

# THE PHENOMENON OF MAN, REVISED: EVOLUTION AND I.T. VERSUS EXTINCTION IN THE YEARS TO COME

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**ABSTRACT:** The Phenomenon of Man, by Teilhard de Chardin, was a great effort to truly unify hard core science and charismatic spirit, with practical implications for better understanding the dynamics of history and period we are now entering. This paper presents the noosphere species theory -- a radical revision of de Chardin's theory, as is necessary to account for what we now know about natural selection, about the mathematics of intelligent systems and about the great ocean of dark matter and energy connecting the galaxies of our cosmos. The noosphere species theory still emphasizes the possibility and need for a growth in spiritual collective intelligence, but it offers more details on how this growth could be supported and accelerated, and it faces up to the reality that our particular noosphere might or might not survive the difficult challenges arising now. And yet, it accepts that we are not alone.

**KEYWORDS:** Noosphere; Machine learning; Soul; Psi; Backpropagation; Sociobiology; Internet of things; Human-centric internet; Futures; Consciousness; Cycles of history; Evolution

## **1. Background and Fundamental Principles of a New Vision**

### 1.1 THE CORE VISION OF TEILHARD DE CHARDIN

In his seminal manifesto, *The Phenomenon of Man* [1], Teilhard de Chardin proposed a new vision of humanity and of our destiny, intended to reconcile the core principles of his Catholic beliefs with the core facts proven by science. He fully embraced the fact of biological evolution over billions of years, but

proposed that this process of evolution includes the earth as a whole, the “noosphere”, as previously described by Vernadsky [2]. He proposed that the omega point prophesied in the Bible refers to that time in the future when we, components or cells of that larger noosphere, become more united, and reach out like a single organism to the larger cosmos. The leading science fiction writer Arthur C. Clarke wrote a graphic novel [3] describing what that omega point transition might feel like to the people experiencing it.

De Chardin himself explained more concretely what his new vision implied for meditation, spirit and the experience of life [4]. A certain young John F. Kennedy was deeply inspired by this vision, very popular at that time, and it was a major motivator underneath all the excuses he used to advance his vision of reaching out further into outer space. I do not have citations for this last point, but it is based on many conversations with many of the people close to that history, ranging from the janitor he spoke to regularly at Harvard to Barbara Marx Hubbard [5], a follower of de Chardin very active in the space and futures movements, and a mentor to Jerry Glenn, founder of the Millennium Project [6].

## PROBLEMS AND CORRECTIONS: A REVISED VERSION OF THE VISION

De Chardin’s vision did not become so viral or so universal as he would have hoped, for two reasons.

### *1.1.1 Political Barriers and Need to Overcome Them*

First, there are many very powerful thought leaders who simply are not interested in reconciling science and spirit or science and religion. They have a firm commitment to either one or the other, insist on holding on to every last comma of some received system of beliefs, and have little tolerance for cognitive dissonance or novelty. They see the political benefits of painting the other side as a strawman, citing the most extreme spokesmen for the other side, whipping up their base as a path to power. But for that 70% or so of humanity which believes that science and spirit both hold fundamental truths important to their life and to their destiny, it really is important to try to reconcile the two with a new unifying vision, just as de Chardin tried to do. Furthermore, from a practical point of view, there is a real danger of nuclear war eradicating the

human species, if the global dialogue becomes dominated by one group which plans to solve the conflict by eradicating religion, and another group which tries to protect itself from the first group by imposing a stifling fundamentalist theocracy on everyone on earth.

This paper is addressed to that 70% or so in the middle. Of course, the number 70% is just a guesstimate; it is based in part on a recent poll of the US on the subject of evolution [7], and in part on earlier work by Greeley and McCready [8]. I suspect that the number would be lower in Europe but higher in the rest of the world. This paper builds upon the foundation of another recent paper which explains why and how I personally believe that the truth does lie in the middle here [9].

#### *1.2.2 Logical Gaps and How to Fill Them: A New, Revised Vision*

Unfortunately, there are also several logical problems with de Chardin's vision which kept it from growing in popularity among those of us in the middle. This paper proposes a new vision of who we are as humans and of our possible destinies (we do have some choice here!), similar to the vision of de Chardin, but revised in a few fundamental ways.

##### *1.2.2.1 Dark Matter: the Physical Substrate Permitting Spiritual Experience or Psi*

The first problem with de Chardin's formulation is that he does not offer a possible physical scientific basis for the flow of spiritual energy (like charisma, qi, mana) which is central to all authentic spiritual traditions around the world, even though he wrote about his deep personal acquaintance with that energy [4]. What mainstream science really knows about the atoms which make up our bodies, and the quantum electrodynamics (QED) which describes most of their interactions [9], simply cannot explain anything like the spiritual experiences common to all major cultures on earth [10] or even that small subset verified in the laboratory [10,11].

