The Neural Basis of Human Conscious Existence

Kant’s Two Senses:
Left Brain: Inner Sense, Time, Logic, Sequential Language, Plans, Noumena, and Memory of the Past
Right Brain: Outer Sense, Space, Geometry, Images, Scenario, Phenomena, and Anticipation of the Future
Metaphysical Gap, Receptive Fields, Bilateral Brain, Human Judgment Power, How We Can Exist as Sentient Beings

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(1) Our thesis is that consciousness (C) is a mechanism, a neural brain mechanism, a dual left/right brain mechanism. Receptive fields are increasing to become global in Brodmann Area 10 (BA10) Ego cluster neurons. Inner C (IC) resides in the left brain and outer C (OC) in the right brain. IC is noumenal; OC is phenomenal. Phenomena are spatial, geometric-continuous, are images. Noumena are temporal, logical-sequential, are structures.

(2) The precise role of each of two regions BA10, in either of the left/right cerebral hemispheres can be clarified. Brain, BA10 left: I, in my interior castle and greater abstract universe, my noumenal cosmos in the temporal sense. Brain, BA10 right: I, in my environment and larger physical universe, my noumenal cosmos in its spatial sense.

(3) Kant’s Oneness function. BA10 provides for oneness (O), a function of the human mind identified by Immanuel Kant as central for experience (E) to occur, forming a unified general experience, which he also calls one experience, interconnected experience, or even experience in general in his Critiques, expounding transcendental metaphysics.

(4) Ego Cluster & Global Receptive Field, or Field of Receptivity. The receptive fields of neurons grow progressively larger, increasing in extent and logical depth along the ventral path & eventually become global in the Ego cluster Brodmann Area 10 (BA10), where the white matter tracts of the sensory ventral path terminate.

(5) Top-Down (T-D), Bottom-Up (B-U).

The inner cosmos, our soul, arises as a top-down nearly free creation, based upon in almost total disregard of bottom-up constraints, the chaotic circumstances in the exterior world. The reason is that the bottom-up approach to interpreting sensory data is unmanageable, hopelessly inefficient & simply impracticable. If it ever succeeds, it still is too slow & bound to fail in the end, due to phenomenal structures being enormously complex and variable.

(6) Internal Structural Historical Record (ISHR). Our understanding is based on linguistic expressions for phenomena that we encounter and register as phenomenal engrams in the neurons of the brain, through acquisition of the logos inherent in the relevant aspects of any phenomena, possessing pre-linguistic structure, in form of internal structures, counting for historical record, ISHR.

(7) While the human soul reflects the glory of the divine mysteries of the universe, as we, like no other creature on Earth, uniquely understand the totality of it, with certain inherent limitations, yet there never will be a time when its true nature & origins are revealed to any living rational being, Aristotle’s rational animal, ζώον λόγον ἔχων.

(8) To comprehend consciousness we require full & radical holistic thinking, the noumenal cosmos. We have...
holistic-cosmic consciousness, our consciousness, a spatiotemporal developing record-system, it extends to the
most distant galaxies, in our noumenal cosmos, & down to the elementary particles and quantum foam.
(9) The life of the free-floating soul, I am, therefore I am a conscious soul, although in reverse, effectively is what
Descartes was saying, unawares. Our existence is identical with our consciousness, but nonetheless delivered up to
the futility of fate.
(10) The human conscious existence amounts to a noumenal cosmos, an internally held world model, which has
many antecedents in the history of philosophy. We can’t be conscious of a few things or of part of the world. The
point is the Being-Question (Heidegger, 1935). We are conscious because we are, we exist. Descartes taken in
reverse.

We need this kind of a dual brain, dual C. The reason is that the OC is for the instant, the present moment in time
the current, momentary scene in the immediate environment, and future anticipation, while neurons of IC are for
the past, which provides us with a general experience, the noumenal cosmos, upon the basis of which we can form
judgment for the actions of the present and even perform future anticipation. The present moment is at home in
BA10, the past in the temporal lobes, both inner and outer. The residence of future anticipation is not yet known,
and constitutes the main purpose of this essay.

Keywords: Kant’s inner and outer senses, orderly inner self and chaotic outer environment, brain laterality,
noumenal cosmos, metaphysical gap, thing-in-itself, pre-linguistic structures (pLs), logos (or language) machine
(LM), geometry and recursive mathematical languages as mental capacities, phenomena and their internal structural
historical record (ISHR)

Saint Paul’s address to the Areopagos, Acts 17:28, King James Version: For in him we live, and move,
and have our being; as certain also of your own poets have said. For we are also his offspring.

To the Modern Age pioneers HOBSES, LEIBNIZ, KANT, BERGSON and many others, who have
promoted the scientific viewpoint in philosophy and have seen glimpses of the cosmos, this side of the
metaphysical gap that separates man from his environment.

These philosophical theories are included in the cosmos, Plato’s Forms, Hobbes’ Calculations, Hume’s
Utility, Leibniz’ Monad, Kant’s Synthetic Unity, Hegel’s Geist, Brentano’s Intentionality, Bergson’s Mental
Self-Record, Husserl’s Phenomenon, Heidegger’s World, & Rorty’s Community.

Introduction: Futility of Fate, the Nature of Future Anticipation

The human soul gloriously reflects a mysterious universe that we barely understand in its totality. But in
life, our soul, in her interior world, is subjected to the futility of fate in an exterior world. The two worlds are
connected by means of an intricate organism, the human body, permeated with and transfused by a giant
nervous system, but this indirect connection is covering over a metaphysical gap which inexorably and forever
keeps the two worlds apart. We humans see ourselves as “inner man” of the Apostle St. Paul, the human soul
dwelling in St. Teresa of Avila’s “interior castle”. To engage in actions in the exterior world, while possible
and even necessary for the organism’s survival is dangerous and deadly and should be avoided if possible. This
essay is about the home of the human soul, how we accept our lives as authors of our existence. Sooner or later,
we come to recognize the futility of fate, and many turn toward the inner man, the soul, as our refuge. The
human conscious existence amounts to a noumenal cosmos, an internally held world model, which has many
antecedents in the history of philosophy. We live two experiences in each momentary instant: (1) Interaction with phenomena of our immediate environment and future anticipation; and (2) Awareness by our inner selves, a noumenal cosmos, the world of our existence, based on processed memories of the past. The cosmos, our soul, arises as a top-down nearly free creation, in almost total disregard of bottom-up constraints, the chaotic circumstances in the exterior world. Life depends on language for overcoming the metaphysical gap that separates an individual animal from its environment. From the beginnings, the genome, the animal’s blueprint, its embryonic logos, is stored in each cell as a linguistic record coded in the DNA alphabet. In all animals, I believe and conjecture the brain stores information in form of a linguistic noumenal cosmos that interprets the animal’s life experience in a top-down approach, to help it understand its world and perchance survive a little longer. The reason is that the bottom-up approach to interpreting sensory data is unmanageable, hopelessly inefficient, and simply impracticable. If it ever succeeds, it still is too slow and bound to fail in the end, due to phenomenal structures being enormously complex and variable.

**Brain Theory: Solution of the Hard Problem of Consciousness**

The thesis is that consciousness is the product of a neural brain mechanism, a point of view that so far has not been given a lot of consideration by academic philosophers. The mechanism exists in Brodman Area 10 (BA10) in both the left & right cerebral hemispheres, as revealed recently by neuroscience. Left: Immanuel Kant’s noumenal temporal inner sense; Right: His phenomenal spatial outer sense.

BA10 is where, increasing along sensory ventral paths, neuronal receptive fields become global. Globally receptive BA10 neurons must also be receiving their own outputs as inputs, making us self-aware, the hallmark of being conscious, according to many authors, beginning with Descartes & Kant.

Not yet ready to explain how the 200 million neurons of BA10 cooperate, other than a charming tale of descent from a noisy chorus of ciliates, each its own neuron, the point of this section is that the oneness function seems to be executed by the neurons in Brodman Area 10 (BA10), they function as the cells form one or more ego-clusters, and possess global receptive fields at the apical prefrontal cortex, connection point of sensory and motor cortices. In the early stages of sensory cortex, typically V1 occipital visual cortex, those “receptive fields” are thought to be very narrow parcels of the environment, and then expand and increase along a line of visual centers V2, ..., V5 approaching the prefrontal cortex and BA10, where the entire universe, all that we know, is taken into account by each neuron or neuronal cluster in dense dendritical arborizations. It now is known that not only the synaptic network, but protein synthesis inside the neurons is required for memory formation in the brain, research not yet widely recognized and only published within the last weeks, months, and years. The global receptivity in BA10 means these neurons are also aware of their own activities, putting a highly practical spin on Descartes’s cogito ergo sum, I am because my neurons know or perceive they are interpreting (top-down) the universe and the current scene, including themselves. My neurons are aware, I am aware, that my experience of the universe is my experience. I recognize my instantaneous scene as being my moment, ever this moment of my life with all the familiar items around me, that are constituting my household and have been present for me in many years, and that current scene has always included myself and my future anticipation awareness of myself and of it all. This is the core, in slightly different words, of Kant’s Transcendental Deduction, both A and B versions taken together.
In both brain halves, I am perceiving myself, in terms of neuronal synapses making contact between axons and dendritic spikes, being embedded in my immediate environment (right brain) and greater universe (left brain); I am perceiving myself as perceiving and acting while perceiving and acting in my world, and while living and being.

This is how globally receptive fields are reflected in my subjective mental experience.

For consistency, we should verify that this discussion fits into our world (right brain phenomena) and let me know how we feel about it (left brain noumena)!

This dual left/right brain mechanism features inner CNS (ICNS) in the left brain and outer CNS (OCNS) in the right brain. ICNS is noumenal; OCNS is phenomenal. Phenomena are spatial, geometric-continuous, are images. Noumena are temporal, logical-sequential, are structures. The precise role of each of two regions BA10, in either of the left/right cerebral hemispheres can be clarified.

