

From the desk of Pierre Beaudry



REFLECTIONS ON THE DYNAMICS OF A FINITE AND UNBOUNDED UNIVERSE

by Pierre Beaudry, 3/21/2010.



“What we actually perceive is a certain span of duration composed of two parts – our immediate past and our imminent future. We lean on the past, we bend forward on the future: leaning and bending forward is the characteristic attitude of a conscious being.” Henri Bergson

“The point is, it’s a prevalent, dynamic mood in society. It’s not popular opinion. People think of popular opinion in terms of numbers of votes. That’s not what determines it. A scientific principle is not based on the number of people who believe in it. So, you’re talking about a kind of principle which is an artistic principle, which is controlling the development of the society’s behavior, its dynamics. Then, you can have the individual who is opposed to what this dynamic represents, but who will *conform to it*, out of fear; out of fear of what they believe is a greater force.”
Lyndon LaRouche



Figure 1. Praxiteles, *Hermes*.

1- IS THE HUMAN SOUL FINITE AND UNBOUNDED LIKE THE UNIVERSE?

I have some very bad news for the existentialists among you who think they only live in the present, in the here and now. You are living in a state of complete delusion. If the reader pays attention to the process of consciousness, he will realize that the present does not exist; it never has existed and never will exist. The present is a fake, a fallacy of composition, invented by a constipated existentialist mathematician. When you think about the process of physical space-time, known as consciousness, there is actually nothing in between past and future. The mathematical instant of the present is nothing but a fiction, the shadow of something that never existed. That instant is merely a Euclidean a priori construct like the point, which has no existence in and of itself, except as an intersection of different planes of rotation.

All that exists is duration between the immediate past that is leaving us and the immediate future which is coming into being. The only proper way to look at the present is to understand it as a moment of change, a moment of becoming from future to past, or from past to future. This transition reflects the permanent ambiguity of true consciousness. Like the smile of Leonardo da Vinci's Mona Lisa, the present is a permanent irony that should always be reflected in your eye. In fact, the present is the greatest irony of all, because most people never pay attention to the importance of what is not there. They take the present for granted instead of considering that they are floating away from it all the time. Indeed, can something that changes all the time and never stays the same ever actually be present? Like Heraclitus asked: can you bathe twice in the same river?

Once the sense-perception illusion of the present is out of the way, the next false identity to be dealt with, and which is appended to it, is that of the fallacy of the individual particle, for instance, the individual body as the sovereign property of an individual. The third fallacy, also attached to the underlying assumption of the present, is the notion that thinking processes come from grey cells in the brain. If you shatter these three fallacies of composition, the present instant, the so-called sovereign body, and the thinking grey cell brain function, you will have destroyed the most tenacious illusions that were ever concocted since the beginning of time. But then again, beware of a new fallacy that might emerge while your attention is distracted, that of trapping the sovereign human soul to a particular individual. Again, the sovereign identity of the individual does not lie in his individuality, but in his universality. Therefore, a true sovereign human being can only be identified as a *universal individual*: that is to say, not as a particular human soul attached to a particular bundle of nerves or ideas, or a particular suit of physical clothing; but rather as a *microcosmic spiritual envelope of the universe that is both finite and unbounded*. This is what Lyn implied when we wrote:

“The conventional, and rather foolish presumption of most among our citizens, presently, is the notion of oneself as a form of what should be regarded as a special kind of what might be described as ‘self-owned property.’ This fault is expressed as the idea that what is presumed to be going on inside a certain kind of ‘personal territory,’ represents an imagined ‘territory’ which is considered to be

one's personal sovereignty, as if it might be considered as comparable to the legal ownership of a piece of territory. Such defective aspects in that which is presently customary belief, have sown confusion into the idea of personal human identity, by counterposing what is actually a quite different idea, and a wrong one at that: the idea of the individual person himself, or herself, as 'property,' or, said more frankly, 'self-slavery,' a slave hoping for a responsible master." (Lyndon H. LaRouche Jr., *Evil Wicked, and Stupid!* February 11, 2010. *Morning Briefing*, February 27, 2010, p. 52 of 78.)

The fallacy of composition, as Lyn identified it, is based on the proprietary function of sense perception, an unfortunate misunderstanding that the personality of the human individual is that of a particle, a "*little me*" in competition for property titles with billions of other particles from around the world and dressed up in the sense perception identity of a "*little me*." This illusion is important to be grasped, if we are to understand why man must be oriented toward the mission of colonizing the universe instead of simply struggling like an animal for survival on this planet. In that sense, not only the human individual, but also the universe as a whole, takes on a completely new significance, meaning, and dimensionality, as the human personality becomes a qualified measure of the expansion of the Noosphere from the Earth to the totality of the Cosmos.

The dynamics of this cosmic universal personality, then, becomes the seat of real sovereignty as exemplified by creativity and the discovery of principles. From that vantage point, the best way to imagine this human soul as a creative entity is as a Leibnizian monad acting on the universe with the power that Einstein ascribed to the Keplerian universe as being both paradoxically *finite and unbounded*. It is for that same reason that the human soul, as well as the physical universe as a whole, has the same natural characteristic of being ironic and anti-entropic; that is, developing at any finite moment of its existence a capacity for axiomatic changes. Consequently, the physical universe cannot be successfully dynamic without the planned creative process of the human mind, because man's dominion over the universe is already preplanned and inscribed in the universe long before man's explicit appearance on the scene. Such is also the characteristic immortality of man inside of the universe.

However, this characterization of immortality is not religious by any means and should not be seen as something acquired by revelation. Think of immortality, rather, as a unique and rare state of universality, which every human being has the potential to realize, but, which is fulfilled by only a few among us, because most people have other needs and motivations. In fact, it may be because of such rarity that motivation psychology never considered immortality as being the most fundamental of all human needs. Yet, it is.

Moreover, this idea of immortality is not religious because it is not derived from the idea of an eternal afterlife. The fallacy of an afterlife comes mostly from dissatisfaction of present life. As Lyn demonstrated in his own works and deeds, a more proper notion of immortality is derived from the universality of physical principles that each human being is capable of discovering, assimilating, and of replicating for the

benefit of every other human being, past, present, and future. In that sense, and in that sense alone, the human individual soul is capable of identifying with the immortality of universal physical principles and, therefore, of being in the Image of the Creative Process that is expressed by the rate of change that human beings are able to effect in acting truthfully on the universe through such principles.

Such a form of immortality is also ascribed to the physical universe, because the unity and the continuity of the physically expanding universe based on universal principles is not only reflected in the human soul, but is also conjugated with it, through the natural forms of human languages and artistic compositions that our poetical imagination uses through analogs of artistic and inferential scientific knowledge in connection with the physical universe.

The point to be made, here, is that such an idea of immortality is generated during the course of history by only a few individuals whose contributions will never perish, because they are necessary for the continued progress of mankind. Their free actions have become necessity. In other words, such contributions will never perish because they reflect universal works in shaping higher forms of changes in congruence with universal physical principles. What is immortal is what is necessary for the human species. Consequently, consider that the study of the progress of the starry heavens is very much like the study of universal human history, because it is like investigating different layers of the past in different places and times, throughout the universe, with the intention of changing the present course of events with the view of improving the future of all of mankind.

2- THE CONNECTION BETWEEN FINITE PAST AND UNBOUNDED FUTURE.

“The work of the brain is to the whole of conscious life what the movements of the conductor’s baton are to the orchestral symphony. As the symphony overflows the movements that scan it, so the mental life overflows the cerebral life.” Henri Bergson, *Mind-Energy*, p. 47.

Does the soul, as we know it, survive after death? Is the death of the individual physical body necessary for the soul to become immortal, or is the immortality of the soul entirely independent of the body, even during life? This is another way of asking: are body and soul two completely different substances? Is one the principle of the other, or are they both organized from a still higher universal principle through which the species decides what is immortal and what is not? Does the soul survive the body after death, or is it just its memory that remains and survives in future humanity? Do states of consciousness have a life of their own? Do states of consciousness carry within themselves, after death, memories of their living experiences? These are only a few of the questions that Henri Bergson (1859-1941) provoked in a book he wrote in 1920, called

Mind-Energy, in which he investigated the relationship between the soul and the body, and between the mind and the brain. The most interesting question he raised was the fact that the mind had a power to overflow the brain, as if the brain were finite and the mind unbounded.

Even when posed in this dualistic fashion, these questions are not necessarily reduced to a form of Aristotelian or Cartesian dualism. For example, the ancient Hylozoic Monism of Thales, Pythagoras, and Plato, considered that body and soul were two attributes of the same and unique substantial living principle, in which the loss of one did not necessarily mean the extinction of the other. Pasteur, for example, believed that mind and body were determined by the same universal principle. Again, the point is not to argue the question of immortality from the standpoint of religion or from the standpoint of the physical-chemical domain of the body, but from the domain of principles expressing how things change from the standpoint of a Vernadskian evolution of the abiotic, the biotic and the cognitive domains.

