The divide between natural and artificial will blur, then disappear. Some of us will continue to be humans, but with a radically expanded and always growing range of available options, and radically increased diversity and complexity. Others will grow into new forms of intelligence far beyond the human domain.

2) We will develop sentient AI and mind uploading technology. Mind uploading technology will permit an indefinite lifespan to those who choose to leave biology behind and upload. Some uploaded humans will choose to merge with each other and with AIs. This will require reformulations of current notions of self, but we will be able to cope.

3) We will spread to the stars and roam the universe. We will meet and merge with other species out there. We may roam to other dimensions of existence as well, beyond the ones of which we're currently aware.

4) We will develop interoperable synthetic realities (virtual worlds) able to support sentience. Some uploads will choose to live in virtual worlds. The divide between physical and synthetic realities will blur, then disappear.

5) We will develop spacetime engineering and scientific "future magic" much beyond our current understanding and imagination.

6) Spacetime engineering and future magic will permit achieving, by scientific means, most of the promises of religions - and many amazing things that no human religion ever dreamed. Eventually we will be able to resurrect the dead by "copying them to the future".

7) Intelligent life will become the main factor in the evolution of the cosmos, and steer it toward an intended path.

8) Radical technological advances will reduce material scarcity drastically, so that abundances of wealth, growth and experience will be available to all minds who so desire. New systems of self-regulation will emerge to mitigate the possibility of mind-creation running amok and exhausting the ample resources of the cosmos.

9) New ethical systems will emerge, based on principles including the spread of joy, growth and freedom through the universe, as well as new principles we cannot yet imagine

10) All these changes will fundamentally improve the subjective and social experience of humans and our creations and successors, leading to states of individual and shared awareness possessing depth, breadth and wonder far beyond that accessible to "legacy humans."

The strong "will" in the points above is not used in the sense of inevitability, but in the sense of intention: we want to do this, we are confident that we can do it, and we will do our fucking best to do it.

My interpretation of cosmism is totally compatible with Ben's - I agree with everything he says in the book - but I emphasize the technological resurrection aspect of Cosmism (point 6): Future science will resurrect everyone that ever lived. I think the concept of technological resurrection is a bridge between science and religion, which can offer hope and happiness to everyone in today's and tomorrow's world.

Therefore, when thinking, talking, or writing about cosmism vs. traditional religions, I emphasize the parallels and continuity rather than the differences. In particular, I emphasize the continuity between modern cosmism and Russian cosmism (an explicitly religious viewpoint): The technological resurrection concept is central to both.

In 2015 I participated in a conference on "Modern Cosmism" in New York City, organized by Vlad Bowen. George Carey and Ben Goertzel were among the participants. The conference was covered by novelist John Crowley in a story first published in *Harper's Magazine* [Crowley 2016] and then republished in Crowley's book *"Totalitopia"* [Crowley 2017].

At the conference, Bowen suggested that future post-biological uploaded humans will build artificial synthetic realities where "super-intelligent life can flourish and fulfill its mission as an important part of overall cosmic evolution" [Bowen 2015].

In my talk [Prisco 2015], I suggested that intelligent life among the stars, using quantum technologies beyond our understanding and imagination, might be able to influence spacetime events anytime, anywhere, including here and now, steer the evolution of the physical universe with spacetime engineering, and resurrect the dead from the past. In Crowley's words [Crowley 2016]:

“Could quantum entanglement - the mysterious instant correlation of distantly separated subatomic particles - eventually make possible the connecting of every space-time moment to every other, and permit instant data channels between different places, different times, and different universes? If so, maybe ‘quantum archaeology’ really could bring the dead back from when and where they are alive.”

I think this cosmist vision could and should play for our grandchildren the same positive role - sense of wonder, sense of meaning, hope to be reunited with loved ones in an afterlife, and calm but active happiness - that traditional religions played for our grandparents. Russian cosmism provided a powerful mystique for the Russian space program, and I hope modern cosmism will provide an even more powerful mystique for our expansion to the stars.

Cosmic humans

In “*Human Purpose and Transhuman Potential*” [Chu 2014], Ted Chu argues that we need a “Cosmic View” - a new, heroic cosmic faith for the post-human era. Chu believes that we should create a new wave of “Cosmic Beings,” artificial intelligences and synthetic life forms, and pass the baton of cosmic evolution to them.

The new cosmic beings will move to the stars and ignite the universe with hyper-intelligent life. Creating our successors isn’t betraying humanity and nature but, on the contrary, a necessary continuation of our evolutionary journey and an act of deep respect, to the point of “extreme worship,” for humanity, evolution, and nature.

Chu's cosmic view of boundless evolution is similar to Pierre Teilhard de Chardin's vision of an emerging “noosphere,” tending toward an Omega Point of unimaginable complexity. See [Steinhart 2008] for a modern interpretation of Teilhard's ideas, written for transhumanists, and references therein. Teilhard, a Jesuit priest whose work is now being rediscovered, was a believer with a deep religious faith.

Chu’s cosmic view can play many of the impersonal, philosophically oriented roles of religion. But it doesn’t offer belief in a personal God who cares, or hope in an afterlife. “The best way to overcome the fear of death,” says Chu, “is to make one’s interests gradually wider and more impersonal, until bit by bit the spiritual walls of the self recede, and one’s life becomes increasingly merged into the universal whole.”

This detached, impersonal, essentially Deist [Prisco 2014] contemplation of the self as a small part of the wonderful cosmic adventure of intelligent life and the creation of more and more evolved entities is, indeed, intellectually satisfying and motivating. But I am afraid that it may not be emotionally satisfying enough, especially for Westerners with a worldview strongly centered on the self. Chu admits that:

“A non-personal God that is cosmic in nature has to be blended with certain human-friendly characteristics in order to be attractive, in the same way that colors are added to the pictures taken through space telescopes to enhance perception and draw popular interest.”