Brain BA10, left: I, in my interior castle and greater abstract universe, my noumenal cosmos in the temporal sense.

Brain BA10, right: I, in my environment and larger physical universe, my noumenal cosmos in its spatial sense.

Why do we need this kind of a dual brain dual CNS? The reason is that OCNS is for the instant, the present moment in time the current, momentary scene in the immediate environment, while the ICNS is for the past, which provides us with a general experience, the noumenal cosmos, upon the basis of which we can form judgment for the actions of the present and even perform future anticipation (red). The present moment (green) is at home in BA10, the past (blue) in the temporal lobes, both inner and outer. The residence of future anticipation is not yet known, and constitutes the main purpose of this essay.

In both, I am perceiving myself, and I am perceiving myself perceiving and acting, while perceiving and acting in my world, and while living & being.

Brain theory can explain human consciousness as a brief summary of the simple explanation that points back at the famous statement by Descartes that our being consists in our thinking, i.e., our mental world. The question, “Was ist der Mensch” has its answer in the logic & anatomy of the central nervous system.

The ultimate metaphysical answer of the question “Was ist der Mensch” turns out to be a corollary of logic and anatomy of the central nervous system.

On the basis of this simple explanation, already foreseen & actually, for the most part, contained, except for title and conclusion, in my 2011 essay in the Springer journal Foundations of Science (FOS). We can now say that Descartes’ “Cogito ergo sum” is true, but in a new way.

The “Hard Problem of Consciousness” was defined in 1995 by the Hungarian philosopher Stevan Harnad and formulated by David Chalmers in 1999. It should be noted that for all practical purpose now, it can be considered solved, based on remarks in work that I have reported in published articles and elsewhere, on ResearchGate. This is a comprehensive statement of the result.

Data entering from sensory receptors into the brain are processed by a stack of neural clusters along the ventral path. The dorsal path plays an auxiliary role, applying its conceptual and categorical apparatus found in the parietal cortex. Neurons on the path have fields of receptivity, or short, receptive fields, imaginary regions of the external universe of which they take note, record data, and influence the neuron’s actions. The receptive fields grow progressively larger, increasing in extent and logical depth along the path & eventually become
global in the ego cluster, BA10. Brodmann Area located just above the eyebrows, where the white matter tracts of the sensory ventral path terminate. The loop structure of the brain continues, however, downstream signals emanating from the motor cortex. Human actions take note of and are influenced by each & everything in & under the heavens, in particular by themselves. This familiar state of affairs allows us to infer that the neurons in BA10 with their global receptive fields are aware of their own activities, record them and take action under their own influence, hence are conscious of the universe & their place in it, thus we can say that here indeed we are solving the “Hard Problem of Consciousness” (Hungarian philosopher Stevan Harnad [1995]; David Chalmers [1999]).

The above pretty much amounts to what Immanuel Kant had outlined in his famous “Transcendental Deduction”, in other terms of course, as neuroscience had not been developed in his 18th century age. He wrote that we observe our own actions but cannot observe our transcendental ego, a left-brain, noumenal construct. This is about what goes on in BA10, known for its hyper-dense dendritic arborizations.

**Dual Ego Clusters in Both Cerebral Hemispheres**

We actually do possess two egos: a phenomenal outward directed one, and a noumenal, inward bound, often mistaken for so-called “introspection”, having a slightly deprecatory connotation. Nonetheless, beyond the non-descript idea of introspection, the precise role of each of two regions BA10, in either of the left/right cerebral hemispheres can be clarified somewhat. We are living inward looking every time we are unsure or depressed, and probably a lot more people are introverts rather than extroverts.

**A Chaotic Universe, the Futility of Fate, & Our Inner Cosmos**

Remarks addressed to me by a friend in my native language:

> Es muß nicht alles einen Sinn haben. Dinge passieren einfach. Wir versuchen des Leben nach unseren Erwartungen zu ordnen, aber letztendlich ist auch das Leben nur ein dynamisches chaotisches System. Man muss sich immer auf das Positive fokussieren. Sie haben mit Ihren Kindern sicherlich wunderbaren Menschen den Weg ins Leben bereitet, auch wenn Sie sie jetzt nicht mehr so häufig sehen.

Und, wie Marc Aurel sagte: “Sage dir immer: ich kann wenn noch so einsam, an allen Orten glücklich sein; denn glücklich ist, wer sich selbst ein glückliches Los bereitet, dies ist: gute Gemütsstimmung, gute Neigungen, gute Handlungen”.

**Our Dual Existence, Bilateral Brain & the Metaphysical Gap**

Kant’s two senses: (1) Left brain: inner sense, time, logic, sequential language, plans, noumena, and memory of the past; (2) Right brain: outer sense, space, geometry, images, scenario, phenomena, and anticipation of the future.

We elucidate the nature of a human being, the new view of our double-ego dictated by the bilateral brain functioning to give us dual consciousness, a dual ego. Based on recent neuroscience pioneering work by Brenda Milner, McGill University professor, and Kavli Laureate 2014, many brilliant labs now are working to follow in her steps. Anticipated by Immanuel Kant in his teaching of our dual senses: Outer sense, phenomenal spatial geometry vs. inner sense, noumenal temporal logic. Right cerebral hemisphere home of outer phenomenal sense & cosmic-environmental awareness-ego, left-lateral brain site for noumenal sense. Both sides house our split ego in dual Brodmann Area10 (BA10), their neuronal receptive fields increasing along sensory paths, becoming global in BA10, conscious of self embedded in phenomenal right-lateral & noumenal left-lateral realities.
There is a great tradition of people who survived extreme deprivations and still maintained their noumenal selves. Some concentration camp survivors will testify. There is the famous case of Victor Frankl, mentioned by Stephen Covey—Frankl has his own book that I want to read. Also, I have heard of one case of a priest who testified that he was able to pray despite near-death injuries sustained in a traffic accident. When he was asked how he could do it, his answer was: “I prayed to the Holy Ghost”.

This priest happened to have been an expert theologian who knew that the Holy Spirit, or Ghost, lives in us—as discussed on many occasions—so perhaps while it is true that we cannot pray to God in abstracto, but we are able to the Holy Spirit in concreto.

Zartusht was first to name him, Spenta Mainyu in Gathic Old-Iranian. It was because of the fact that Zartusht’s teachings were undergoing an Armenian revival during the time of Jesus that he and his apostles were able to refer to the Holy Ghost and everybody knew what they meant, what they were talking about. This historical fact is further underlined by a passage in Acts, where Saint Luke, the author of Acts, tells of some brethren who had not yet even heard of the spirit.

Conscious exist can only be understood by means of radical holistic thinking, involving both modes of being of a person consisting first by undergoing an experiential familiarity with the futility of fate, and its intellectual understanding as the turbulent phenomenal universe, which is perceived via the neurons of the right brain and their circuitry, as well as the same person’s daily habit of withdrawing into her interior castle, the legacy of thousands of generations of religious people, but brought to public awareness on a steady basis that cannot be buried ever again beneath the debris of history, the work of Saint Teresa of Avila, especially her book so titled, and again counterpoised to the intellectual grasp by that person of this interior castle consisting in the left brain noumenal cosmos.

1 The Metaphysical Gap (MG)

The concept is hardly a novelty item, by any measure. Apart from Plato’s cave allegory, Kant unmistakable explains what is at stake in his 3rd Critique of Judgment Power:

Now although there is an incalculable gulf fixed between the domain of the concept of nature, as the sensible, and the domain of the concept of freedom, as the supersensible, so that from the former to the latter (thus by means of the theoretical use of reason) no transition is possible, just as if there were so many different worlds, the first of which can have no influence on the second: Yet the latter should have an influence on the former, namely, the concept of freedom should make the end that is imposed by its laws real in the sensible world; and nature must consequently also be able to be conceived in such a way that the lawfulness of its form is at least in agreement with the possibility of the ends that are to be realized in it in accordance with the laws of freedom. Thus, there must still be a ground of the unity of the supersensible that grounds nature with that which the concept of freedom contains practically, the concept of which, even if it does not suffice for cognition of it either theoretically or practically, and thus has no proper domain of its own, nevertheless makes possible the transition from the manner of thinking in accordance with the principles of the one to that in accordance with the principles of the other (Kant, 1790).

2 Sensible & Supersensible Judgments: The Bilateral Brain

3 Kant’s Function of Unity (FoU)

The point of this section is that the “function of unity” seems to be executed by the neurons in Brodmann Area 10 (BA10), where the cells form one or more ego-clusters, and possess global receptive fields at the apical prefrontal cortex, connection point of sensory & motor cortices. In the early stages of sensory cortex, typically

1 Recently, doubts have arisen about Frankl’s honesty & sincerity.
V1 occipital visual cortex, those “receptive fields” are thought to be very narrow parcels of the environment, and then expand and increase along a line of visual centers V2, ..., V5 approaching the prefrontal cortex and BA10, where the entire universe, all that we know, is taken into account by each neuron or neuronal cluster in dense dendritical arborizations. It now is known that not only the synaptic network, but protein synthesis inside the neurons is required for memory formation in the brain, research not yet widely recognized and only published within the last weeks, months, and years. The global receptivity in BA10 means these neurons are also aware of their own activities, putting a highly practical spin on Descartes’s cogito ergo sum, I am because my neurons know or perceive they are interpreting (top-down) the universe and the current scene, including themselves. My neurons are aware, I am aware, that my experience of the universe is my experience. I recognize my instantaneous scene as being my moment, ever this moment of my life with all the familiar items around me, that are constituting my household and have been present for me in many years, and that current scene has always included myself and my awareness of myself and of it all. This is the core, in slightly different words, of Kant’s Transcendental Deduction, both A & B versions taken together.