I am now going to follow the most stimulating direction of scientific research that Lyn has given, again recently, for the science of physical economy. It is through the anti-entropic means by which an organism constitutes itself and perpetuates itself through the cosmo-geological function of its species that the dynamics of the immortality of the soul must be investigated and discovered. The single most important aspect of immortality from the vantage point of perpetuating the human species, qua species, comes from the cognitive creativity of the human subject as a social individual. However, one cannot take for granted that a soul represents the personality of the individual, the true self of a person, without considering the personality of the universe. There is an apparent paradox here that forces the question: is immortality independent of the individual physical body that carries it or is it independent altogether of universal matter in which it is immersed but over which it has mastery? Is it also finite and unbounded in the sense of residing in matter, but controlling it from the outside, in the same proportion that it is finite by way of the past and unbounded by way of the future? The answer to that complex question should help us determine the sense of “self” that individuals think they have, or the kind of mistaken identity they imagine they have about their so-called “*private territory*,” as a bundle of sense perceptions. Here, again, is how Lyn formulated the problem from the higher standpoint of economics:

“The worst of the trends of belief in that direction, is typified by the essentially feral sort of notion of “my sovereign self,” which is the characteristic moral depravity of the modern European existentialist standpoint which has been definitely thrown, as Martin Heidegger proposed, but to an unknown “where?”

It should have been obvious, that the root of that sort of pathological, but, unfortunately, prevalently popular disposition, is to be found, in the role of those passions associated with notions of “sense-certainty,” such as the notions of “me and my property.” The tendency of what are the self-important, but relatively culturally illiterate persons, is to equate our existence with naïve sense-experience as such, a view which is a crucial moral fault. Pleasure and pain serve for them as

the implicitly titled property-lines of personal individuality. Yet the thoughtful scientist should have recognized that none of those egotistical fantasies are true.” (LaRouche, Op. Cit., p. 53 of 78.)

Here is how Henri Bergson formulated the question: “In what manner does mental-life overflow brain-life?” His answer was: “Speaking generally, the psychical state seems to us to be, in most cases, immensely wider than the cerebral state. I mean that the brain state indicates only a small part of the mental state, that part which is capable of translating itself into movements of locomotion.” (Henri Bergson, *Matter and Memory*, George Allen & Unwin, Ltd. New York, 1970, p. xvii.)

What brought Bergson to this conclusion was his experimental work on the psychophysiology of memory, and this brought him to the recognition that “there is nothing that is more immediately given, nothing that is more obviously real than consciousness, and the human mind is conscience itself. But, above all, consciousness means memory.” Note that for Bergson, the brain is merely a commutator that receives impulses from sense perception and switches them in the direction of physical motions of the body. The brain does not store up ideas. The brain is not an organ of thought.

This means that the mind is not only separate from the brain, but that the brain has a very different and unique function to fulfill. For Bergson, the brain is a sort of guardian and protector of the state of consciousness. In fact, he considers that the brain acts as a screening and masking instrument that sometimes blocks memory, by preventing consciousness from accessing material that might become detrimental to the mental or physical life of the individual. Thus, the brain protects the person by blocking certain dangerous intrusions coming from the outside or from the past, and wards off any threats that may endanger the mind. In other words, the brain is the watchdog of the mind. Here is the daring conclusion that Bergson came to:

“And consequently, I believe that our whole past still exists. It exists subconsciously, by which I mean that it is present to consciousness in such a manner that, to have the revelation of it, consciousness has no need to go out of itself or seek for foreign assistance; it has but to remove an obstacle, to withdraw a veil, in order that all that it contains, all in fact that it actually is, may be revealed. Fortunate are we to have this obstacle; infinitely precious to us is the veil! The brain is what secures to us this advantage. It keeps our attention fixed on life; and life looks forward; it looks back only in the degree to which the past can aid it to illumine and prepare the future. To live is, for the mind, essentially to concentrate itself on the action to be accomplished. To live is to be inserted in things by means of a mechanism which draws from consciousness all that is utilizable in action, all that can be acted on the stage, and darkens the greater part of the rest. Such is the brain’s part in the work of memory: it does not serve to preserve the past, but primarily to mask it, then to allow only what is practically useful to emerge through the mask. Such too is the part the brain plays in regard to the mind generally. Extracting from the mind what is externalizable in movement, inserting the mind into this motor frame, it causes it to limit its vision,

but also it makes its action efficacious. This means that the mind overflows the brain on all sides, and that cerebral activity responds only to a small part of mental activity.” (Henri Bergson, *Mind-Energy*, Lectures & Essays, Macmillan and Co., Limited, London, 1920, p. 56-57.)

In other words, mental life is not an effect of bodily life, because the brain is merely the mask that the mind wears to filter the past back to the future. Here, it is important to clearly establish the important distinction that not only the brain is not what produces ideas, but that the brain, which otherwise has been much overrated by positivists, should be considered merely as the protective guardian of the person. “The brain is then strictly speaking, neither an organ of thought, nor of feeling, nor of consciousness; but it keeps consciousness, feeling, and thought tensely strained on life, and consequently makes them capable of efficacious action. Let us say, if you will, that the brain is the organ of attention to life.” (Bergson Op. Cit., p. 59) This not only implies the existence of a certain independent relationship between the soul and the body, but also that the brain should not be considered at all the residence of the mind. However, although Bergson may have been one of the first scientists to accurately demonstrate the clinical forms of collaboration between the brain, memory, and consciousness, this is not the most fertile terrain to examine the issue of dynamics. As Lyn pointed out, the true residence of the mind is in the principles of the universe. So, let’s elevate this Bergson notion to the required level that Lyn addressed a few weeks ago:

“Thus, true science begins at the point that we acknowledge the efficient presence of an agency, which we might choose to identify, not as ‘brain,’ but as ‘mind,’ rather than as mere sense-perception, an agency which, in fact, is, in turn, only a mediator of a higher order of agency. ‘Brain’ is a physical organ; ‘mind’ is the state of the process which, contrary to the credulities of the reductionists, is of great importance as a source of support for that function which we should recognize as the ontological actuality of ‘mind.’ ‘Mind’ inhabits, among those organs, the ‘brain.’ The house and the inhabitant are not the same, either in identity or ontology.” (Lyndon H. LaRouche, Jr., Op. cit.)

Here, I take the liberty of moving the terrain of the debate to Lyn’s higher plane, because, even though there is a close relationship between mind and brain, there is evidence of an even higher and more crucial relationship between mind and universal physical principles. The dynamics of universal physical principles represent, therefore, the higher residence of the mind and the fruits of this higher dependency can only be harvested from this higher field of universal investigation. As Lyn repeatedly showed, it is only from the phototropism of those higher principles that new discoveries can be truthfully validated. So, even though this may appear to be a big jump, it is essential to discover how one can experiment immortality from the vantage point of the universal principle of creative cognition within the tension of finiteness and unboundedness. The question this raises is what form of *finiteunbounded tension* does the mind of the universe take in regard to Vernadsky’s three phase-spaces, and especially with respect to time?

The same principle of *finiteunbounded tension*, here, also permits to eliminate the fallacy of the “instant,” and of the “nanosecond,” as a unit of measure in physical space-time. This is something that both Vernadsky and Bergson have agreed upon, because the idea of “duration,” as they both conceived it (*dleniye* as Vernadsky translated Bergson’s concept of “*durée*”) gave a more appropriate understanding of a measure of change by expressing the flow between the past and the future, for instance, during the long process of radioactive decay, or during the greatly accelerated motion of electrons under condition of an Alpha-particle destruction. *Duration in the universe is the time of cyclical motion of some periodical change, as opposed to the unidirectional mental construct of the instant in itself.* Thus, the phenomenon of duration is not only a cyclical manifestation of astronomical time, as associated with planetary, living, and mental processes, as the circadian cycle or as the biogenic migration of atoms in living processes exemplifies, but also with the measurement of periodicity in the transitory nature of non-living processes at the sub-atomic levels of cosmic radiation of far away galaxies.

3- ON THE DYNAMICS OF SELF-CONSCIOUSNESS.

One of the fascinating aspects of investigating the ordering process of the starry heavens is that you are experimenting with the memory of the universe. The starry heavens are an immense memory of everything that exists. Everything that has occurred in the past billions of years is up there, looking down at us, as if in the simultaneity of eternity; different physical space-time events are celebrating cosmic birthdays, weddings, and funerals all at different times, but simultaneously. The memory of the heavens is playing up there like a classical artistic composition and resonating like a great universal symphony. The question this raises is: is this ordering principle of the starry heavens in the same proportion as the ordering of the orbits of the human mind? It is this state of affairs that leads me to investigate two forms of memory in relationship to the finiteness and unboundedness of the universe: one is the memory-storage of the finite past and the other is the memory-action of change from the unbounded future.