But now, in the twenty-first century, science is ever more confident that our cosmos is made up of more than just atoms. We know that more than 90% of the cosmos we live in is made up of "dark matter and dark energy," but we do not know exactly what dark matter really is. There was a time a few years ago when many of us thought we might explain the strange movements of galaxies

by a new theory of gravity like Moffatt's, without dark matter. but many groups have been able to map the distribution of dark matter, by "seeing" it by gravitational lensing effects [12].

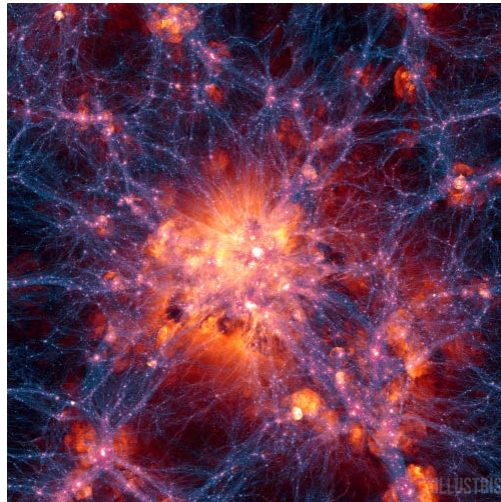


Figure 1. One of many recent maps of dark matter (from <http://www.illustris-project.org/>)

In order to be consistent with the best mainstream version of quantum theory known to science today [9], or with new efforts to find a more realistic foundation underlying quantum theory, while still accepting psi or spiritual energy, we have almost no choice but to hold that "dark matter" is the physical substrate which makes psi and authentic spiritual experience possible. We may debate whether dark matter is made up of fields, or of particles, or of a mix of the two, but in any case it is what Aristotle would call the "substance" underlying higher forms like spirit, and all aspects of mind or consciousness which do not use atoms as their substance.

Of course, we cannot totally rule out the possibility that quantum theory and Einsteinian realism are both false, but until and unless we have evidence which contradicts them *and which also* gives us an alternative clear and coherent enough to live by, a ruthlessly rational and sane person in the middle will act on the assumption that the dark matter hypothesis here is probably

true.

The most plausible alternative hypothesis for a person in the middle would be that the Lagrange-Euler equations of physics have strange properties far beyond what science understands as yet. Could it be that psi and spiritual experience can all be explained as side effects of a kind of universal Jungian synchronicity, without the action of any minds but what is in our heads and what these equations describe? I tend to doubt it, but scientific integrity demands that we do justice to “next best” alternatives, both to the left and to the right, so that we can remain alert to any new evidence pushing us to either side.

When I discuss this dark matter hypothesis, some people ask: “Why dark matter? Why not moola pazoola or prima materia or...” It is important to remember that science does not yet know what dark matter and dark energy are in more concrete terms. If you want to call an unknown force field “moola pazoola,” that would be fine in principle, so long as you do not immediately attach a whole lot of unproven hypotheses along with it. To this day, many of the nonproductive and meaningless arguments in philosophy and religion are based on a failure to remember that the words we use are just a recent invention of human culture. The term “dark matter” is a good one to use for now, precisely because it does not use a semantic trick to sneak in unproven and unnecessary side assumptions. It is fine that many people discuss more concrete possibilities for what dark matter might be, but the vision presented in this paper is intentionally consistent with many possibilities for those details.

#### 1.2.2.2. The Noosphere Species Theory: It’s Not Just Earth

Above all, modern science knows that the process of evolution by natural selection on earth [13,14,15] simply does not predict the kind of outcome which de Chardin envisioned. This paper proposes a new vision of who we are as humans, which is similar to that of de Chardin, but revised in a way which fits what we know from evolution.

In a nutshell, the theory is that we on earth are all parts of a greater noosphere, exactly as de Chardin felt, growing towards greater unity and some kind of collective intelligence at a “spiritual level,” i.e. in our connections through the noosphere. Our noosphere is not some kind of mature god, as in

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some versions of the Gaia theory, but more like a child, better called Terry (for Terra, also not gender specific) than Gaia. A child whose existence is possible, under natural selection, only because of natural selection in a much larger environment – the environment depicted in Figure 1, a vast connected ocean of matter and energy criss-crossing the universe more than 10 billions years old. (How much older we do not really know.) Our noosphere is just one member of a whole species of noospheres. I have spoken about this idea in the past [12,16,17,18], but this is the first serious publication in the West.

There are two major reasons why I feel that this vision is inevitable, so long as we hold to quantum or Einsteinian realism.