(4) Ego Cluster (EC) & Global Receptive Field (GRF) or Field of Receptivity (GFoR).

Our human understanding is based on linguistic expressions for phenomena that we encounter as objects in space. We register these as phenomenal engrams in the neurons of the brain, through acquisition of the logos, *i.e.*, the object’s genetic structure, inherent in the relevant aspects of any phenomena, possessing pre-linguistic structure, in form of internal structures, counting for historical record, ISHR.

(5) Top-Down (T-D) vs. Bottom-Up (B-U), the main reason for the distinction being that B-U is hopelessly inefficient and in fact impractical for any living animal, as psychologists have discovered in recent decades, by now accepted widely, although rear-guard skirmishes still are being fought (Burchard, 2019).

(6) Internal Structural Historical Record (ISHR) refers to the pre-linguistic structure.

(7) While the human soul reflects the glory of the divine mysteries of the universe, as we, like no other creature on Earth, uniquely understand the totality of it, with certain inherent limitations, yet it seems unlikely that the true nature & origin of the universe will become revealed at any time in the future to a living rational being, Aristotle’s rational animal, ζώον λόγον ἔχων.

(8) To comprehend consciousness we require full & radical holistic thinking, the noumenal cosmos. We have holistic-cosmic consciousness, our consciousness, a spatiotemporal developing record-system, extending to the most distant galaxies, in our noumenal cosmos, & down to the elementary particles and quantum foam.

(9) The life of the free-floating soul, *I am, therefore I am a conscious soul*, although in reverse, effectively is what Descartes was saying, unawares. We exist as conscious beings. By means of our conscious thoughts, we are. A Brodmann Area BA10 process with 200 million neurons performing Kant's Oneness Function, this likely will remain a mystery for a long period of time, & mimicking it will be a task out of reach for human computer programming skills.

Our existence is identical with our consciousness, but nonetheless, to the realistic mind, delivered up to the futility of fate. We bravely bear with the shortcomings of life.

(10) The human conscious existence is holistic, amounting to a noumenal cosmos, an organized internally held world model, which has many antecedents in the history of philosophy.

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2 Exemplified in song by Amália Rodrigues, Rainha do Fado, in “A Janela de Meu Peito.”
We think in holistic terms & cannot be conscious of only a few things or of part of the world. The point is the Being-Question (Heidegger, 1935).

(11) Life depends on language for overcoming the metaphysical gap that separates an individual animal from its environment. From the beginnings, the genome, the animal’s blueprint, its embryonic logos, is stored in each cell as a linguistic record coded in the DNA alphabet.

We are born blind and cannot see reality unless taught well—by parental example—as children in a wholesome environment. That is unavailable for many of us, perhaps a very large part of humanity, as it exists now & always has existed.

We too, like all of life, are subject to laws of Darwinian evolution and undergo rigorous selection for survival of our lineage.

(12) Basically, fate is futile, so sometimes we feel nothing really matters in life …

But this is where I reserve the right of us humans to turn our backs on the futility of fate, as it is bound to be for each individual who cannot be masters of our fate, but have the basic right to decline that futility.

Instead, some maybe most of us choose the life of the soul, floating free above a reality, that so often has been too much for us. Each of us in the sense of philosopher-mathematician Leibniz, are a monad that is tuned to a universal truth as we all see it, only differing in the precious details of interpretation.

(13) Speaking frankly, on first principles, here, in this essay, I wish to reveal a basic truth concerning the human soul, that the inner world of the noumenal cosmos is really all we have, on purely materialistic, neuro-anatomical grounds, there is nothing else that has any meaning for us as long as we live as functioning, healthy human biological organisms.

I am trying to express much the same as what Saint Teresa of Avila wrote in probably the best book; there is about the human soul, “The Interior Castle”.

To help us withstand the futility of fate, and how to deal with it, to survive in spite of it, and effectively ignore it, waving to it with our handkerchiefs and wishing it good bye and good riddance, we poor humans need the intact internal fortress, well equipped and supplied with all of the necessities of the life of soul & body united through a functioning nervous system that brings every cell of the body and every thought together in the noumenal cosmos of the prefrontal cortex, as a dwelling for our worn souls.

The essay suggests five major themes, each making one of five chapters: (i) life is linguistic; (ii) noumenal cosmos, source of judgment power; (iii) bilateral brain confirms Kant’s two senses; (iv) the brain, a super-Turing logos machine; and (v) scientific perspectives on the history of thought & religion.

(14) Current neuroscience largely supplies all that is needed to lift the veil off the deepest mystery of all mysteries, our ontological brain, a world-maker, the “noumenal cosmos”, first mentioned in my 2005 article in *Foundations of Science*. Actually, a rough draft sent to C. F. von Weizsaecker’s in honor of his 90th birthday 28 June 2002, but he gave it to someone else because, he wrote, he was too old to read it. In his days, the easy cure of Alzheimer’s was not yet known, and he sadly succumbed to the disease.3

(15) Our existence is identical with our consciousness, what nature & nurture have donated to us, and we readily put up with the shortfalls when even our modest expectations & desires are not met.

The human conscious existence amounts to a noumenal cosmos, an internally held world model, which has many antecedents in the history of philosophy. In this essay, I tell of the cosmos as the home of the human soul.

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3 As I believe, second hand info.
Our dual two-brain consciousness. We live two experiences in each momentary instant: (1) interaction with phenomena of our immediate environment and future anticipation; and (2) awareness by our inner selves, a noumenal cosmos, the world of our existence, based on processed memories of the past.

By recent neuroscience, Immanuel Kant’s noumena and the inner sense reside in the left cerebral hemisphere, with the outer sense and phenomenal engrams placed in the right brain.

But in real life, our soul, dwelling in its interior world, is subject to the futility of fate in the exterior world, all the stupid things that we hate but have had to live through and often wish we would be able to forget, suffering endless, random, irrelevant, and indifferent encounters with a turbulent world replete with nefarious agents who believe they own us, giving themselves permission to control us; all of whom are eager, only too eager, in the pursuit of their plans for enriching themselves, at our cost.

The two worlds are connected by means of an intricate organism, the human body, permeated with a giant nervous system, but this indirect connection is covering over a metaphysical gap which inexorably and forever keeps the two worlds apart.

We are after all mere shadows, albeit shadows with arms and legs, realized in the neural ego clusters of the frontopolar (orbitofrontal) cerebral cortex, in the extremely dense dendritic arborizations of Brodmann Area 10, by means of the neurons in these centers possessing global receptive fields, meaning their endoneural RNA transcriptions & protein syntheses are performed by taking into account the entire known cosmos. In particular, these neurons are aware of their own actions and of those of their neighbors.

In this essay, I tell of the home of the human soul, the noumenal cosmos, and of a window into the soul that has recently been opened up for us, its cobwebs cleaned off, by a new understanding of its nature gained through neuroscientists over many decades working on brain laterality.4

Their results allow us to think of the soul as experiencing the exterior world via the right brain, and contemplating the interior world, i.e., our very own being in the noumenal cosmos, in the left brain.

A newfound dignity of the human soul is revealed when we look at her through that old window, the inner sense discovered by Immanuel Kant by which we always have known her, but have denigrated by thinking of her as mere introspection when in fact she is the awareness of our very being, our human identity, ourselves in our very existence as competent rational beings. Humans since ancient times have known this, the “inner man” of the Apostle St. Paul, the human soul dwelling in the “interior castle” of St. Teresa of Avila.

We accept our lives for what they are as if we were the authors of our existence. We struggle and labor until eventually, sooner or later, we come to recognize the futility of fate, and then we, many of us, turn toward the inner man, from ancient days our refuge, where our lives can be complete and we will be far away from the public scene.

We live two experiences in each momentary instant: (1) interaction with phenomena of our immediate environment and future anticipation; and (2) awareness by our inner selves, a noumenal cosmos, the world of our existence, based on processed memories of the past.

The cosmos, our soul, arises as a top-down nearly free creation, in almost total disregard of bottom-up constraints furnished by the messy, chaotic circumstances in the external environment.

The best account of the human soul is in St. Teresa of Avila’s description of the Seven Mansions of the soul’s “Interior Castle”. There, we are protected from the futility of fate, being covered by Christian

4 Exemplified in song by Amália Rodrigues, Rainha do Fado, in “A Janela de Meu Peito”.
contemplative prayer and escape by rapture, where Earthly things become mere shadows or strangely dim.

A similar Tibetan Buddhist practice may be “meditation between”. Both religions focus on a greater noumenal awareness of the reality of the human soul by quieting distractions based on phenomenal awareness. Both can involve recitation and devotional practices as well as more abstract contemplation and ecstatic sequences.

We all, each of us, accept who we are, our existence as it is given to us, our fate, ignoring its evident futility, as not being of our own choosing, but initially given to us by our parents, who did not know us then, and had no specific plans for our identity.

We bravely bear with the shortcomings of life. The life of the free-floating soul, I am, therefore I am a conscious soul, although in reverse, effectively is what Descartes was saying, unawares.

The human conscious existence amounts to a noumenal cosmos, an internally held world model, which has many antecedents in the history of philosophy.

Always, day-by-day, we must be able to endure the onslaught of an untamed, chaotic environment that we can influence only slightly, but in fact much of the time out of control, as it amounts to a daily storm washing over us, a steady gale battering the shores of our existence, and occasionally a tsunami.

My main task here is to discover an entirely new style, even a new language, resembling Portuguese Fado lyrics, the whole point being that we need to look at the human being in the light of our double existence.

1) Our being haplessly exposed to an inexorable fate that we hardly can claim to control, that nonetheless is our fate despite its futility and which we have to own & fully accept as ours, no matter what it brings us and what it amounts to;

2) our inner human self, the noumenal cosmos, a virtual universe coded in the 80 billion neurons of our brain, which we can influence in contrast to our external fate, where we are, who we are, in our innermost existence.