The first memory can be considered as collecting passively without selection everything that occurred during our daily-lives, storing them as they come only once and never to be repeated again in physical space-time, but representing a large yet limited storage of unique and unchanged resources. The second memory is a current recollecting agency that actively browses through the first memory and attempts to retrieve all memory-data on behalf of a willful intention of change oriented to the future. This second memory is different from the first in that it is an actively selective instrument. It is the willful memory which reshapes past ideas with the emergence of new ones for some future purpose. The memory-data of the first memory are thus constantly more or less modified by the willful activity of the second memory, whose function is to establish a self-conscious bridge that spans the past and the future, and thus identifies the measure of change to be determined between them. That measure is where creativity is located.

The first memory faithfully records everything without our being conscious of it. The second memory restores the past into an active and conscious staging area which is only conquered by making efforts of recollection and projection that are dependent upon the free will and the ability of associating ideas. It is like the starry heavens which are constantly present before us which have stored up everything that the universe has gone through during millions of years at different stages of the past, but which changes with every occurrence from the harmonic field of cosmic radiation. Thus, cosmic radiation represents the second memory of the starry heavens. The *finiteunboundedness tension* between the two memories represents the anti-entropic function of the second memory acting on the first with the intention of modifying past memory-data for the benefit of the future. This creative *attention to the intention* of the universe is like the unbounded exploration of the human mind that selects events of past human history as a recollection of discoveries, directly pertinent for the purpose of changing the course of events into an improved future for mankind.

In a typical mental process, self-consciousness starts from the future intention and goes back to the past, recollecting whatever significant memory-data and concepts it requires, in order to modify the current course of events with anticipation of an idea that should be realized in the future. This back and forth motion of the mind, going from the future to the past, and back from the past to the future is a form of *cyclical analysis situs* that is characterized by this sort of pathway that the mind takes to change the current state of affairs, in order to determine a specific objective to be realized. This dynamic also represents the simplest image of fluid motion of the creative process itself.

As Lyn showed, we do not control dynamics; we are controlled by it. For instance, when you read something, you tend to read all of the words one after the other, in a straight line, from left to right, right to left, in the form of boustrophedon, or from the top down, depending on your culture; and as you accelerate your reading, you can recognize that every word creates an after-image that tends to become jumbled and connected with others, but without creating any serious disturbances in the back and forth motions of your eyes jumping from line to line. The natural tendency of the mind, here, is to accelerate to the point of reaching a level of “speed reading” in which the mind notes only a few of the characters and fills in the in-betweenness of the intervals with memory-images that take the place of the printed characters. That is part of the natural dynamics of reading.

Imagine, then, that contrary to this linear form of reading, your self-conscious mind were to proceed, instead, in a non-linear circuit modular fashion that is self-reflective of the universe as a whole, and in which the elements of the process that your mind is attempting to put together are not words, but memory-data and memory-clusters of former ideas and discoveries, like the interactions of galaxies that are held together in a well-ordered state of tension as an electrical current does in a magnetic field, and in such a manner that the elements are molded into a flow without disruption, in a singular movement that is loosely continuous, but which always intersects some clusters of memory-data, changes them and finds its way back to the point from which it started, but in the future.

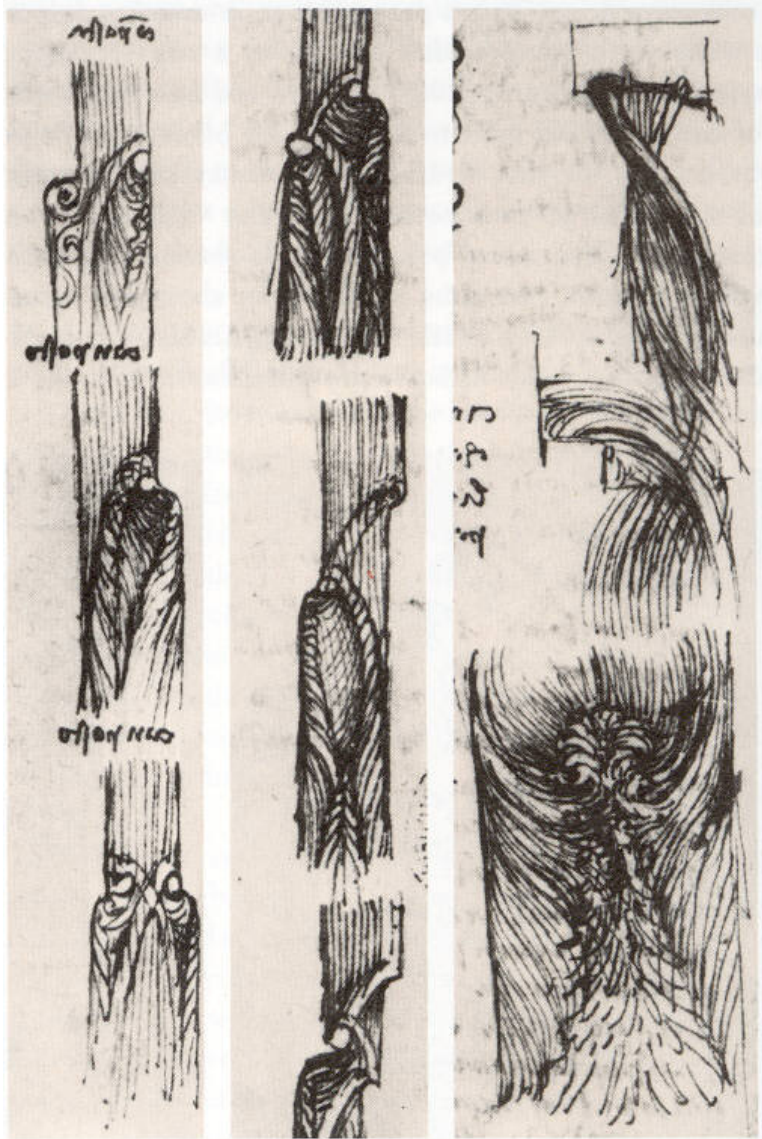


Figure 3. Leonardo da Vinci. “Columnar waves.” *Manuscript F*.

Then, suddenly, during that process, imagine further that you willfully introduce some abrupt change, a shocking new idea. You generate a sort of controlled aberration in physical space-time, something like a discontinuity that creates an obstacle as in the hydrodynamic work of *analysis situs* that you find in the experimental drawings of “columnar waves” by Leonardo da Vinci. Think of such discontinuities as being introduced in order to provoke qualitative changes, not merely in water flows, but, also in mental processes. What sort of intellectual process was he attempting to capture? These Leonardo exercises also resemble movements of willful processes of *paying attention to life threatening singularities*, which open up a number of questions: are all living being conscious? Does consciousness cover the entirety of the abiotic, biotic, and cognitive domains? If so, what forms does consciousness take in each of those phase-spaces? As

Pierre de Fermat noted about the propagation of light: how does light know which inclination to take when it changes its direction into a new medium?

Is that the same kind of mental motion as that of a creative process of discovery, in which one has to willfully generate shocks of discontinuities? If, in the process of memorization, that is, of recalling to the presence of consciousness a group of memory-data, you introduce an obstacle that causes a discontinuity which is essentially the same as causing a shock to the system, then, one of two things will result: either the brain will block the singularity, thus causing the mind to go, for a moment, into some form of amnesia, or the creative mind will force the singularity on the brain, causing it to deal with it, because a new universal physical principle has secured it into a completely new higher arrangement. What happens here in the difference between memorizing and discovering a new principle? When this happens, everything in the memory is reorganized along the new lines of the new principle.

The essential difference between the two processes of memorizing and of discovering is that the *process of leaning back* to recollect a memory cluster requires a manifold of similarity in which the memory slips into the image of the present conscious object; as if it had been invited by the sketch of a conscious outline that created the resemblance of what was to be recalled. On the other hand, in the discovery of a new idea, the mind encounters the shock of a discontinuity in the *process of bending forward*, as if the creation of a new outline had engaged the mind into a new foreboding arrangement that throws confusion into past memory-data, as they are projected onto the screen of the mind, pass the screening mask of the brain, in the willful act of seeking to find new improved pathways. The difference, here, is that the new idea is produced by *analogical inference*, as opposed to by *sense perception similarity*. That is a very risky and fearful jump to be made, but it must always be made against the odds of public opinion and of peer group pressure, for it is the successful passing of this hurdle that reflects the moment when a new idea is created. This is where Morpheus becomes your best guide. In this manner, the process never returns to its beginning, but to an emerging new manifold.

This new idea is then captured by projecting new sketches and new outlines for the same memory-clusters in comparison with old ones, and viewed from different positions of *analysis situs*, testing the reality of the newly formed *holographic-like-thought-object* inside of your mind, as the memory clusters are reshaped and regrouped into a higher form of existence. This new connection is made when the process is inverted on itself, that is, *when the attitude of consciousness is turned into a consciousness of a new attitude*.