Another in my opinion questionable aspect of Chu's excellent work is an excessive conceptual separation between today's humanity and future post-humanity.

While I wholeheartedly embrace the necessity - our cosmic duty - of self-directed evolution to create Cosmic Beings able to ignite the universe with intelligent life, I never liked the concept of “post-humanity.” What's wrong with just “humanity,” evolved?

I imagine a co-evolution of humanity and technology, with humans enhanced by synthetic biology and artificial intelligence, and artificial life powered by mind grafts from human uploads, blending more and more until it will be impossible - and pointless - to tell which is which. Like children retain their fundamental identity after growing up and becoming adults, post-humans will retain our fundamental identity. We don't need to fear a post-human takeover, because the post-humans will be ourselves. This alternative vision of cosmic humans is, I believe, consistent with Chu's cosmic view but more emotionally appealing.

Cosmic humans are the bridge between Chu's Deism and Teilhard's Theism. We will leave biology behind and move to the stars, find Gods, build Gods, and become Gods. We will resurrect the dead from the past with advanced science, space-time engineering and “time magic.”

This “Theism From Deism” - a bridge between the impersonal, scientific cosmic view and a personal God who cares and grants resurrection - is present but never made too explicit in both transhumanism and new religious trends. The reason is easy to understand - it sounds too much like religion to rationalist transhumanists, and too much like cold, aseptic technology to believers and spiritually oriented seekers. Rationalists are often offended by the religious conclusions, and believers may be offended by the scientific premises.

I think, however, that we should actively promote our heroic cosmic faith, in a simple, appealing viral package. I don't really hope to see transhumanist technologies such as conscious AI and mind uploading in my lifetime, but I am happy for our grandchildren who will live in a “magic” world.

I am happy to be a small part of life on Earth, on its way to become cosmic life in a magic universe. And I am happy to contemplate the possibility that future Gods might find ways to remember us and bring us back to life. It's because our cosmic faith can provide happiness and hope, without asking to give up science, that I wish to offer it to everyone.

The Secret

Ben Goertzel opens “*A Cosmist Manifesto*” with a dedication to Valentin Turchin, “a great Soviet-American scientist and futurist visionary” who died the year the book was completed. Ben considers Turchin’s book “*The Phenomenon of Science*” [Turchin 1977] as “one of the most elegant statements of Cosmist scientific philosophy ever written.” [A free version of Turchin’s book is available online] in the “*Principia Cybernetica*” website.

Turchin concludes “*The Phenomenon of Science*” with a reflection on the possibility of resurrection:

“We shall hope that we have not yet made an uncorrectable mistake and that people will be able to create new, fantastic (from our present point of view) forms of organization of matter, and forms of consciousness. And then the last, but also the most disturbing, question arises: can’t there exist a connection between the present individual consciousness of each human personality and this future superconsciousness, a bridge built across time? In other words, isn’t a resurrection of the individual personality in some form possible all the same?

Unfortunately, all we know at the present time compels us to answer in the negative. We do not see any possibility of this. Neither is there a necessity for it in the process of cosmic evolution. Like the apes from which they originated, people are not worth resurrection. All that remains after us is what we have created during the time allotted to us.

But no one can force a person to give up hope. In this case there is some reason to hope, because our last question concerns things about which we know very little. We understand some things about the chemical and physical processes related to life and we also can make our way in questions related to feelings, representations, and knowledge of reality. But the consciousness and the will are a riddle to us. We do not know the connection here between two aspects: the subjective, inner aspect and the objective, external aspect with which science deals. We do not even know how to ask the questions whose answers must be sought. Everything here is unclear and mysterious: great surprises are possible.

We have constructed a beautiful and majestic edifice of science. Its fine-laced linguistic constructions soar high into the sky. But direct your gaze to the space between the pillars, arches, and floors, beyond them, off into the void. Look more carefully, and there in the distance, in the black depth, you will see someone's green eyes staring. It is the Secret, looking at you."

Turchin's words are sober, but leave the door open to hope. Nobody can force you to give up hope. On the contrary, science offers reasons to hope that the Secret in the black depth might permit the continuation of personal consciousness after physical death.

I don't need certainty: For me, hope is good enough, especially the kind of hope that relies on action. I am persuaded that some forms of resurrection of the individual personality are possible in the physical universe, and I hope that future scientists will develop the science and practical engineering of technological resurrection. This is not, or not only, wishful thinking, but a project.

In Part 3 of this book I outline some aspects of contemporary science that seem to offer reasons to hope. Most (probably all) of my suggestions in Part 3 are likely to be wrong, or hopelessly naive. But so what? In a cosmist spirit, I believe that "science in its current form, just like religion and philosophy in their current forms, may turn out to be overly limited" [Goffman 2015] for understanding these things. Future thinkers (perhaps you, or your grandchildren?) will do much better.

Notes

[A free version of Turchin's book is available online]
<http://pespmc1.vub.ac.be/POSBOOK.html>

[a space-filling fat fractal] See "There's plenty of room at the bottom."

[beings able to resurrect the dead would be practically indistinguishable from God] See “Little green Gods.”

[Frank Tipler] See “Omega Point.”

[Mormon Transhumanist Association] See “Man will become like God, say Mormons and transhumanists.”

[Svyatogor criticized Fedorov from a secular, pre-transhumanist perspective]
Svyatogor’s objections to Fedorov’s resurrection program remind me of those voiced by Zoltan Istvan’s character Jethro Knights in “*The Transhumanist Wager*” (see “The interplay of science fiction, science, and religion”). Both consider speculations on future resurrection as a distraction from the urgent need to launch a transhumanist revolution and attain immortality here and now.

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