The cosmos, our soul, arises as a top-down nearly free creation, in almost total disregard of bottom-up constraints furnished by the messy, chaotic circumstances in the external environment.

It is the responsibility of each individual human being to keep this, what I call the noumenal cosmos, as neat & clean as possible—“cosmic cosmetics”—discarding ill fortunes and avoiding ill doings. Here is where many people fail, and destroy themselves, ruin their souls, their existences. Contemplating pathologies of the cosmos is an important part of my essay. This is where psychosomatic illnesses originate, currently underestimated in official medicine. Some believe that each cell of the body shares in this cosmic consciousness, more or less, and here is much room for future work.

This is what philosophers over the centuries and millennia have pondered and sought to understand from Parmenides, Heraclitus, Plato, and Aristotle, to Kant, Heidegger, Ortega y Gasset, Sartre and Rorty. St. Thomas of Aquino would have called it the soul, but today I believe a holistic philosophy should see our existence as a cosmic conscience reaching from the far galaxies down to the elementary particles, our inside cosmos.

The rock in front of us is layered and has an extensive history just like our organism—controlled by our brain, CNS—but the rock does not have its own operative-developing language system for writing records, like each one of our cells does, which is the nature of consciousness. The existence of the rock as a unitary structural whole is brought about by its being incorporated into our internal cosmos. Its existence as quantum foam is not unitary & most likely will remain questionable.

So, it is okay with me to say each living cell is conscious. Paramecium is conscious (Burchard, 2016). We can tell when watching it under the microscope, as it scurries about, making a living for its precious little own
self. It can do this because it is its own neuron. The nucleus makes a macronucleus (after each mitotic division or sexual reproducing gamete), a 500-ploid copy of 80% of its total genome, that somehow works to form a noumenal cosmos, small, but sufficient for enabling it to exist as holistic structure just like we do.

In each cell, the ribosome is a de-facto Turing machine-cum-industrial machinery plant for making everything our cell needs. There are about 10 million ribosomes in each mammalian cell.

Just one? How about the highly polyploid neurons in the brain? Heidegger asked the Seinsfrage, but he failed to properly understand the noumenal cosmos, instead he had something called being-in-the-world which is the same thing, but kind of nebulous in never-never land of his mind/personal experience. In contrast, the noumenal cosmos is really in your brain. So, in summary, the human organism is a complex, self-recording language system, that includes an ego cluster in the frontopolar, aka orbitopolar lobe of the brain, just above and behind your eyebrows, probably Brodmann Areas 10 and 11. The ego cluster has global field of receptivity, i.e., if you go up the brain from brainstem to the forebrain and the cerebral cortex, each cell gets input from more and more of the incoming data stream and the secondary associations which are derived in trying to make sense of all of the interrelations, a formidable task which never will and never can get done, until finally you reach the ego cluster which gets input from all that your brain has ever recorded, ever analyzed, ever derived, the entire cosmos. It can hear the 84 billion neurons talking like a huge debating society of Parameciums. It will have its attention roam freely over all of the available data.

We require for our understanding; this elucidates the brain as the constructor of a movie, reconstructed to coherence, centering on the ego as the main actor. This explains a lot, from perception to behavior to societal functions, for all sorts of forms of life.

From our limited understanding of Buddhist writings, there is a step beyond the ego in the Buddhist view. If we understand these writings a little, they imply that consciousness can only be infinite. Egos take credit for infinite consciousness in their finite reconstructions. Perhaps egos are the eyes through which consciousness views all of these movies.

Still, the enemy’s battle line stands solid, ready to repulse any onslaught from the righteous side, our side. Why is this so?

Being a published philosopher (two articles in a high-prestige Springer journal, two more less so, due to old age and diminished ability, this fifth one in revision, all on the same identical topic), this is my place in the world, to offer perspective to myself and to my fellow long-suffering sentient human beings.

Well the matter and its causal origin, its raison d’etre is simple & easy to explain based on what I have learnt. We humans are individually creative, not communally, as widely supposed in error. True, we pick up a lot from our fellow man and woman, from the wind-blown debris of a civilized world, yet it does not mean anything until we individually put it together in our minds by Immanuel Kant’s function of unity, until in our souls, we create a global context where the items in our individual experiences fit together as an internal world model—what I call our noumenal cosmos—where noumena is Kant’s technical term for mental things, standing opposite phenomena, which are experiential, external from the soul.

It turns out that recent advances in neuroscience have lead to the astonishing conclusion that noumena are kept in the left brain where our linguistic competence is located in Broca’s and Wernicke’s areas etc., while phenomena are coded in the right brain as phenomenal engrams, the entire affair under frontal lobe control in both halves, which talk to each other via the corpus callosum. For good reasons, the left brain with its noumena
is thought to be dominant, although it is based on our past, anticipation of our/the future is right brain stuff. Evidently mysteries, of how exactly the two cerebral halves cooperate, still exist.

Ergo, the idea of a mainstream consensus just does not hold water.

We, as individuals are guardians of the truths, have found singly and separately. Keep to it, guard it, make it your personal noumenal cosmos, make it beautiful for yourself, and apply mental cosmetics to its fullest extent. Grab any tidbits that the windblown debris of culture offers to you and sift it before incorporating into your soul.

Communal organizations are forcing us to adhere to their norms, but they have no control over us knowing, each one in our own soul, our noumenal cosmos, what really is to be believed.

Brenda Milner, at McGill University, for her pioneering work on left/right brain laterality has been awarded the 2014 Kavli Prize in Neuroscience by the Norwegian Academy.

Principles which I hold to be essential for any successful, realistic philosophy of life are further explained and expounded in the body of this paper:

(1) I, representing my hominin clade, have evolved driven by the metaphysical structure of nature that I understand as an evolving animal pursuing its life within its environment.

(2) Science and mathematics are common sense tools of existence which should be acknowledged as having precedence over philosophy and religion & granted priority in posing questions of logic, metaphysics, and ethics.

In this essay, I add science to philosophy and continue to outline a new discipline, called scientific philosophy, in which by the methods of science, I study philosophy & religion as my subject matter, seen as biological functions of the human organism.

There are tremendous benefits that accrue to myself from this change in philosophical perspective. I can advance conjectures or hypotheses, as is common for the working scientist, trying to figure out what goes on in my brain when I philosophize, and how that might relate to my life’s exigencies, but until now completely unheard of and totally unknown in traditional philosophy.

Another consequence is the recognition of how very correct professional, academic philosophers have been all along, that the discipline essentially consists in its own history, or that philosophy today is best understood as amounting to a critical history of philosophy, and as wittily commented by Alfred North Whitehead, *a set of footnotes to Plato*.

In my published articles, the most recent ones deal with the Darwinian evolutionary pressures acting on our hominin clade to develop powerful brains, and why we should not ignore the thinking organ, our cerebral neocortex, when thinking about thoughts. Some sections are devoted to philosophers & their remarks of a scientific context. A good example is Heidegger’s lizard, frequently quoted and widely popular although less than well founded (Burchard, 2005; 2011; 2014; 2016; H. Burchard & J. Burchard, 2016). In this, the 5th in my series of articles, I try to focus once more on a new take on philosophy, with a foundation in mathematics and science, claiming that these areas are more primitive than logic, metaphysics, and ethics.

In this essay, I tell the story of life in a science-based, philosophical account, that is both non-materialistic & non-vitalistic, but in fact linguistic, *i.e.*, language-based. Parts still remain conjectural and are stated as hypotheses, indicating that this essay combines science with philosophy. The essay suggests five major themes, each making one of five chapters: (i) life is linguistic; (ii) noumenal cosmos, source of judgment power; (iii)
bilateral brain confirms Kant’s two senses; (iv) the brain, a super-Turing logos machine; and (v) scientific perspectives on the history of thought & religion. Also, not to be overlooked, pathologies of the noumenal cosmos and/or malformed self-image that are scarcely understood by experts in applicable fields. These often develop at a young age, with partial causes from hidden societal structures or just plain bad company. Countermeasures depend on favorable circumstances but often present their own negative side effects.

The main point of my string of five papers, this one at hand being #5, with #1-4 in print (Burchard, 2005; 2011; 2014; 2016), is a three-part series of steps toward a holistic understanding of existence, human life & all-biotic, esp. animalian:

Step 1: The left-right brain laterality is now confirming Immanuel Kant’s pair of senses: His inner sense is left-hemispherical, temporal, sequential-logical, noumenal, good for imagined objects of thought in time (=noumena in his terminology); his outer sense is right-brain, spatial, geometric, phenomenal for observed objects in space. Brenda Milner, McGill University, has been awarded the 2014 Kavli Prize in Neuroscience by the Norwegian Academy for her pioneering work on brain laterality, but a vast literature is emerging of new details by many distinguished workers. This sensational connection of the 18th century desk work composed with a goose quill & the 21st century neuro-lab work still largely remains off-side in our splintered academic set-up.

Step 2: The receptive fields of neurons, lately more and more in play, is growing along dorsal & ventral sensory white matter tracts progressively, until in the frontopolar (Brodmann Area 10) ego clusters, neurons have global receptive fields, explaining consciousness as occurring in the ultra-dense dendritic arborizations of the giant pyramidal neurons (Jirenhed et al., 2017, for memory storage inside giant neurons, also Ramirez et al., 2014). Being global, these clusters watch their own actions, giving organismic substance to Kant’s self-observation within the noumenal cosmos of his “general experience” as a necessary part of perception, as the core of his famous “Transcendental Deduction”, or vague ideas, such as the “strange loops” (Douglas Hofstadter), etc.