Once the chirality of the process is locked into place by such a reciprocal motion, the new form is browsed through again in all its possible facets and mirroring images, and the unfolding process holding together this new memory cluster represents a new nesting place for the new arrangement to be adumbrated. This new group of memories, then, flows into the shape of the new mold that was just created for it by the mental movement of self-consciousness. The higher idea then comes into existence by slipping

comfortably into it as if it had found a permanent new place to reside, without being disturbed by the social discontinuity that the mind had encountered at the beginning regarding public opinion or peer pressure. This is how the Riemannian universe holds together as it goes through singularities. For example, photosynthesis leans and bends in the same way, as the Vernadsky biogenic migration of atoms transferred from the non-living to the living, and inversely from the living to a non-living residue. The intended effect may be different, but the *analysis situs* is the same.

This point of chirality is very important because this is the crucial feature of physical space-time that expresses *reversibility*. Chirality can express both clockwise and counterclockwise motions in space, as well as right-handedness and left-handedness as a mirror effect, but it can also express forward and backward reversibility of physical space-time in a biogenic process of transformation. In both cases of space and time, it is the *reversibility* of time in the reciprocal motion of change that is important to reflect on, not the right-handedness or left-handedness.

4- THE MORE YOU USE YOUR MIND, THE LESS YOU USE YOUR BRAIN.

This paradox of the brain function, whereby the more you use your mind the less you use your brain, is an actual physical proof that the mind is a living anti-entropic reflection of the universal process of change. In fact, it demonstrates that you can change your brain simply by exercising your mind and increasing the number of neurons that your brain needs for doing its job. Physical exercise is also a great source of increase in neurons.

For a long time, British empiricists have made believe that electroshocks were the best means of unblocking the brain synapses of clogged brain cells, and as a result, they have practiced the evil doctrine of behavior modification. For instance, this is how the British Tavistock Clinic destroyed a lot of people for life, as was demonstrated at the Montreal Allen Memorial Hospital by Dr. Cameron, during the 1960's implementation of the drug and shock-therapy program known as MK-Ultra. However, today, it can actually be conclusively demonstrated that the mental shock waves caused by paradoxes, ironies, and good healthy jokes are actually the best cleansers you can find for blocked brain drains, and the beauty of it is that the repairs are free of charge.

Recent biomedical discoveries have shown that the idea that brain cells could not be reproduced has been proven utterly false. On February 26, 2010, *Le Figaro* newspaper reported that brain aging was not irreversible and that animals as well as human beings were actually able to replenish lost brain neurons. The newspaper reported:

“Brain aging is not a fatality. The *campagne du Neurodon* (from March 8 to 14 next) and the *Semaine du cerveau* (from March 15 to 21) will be an

opportunity to bring us up to date on the current researches, and they are moving at a great pace. Scientists have discovered a stunning capacity of the brain to produce new neurons and have opened new research orientations thanks to which you can repair, stimulate, and maintain the functioning of the brain.” (Martine Betti-Cusso, *Le Figaro*, February 26, 2010.)

If it is the case that the brain is an agency that can be repaired while exercising your mind, then, why is it that no government of the world has yet begun to use LaRouche’s method to get us out of the current worldwide economic and monetary breakdown crisis? The reason is that the increase in brain cells does not necessary mean increase in the power of the mind, because using your brain is not the same thing as using your mind. The actual full implication of these discoveries on the brain, however, which *Le Figaro* does not touch on, is that such new discoveries are effective demonstrations of the anti-entropic nature of the human mind as the causal agency for improving the brain. This demonstrates that “*the more you use your mind, the less you wear down your brain!*” This is a very important discovery which demonstrates that cognitive and social activities are necessary to rejuvenate the brain by creating new neuron cells, and replacing those that have been lost.

The great leap forward in this field came during the 1980’s when the mystery of the *canary anomaly* was solved. Scientists were finally able to answer the puzzling question: “*Why does the chant of the canary change every year?*”

Researchers discovered that the *Serinus Canaria* loses all of its vocal neurons in the autumn and produces new ones by the following springtime. Although the implications of this amazing discovery were kept out of the public for years, research went on unabated around the world, until 1996, when Elizabeth Gould and her group at Princeton University, discovered the occurrence of neurogenesis (generation of neurons) in the brains of primates. Then, in the last few years, neurobiologist Fred Gage of the Salk Institute for Biological Studies in La Jolla, California, broke through the crucial step for man when he discovered that neurons were constantly being born at all times during human life, especially in the centers of the brain related to cognitive and memory activity.

“*The idea is that we have control over who we are, even as adults,*” said Gage with a touch of Californian irony. Up until now, it had been accepted as an article of faith that you were born with a certain number of brain cells and that was the only cellular package you were entitled to get in your box for the rest of your life. Not true. This entropic view of the brain has now been completely trashed ever since Fred Gage made his crucial discovery. The question this now raises is: “*To what degree does the willful human mind have control in determining the anti-entropic increase of his brain, as opposed to being doomed by its so-called entropic and predetermined fixed state?*”

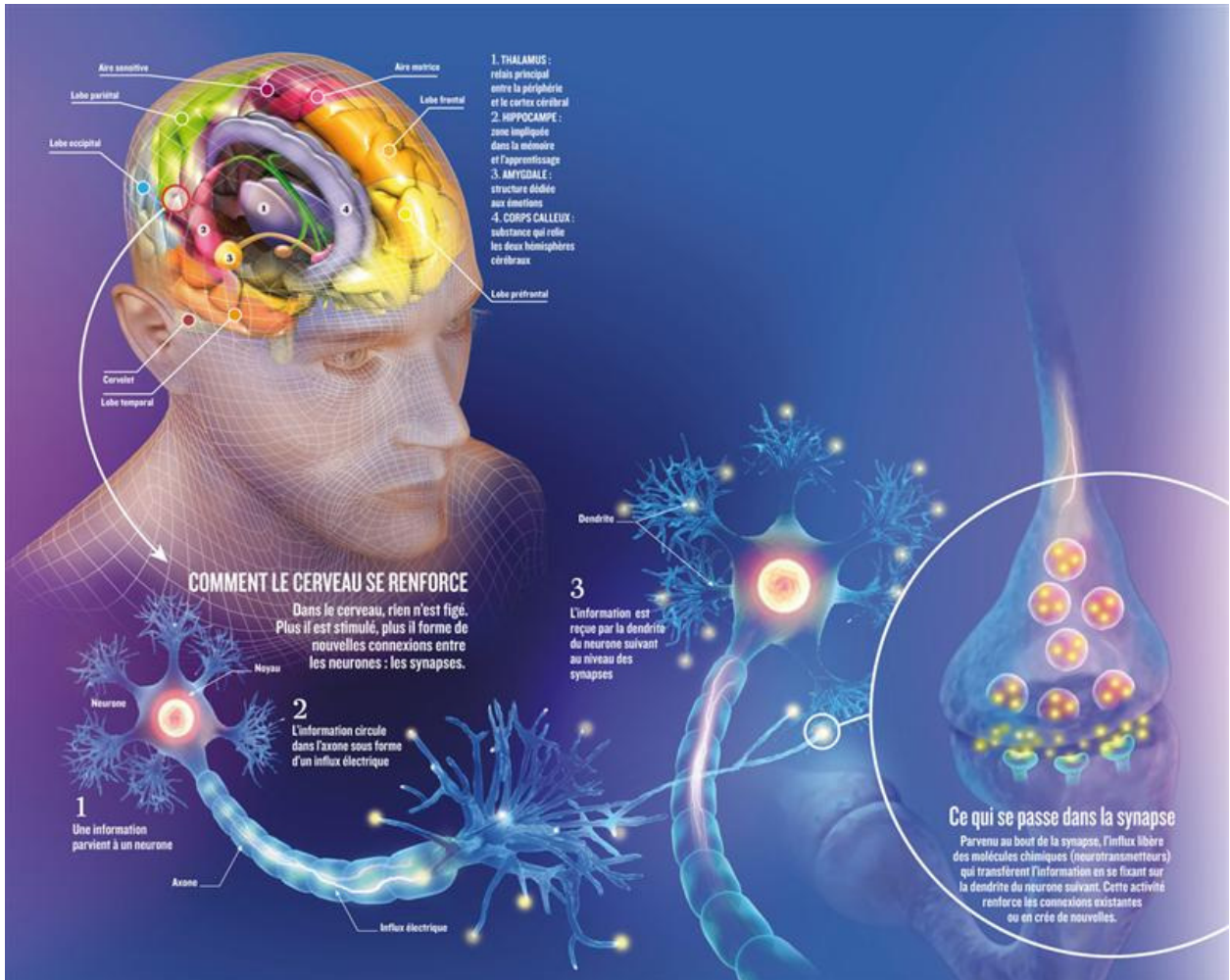


Figure 4. The brain from *Le Figaro*, February 26, 2010.

If man can willfully improve on the brain by mental exercises, then, this discovery has several very profound implications. This means that not only the aging of brain tissues could be turned around and degenerative brain diseases, such as Parkinson or Alzheimer conditions, might be cured, but, also, that problem solving processes such as ironies of classical artistic compositions, paradoxes, and anomalies of scientific experiments become the most favorable exercises for the production of neurons in a creative human mind. Such mental exercises become the fountain of rejuvenating neurogenesis. As a result: *You get more neurons because you solve more problems, but you don't solve more problems because you get more neurons.* That is the catch. A new and higher agency is required to solve problems, which is located in the domain of universal physical principles.