First, from what we know of biological evolution, we should *expect* life to evolve, whenever there exists the vast kind of connected ocean of matter pulsing with free energy, as you can see in Figure 1. All but a few of the galaxies in our universe are bright dots, or nodes, in this network, and we now know that the connection to dark matter is crucial the birth of the stars themselves; more precisely, we know that those few “zombie galaxies” [12] which are *not* connected to the network of dark matter suffer from a dramatic lack of star formation. This evidence speaks not only to life, but to some kind of coupling between dark matter and atomic matter, in which the dark matter side plays the dominant role.

Second, in order to explain and understand basic psi phenomena like remote viewing [10,11], let alone bilocation and prophetic dreams and such, it is not enough to have a plausible physical substrate like dark matter or anything else. There are many people who claim to have a “physical explanation” for psi based on some kind of physical substrate (in the spirit of moola pazoola), but that simply is not sufficient by itself to explain how such things could be possible. Necessary, but not sufficient.

Consider the example of remote viewing, where a person in one small place on earth somehow delivers information about another small place or person thousands of miles away. If QED by itself could explain such a thing, then technology using QED based on the best, most advanced understanding of QED should be able to replicate it in technology. I can say with some confidence that it cannot, despite many billions of dollars worth of intense effort by the most brilliant people on earth [19].

The real difficulty in building or explaining such a capability, regardless of what kind of physical substances are used, is the *switching problem*. How can a connection be made between two points, A and B (or Alice and Bob), so very far away from each other? It absolutely requires a highly refined switching network, not the kind of system which emerges in a random complex system like a muddy but lifeless dirty pond or a mass of uncontrolled clouds floating in the sky. Unless we imagine that some weird group of space aliens chose to install an “invisible” technical switching network or communication satellite made of dark matter, the only way this system could have emerged here is by *biological evolution*. The claim, then, is that the switching function is performed by our noosphere, a vast living organism made primarily of dark matter (with some extensions to ordinary matter just as snakes sometimes grow a skin, and as human bodies contain both cells and matrix).

For many years, I tended to assume that our noosphere basically penetrates and interfaces with the entire earth. When I met a woman in Nepal active both in the Labor Party of England and in higher yoga (shades of Annie Besant?), and she asked how to bring her two worlds closer together, I strongly urged rallies using the song “We are the Earth.” I feel a positive shiver up my spine even as a type that. (Of course, openness to that kind of feeling is very important to mundane sanity, let alone spiritual growth. Mundane sanity is what *led me* from hard core “materialism” to experiences beyond it in the first place [9].) However, logic suggests that our noosphere would not be limited to just our planet. Stars like our sun are also connected to dark matter, and exploration of our solar system seems unlikely to weaken our spiritual connection. So now I tend to think of us as part of the Sol noosphere, not just the one planet. I interpret the manifesto of Akhnaton declaring the sun as the One God as an attempt to channel the nervous system part of the Sol noosphere, the vast neural network in which our personal “souls,” our common ideas and archetypes all reside as subsystems.

A key aspect of this theory is that we humans are what Dante called “half beast, half angel” – a symbiotic life form, such that part of us is the system of atoms which science now understands far better than most people know, and part is dark matter. It is also what Rosicrucians have called an “Alchemical marriage.” Some marriages are good, and some are dysfunctional. Another

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aspect is that there exists more mature life and mind beyond our solar system, “in the heavens’ (in Figure 1!).

In the remainder of this paper, I will use the term “soul” to refer to the “angel” side of us, that part of us made primarily of dark matter, a part of the noosphere. Section 2 of this paper will give my own personal views on what this means in practical terms for us as humans, either as individuals or as agents in history.

### 1.2.2.3. Information Technology (IT), DNA, Money and Soul – Four Forces which Could Save Us or Kill Us

One key test of human sanity is whether we are capable of facing up to “inconvenient truths,” without hiding from them or giving up altogether. Do we give in to the common ego defense mechanism called “denial”, or do we use a more mature way of coping with unpleasant news, the kind of mechanism which leads to success more often in life than denial does [20,21]?

The original vision of de Chardin [1] basically said that the human species is destined to rise to a great and higher level of existence. Many religious dogmas became popular, even though they contradict each other in ways which should make them think twice, in part because they say what many people want to believe, that their apotheosis is guaranteed, at least if they follow certain rules.

The noosphere species theory clearly does not guarantee that the human species or any part or product of the human species will survive the challenges of this century, as they play out over the next few thousand years. It predicts that the noosphere has a “body, brain and immune system” (among others) which will play an important role, which are the product of billions of years of evolution making them far more helpful than random chance, but that does not provide a guarantee. In nature, not all little fish grow to adulthood, despite the billions of years of evolution driving them to the behavior and learning which maximize their chances. Are noospheres like fish or like bonobos, who have a better chance of survival? We don’t know, but we do know that we face very severe risks as a species, and we know that soul is only one of the underlying forces which will shape our destiny.