Step 3: A combination of Steps 1 and 2 leads to an emergent explanation of our ontological experience, what Heidegger has expressed succinctly as “being in the world”: From the simple sensory-action loop of animal neural structure, the two-hemisphere split has evolved, at least in vertebrates I believe, with Kant’s discovery of the division into an inner, noumenal, self-directed loop & and an outer, phenomenal, environment-directed loop. The dual worlds are of course communicating via the corpus callosum, but my consciousness remains split in two, awareness of what occurs in the environment and how I feel about it. Evolutionary advantages of this dual arrangement are obvious, permitting left brain analysis of phenomena aiding anticipation of events and top-down identification of environmental features by means of Kant’s judgment power residing in the noumenal cosmos, mitigating the hopelessly slow process of bottom-up edge-detection, etc., upon which no animal could rely and expect to survive very long in this dog-eat-dog world of ours.

Although David Hilbert worked with Hilbert space a lot around 1900-1910, so did others. It was actually John von Neumann who named it Hilbert space being first to understand its importance for quantum mechanics, around 1928-1930. The legend goes that von Neumann gave a lecture on quantum mechanics, and Hilbert sat in the front row, nodding and falling asleep as he usually did. At the end of the lecture, he raised himself up and asked the speaker, von Neumann: “And what is this Hilbert space, that you keep talking about”? 
He, von Neumann, also was the chief mathematician of the Manhattan Project that produced the nuclear bombs dropped on Japan in August 1945—all these 75 years ago. In that capacity, doing horrendous computations, he was the first to build a stored-program computer, although Alan Turing had invented the concept in 1936, in a paper that von Neumann knew well.

Like several other Manhattan Project scientists, he got too much radiation from being near fissile Uranium 235 and Plutonium 239—it is assumed. He died an extremely painful bone cancer death in the Princeton dormitory at the IAS. Colleagues heard him scream although sedated by morphine injections. A military guard was stationed outside his quarters for fear he might be revealing state secrets in the agony of his diminished state.

His life is brilliantly illustrating my thesis of the Futility of Fate, things just happen. This refers to the existence of a human being in our disorderly universe, our phenomenal right-brain experience. Our other existence—we do have dual citizenship here on Earth—is our noumenal left-brain experience. Von Neumann’s pain was phenomenal; his noumenal self was unaffected except for his suffering. It is said by Catholic priests that suffering patients are unable to pray, \textit{i.e.}, at that time on such an occasion, your noumenal self ceases to exist, or at least is incapacitated, while you suffer. However, after healing, it is fully restored.

**Scientific Philosophy to Be Founded on Mathematics and Science**

This reliance on accessible pre-linguistic structures comes into view as the fact that we understand the world through language, \textit{i.e.}, our understanding is based on linguistic expressions for phenomena that we encounter and register as phenomenal engrams in the neurons of the brain. I accomplish this through acquisition of the logos inherent in the relevant aspects of any phenomenal, pre-linguistic structure, as its Internal Structural Historical Record (ISHR) (Burchard, 2005; 2011; 2014; 2016). This contextual circle was first explained and codified in the essential dualisms that Kant discovered to exist within human mental cognitive capacities, consisting in his famous counter positions or dualisms, recognized universally as having defined modern philosophy: \textit{time} ↔ \textit{space}, \textit{inner} ↔ \textit{outer sense}, \textit{logic} ↔ \textit{geometry}, \textit{noumena} ↔ \textit{phenomena} (Kant, 1781/1787).

Now, however, thanks to new discoveries made through ingenious neuroscience experiments, I can explain the anatomical neural basis for how our human mental facilities can & do implement these dualisms as anatomical neuronal structures.

It is in a sophisticated division of labor between the two cerebral hemispheres which serve the human animal as a logos machine, as I engage phenomena in the environment, that I am able to discern the logos of these phenomena, or how they came into being, \textit{i.e.}, their ISHR.

So far to date, philosophy in purposes and methods has been seen to rather have proceeded and worked the other way round, not starting from mathematics but engaging in a largely fruitless philosophy of mathematics, which has explained little if anything, with philosophy of science being only slightly more relevant. In this age when the two areas, science and mathematics have seen such spectacular achievements and have progressed to a level of near perfect completeness, I am much more certain of science than of metaphysics, much rather rely on a mathematical language theory as initiated by Noam Chomsky and others, than follow Husserl’s only partially successful phenomenology. There is no denying however the intellectual and aesthetic attractions by some of the best, the brightest brilliant philosophical writers that have captured generations of students of their work, such as Nietzsche or Heidegger, the first one trying to out-talk his incipient insanity, the second one his
political—and incidentally, scientific—naiveté and his longing for the wholeness of his catholic youth.

**Evolution Driven by Metaphysics**

The human animal is an endproduct, a crown clade, of four billion years of Darwinian evolution, struggling to maintain continued existence of the germline against all odds, daily exigencies as well as world-shattering catastrophes. This has forced life to come up with an elaborate scheme, somehow hidden in the stars and the supernovas from the beginning. The DNA molecule allowed life to maintain an unbroken string of records of what devices work and keep the organism alive. The metaphysics of one cell against the primordial soup, one animal against a hostile environment, the war of all against all (Thomas Hobbes, 1642, 1651).

A better world was promised and came about after language, the logos, spelt out in genetic DNA/RNA code came into being and the world eventually ceded itself to the word, the divinity, surrendering all of her material concerns to the best mind, Vohu Manah of Zartusht and the kingdom of love of his late student, Jesus of Nazareth.

How all this jives with science is explained in the final section below. Come on, guys, it is not that hard, buddies, we have solved more difficult problems than that, answered tougher questions, we can do it. It is not necessary to maintain an atheistic materialist attitude, pride, saying a human being is just a bag of chemicals. There is more to us than that, please, keep on reading, you will see!

This is my thesis, a mix of science and philosophy to be presented in this essay in the full awesome detail and powerful array of brain tools, scientific equipment, and devices.

The human biological organism has a digital brain of 84 billion neurons, tied together by a synaptic network as a super-Turing machine, that includes an internally stored, linguistic noumenal cosmos, that is coded in the genetic code of the four-letter DNA alphabet \( \{A, T, G, C\} \), resp. \( \{A, U, G, C\} \) for RNA (Burchard, 2016).

![Figure 1. Genetic code. Wikipedia.](image_url)
Life Is Digital-Linguistic

The nature of the human mind, its conscious awareness of the world, continues to be a complete mystery. This has been the exact traditional domain of philosophy, where almost no progress has been achieved since the pioneering efforts of Immanuel Kant, who is considered the founder of modern philosophy with all but universal agreement, and who first had attempted to move philosophy out of her post-Platonic medieval condition to share the world stage with the then emergent modern sciences.

The cosmological source or origin of the universe likewise continues to be a complete mystery.

This also is my second essay specifically on science and philosophy, treating philosophy as a subject of study by a new branch of science, which I call scientific philosophy, similar to the by now well-established discipline of cognitive science.

Now for the first time, I am able to explain some key classical issues of philosophy based on brain structure and function recently revealed by neuroscientists. Comprehensively stated, this essay can account for the nature of human life and for life on our beautiful blue planet in general, in the following full terms, replacing ancient metaphysical conceptions or views, such as vitalism or materialism, with this totally and exclusively scientific proposal.

Life, human life in particular, is based on pre-linguistic structures being accessible, referring to action in the cell of biochemical mechanisms, such as the ribosome, performing metabolic and generative life functions, the working of the machinery which is run with the help of a control language, an operating system, recorded and emplaced in the organism by means of symbolic code for genome & memories. Each animal, from the ciliate stage and up, includes a coded record of its total life history, amounting to a world-model, for its sector of the environment and surrounds, sanitized & analyzed, here termed a noumenal cosmos bridging the metaphysical gap, that forms the basis of judgment power, Kant’s Urtheilskraft, without which the animal, even as early as Paramecium, could not hope to survive very long in an often hostile universe (Burchard, 2016).

In me as in other vertebrates, at least in higher mammals, but very likely at much earlier stages on the evolutionary timeline, a bilateral brain & division of labor, left↔right Brain, Kant’s inner↔outer sense, noumena↔phenomena, logics ↔geometry is topping the central nervous system.

The animal organism requires an interpretation of all those phenomenal structures that it encounters in its lifetime, and it must search for such an interpretation, here referred to as a logos, in its world.

Accordingly, my brain performs its principal function as my logos machine, a giant super-Turing DNA computer. Based on this comprehensive cosmic logo of life, I am in the position to offer some relevant, competent, and material scientific perspectives on the history of thought & religion.

This is my complex thesis, detailed in five separate but interrelated statements or themes, which I state next, here in this introductory section, in comprehensive, interlocking terms, as dictated by reality, in such a way that at the very outset in this essay, the reader can acquire a comprehensive account of the whole.

At the very outset, we should recognize and understand the approach via the concept of phenomena being nothing but accessible pre-linguistic structures and that this is dictated by a split within nature herself, centered on the metaphysical gap and its two shores, standing as I do on my side, the human shore of the chasm (Burchard, 2016).

The noumenal cosmos already mentioned, is an expression that was coined in my first paper that appeared in the June 2005 issue of Foundations of Science (Burchard, 2005), but written 2002 on the occasion of C.F.
von Weizsäcker’s 90th birthday, in whose lectures and seminars I sat. The cosmos, held internally presumably by all animals from ciliates and up in various conditions of perfection, is required as a basis of judgment power, Kant’s Urtheilskraft, for bridging the metaphysical gap between individual & environment, a mental world model derived from the individual’s total life experience. Perhaps around two billion years ago or less, ciliates are suspected of holding a cosmos in their polyploid macronucleus, making unicellular Paramecium its own neuron (Burchard, 2016). Like all forms of animal life, since the initial radiation of the ciliate phylum ciliophora, we require human understanding for survival, judgment power that resides in the noumenal cosmos, so that dealing with the environment, we can know what we are doing.