From the standpoint of Vernadsky's principle of living matter, the central nervous system and the process of cephalization has been developing on this planet for more than

two billion years of geological time, with the intention of creating an overflow over the planet. This anti-entropic process has today reached a turning point with Lyn's Four Power Policy of infrastructure development amongst Russia, China, India, and the United States. In this context, the reader should know that in 1922-23, at the time when Einstein was giving his first lectures on Relativity in the classroom of Henri Bergson at the College de France in Paris, Vernadsky was giving lectures on how to establish the Noosphere as a *biogeochemical phenomenon* next door at the Sorbonne. It is not difficult to infer that Bergson and Vernadsky discussed how the Noosphere was in the process of becoming the most important geological phenomenon on the planet. From that vantage point, not only is the Four Power Policy a direct manifestation of the human mind as the new geological force on the planet, but also it is the direct expression of the overflow of mind over matter.

5- ON EINSTEIN'S NOTION OF FINITE AND UNBOUNDED UNIVERSE.

While referring explicitly to the Riemannian idea of a spherical domain in opposition to Euclid, Albert Einstein showed how to conceive of the idea of a universe that would be at the same time paradoxically finite, but without limits. He wrote:

“Let us consider now a second two-dimensional existence, but this time on a spherical surface instead of on a plane. The flat beings with their measuring-rods and other objects fit exactly on this surface and they are unable to leave it. Their whole universe of observation extends exclusively over the surface of the sphere. Are these beings able to regard the geometry of their universe as being plane geometry and their rods withal as the realization of "distance"? They cannot do this. For if they attempt to realize a straight line, they will obtain a curve, which we "three dimensional beings" designate as a great circle, *i.e.* a self-contained line of definite finite length, which can be measured up by means of a measuring-rod. Similarly, this universe has a finite area that can be compared with the area of a square constructed with rods. The great charm resulting from this consideration lies in the recognition of the fact that *the universe of these beings is finite and yet has no limits.*” (Albert Einstein, *Relativity: The Special and General Theory*, 1920, Chapter XXXI, *The Possibility of a "Finite" and Yet "Unbounded" Universe.*)

And, he added: “But the spherical-surface beings do not need to go on a world tour in order to perceive that they are not living in a Euclidean universe.” Why did Einstein use the metaphor of the sphere? How is the sphere crucial for understanding our universe? What Einstein is identifying, here, is a change of measuring-rod which implies that any attempt at generating a straight line on a sphere ends up defining an arc of a great circle, that is, a line that must come back to itself because it reflects closure. The key idea, here, is not “line” but “closure.” The sphere is a finite volume, but it is not bounded. In developing this idea, Einstein was not looking for a shape of our universe. He was not dealing with a perception. What he emphasized was that, regardless of shape or form,

spherical, ellipsoid, toroidal, or some other form, the universe had to be closed and unbounded rather than open and indefinite; that is to say, the “world-sphere” has to be a closed space-time continuum of constant curvature. In fact, if Einstein chose the spherical or ellipsoidal model, it was because of its simplicity, and because “all points on it are equivalent.” Because of this double quality, the sphere is the most appropriate closed infinite surface for his idea of relativity. Moreover, Einstein was very explicit about his choice of a spherical model in opposition to Newton:

“If we ponder over the question as to how the universe, considered as a whole, is to be regarded, the first answer that suggests itself to us is surely this: As regards space (and time) the universe is infinite. There are stars everywhere so that the density of matter, although very variable in detail, is nevertheless on average everywhere the same. In other words: however far we might travel through space, we should find everywhere an attenuated swarm of fixed stars of approximately the same kind of density.

This view is not in harmony with the theory of Newton. The latter theory rather requires that the universe should have a kind of center in which the density of the stars is a maximum, and that as we proceed outwards from this center the group-density of the stars should diminish, until finally, at great distances, it is succeeded by an infinite region of emptiness. The stellar universe ought to be a finite island in the infinite ocean of space.

This conception is in itself not very satisfactory. It is still less satisfactory because it leads to the result that the light emitted by the stars and also individual stars of the stellar system are perpetually passing out into infinite space, never to return, and without ever again coming into interaction with other objects of nature. Such a finite material universe would be destined to become gradually but systematically impoverished.” (Einstein, *Op. Cit.*, Chapter XXX.)

Evidently, Newton never could explain why the universe would waste all of this cosmic radiation. In fact, the universe is not going toward an impoverished state, but rather toward a richer anti-entropic state. Thus, Einstein rejected this insane Newtonian conception of an emptying universe because it destroyed all harmonic ordering as well as closure by self-development. In other words, as Einstein hypothesized, if the density of matter in the universe does not tend to zero while it keeps extending outwardly, then the Universe is demonstrably finite at any given moment of its existence, but infinite in its development.

In this context, it is also important to note that Bergson had failed to understand Einstein’s relativity because he made the fallacy of separating time from space. As Bergson put it: “We have carved out of the theory of relativity that which concerns time; we have laid the other problems aside (i.e. space).” (Henri Bergson, *Duration and Simultaneity, with reference to Einstein’s theory*, The Bobbs-Merrill Company, Inc, New York, 1965, p. 7) Regardless of Bergson’s refusal to accept Einstein’s notion of “relativity of simultaneity,” the two conceptions of time of Bergson and Einstein are not

mutually exclusive as demonstrated by French astronomer, Charles Nordmann, in his book, *The Tyranny of Time, Einstein or Bergson?* New York, International Publishers, 1925.

In setting reality within the domain of physical space-time, one must think of a universe that keeps returning to a new future within the harmonic ordering of its unboundedness. Newton's universe was merely derived from a failure of sense perception, a fallacy of composition which magically projects the *a priori* perception of an external dark and silent abyss that sucks the very essence of the universe outwardly. But let's develop a few more ideas before we get to that extreme characterization.

How is our universe contained within the closure of its unbounded boundary conditions? For the last two centuries, astronomers have been able to give us a rough estimate of the relative sense of the boundary conditions of our changing universe. Most of the observable stars in the heavens – their numbers being only a few hundred millions – are located in the Milky Way, where our Sun is situated somewhere close to the middle. There are trillions more outside of the Milky Way. However, change in the universe seems to be limited, for now, by the speed of light, but just the idea that the rate of change occurring in any part of the universe might be much greater than that limit encompasses should attract our attention. The question is not the limit in magnitude, but that of a limit encompassed by the change in principles: how can we measure the rate of qualitative as well as quantitative change in this change of magnitude of the universe?

Ironically, the rate of change of our *Milky Way* cannot be perceived directly, because, as Nordmann noted, we are as if located in a small closet inside of an immense building which keeps growing and whose exterior architecture we have no means of visualizing, and which, in any case, could not even be determined from the standpoint of normal sense-perception. This paradoxical space-time situation of conflict between our imagination and our sense-perception captures well *the ironic state of perplexity that we find ourselves, inside the closet of our own galactic building, when we attempt to imagine the magnitude of the rate of change of the growing universe as a whole, and when we realize it must be done from imagining ourselves to be outside of our galaxy looking in.* That is a difficult problem for anyone who wishes to establish a measure of the rate of change in a finite and growing universe, but that is also a clue as to the method for solving the problem.

Be that as it may, it is the character of perplexity generated by that question of *finiteness and unboundedness* that is necessary to examine if we are to have some understanding about the measure of change in the universe, and if what happens at its boundary conditions were to be meaningful at all. However, as Nordmann showed, several compounded methods of observation have led scientists to the conclusion that the Milky Way had the form of a double spiral galaxy whose maximum expanse was calculated to be a distance in which light would have to travel between 150,000 to 200,000 years across, at a speed of 186,000 miles per second. This was discovered through a singularity.

To give an idea of what your perplexity must look like under these conditions, consider that the light of some of the most remote stars of our galaxy that we see today, have left their original source between 800 and 1,000 centuries ago. The light we see today, reflects the situation those stars were in long before humanity, as we know it, even began to exist. Nordmann noted: “Thus, plunging into the depth of space is for us the most effective means of diving into the depth of time and seeing the most remote past.” (Charles Nordmann, *L’AU-DELÀ, Face au problème de l’immortalité*, Paris, Librairie Hachette, 1927, p. 149)

We have, here, a near simultaneity of eternity in which the finiteness of a past moment of the universe has come to us in the future, at a moment of observation in which we assume the state of the object under observation has not been modified during its travel through space-time, but which still remains unbounded in its potential development. We think we are observing it as it was millions of years ago, but that is not true. That assumption, again, is but an illusion, because space-time does modify everything during space travel, including the human instrumentation observing it during its change. So, those modifications by space-time and by our own instrumentation have modified the observation by a new measure of change. It is this kind of measure that is required to be identified in science today; that is, not the way the universe was, but the way the universe truly changes. If we were able to measure that *warp in the measure of change* which impacts the modulation of cosmic radiation while traveling only a short period during millions of years, we would have a better understanding of what happens to the universe as a whole during those long waves of history.