There have been many recent efforts to analyze more concretely what the



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most serious, highest probability risks are to the very existence of the human species [6,22,23]. Having studied these in some depth, I believe that the biggest four threats now, in order, are: (1) nuclear war and misuse of nuclear technology in general [24,25]; (2) extinction due to future release of H<sub>2</sub>S from the oceans, due to climate change [26,27,28,29]; (3) misuse of biotechnology; and (4) the “Terminator” scenario for AI [30], which could happen in many different ways if my own work in that field [31,32,33] is misused by people who do not understand the underlying principles.

#### 1.2.2.3.1 DNA and Soul as Drivers of Extinction versus Survival

Unfortunately, the normal process of evolution by mundane natural selection on earth suggests relatively little hope that humans could avoid extinction by at least one of these four mechanisms. Ecosystems which seem relatively stable, after billions of years of world-spanning species being deleted, normally go unstable when large, random changes are made in the relations between organisms [14]. Many of the starry eyed visions for a new human species, using new techniques for genetic manipulation to create more beautiful people, remind me of how the trilobites – who once ruled the earth – became extinct as a result of excessive selection for sexual attractiveness leading to a brittle catastrophe at the global, systems level. From the viewpoint of game theory, the great pastoral societies like Afghanistan which led to the rise of most human civilization [15] change dramatically when nuclear weapons are added to the game. If war is inevitable sooner or later, due to conflicts and zerosum thinking, and if nuclear capabilities are widely distributed, nuclear “kembali” will be very, very hard to avoid [24].

Furthermore, ongoing population growth [34] makes it almost inevitable that zerosum thinking will become prevalent, once again, in earth, unless there are dramatic, conscious changes in global trends. There has been a lot of wishful thinking on this subject, based on the same kind of social pressures which cause other forms of denial, but a detailed study of the literature on biology and fertility shows strong reasons to doubt the good news. The details of that literature are beyond the scope of this paper, but a few examples are in order.

In 1982, when I contributed to the OTA assessment of competing

quantitative models of the future of humanity (<https://ota.fas.org/reports/8212.pdf>), we found that the “UN population projections” cited by so many groups trying to sell their plans for economic development were actually selected from a large set of scenarios, which the UN stressed were not forecasts, and did not include any real modelling of fertility. Research by Sally Quinn of Census and research by the World Bank got much deeper into the drivers of fertility, and found that population growth in advanced nations in recent years was slowed, not by rises in income as such, but by four key variables: (1) women’s empowerment and education; (2) availability of public health, especially the whole range of family planning; (3) urbanization; and (4) cultures which do not force women to have children. I was in fact invited to a meeting on the United Nations Fund for Population Assistance, which did study these things in great detail, and started a major push to push these four variables in order to prevent the kind of catastrophe which present trends really do predict.

These efforts can be of great value to reduce instability in the next few centuries, but natural selection is still very much at work. Already, cultures which force more children do produce more children, producing demographic imbalances already starting to grow around the world. *Some* aspects of genetic selection require millions of years to have any effect, but it is well known that a mere 7 to 10 generations are enough to cause massive changes in the mix of genes already “well known” to biology [10]; genes related to sexual behavior and aggression are certainly among those genes. Sociobiology [10] did underestimate the power of personal experience and learning to change behavior, to transcend that is in the genes; however, even the highest level of learning [35,36] in the brain is still anchored in the properties of “telos” or “happiness” specified by these genes.

The prediction, then, is that we will not live forever in a world where more intelligent and prosperous women have fewer children. The prediction is that there will be a selection for massively competent women who also have massively powerful hormones, overwhelming the social pressures. When I realized this in graduate school, I have to admit I visualized such women and wanted to meet them. That goes beyond the scope of this paper, but may help the reader in remembering what is going on here.

The current exponential growth of the human species is not so different from the growth which earlier civilizations have experienced for a few centuries [37,38] or even from the “quantum leaps” which other world-spanning new species have experienced [13]. In the past, it has always been just the first half of an “S” curve which then comes to terms, sometimes well and sometimes badly, with various types of constraints.

In touring a wide variety of island cultures in the Pacific, I have had a chance to look very closely at some of the very general types of possible paths. It started mostly with adventurous “people of the boat” from Taiwan, expanding with great hope into a new frontier, very similar in spirit to more recent European settlers of the Americas. In some areas, the culture was deeply committed to maximizing its population when it could. But in bad years (a stochastic event, mostly connected to El Nino), there was a sudden imbalance. This led to war in some cases, but more often to human sacrifice in cooperative societies (like the great Moche civilization of Peru), and to cannibalism in societies even more committed to maximizing carrying capacity and recycling.