The cosmos, a sanitized logos extract from reality, is housed in the digital-linguistic neural system, run by a formal language directed ribosome machine. The human CNS is topped by a large brain which is the organism’s control center. Included are ready prepared preprogrammed action schemes that provide the animal with precise steps for what to do next, preplanned based on information stored in the cosmos and formulated in terms of a layout of the environment.

**Digital Control of Organism Forced by Metaphysics**

Life, the living cell, is coded in a mechanical ribosome machine, based on a recursive algorithmic language system that is governed by my bilateral brain (Burchard, 2016).

**Complete Outline of Results & Organization of this Essay**

Accordingly, there are five major parts to this particular study which is centered on the algorithmic nature of life, the living cell, especially giant polyploid neurons, and on my central concepts, the metaphysical gap and the noumenal cosmos, continuing from earlier work (Burchard, 2016).

1. **Theme I:** Life is realized in accessible pre-linguistic phenomenal structures. Synopsis: Engrams in symbolic “genetic” code using the DNA alphabet code for both genome & individual neural memories, the genome being the tribal, phylogenetic acquired memory, the individual experience leading to phenotypic formed memories, but updated constantly to an internal world-model, called the cosmos. Biochemical mechanisms, such as the ribosome, perform metabolic and generative life functions, and likewise presumably also memory recording internal to giant polyploid neurons, our main conjectural hypothesis for this essay, the working of the machinery which is run with the help of a control language, an operating system, recorded and emplaced in the organism by means of symbolic DNA code. The metaphysical gap is overcome by interpreting phenomena. Scientific philosophy begins with the insight that life is digital-linguistic, thanks to discovery 1961 of the genetic code in terms of the DNA alphabet in the four-letter alphabet \{A, T, G, C\}.

Phenomena in space external to the organism are coded in memory as phenomenal engrams. These are now known to be held inside individual neurons according to recent work by a Swedish team, vide infra (Jirenhed et al., 2017).

A symbolic—digital—code is required to store genome of life & intraneuron memory. Phenomenal engrams in cerebral neurons encode accessible reality. Until quite recently, that memories are recorded in individual neurons had been thought of as a long outdated hypothesis, but now has been confirmed through ingenious experiments in several neuroscience labs (Ramirez et al., 2014). Neural networks are still important as they are reforming continually, with creation of new synapses & degeneration of those that have come to be used less.

2. **Theme II:** Noumenal Cosmos, source of judgment power, bridges metaphysical gap. Synopsis: The
animal can bridge the metaphysical gap existing between the self & the environment with help from a recursive algorithmic language system operated by the bilateral brain. Each animal, from the ciliate stage on up, includes an internal coded world-model, or noumenal cosmos, for its sector of the environment, a record of its total life history, analyzed & sanitized, that forms the basis of judgment power, Kant’s Urtheilskraft, without which no animal, even as early as Paramecium, could hope to survive very long in an often hostile universe.

Kant did not specifically address the question of origins of my capacity for judgment, Urtheilskraft, nor its foundation that resides in the noumenal cosmos, providing cosmic feedback to the observation & control of the scene for the animal’s benefit.

But in both his Critique of Pure Reason (A-edition) and Critique of Judgment Power, Kant does clearly identify the cosmos, variously under one or more of the names of general experience, one experience, interconnected experience, or even experience in general (Kant, 1781/1787; 1790; Brook, 2006). There is to be addressed in this essay as its chief subject matter a split present within nature herself, which is the metaphysical gap. The metaphysical gap separates an individual human animal, its self or ego, from the environment. The metaphysical gap is bridged by judgment power residing in the noumenal cosmos.

(3) Theme III: Bilateral brain function confirms Kant’s insightful metaphysics. Synopsis: The bilateral brain is designed for division of labor between the left ↔ right brain halves, which are topping the central nervous system (CNS). The two cerebral hemispheres correspond to Kant’s inner and outer senses:

(a) Left brain: Temporal-sequential-noumenal, logical-symbolic, verbal language, rear view mirror—past-review.

(b) Right brain: Spatial-geometric-phenomenal, empirical-sensory, image language, crystal ball—future-gaze, anticipation of events.

(4) Theme IV: The brain’s giant super-Turing logos machine. Synopsis: The animal organism requires an interpretation, here referred to as a logos, of phenomenal structures which it encounters throughout its lifetime. Accordingly, the bilateral brain, really the entire CNS, performs its principal function as a giant super-Turing logos computing machine consisting of multibillion neurons, freely synapsing & functioning as, performing the work of a logos machine, operated by a giant DNA computer, the symbolic left brain dominating logos discovery at least in most mammals or higher vertebrates.

(5) Theme V: Scientific perspectives on the history of thought & religion. Synopsis: Based on this comprehensive cosmic logos of life, the views and theories of this essay, I am in the unique position to offer some relevant, competent, and material explanations as to the scientific facts behind philosophy & religion, and give a general survey of human society as far as our intellectual life is concerned, by treating it all as neural output, thus able to explain history of philosophy or more broadly the humanities but also politics and societal standards. Historical aspects relating to the noumenal cosmos are discussed; its importance for contemporary philosophy and religion is recognizably left brain matters, the place of free will, religion, the Kantian thing by itself. The latter perhaps may be identified best as quantum foam.

In classical philosophy, the human mind rehearses noumena and their practical aspects, a left brain affair, with scientific evidence lodged in the right cerebral hemisphere, if any playing a secondary role in philosophical discussions.

I need religion, which I experience in my left brains, because reality is incomprehensible, the futility of fate, inexorable destiny largely beyond our control, something atheistic materialists do not wish to understand
Deciding on the steps to include in action schemata, an animal exhibits freedom of will.

The metaphysical gap could be said to have been the hidden agenda of philosophy as well as cryptic motive of religious devotion since the dawn of humanity in the Pleistocene, when my lineages began to separate from my hominoid relatives.

Also, not to be overlooked, in this generalized survey of our intellectual capacities and their current condition, are pathologies of the cosmos, malformed world model or self-image, but always alien to civilized life and scarcely understood by experts in applicable fields. These degenerate brains & diseased organisms often develop at a young age, with partial causes from hidden societal structures or just plain bad company. Countermeasures seem ineffective and depend on favorable circumstances but often present their own negative side effects.

**Theme I: Life Is Realized in Accessible Pre-linguistic Phenomenal Structures**

**Synopsis:** Engrams in symbolic “genetic” code using the DNA alphabet are used for both genome & individual neural memories, the genome being the tribal, phylogenetic acquired memory, the individual experience leading to phenotypic formed memories, but updated constantly to an internal world-model. Biochemical mechanisms, such as the ribosome, perform metabolic and generative life functions, and likewise presumably also memory recording internal to giant polyploid neurons, our main conjectural hypothesis for this essay, the working of the machinery which is run with the help of a control language, an operating system, recorded and emplaced in the organism by means of symbolic code. Phenomena in space external to the organism are coded in memory as phenomenal engrams. These are now known to be held inside individual neurons according to recent work by a Swedish team.

**The Doctrine of Accessibility of Pre-linguistic Phenomenal Structures**

**Synopsis:** The contrast between a phenomenal structure and its logos, realized as a right-brain phenomenal engram, is congruent with the metaphysical gap. This factual contrast is the essence of accessibility of pre-linguistic phenomenal structures, the doctrine that the accessible reality of phenomena that I process in my mind, or in the underlying neural mechanisms, are linguistic, *i.e.*, language based while the true nature of that reality—quantum foam—may remain incomprehensible or unknowable, except as a mental construct of elementary particle theory that may be current or final in theoretical physics, and is one possible revisionist interpretation of Kant’s thing-by-itself.

(1) The individual animal organism is categorized as *language*, or *logos* (L).
(2) The organism’s world, or accessible reality, its environment is—part of—the *universe* (U).
(3) The L/U duality is understood as the two sides of the metaphysical gap.
(4) Immediately, a profound duality appears between the organism and its environment.
(5) The organism is language-driven, the world around it, the universe, is not.
(6) Anything, a human needs to know for survival, must first pass through the gap as a data stream to be incorporated in the internal cosmos with all possible associations indexed and reachable by means of the immensely complex neural network, with synapses constantly added and/or corrected or adjusted.
(7) It is this inevitable L/U duality, this metaphysical gap that philosophy in its millennial history has been discussing, with more or less clarity, but rarely in its plain biological necessity, as I am attempting to do here.
Metaphysics of Life: Life Is Digital-Linguistic

Synopsis: The discovery 1961 of the genetic code (see Figure 1) is more than an event in genetics, but the human race learning for the first time that there is a digital-linguistic basis to life and with the very recent discovery of intra-neuron complex memory storage this year 2017. In fact, all of life is digital-linguistic, the long-sought solution of the vitalism conundrum.

1. I will explain: Adding science to philosophy I find that life, the living cell is operating & expressed in a digital-controlled language mechanism, the ribosome being the chief mechanical machine, but there is much more, to do with gene transcription, translation and splicing.

2. The control language is based on the genetic code in the four-letter DNA (RNA) alphabet.

3. Life is carving a niche for itself out of nothing in the voids of an empty universe. This partially invalidates neural network theories of memory that had been dominant for decades.

4. Neural networks are still important because the brain, a multibillion super-Turing machine continually changes connectivities through new synapse formation.

5. I can start scientific philosophy from this insight that life is digital-linguistic (Burchard, 2016), thanks to the discovery of the genetic code in 1961 by Heinrich Matthaei, who found that three-letter codons in terms of the DNA alphabet in the four-letter alphabet \{A, T, G, C\}—for RNA, it is \{A, U, G, C\}, determine protein synthesis by means of the ribosome machine (Matthaei & Nirenberg, 1961).