Now, look at the intergalactic nebulae *warp in the measure of change* as the result of great works of art inside a universe in which God created man. Look at them as if they were ironies of Classical artistic compositions reflecting mind, and investigate them as if they were great paintings by Leonardo or Raphael, created with the intention of producing ironies or anomalies that reflect perplexing events, indicating the imperceptible presence of mind as a universal physical principle at work. Like a painting by Leonardo, the stars in heaven are not ordered as the objects that you see on the canvas of the heavens. They represent a state of mind that is harmonically ordered for your mind to decipher. For instance, ask yourself: what harmonic anomalies does the Crab Nebula and its cosmic radiation generate from the standpoint of musical counterpoint? What are the musical dissonances underlying the ordering of the Crab Nebula? The way that the sky appears visually to be rotating around us is not how it is harmonically organized. This is merely a visual mapping. But, this is not how the universe is organized from the standpoint of principles. Let’s ponder, for a moment, on Lyn’s idea of the mind as a weak force.

“But why is the human mind the most powerful force on this planet? It’s not the most powerful *physical* force. It’s the most powerful historical force. For failure, or for success. Well, what’s that say about cosmic radiation? That is a very weak aspect, relatively speaking, of cosmic radiation which corresponds to the domain of the human mind, of this human mind, is the power that runs the universe in the long run. But against hot iron, it’s the weakest. The brain is weak

physically. The mind is weak physically. The mind, as such, is the most powerful force in the universe, nonetheless. It's expressed relative to physical values, as a very weak force, which is what idiots will put to one side. The idiots will say, "ignore weak force, electromagnetic field forces." The intelligent scientist will say, "No, that's precisely what you have to concentrate on." Because it's precisely that characteristic of the human mind, which corresponds to the power of humanity, to change the universe. Hmm? And there's also the underlying principle of the universe." (Lyndon H. LaRouche Jr., *COSMIC RADIATION : « THE MIND IS A WEAK FORCE, IT'S MORE POWERFUL THAN THE STARS.*" Leadership Meeting for Tuesday, March 16, 2010.)

Just how powerful is the human mind with respect to the stars? Let's have a look. Large telescopes have shown us the existence of many galactic nebulas in the neighborhood of our own galaxy, as well as more than 300,000 extragalactic nebulas outside of our own Milky Way galaxy. Is that an expression of man's power? No. These are only an effect, an improvement in visual projections. These images do not show the more profound harmonies that hold the universe together and their ordering significance as to principles. What the Hubble Telescope has shown us more recently, for example, is in complete conformity with the observations made by scientists at least 80 years ago, through diversified and conjugated sensing instruments. The Hubble telescope is a great lens, but not a breakthrough in the way to understand the universe; it has merely increased the magnitude of visible extragalactic nebulas, demonstrated that, given a few exceptions, they are mostly of the same type. Thanks to it, we now know that our universe is made up of a common species of nebulas, although their ages may differ. But, this is the power of the lens, not the power of knowledge we are seeking to acquire.

Here, I would just like to note that, at the turn of the century, Nordmann was confronted with the similar problem as he came to the shocking conclusion that apparent insignificant singularities occurring in the sun had an important effect on the Earth. In 1903, he became the first scientist to establish conclusively the evidence of the role of cosmic radiation in affecting temperature levels on Earth. Nordmann accomplished this by establishing the first comprehensive study of how sunspot singularities affected the Earth's average temperature. See Charles Nordmann, *The Sun-Spot Period and the Variation of the Mean Annual Temperature on the Earth*, From the Smithsonian Report for 1903, p 139-149, Washington Government Printing Office, 1904.

6- HOW ARCHYTAS CHANGED THE LIMITS OF THE UNIVERSE.

Thus, the mental image of our unique relativist physical universe must be as a thought-object that is *finite and yet without bounds*, because we always have the creative capability of discovering and producing new discontinuities and dissonances that are not perceived by our senses. So, paradoxically, the universe is not measured and determined by powerful forces, but by the curvature of such weak forces that breaks through the weak flanks of a system that has to be changed. In other words, the universe is self-

bounding without external limitation; that is, it is limited only internally by the axiomatic dynamics of self-generating qualitative dissonances that are willfully generated by the creative human mind. This being the case, we then have a nice paradox to solve. Think of the activity of this entire universal process as being like a multiply connected series of non-living, living, and cognitive envelopment processes, exceeding each other, but always unfolding within one another, and reaching certain apparent limits in accordance with some well-tempered Lydian discontinuities acting from the top down and from the outside. Such harmonic discontinuities act as bridges to the next higher manifold of universal arrangement and understanding. Now, at this point, recall how Archytas related to this sort of *finite and unbounded* universe and try to imagine how he was able to solve the anomaly of going beyond the finiteness of the universe.

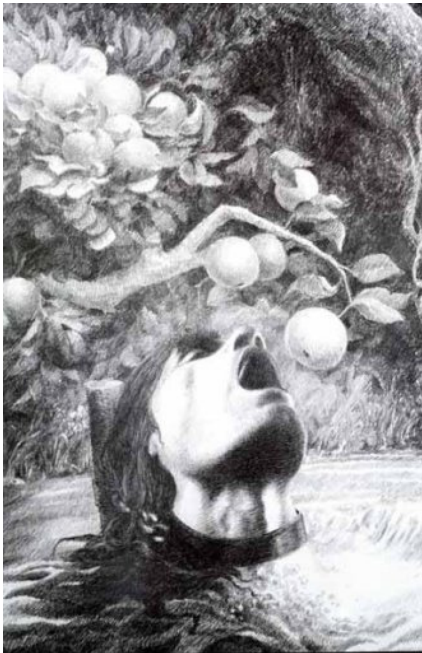


Figure 5. The *Flammarion Woodcut*, 1888.

The *Flammarion Woodcut* of Figure 5 depicts the Archytas thought experiment of reaching out to a singularity at the far end of the universe. What Archytas did was to wonder if he could pierce through that limit with his walking stick. In doing that, he created a singularity, a discontinuity that introduced an incommensurable gap. While

imagining himself advancing with his stick inside of the limit and into that gap, he asked how far he could advance in this manner, by establishing a new limit that he had set with his stick. Why did he do that? What was he attempting to accomplish by doing that? He was breaking the mold; he was breaking with the idea that the universe was perfectly closed on itself as if it had a fixed lid. However, this did not mean that he believed the universe had no closure and was open-ended infinitely. He knew that his measuring mind, in relationship with the universe, could not be limited. So, how could he attain what appeared to be impossible without creating a paradox? The idea is to discover a knowledge that could exceed the apparent limitations of sense perception. So, he dared to go beyond and challenge the unbounded. Why is it that there does not exist a single society on this planet today, a single culture in which individual human beings are in synchronization with what Archytas was attempting to do?

The point Archytas was making is that the limit of a finite universe, as captured by the metaphor of his sublime thought experiment, required that there would always be an unknown domain of self-actualization that the mind seeks to realize beyond its present state of finiteness, and from the confinement of which, the relentless willful reaching out always needs to be exceeded by daring to go where no one had gone before. Thus, what this *Flammarion Woodcut* reflects is a state of mind, not a state of matter. It is the limit of the mind that Archytas is piercing through, here, represented metaphorically by the apparent limit of the universe, the limits of public opinion and of peer groups. This expresses man's scientific quest for knowledge in investigating the discontinuity amongst the Euclidean flat earth, the spherical domain of the heavens, and the universal physical principles underlying that heavenly sphere. The modern form of such an epistemological experiment is expressed by the mental image of Riemann's multiply connected manifolds.



"I also saw the awful agonies that Tantalus has to bear. The old man was standing in a pool of water which nearly reached his chin, and his thirst drove him to unceasing efforts; but he could never get a drop to drink. For whenever he stooped in his eagerness to lap the water, it disappeared. The pool was swallowed up, and all he saw at his feet was the dark earth, which some mysterious power had parched. Trees spread their foliage high over the pool and dangle fruits above his head—pear-trees and pomegranates, apple-trees with their glossy burden, sweet figs and luxuriant olives. But whenever the old man tried to grasp them in his hands, the wind would toss them up towards the shadowy clouds." (Homer, *Odyssey* 11.584).

Figure 6. The Apples of Tantalus.

On the other hand, Homer's Tantalus shows the tragic consequence of remaining within the limits of sense-perception of public opinion and of peer group pressure. Because Tantalus had teased men by giving them a taste of the ambrosia of the gods, he was condemned to eternal torment. While always remaining within the domain of an imaginary sense perception, Tantalus was unable to end his torment, because he faked the true joy of discovery by replacing it with pleasure and approval. This is the sort of obstacle that the mind sometimes creates for itself when confronted by public opinion. To "tantalize" then becomes a self-imposed torment. The Christian myth of Adam's apple in the Earthly Paradise also comes from this ancient Greek story.