A fascinating exception was the culture of Easter Island [39], which, contrary to self-serving European myths, was a great success in adapting to nature, devastated more by Europeans at times than by native cultures. A relatively stable native society, based on ancestor worship not unlike old Chinese culture and the culture depicted in the movie “Coco,” became unstable when the first, brief European visitors showed that a higher standard of living was possible in a prosperous and growing society. The resulting time of troubles was a monstrous experience. It is very unfortunate that anthropologists have not fully recorded the oral traditions of the competing tribes which found a way out. The way out was a strong system of maximally honorable competition, the Bird Man competition, which I suspect was inspired in part by the esoteric secret society of navigators based on Raiatea which I also had a chance to visit, which also had a serious spiritual input. Honorable competition provided a way to allocate resources, and limit population growth to what is sustainable, and what makes people happy and fosters more authentic spiritual growth. It provides a kind of ecosystem in which natural selection does not force fatal and degrading warfare.

The first challenge here in reality is how to avoid extremes like

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dishonorable competition leading to unsustainable levels of war and violence and degrading of the spirit, or like illusions that everyone can have all they want without constraint and without some kind of selection mechanism. The second big challenge is to converge on some kind of sustainable social contract [40,41,42] which can maintain honorable competition based on natural types of selection mechanism which do not cause us to degenerate into silly outcomes like those of the trilobites or like the dangerous, brittle speciation of caste systems or early Carib and Arawak.

To the extent that we try to channel the will of the noosphere, the challenge is to provide societies which really support a high level of collective intelligence and personal spiritual growth, which requires a high level of education, diversity, freedom and dialogue. It requires designing both formal and informal education and research systems in a way which fully incorporates these bottom line values. Given the great and growing power of the noosphere, those of us who do not choose to work with it may encounter many strange surprises and unnecessary difficulties, as in any bad alchemical marriage. A higher level of collective intelligence, both spiritual and mundane, would be essential to improving our chances of rising with all the threats to the existence of the human species.

#### 1.2.2.3.2 How New Information Technology and Money Change the Game

Spirit and DNA are certainly not the only deep, fundamental forces driving the course of future history. We are now at the early stages of a massive growth in the use of Information Technology (IT); unless there is some kind of massive war and return to dark ages (which itself would raise our chances of extinction and impede spiritual growth), we need to plan for a world in which all flows of money, all corporations and many other activities will be redefined as files in the emerging global Internet of Things (IOT). This redefines the nature of what it means to create a new, viable social contract for nations and for the world.

Careless deployments even of simple, weak information technologies has already begun to destabilize the limited, partial social contracts we have come to depend on, like the US Constitution. Many business plans have emerged, based on myopic social and economic pressures, which would be

nonsustainable in a number of ways if present trends continue and they basically take over the world. Manifestos for a human-friendly internet have started to appear, but unless we do the hard work of translating them into actual system specifications for the emerging foundations of hardware and software, it will all be like the pious words one often hears before an organization starts creating a disaster. The enemy here is a kind of entropy, which can only be overcome by a maximum use of consciousness and intelligence in concrete, mathematically grounded design implementing very basic mathematical, ethical and spiritual principles. This is one more reason why we need a stronger cadre of people in the middle, capable of integrating and appreciating all the critical aspects of this challenge.

In 2018, the French research group INRIA and the leading French electric power market funded me to go to Rio De Janeiro, to present a paper on how the new “deep learning” or “new AI” technology changes the game in energy markets (and climate change). As this paper went through review at many levels of the IEEE, I was asked to give more details on how to address the larger challenges of the coming IOT in general. Because that paper is already widely available, and contains many further citations available on the web, I will not repeat the details here [34].

As a general matter, I doubt that the earth is the first planet in this universe to reach this adolescent stage of its development, when its survival is at risk. I would expect that noospheres which have survived in this cosmos have strongly developed “brains,” which support intelligence and mind, and “immune systems,” which encourage the kind of social contracts and rules which make it possible to survive difficult times like ours. Could it be that the “Ten Commandments” were the best social contract or covenant which could be communicated to foster such things, and to foster intellectual growth, at the early time when they appeared? Could it be that the US Constitution, which was influenced by authentic spiritual inputs from Scottish Rite Freemasons and Quakers as well as readers like Jefferson of Locke, Francis Bacon and Newton, were an improved Gen II social contract, supported by the noosphere for many years, until... Could we be entering a new era, when a more sophisticated Gen 3 social contract, implemented in advanced IT, is essential to survival through the next phase of our growth?

## 2. Selected Examples of What the new Vision Implies

This new vision is intended to integrate many, many threads of activity and thought, the details of which are beyond the scope of any one journal article. Here I will give just a few examples where a new viewpoint changes many things.