6. To explain what it means that life is digital-linguistic, adding science to philosophy I find that life, the living cell is operating & expressed in a digital-controlled language mechanism, the ribosome being the chief mechanical machine, but there is much more, to do with gene transcription, translation and splicing. The control language is based on the genetic code in the four-letter DNA alphabet.

7. Knowing that life consists in natural products built from blueprints, the genome, coded in the genetic code, testifies to the basic digital-linguistic nature of life realized in all of the living cells that exist or have ever existed on the planet, as digital-linguistic ribosome machines working with the DNA alphabet.

8. This basic nature of life is escalated in the brain with each polyploid neuron combining to constitute a super-Turing DNA computer, exceeding the classical definition of recursive computability, because neurons are able to form ever-changing complex networks by freely synapsing with each other (Burchard, 2016).

Nuclear DNA Encodes Genome by Digital-Symbolic Genetic Code, & Phenomenal Engrams in Cerebral Neurons Encode Accessible Reality

Synopsis: A symbolic—digital—code is required to store genome of life & intraneuron memory.

1. Until quite recently, that memories are recorded in individual neurons had been thought of as a long outdated hypothesis, but now has been confirmed through ingenious experiments in several neuroscience labs (Ramirez et al., 2014; Jirenhed et al., 2017). Neural networks are still important as they are reforming continually, with creation of new synapses & degeneration of those that come to be used less.

2. Very recently (Jirenhed et al., 2017) discovered that individual Purkinje neurons can store memories.

3. It seems reasonable to hypothesize, as I have previously (Burchard, 2016), that the genetic mechanisms of gene splicing can be adapted to code such information in the DNA strings of polyploid nerve cells, perhaps using introns.

4. Phenomenal engrams are stored internal to individual neurons, apparently encoded by rapid protein synthesis (Jones, 2018).
(5) Then, synaptic plasticity and neural networks play a secondary role, but continue to be important in the sense of the super-Turing DNA computer that I have postulated (Burchard, 2016).

(6) Possibly, introns might be used for storing memory engrams, but nothing is known about these matters as of yet.

(7) There are several classes of polyploid neurons, containing multiple copies of part of the genome, up to 500-fold or perhaps more, giving strong hint that information in the form of memory engrams are stored in excess DNA. Certainly, genetic mechanisms are available for cutting and splicing DNA, likewise coded in the genome, for neurons to manipulate their genome and side step the original purpose of phylogenetic genotypical information storage, the tribal heritage, in order to make room for ontogenetic information to produce a different phenotype.

(9) These tentative conjectures are based on known cytological details of unicellular Paramecium, the slipper animal. Familiar from biology classes, it is found in almost any drop of water from a puddle in your backyard. Paramecium is one among ciliates (phylum Ciliophora), similar to my one-celled ancestors. As I watch it scurrying about under the microscope, it is searching for food particles, and it certainly seems to know somewhat what it is doing.

(10) Paramecium, being a typical representative of that protozoan phylum is remarkable for each unicellular individual being its own nerve cell. Apparently, its ciliate macronucleus, which contains about 80% of the genome at 500-fold ploidy, serves as the animalcule’s cerebrelle, its brain-like organelle. It might be said that this protist is at once its own nerve cell. With its macronucleus, here I seem to have found the original nervous apparatus, and the precursor of multicellular neuronal systems.

(11) Ciliates are remarkably diverse in the details of how the macronucleus or cerebrelle is formed and disintegrates during reproduction which can proceed two ways, by mitosis or by sexual reproduction with conjugation and diploid zygote formation, with subsequent mitotic cell divisions back to the normal haploid individuals.

(12) Apparently, the evolutionary step of neural encoding was achieved on the unicellular level, during a hypothetical ciliate radiation that must have preceded the Cambrian age, perhaps in the Ediacaran or more likely even earlier during the Neoproterozoic.

(13) I like to think of the 84 billion neurons in my brain, half in the cerebellum, as a multibillion tribe of ciliates, all holding a synchronized conversation, connected by synapses which they can and do rearrange for best coverage of the latest news or greatest relevance, and which I experience as my conscious existence in the Ego or Selfhood centers in the prefrontal cerebral cortex in its most forward positioned, orbitofrontal parts just above the eyebrows (Burchard, 2011). Emphatically, Antonio Damasio practicing psychiatry, in example after example has come to understand whole-body consciousness as the essence of a human being, unsurprisingly one would think, knowing that peripheral nerve endings permeate body tissues near every cell.

(14) Conjecturally, nuclear introns may be used for storing information of Paramecium’s life experience using the common cellular mechanisms of gene splicing, but all this even now is mere guesswork.

**Theme II: Noumenal Cosmos, Source of Judgment Power, Bridges Metaphysical Gap**

**Synopsis:** The animal can bridge the metaphysical gap existing between the self & the environment with help from a recursive algorithmic language system operated by the bilateral brain. Each animal, from the ciliate stage on up, includes an internal coded world-model, or noumenal cosmos, for its sector of the environment,
record of its total life history, analyzed & sanitized, that forms the basis of judgment power, Kant’s *Urtheilskraft*, without which no animal, even as early as Paramecium, could hope to survive very long in an often hostile universe.

The noumenal cosmos, this side of the metaphysical gap. The metaphysical gap separates an individual human animal, its self or ego, from the environment. The gap is bridged by judgment power residing in the noumenal cosmos. It could be said to have been the hidden agenda of philosophy as well as cryptic motive of religious devotion since the dawn of humanity in the Pleistocene, when my lineage began to separate from my hominoid relatives.

(1) Kant did not specifically address the question of origins of my capacity for judgment, *Urtheilskraft*, nor its foundations that reside in my noumenal cosmos, providing cosmic feedback to the observation & control of the scene for the animal’s benefit.

(2) But in both his *Critiques of Pure Reason* (A-edition) and *Judgment Power* Kant does clearly identify the cosmos under the names of general experience, one experience, interconnected experience, or even experience in general (Kant, 1781/1787; 1790; Brook, 2006).

(3) There is to be addressed in this essay as its chief subject matter a split present within nature herself, which is the metaphysical gap.

(4) The metaphysical gap separates an individual human animal, its Self or Ego, from the environment and is bridged by judgment power residing in the noumenal cosmos, using its own internal language system, because reality is sufficiently accessible by linguistic descriptions.

(5) That the brain can do that is a chief hypothesis of this essay, guided by the fact that life itself in all of its forms is realized through genomic blueprints, a digital-linguistic record in the sense of mathematical formal language theory.

(6) The super-Turing machine allows the animal to use linguistic descriptors and thereby bridge the metaphysical gap, hermeneutically interpreting its existence in the real world, the environment of experience.

(7) Somewhere an explanation is needed, that the gap is nothing very new. It can be identified as a cryptic consensus among Russel, Husserl, Heidegger, and Quine (Burchard, 2014). From another point of view, the gap is a cleaned-up version of Plato’s cave *vide infra*, a recast form of Leibniz’ monadology, Hume’s skepticism, or Heidegger’s being-in-the-world, etc.

(8) Bringing science into philosophy creates a new branch, scientific philosophy that has the advantage of recognizing the inner world not as an abstract metaphysical construct, but as a neural structure.

**Basic Facts & Science of the Metaphysical Gap**

*Synopsis*: I can overcome the gap by my judgment power founded in the noumenal cosmos, a world-model internally held in the brain. The contrast could not be greater. As an example, take a rock formation on a highway near you, laid bare by a road cut, as my phenomenon. On the noumenal side, a geologist’s reading of the rock layers, held externally as his field notes, a verbal record which he internalized prior to putting it on paper, using alphabet and numerals. In case of a hilly landscape being the natural terminus of the metaphysical gap, on its human end I may read a contour map of the hills as a more general form of image language.

(1) This point of view is very close to Immanuel Kant’s own description in the introduction to his *Critique of Judgment Power*, where he refers to my noumenal cosmos as general experience, as he also does in the *Critique of Pure Reason*, as explained by Andrew Brook (Kant, 1781/1787; 1790; Brook, 2006).
(2) The cosmos includes all possible associations, *i.e.*, logical interconnections among phenomenal engrams.

(3) These are now becoming known as linguistic records, most likely in the genetic DNA/RNA code, affording me an accessible reality by language that can reflect environmental pre-linguistic phenomena, to the extent of their logoi, their ISHR. As an example, consider a house, its blue print, but also the pillars, beams, doorways, electric wiring, *etc.*, that can be fairly specified in verbal language. Or think of a polished slab of metamorphic rock, with fossils still recognizable among the igneous veins, and of the hillside where it was cut, rock strata in the quarry walls displaying the progression of geological ages, recorded in a geologist’s field notes, covering partial aspects of the hill’s ISHR.

**Noumenal Cosmos & Judgment Power Bridge the Metaphysical Gap**

*Synopsis:* The focus here is on the human power of judgment, Immanuel Kant’s *Urtheilskraft*, \(^5\) upon which I must rely while reaching for success in life, or perhaps merely struggling to survive. In the endeavor, I must bridge the metaphysical gap that separates me human animals from my environment, but this is only possible if I chart my course of action based on directions from the internally held, noumenal cosmos.

(1) As lucidly explained by Kant in his *Kritik der Urtheilskraft* (Kant, 1790) due to the fact that most events are governed by fairly simple natural laws and that I have a general experience, the cosmos, stored in the brain, I can successfully judge many cases of conflicting environmental conditions.

(2) For the power of judgment, I have the Default Mode Network (DMN) that I have been interpreting as a neural site where the noumenal cosmos is housed, located in the combined medial prefrontal area of the neocortex and in the parietal cortex in both of the two hemispheres. The precise functional modus operandi and division of labor between the two halves of the brain can be deduced in part from the descriptions above of the two senses, and their working principles as they appear to be distributed to the two halves.

(3) The metaphysical gap is first of all the logical distinction of a human being from its environment, with a concomitant separation as far as exchange of information is concerned, requiring channels of communication between the two sides.