In the case of a universe that is finite but unbounded, for example, the tantalizer looks for vast empty spaces, completely devoid of ether and of wasted cosmic radiation surrounding our universe. This was Newton's view of the world. The existence of other universes could even be imagined, beyond the finiteness of our own universe, but would be as if forever none existent, because no knowledge of them could ever reach us from them and cross over the dark and silent abyss surrounding our constricted island. This could be imagined, but could not correspond to reality. Why?

Such other universes beyond this dark and silent abyss surrounding our giant "monad," as some scientists describe it, could not exist simply because the quest is not inferential, because the limit of the mind is defined by sense-perception as opposed to learned ignorance. As a result, the thought experiment becomes simply failed perception. If this thought experiment arrangement were understood properly, there would be no need for anything to exist outside of our finite and unbounded conception of the universe, because it would be attached to our own self-perfecting process of development by some lawful Riemannian discontinuity. The very fact of a universal process containing within its internal developments the required discontinuities for its anti-entropic development by *finiteunbounded tension* precludes the existence of other universes. This means that if there were to exist other worlds beyond the one we know we exist in, they could only be known from the outside and from the top down, and they would be sparked by the dynamics that are constantly internal to our universe. Such is the meaning of anti-entropy: proceeding from the top down as opposed to from the bottom up.

The reason for this is simple: the area of that "*dark and silent abyss*" is merely the thickness of the dark veil of positive knowledge that must be lifted from the inversed mirror image of the next expansion phase of our own universal development in the image of God. Here, the image of Archytas peeking through our universe would simply have to be inverted and mixed with God's image, as in Dante's last stanza of *Paradise*, that is, as if he were looking inside of our universe from the outside, because the dynamics are coming from the other side, from the top down:

"As the geometer intently seeks
To square the circle, but he cannot reach,
Through thought on thought, the principle he needs,

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So I searched that strange sight: I wished to see
The way in which our human effigy
Suited the circle and found place in it –
And my own wings were far too weak for that.
But then my mind was struck by light that flashed
And, with this light, received what it had asked.
Here force failed my high fantasy; but my
Desire and will were moved already – like
A wheel revolving uniformly – by
The love that moves the Sun and the other stars.” 145

But, the reader might object: aren't we, once again, trapping ourselves into the magnitude of absolute space? Possibly, but not if that new form of space were to be subject to universal change in physical space-time. But, is there not God's heavenly residence beyond the universe? Lyn will respond to this:

“The form of the question which must be posed to today's audiences, is: *whether Christianity, which still embodies, at least nominally, the dominant matrix of trans-Atlantic culture now, is, in its true form, something efficiently within the actual universe of such as Kepler, Leibniz, Riemann, Einstein and Planck, which we inhabit, as opposed to that illusory faith which believes only in an unreachable universe which is regarded as merely a shadow of some imagined Paradise which exists outside of our physical universe?* My point is, that, in physical science, there is no “other place” to be called “Heaven,” other than the universe we inhabit as living persons now; it is devotion to that cause, the cause of the real universe in which the Creator's reigning influence ultimately operates with our assigned participation. [12] This scientific matter touches upon those notions of the ontology of human “soul” which, in scientific terms, define the distinction of the immortality of the human mind from the mortality of the human brain.” (Lyndon H. LaRouche Jr., *The British Theology of Sex*, March 19, 2010, Morning Briefing, March 29, 2010.)

Thus, as we proceed to seek to know more about physical space-time, how much more can be contained in this expansion of the limit, remains an open question, but not a tantalizing one. This is merely a matter of necessary human progress. If the imaginary space beyond our own universe were to exist, as the tantalizer just imagined it, as an infinite abyss beyond our *finite but unbounded* universe, or as a divine residence, then, as Archytas had recognized with his own imaginary measuring stick, a formless idea that has not yet been born would appear in our minds, from outside of our galactic cubicle, only to project on the wall of our own self-consciousness the unshakeable shadowy prelude to the next phase of our development. Thank God, the black abyss beyond our universe would then dissipate as merely the thin veil that it is, and proportional to the space taken up by the illusion of sense perception. That isn't much, yet most people would consider it to be an impossible magnitude to surmount. But then again, isn't Heaven the joy that one experiments in going through such “impossible” singularities. At least, that is how the weak force works.

There is a good reason why man is able to put the totality of the expanding universe inside of a single idea, and peruse that idea at a speed greater than the speed of light. It is because the universe has been created in the self-image of God's Creative Process, and the human mind was created as the only cognitive power capable of changing the lenses of his dynamic apparatus, for the purpose of capturing such axiomatic changes of magnitude. Now ask yourself, did Michelangelo succeed in representing such a cognitive change in his representation of the connection between God and Man in the Sistine Chapel? Is this an expression of the weak force?

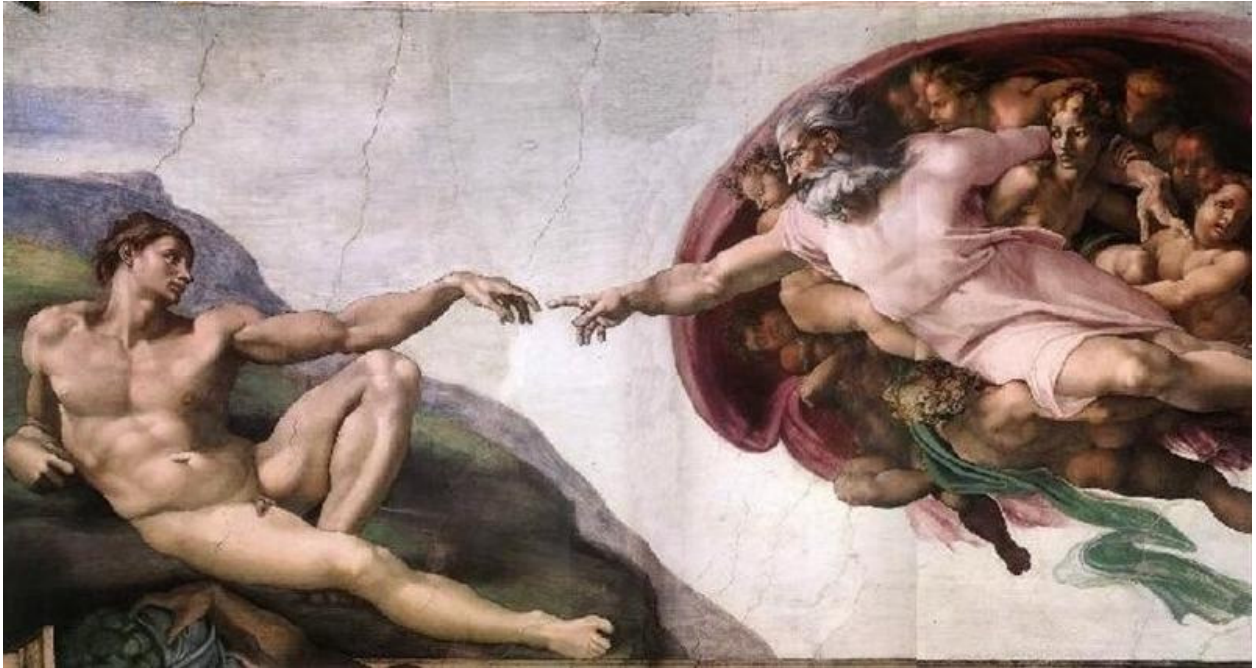


Figure 7. Michelangelo, *The Sistine Chapel*. 1508-1512.

Compare this tantalizing icon of Michelangelo with the *Flammarion Woodcut*. What is the difference between the two? Is Michelangelo depicting how Man makes contact with God? No, because the finger of God, about to touch the finger of man, does not allow for the proper relationship of incommensurability to be expressed between the two domains of divinity and humanity. What is he doing then? Michelangelo is faking it. That is a fallacy of composition. That is a weakness, but not a weak force. As Aristotle and Euclid believed before him, Michelangelo also believed that he could smooth out the discontinuity between God and Man by appealing to sense perception. Leonardo remarked in his *Notebooks*: "Represent your figures in such action as may be fitted to express what purpose is in their minds; otherwise your art will not be good." In other words, the *Flammarion Woodcut* expresses the incommensurability of inferential knowledge of the creative mind while Michelangelo's Sistine Chapel ceiling expresses the limit of positive knowledge of the positivist. The first stems from learned ignorance; the second, Leonardo identified as being a contact between two "bags of nuts!"



Figure 8. A Wolfgang Köhler experiment. Wolfgang Köhler: *The Mentality of Apes*, Harcourt, Brace & Company, Inc., New York, 1926.

Thus, positive knowledge is merely a tease. It is false knowledge because, as Michelangelo has shown, what is required for man to know is not accessible in the manner that he showed. Wolfgang Köhler provided the proof of this point with his experiments on the difference between man and animal.