### 2.1 AFTERLIFE: WHAT CHOICES DO YOU REALLY FACE AS YOU RETIRE, AGE AND DIE?



Figure 2. Choices which each of us faces as we retire, age, die

Like it or not, every one of us is destined to change in a major way as we age, retire and die. Many religions tell us that we will be the same person after we die, but first person experience tells me that I already change in a major way from periods of clarity and attunement in early morning to late night periods of exhaustion, especially after alcohol. The noosphere species model essentially predicts that when we die the Alchemical marriage also ends, leaving one part alive but only one part. What is the destiny of that part?

Some mystics claim that the answer to that question varies a lot from person to person, depending on what they level of development they have achieved in their lifetime [44,45]. The noosphere species model basically predicts that this is true. More precisely, it predicts that our lifetime and training will lead us towards a fate like the left side of figure 2, or the right side,

or a mix, depending on what we learn as a whole system of brain and soul.

Of course, our world is full of people who just “know” that this could not be the choice we are facing. In my plenary talk on conscious and machine intelligence in 2018 [17], I began my summary with a quote from Mark Twain: “It ain't what you don't know that gets you into trouble. It's what you know for sure that just ain't so.” That happens again and again in all human cultures, from island tribes to branches of science and religion. Even as a child, I wondered how people could have so much conviction about THEIR tribe's beliefs when so many other tribes were equally convinced about something else, with about the same level of justification. Again and again, I have also seen how powerful organizations try to sell themselves by simplifying, by pushing people into simple black and white choices. In today's world, people have mostly gravitated to two possibilities about afterlife – either it is a total fraud, or you wake up your same old self unchanged, on your way to absolute perfection of pain or joy or reincarnation.

It really made me sad last year to see certain Hindu theologians taking strong measures, as strong as certain believers in Adam and Eve, to defend the dogma that the “you” who experiences astral travel or death is exactly the same “you” as the one in everyday life. In MY everyday life, I have learned more and more to understand the differences between the “me” thinking clearly in the early morning and the “me” late at night most nights, especially after a bit of alcohol. In fact, after the sail away party with unlimited free margaritas, I remember the feeling of having hardly any functioning brain at all and operating my body and words as one would operate a puppet from a great distance – and I remember others in the same state who were less functional.

But if you and I are alchemical marriages, what happens when the angel gets to be a widow or widower?

This more scientific viewpoint, less black-and-white than today's theologies, is actually much closer to the ancient beliefs of places like Mexico, dating back to the days before various emperors manipulated them. I highly recommend that everyone should see the happy children's movie *Coco*, which does a brilliant job of explaining that culture, a culture which is much more totally true than most of the cultures with power today. The movie is correct in depicting certain technical details which I could even give you an equation for,

but blogs are not the right place for equations. Still, I can give you a hint in words. Survival in Coco depends on a flow of some kind of emotional energy, like what Freud called “psychic energy,” like “qi” or “mana”, like the backpropagation flows which govern the changes made over time in ANY intelligent network. For the dead people in Coco, their survival depends on a flow of qi from a primary source, the world of the living; when it dries up, dry up and dissolve into powder, like a certain passage in the Book of Esdras (a book in the modern Catholic bible we have at home but not in the King James bible). On my latest cruise on Holland American, I certainly saw some rich people showing signs of dissolving away into powder, kept alive mainly by connections to their grandchildren.

This way of thinking was not just in Mexico. Gavriel Kaye has written great novels conveying the old culture of China. Even under Confucius and Meng Tzu (“Mencius”), the assumptions and practices were very much like Coco, until a famous “reformer” Zhu Xi, catering to a power-driver emperor, redefined the state religion. (Many people in China blame its current problems on Jiang Zemin, the latest great secular reformer, but I blame them more on Zhu Xi. Both offered a mix of great new positive insights and great new dangerous oversimplifications.) Even Mormons might see something they agree with in Coco. Much of East Asia still maintains that culture, despite the efforts by people like Zhu Xi and Jiang Zemin to stamp it out and control them.

One important detail: in Coco, a bad guy gets energy from people who are NOT of his family. OK, he was bad, but it is not natural to restrict the flow of energy only to flows within a family. It violates nature to limit things in that way. In a previous year, we actually visited Mao Tze Tung’s dorm room in the college in ChangSha where Zhu Xi taught, and saw the echoes of his scream that it is not *just* within the family.

But Figure 2 shows you *two* pictures. Only one is the simple “Day of the Dead.” The beliefs of the Mayans included Coco as ONE PART of it, but there was also that other world of “the heavens,” and the alternative real, great hope depicted by the Sian Kaan, the tree which bridges through the earth from that Day of the Dead realm to the world of the heavens. To me, this is ever so real, and I wish others could really see how real it is and how much it changes – offering our best hope not only to do better than the happy skeletons which



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eventually *do* dissolve into powder, but also our best hope to save the mundane human species from extinction, if only we refuse to turn into happy skeletons and insist on always reaching with real energy and receptivity to the real heavens. (See [http://www.werbos.com/Space\\_personal\\_Werbos.htm](http://www.werbos.com/Space_personal_Werbos.htm) for my chapter in the book *Beyond Earth*, Krone ed, Apogee Press. Reaching out with rocketplanes actually is part of this, but no, it is not at all the whole thing.)

Of course, we saw a lot of great trees in our latest cruise up the Amazon, and a lot of people on the cruise reaching out very energetically to try to learn and see nature and life and cultures beyond their own grandchildren. They were not neglecting their grandchildren. The Sian Kaan still always connects to the earth and to its roots, but it adds another connection, to a primary source of qi above them, qi which flows back to the living world and to the Coco world (the world of “widow” and “widower” spirit personalities). The duality Figure 2 is also consistent with the Egyptian Book of the Dead, which asserts that each of us actually has two souls, one more like the part on the left and one like the part on the right.

How can we add this extra dimension to our lives, to our “inner life” as Quakers would say? That subject is very important to each of us, but beyond the scope of this subsection.

## 2.2 CHALLENGES IN THE TRAINING AND GROWTH OF THE SOUL

Important as these challenges are, this paper can only provide a few crude starting points at best.

Many years ago, I worked with a group of Quakers dissatisfied with the choices for K-12 education in our neighborhood. In creating a new K-8 school, we focused on a clear mission: to develop, through exercise and training but not indoctrination, the skills and strength of body, brain and soul, and the integration of the three. It really helps to remember a clear and central focus when engaged in a difficult new endeavor.

But how to do that? Because no one on earth really knows the most effective way to fulfill that mission, we drew on deep cultures from all over the world. In addition to standard Quaker meditation and practice (which entails the absolute minimum of indoctrination and dogma consistent with making the effort), we drew on the best yoga exercises we could find, Sufi dances, Western

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mystical traditions and exercises, native American practices, and so on. There is a huge need for more systematic research to see how these various methods work, for different people, and to use our new understanding of intelligent systems to try to do better [46].

That school certainly does not tell us what the best practices really are, but there were interesting lessons learned. The most enduring successful exercises were probably: (1) the Quaker meditation period, which stresses learning to listen to an inner voice; (2) an English composition class in which children learned to give feedback on each other's work, in a way which supports communication and listening and understanding skills both mundane and deeper; (3) the conflict resolution class, which had much the same benefits, and also helped prevent the waste of time on neurotic conflict behavior which slows down many schools today.

Similar considerations apply to adults as well, of course. There is a deep spiritual imperative to keep learning and growing at all ages. At the old National Science Foundation, following the vision of Vannevar Bush before it was degraded by certain politicians circa 2014, many of us reached high towards a system of honorable competition and very deep dialogue, especially in well-managed panel reviews, which in my view activated spiritual connections and higher intelligence much more than what goes on in many churches and temples. Authenticity and commitment to truth were alive and well in that high-energy environment, as strenuous (but exhausting) in its way as the most professional athletic events.

A great challenge to the IT systems of the future is how to foster that kind of deep dialogue all across human society. Today's email and social network systems clearly do not create that level of authentic deep dialogue, in part because of phenomena like trolls, in part because words on a page do not automatically evoke natural deep human connections to humans, in part because people need more training in simple sanity [16, 20, 21], and in part because research on It had yet to harness the full power of intelligent systems to support collaboration. In my experience, weekly or monthly international video conferences can work far better than the usual social media, but this is just one small step.

The technical requirements for IT platforms to allow humans to collaborate

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more effectively, without any need for risky, questionable and unnatural “cyborg” interfaces, are too complex to discuss here in great detail. Those interested might consider a case study, a discussion of how such a system might have avoided the kind of risk and damage which can be seen at the present time in the Brexit debates of March, 2019 (which I hope will be overcome through some kind of “miracle”). [47].

### 2.3 COMMENTS ON ADVANCED MYSTICISM

This paper is not a proper place to try to recount all my personal experiments with psi and spirit since the time in 1967 when I first decided it would be worthwhile to try to understand them more concretely. But a few general comments are in order.

First, I have found that the noosphere species concept does more than just justify the idea of psi and soul at an abstract level. The idea that the “brain” of the noosphere is governed by the same universal mathematical laws which apply to any intelligent system turns out to be very useful in finding order in an otherwise very chaotic and diverse ocean of information. For example, if we accept that growth and adaptation of the noosphere brain is governed by modulated backpropagation, just like higher biological and computer intelligent systems, and we recognize that the word “qi” is simply a subjective way of talking about the (several types) of modulated backpropagation operating in the noosphere, we can more easily adapt to the reality that we are a part but not the rulers of an extremely large and intelligent system. We can avoid the twin hazards, the Scylla and Charybdis of spiritual development – delusions of grandeur and delusions of helplessness. These twin hazards remind me often of an initiation lecture I received for certain Senate staff, which they summarized as: “You must play. You can’t win.” We are called to engage enough to learn, to contribute as much as we can, but not to try to control or bias the process (which is not only unwise and unnatural but also very hazardous at times).