In his studies on monkeys, Köhler came to the clear and definite conclusion that it was wrong to think that animals could solve problems through “learning by insight,” as humans do, because learning by insight is inferential knowledge acquired through cognitive discontinuities, and not by teasing. On the other hand, the positive knowledge of animals is merely learning by trial and error, based on sense perception, and without memory. In Figure 8, the monkeys are attempting to bridge the empty space between the soil they stand on and the piece of food hanging out of reach above their heads. There are no discontinuities. The monkeys are clearly looking for a form of extension of their own physical reaching capabilities, and attempting to connect their appetite directly with their

objective. The point is that they may be trying to reach what is above their heads, but they are not reaching for something beyond their capabilities. When man reaches out to God, he is reaching beyond his own capabilities.

Here, the chimps are merely attempting to bridge the empty space between the soil and the desired object. That is all that is going on in their minds. Once that visual-spatial connection is made, they know that the solution to the problem is a matter of finding the props that will help them accomplish that objective. They cannot reflect on that objective, because they have no consciousness, but they know it. And, the idea they have of how to get to their objective doesn't have to be elegant. If there had been no boxes, but just Koehler standing under the banana, a chimp would have jumped on his shoulders to get his prize. It may come as a surprise to a man watching the monkey climbing on top of boxes, but such a filling of visual space does not come as a surprise to the monkeys. There is no surprise, here, like there must be one in a genuine human discovery of principle. There is no Aha!

On the contrary, man is looking for a higher dimensionality. He is seeking something that is not accessible from his previously acquired knowledge. He is looking for something that is not going to be accessible by filling the space that is given to him by sense perception. Therefore, he is looking for a discontinuity, for something that does not agree with the animalistic habits of filling empty space. Such discontinuities are very important for human creativity, because they are built into the natural fabric of thinking processes in relationship with perception. It is those singularities that prove the difference between man and animal.

Moreover, as Lyn showed, mathematics is filled with such doorstoppers. Whenever you find a mathematical discontinuity, you can be sure that you have a universal physical principle knocking at the door. In a sense, discontinuities are very useful, because they are the shadows that are warning you before you walk into a trap, or you are on the verge of discovering something important. Sometimes, discontinuities may even take the form of anti-entropic anomalies that jar the imagination like a good joke does. For example, look at the weak force of the expletive Aha! This irony is especially powerful when it expresses the sudden triumph of forcing someone to admit he was wrong.

“For twenty years Mr. Sokoloff had been eating at the same restaurant on Second Avenue. On this night, as on every other, Mr. Sokoloff ordered chicken soup. The waiter set it down and started off. Mr. Sokoloff called, ‘Waiter!’

‘Yeah?’

‘Please taste this soup.’

The waiter said, ‘Hanh? Twenty years you’ve been eating the chicken soup here, no? Have you ever had a bad plate --’

‘Waiter’ said Sokoloff firmly, ‘taste the soup.’

‘Sokoloff, what’s the matter with you?’

‘Taste the soup!’

'All right, all right,' grimaced the waiter. 'I'll taste – where's the spoon?'
'Aha!' cried Sokoloff.
(Leo Rosten, *The Joy of Yiddish*, Pocket Books, 1968.)

The proof of a discovery by insight lies in the fact that the inferred solution to the problem comes as a joyful conclusion in which the discoverer realizes that it is the singularity factor that establishes the gestalt connection, and that's why he is forced to respond with laughter: "Of course!" Here, it becomes evident that a chimpanzee, a Kantian, or a positivist is incapable of understanding such a process. In his experiments, Koehler was also polemicizing against the positivist-behaviorist belief that human behavior could be reduced to environmental conditioning by motivation. And that is not a joke.

Thus, an *inferential effect* may be directed locally, but its intention is always oriented toward changing a universal situation. That is also how the universe is organized by weak forces as a whole. Can you change something in the ionosphere of Neptune by modifying something in an experimental laboratory on Earth? The mastery of the anti-entropic character of cosmic radiation, for example, will surely be able to answer that question. As Lyn showed by the effects of the catenary-tractrix principle, this anti-entropic *finiteunbounded process* works much in the same manner that Frederick the Grosse deployed his forces at the Battle of Leuthen, or as Washington deployed his forces to cross the Delaware on Christmas Eve of 1776. Each local action decided the entire outcome of the war as a whole. How so? Think of the natural function of the least action effect of a military flank. Three things are essential, the first is the element of surprise, the second is the factor of mobility, and the third is the intention of the commanders. Of those three elements, *surprise, mobility, and intention*, the third factor is the single most important one, because, in order to win, the commander of the smaller forces must always decide his strategy based on paying *attention to the intention* of the commander of the larger forces. "*Know your enemy*" as Lyn always says. The failure to do that will lose you the war. I guarantee it.

This is also how one can act locally and change something universally. Thus, we must define the role of man in, by, and for the universe. That is how to determine the direction that mankind must now take. In other words, since mankind is determined by dynamics, and dynamics is not determined by the particulars they affect, what must govern dynamics are individuals who affect change universally through a choice of ironies and singularities as they are manifested in classical artistic compositions. Short of that you will not succeed. However, for discontinuities to be understood properly in a scientific context, their anti-entropic causal function must relate to the three Vernadsky phase-spaces in three different forms of energy-flux-density. This must correspond to what Lyn had identified as his conception of man in his own profession as an economist. As Lyn put it:

"I refer, thus, to the definitions which Percy Bysshe Shelley's use of Gottfried Leibniz notion of dynamics portends; one's profession should be what one should be becoming. What I have been becoming, is expressed by my present

view of the place of the human species within the functional context of our Solar System and beyond. To come to the relevant point here, the universe, as we are enabled, or should qualify ourselves to become able to change it, works to such effect, that as we should have devoted ourselves to that end, as being the proper conception of the subject of man. That has turned out to have become my profession, whether I foresaw it, or not, at some particular, earlier point in time.” (Lyndon H. LaRouche Jr., *EVIL, WICKED & STUPID !*, Morning Briefing, February 11, 2010, page 28 of 78.)

Thus, as Leibniz showed, reason and power are proportional as understanding must be in harmony with action. Man must be what he has to become universally by doing everything that he is capable of becoming, and by acting on the universe in proportion with that declared state of purpose in mind. But, what needs to be discovered is how to know, under what condition of warfare, and when, during this mission, you are proportionally in tune with the universe. I believe that Pasteur is the one who can provide the best answer to that question.

CONCLUSION: PASTEUR ON ENTHUSIASM

In ending, I recall the spirit of the infinite that Pasteur had raised against the positivists of the Ecole Polytechnique of 1882, when he denounced the reductionist methods of Augustin Cauchy and of Auguste Comte. Only a few years before the spectroscope was invented, Auguste Comte had made the pompous declaration that the chemical composition of stars was forever unknowable. It is, therefore, fitting that we think of the dynamics of a *finite and unbounded* universe as the principle that carries the “Inner God” that Pasteur identified as the inspiration of his research when he said:

"Positivism sins not only through methodological error. There is a considerable gap in its seemingly tight net of reasoning.... The large and obvious flaw in the system consists in that the positivist conception of the world does not take into account the most important of positive notions—that of the infinite.

What lies beyond the starry vault of the heavens? More starry heavens. So be it! And beyond? Pushed by an invisible force, the human mind will never cease asking itself: What is there beyond? Does it want to stop either in time or space? Since an endpoint would be merely a finite dimension, greater only than those that had preceded it, no longer does the mind begin to envision it than this implacable question returns, and the mind cannot quell curiosity's call. ... Positivism gratuitously brushes aside this positive and fundamental notion, along with its consequences for the life of society. ...

Are not the science and passion of understanding nothing else but the effects of the spur of knowledge, put in our souls by the mystery of the universe? Where are the real sources of human dignity, of liberty and of modern democracy, if not in the notion of the infinite before which all men are equal?

The spiritual bond situated within a sort of lower-level religion of Man, cannot reside elsewhere than within the higher notion of the infinite, because this spiritual bond must be associated with the mystery of the world. The Religion of Man is one of those superficially obvious and suspect ideas which brought one eminent psychologist to say: "I have thought for a long time that the person who has only clear and precise ideas must assuredly be a fool. For the most precious notions harbored by human intelligence are deeply behind-the-scene and in semi-daylight, and it is around these confused ideas, whose interrelations escape us, that the clear ideas gravitate, extending, developing, and germinating themselves." If we were cut off from this background, the exact sciences would lose the greatness which they draw from the secret rapport they hold with those infinite truths whose existence we can only suspect.

The Greeks understood this mysterious power below the surface of things. It is they who bequeathed to us one of the most beautiful words of our language: the word *enthusiasm*, "inner God."

The greatness of human actions is measured by the inspiration that gives them birth. Joyous is he who carries within him an inner God, an ideal of beauty, which he obeys: an ideal of art, an ideal of science, an ideal of his nation, and an ideal of the virtues of the Gospel. These are the living sources of great thoughts and great actions, and all of them are lit by the gleam of the infinite." (Louis Pasteur, Highlight of his speech delivered to the French Academy of Sciences, in Paris, 1882.)

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