Many mystics talk about “planes of existence,” like travel to astral planes and so on. The noosphere species theory would interpret these important and valid experiences as experiences in a realm less real than our mundane world of atoms, experiences in something like an internet chat room of the noosphere.

At a higher level, when we enter into states of “meditation” where we really feel ourselves as part of the noosphere, the vast mind connecting our entire earth or solar system, and respond to the values and feelings and thoughts at that level, we can become channels for that higher qi, which will continue at least as long as life on earth continues, and perhaps even more. It requires great discipline over time to learn to cope with the resulting “firehose of information” [48]. None of this requires accounting for the quantum mechanical aspect of noosphere level intelligence [33,49], but once we do, it is somewhat easier and more natural to think of it as an ocean of information across space time and the cosmos rather than a firehose or volatile kaleidoscope.

In my last cruise, in early 2019, I finished reading “Vita Nostra,” a one sided but great and useful novel about spiritual development. No, we are not words, but we are... partly something like that. And we need to pursue many types of discipline to connect more completely to that which may not be truly eternal, but will last billions of years, if we do not screw up all life on earth. And, as Jesus said, we need to allow a certain kind of love permeate us deeply at all levels, including a very strenuous love for the spirit of truth which, he had, would be what really comes in later days like ours.

In summary: St. Paul Letter to the Galatians, Revised Standard Version, 3:5:  
“Does he who supplies the Spirit to you and works miracles among you do so by works of the law [i.e. rules like kosher, five pillars, etc.], or by hearing with faith?”  
Learning to really listen and hear, with faith in the idea that it is worth the effort, is a central part of all of this.

### 2.3 COMMENTS ON INTERFACE OF SOUL WITH BRAIN AND PSYCHOKINESIS

A key aspect of the noosphere species theory is that the dominant partner in the brain-soul interface is the soul or dark matter side. Thus in attempts to connect traces of psi with data like brain recordings, we should not expect to find anything like a psychic reception or transmission organ in the brain or the peripheral nervous system. In actuality, different people should be expected to learn different interfaces, as they train the neural networks both of their soul and of their brain. This fits well with the more practical, earthy experience reported by people like Sanders [50], by yoga experience with chakras and by other experiential mystical traditions from all over the world.

This suggests that the neural correlates of psi also vary from person to person, but entail in general having some parts of the brain or ganglia tuned to “criticality” states which make it relatively easy for the soul to perturb them. It also suggests that soul might or might not also be able to connect to intelligent critical systems made up of electronic or photonics components, but because the development of such systems was not tweaked by billions of years of low-level inputs from the noosphere, we really do not yet know what the possibilities for such systems are. Because “embodiment” is crucial to any intelligent system, we do know that the usual dreams of immortality through downloading are grossly misplaced.

Likewise, to explain phenomena like PK, we need to consider the pathway of signals from brain to personal soul either directly or indirectly to "invisible muscles" of dark matter which can then perturb ordinary matter. *Something* has to perturb ordinary matter for PK to be possible, either if we believe Einstein realism or if we believe quantum realism, and that something has to be something we don't see with today's instruments. To say that its "dark matter" is no more narrow or specialized than saying it is a hardly known form of material substrate.

The challenge we are best equipped to address is not so much how to strengthen the "invisible" muscles but how to connect better with (and train) the "invisible neural networks" which connect our brains or our conscious selves to what those "invisible" muscles do. It's not about quantum mechanics; it's about training (and understanding) neural networks.

For my own personal self-training, in addition to trying out a variety of exercises and learning how to be open while doing them, I have also made heavy use of the “bootstrap” principle [46] important to training all kinds of neural network, from brains to soul. The key idea is that all intelligent systems include subsystems which learn to make predictions of what they see. If we see a partial but fuzzy image, like the light in relatively dark but slightly lit room, if we focus hard on try to predict what we see and feel and “see in the dark,” and become receptive to clues from any kind of inner sensation anywhere, there is hope that our natural (nonverbal) neural networks will learn to use and thus respond to those other inputs. Focusing on inputs like moving bits of fog can help one to learn to “look sideways” and see them more easily, partly just by

mundane pattern recognition but partly by more. Procedures for testing which rigidly separate mundane and psi inputs and outputs can be useful for testing, but terrible for training. However, all of this can be seen as just a set of thoughts requiring testing in future research.

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