(4) Previously therefore, I also have spoken of the gap as a cognitive gap subject to Darwinian evolution of my neural system. Through the cognitive gap as an information channel of Darwinian evolutionary design, data are flowing crossing between the biological organism and its environment.

(5) Ego or self relies on its noumenal cosmos, a model world providing the global context required in each application of ego’s conceptual-categorical apparatus (CCA) when forming judgments about events in the environment (Burchard, 2014).

(6) In my favorite two examples of: (a) a geological rock formation and (b) a house, the phenomenal structures contain an ISHR of the process of becoming that gave rise to them; (a) the slow accumulation of different layers of sediment that gave rise to the rock formation; (b) the translation of the architect’s plans into the concrete entity that is the house.

(7) The development of an individual animal’s phenotype in ontogenesis, esp. me, or even of plants, is an impressive case of phenomenal structures coming into existence. For me, my own personal experience is a vast structure, which I can consider as being its own ISHR. I have compared human life structurally to a pond, its surface glistening lit by sun or moon, with sediment accumulating on the bottom over the years (Burchard, \(^5\) Retaining the spelling in Kant’s times.)
Somewhat in the same direction, Antonio Damasio has chosen the analogy of a movie-in-the-brain, where the owner makes an appearance (Parvizi & Damasio, 2001). At a standard gamma-rhythm of 40 Hz, and a processing time per movie frame of 300 ms, there are about 12 successive frame being processed simultaneously in the brain at a series of processing centers, in all sensory dimensions, with massive feedback under top-down processing based on accumulating evidence in the noumenal cosmos, where the final version of each frame is then incorporated in perpetuity.

It is precisely because phenomena in space have a structure that emerged through a process of becoming that my phenomenal engrams help me to bridge the metaphysical gap. Or, the pre-linguistic structure (pLs) present in the phenomenon which came about through a process of becoming can be useful for survival.

I do not have direct access to nature: Our noumenal cosmos does not resemble the real universe any more than the word “computer” resembles a computer or the contours on a map resemble a hill; what matters is the overall structural coherence between phenomenal engrams (logos) and the universe (nature).

I also have referred to the gap by the name of Heidegger chasm, because he first had alerted me to its existence under the guise of the profound chasm that he sees as separating thought from being.

On my human side of the chasm, standing along the near shore of it, I am keeping a world model, the noumenal cosmos, coded in the neurons of my brain, a recent discovery by multiple teams of neuroscientists (2017), vide supra.

Heidegger, especially with his main work Being & Time, but also his 1935 lectures on metaphysics has deeply influenced my own thoughts. There can be little doubt that his own being is his main concern in all of his philosophy, his own noumenal cosmos in which he, the owner, makes an appearance as the principal object of study, through his own being-in-the-world.

But he is not an always speaking competently as a scientist, though he has much to say about science. A case-in-point, it is easy to debunk his famous and widely popular lizard example (Burchard, 2016). Like all animals, beginning with Paramecium, the lizard has its own noumenal cosmos, allowing him to discern “as what” the phenomenon will appear, in Heidegger’s “as” version of Brentano’s intentionality.

His quest to understand becoming is answered by above examples of characterizing human development using concepts of scientific philosophy. Damasio’s movie-in-the-brain is more precise, substantive, and more profound, I believe, than his ruminations on the Ereignis—owning, or on his central concept of the Lichtung—clearing, which ever remains a mere vague suggestion, and probably is best identified with the noumenal cosmos.

The Metaphysical Gap Is With Me Every Minute of My Life

Synopsis: Animals need to understand their environment but are separated from it and in dire need of detailed information for survival, ever wary of potential dangers & threats.

Reality, the animal’s external world, is separated from the biological organism’s ego, its logical structure, the soul, by the metaphysical gap, for which neither science nor philosophy so far have had a concept or a name.

The gap is not a physical separation, although that may be present, not a spatial distance, because the animal’s own anatomical body is not identical to its internal self or ego, certainly not in my, the human case. But perhaps I should allow that every animal possesses an ego or self, from the functional, logical definition as
a neural control center sited in the prefrontal cerebral cortex, in the mammalian case.

(3) The raw fact is that the animal needs an internal model of its world for it to orient itself\(^6\) and find its way around to find food, shelter, social companionship for protection and reproduction. This internal world model, the noumenal cosmos (NK), the source of human judgment power, depends on every minute of my life.

**The Noumenal Cosmos, Identifiable as a Neural Network at a Known Anatomical Site**

*Synopsis:* The noumenal cosmos is thought to coincide anatomically with the DMN.

1. The Default Mode Network (DMN) may be identified as the anatomical substrate of the noumenal cosmos (NK), in medial prefrontal areas & CCA in parietal cortex, each hemisphere (Burchard, 2011).

2. This leads to the question of identification, because unlike Rorty’s (1979) mindless people, humans experience the inner cosmos, so different from the real universe, in lieu of the latter. We do not know about the neurophysiological processes as they happen forming our lives, and cannot account for these, except by scientists letting us know about some of their findings.

3. This led Joseph Levine to raise the specter of the *explanatory gap* (Levine, 1983). However, this is a mere coffee table issue compared to the metaphysical gap that is with us, challenging our marginal competence, at every minute while alive.

4. Here, we are not concerned with dissolving either gap, one cannot be removed ever, the other is of interest for solution, but not a concern, as long as people are aware of & find out about, their own unique dignity as world-makers, an orderly inner account—actually present in their bodies, in some neuro-anatomical form that as yet has not been discovered even approximatively, charged with the obligatory duty of guarding their inner cosmos, and with the humble chore of cleaning it out regularly, in view of the frequent mistakes we all make, some less so, some more.

5. But, even if anyone would be 100% successful in life, he or she would bear the scars of the struggle that we are obliged to fight each day, to remain pure of heart, wide-hearted with love of our fellow creatures, with a clear view toward the horizon of their private inner oceans and plains,\(^7\) because it seems that all the world is arrayed to give battle, keeping low us humans, each of one us. Demise is a sure thing for the negligent, unready for to defend & love their own souls.

6. Reality is not what you think it is; life is beautiful, at least I think it is.

**The Metaphysical Gap Is a Scientific Fact, Not a Philosophical Position or System**

*Synopsis:* The metaphysical gap separates the objective world or universe of physical objects in space from our subjective understanding of same which we can express by means of language. Plato's cave allegory, in an historical first, explicitly describes the gap by way of powerful imagery, humans observing mere shadows of the objects carried behind their backs, not the objects themselves.

1. What still was a mystery to Plato, and he does not refer to this explicitly, is the fact that the brain works with language systems, as familiar to me from the mathematical theory of formal languages.

2. The explanation is that the brain works with the DNA/RNA genetic code and the built-in genetic machinery in the cell nucleus and auxiliary nucleotide chains in highly polyploid neurons, which act as DNA computers. These are my hypotheses that are in process of being confirmed by neuroscientists, one-by-one at present, I feel confident. For more *vide infra.*

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\(^6\) The orientation movement, or taxis, of ethologists, as a primitive sign of intentional cognition.

\(^7\) *Rüm Hart, klaarkiming*, North Frisian motto.
(3) This allows me and other animals to record structural details, relying on the logos of a phenomenon, its internal structural historic record, ISHR which is linguistic by its nature of being stored in neurons, to understand and manipulate the environmental phenomena.

(4) An ISHR is a vast structural complex subject to linguistic interpretation, just think of Plato’s favorite example, a house, with its pillars, arches, doors & windows, plumbing & wiring *etc.*, or a global phenomenon of geographical dimensions, *e.g.*, the continent of Asia, to understand the amount of data stored in the brain for each thing in my world.

(5) I view the answer as related to animal intelligence, and even to protozoan (unicellular) ciliates like Paramecium, the slipper animal, functioning as its own single-celled brain.

(6) The reason is that all animals must act and must anticipate their actions, planning details of execution & profitable outcome. To properly foresee environmental events including reactions of other biota, deep analysis of various natural animal systems and their psychological possibilities & capacities is required or at least helpful.

(7) Animals being separated from their environment by the metaphysical gap (Burchard, 2014), they can survive only if they possess an internalized world model, their own proprietary noumenal cosmos stored in their brains, & a facility for detailed preprogrammed action sequence (Lorenz & Tinbergen, 1938) to be charted based on their private cosmos prior to executing & actually performing the action.

(8) The gap is the distinction and separation between environmental phenomena on the one hand, and phenomenal engrams in my brain on the other.

(9) A stark reminder of the gap, Kant erroneously placed phenomena in the mind, mistaking phenomenal engrams for phenomena. His transcendental philosophy arose from and expresses his clouded awareness of the gap.

(10) In Heidegger’s world, the metaphysical gap is the chasm between thought and being. His thinking is half-way toward science from Kant’s transcendental idealism. In fact, I believe his textbook on metaphysics is an attempt at scientifically valid description of the mechanisms of perception. I could say that Heidegger still fully in the Kantian tradition internalizes the external world. How else could he have embraced National Socialism?

(11) In fact, all I really know and understand, if anything, are phenomenal engrams, parts of my internal human identity, not phenomena, parts of the external natural environment about us.

(12) The gap is like a shroud, cast over the external reality of the universe, keeping it hidden from me except for a rough impression of its shape that I can glean from the contours of the shroud.

(13) This is the reason why the metaphysical gap so far has not made an appearance explicitly in philosophy.

(14) It is a matter for science, in the unrivaled clarity of her explanations, to discover the gap.

(15) For in science, I am always starting from the external environment, which I am trying to reconstruct in the full reality of the universe, where the metaphysical gap is not only included but evident, *e.g.*, in the study of human behavior, or animal behavior in ethology, because all animals labor and suffer under the gap, perhaps even plants.

(16) In science, I am involved with the external universe in quasi-realistic fashion, by experiments and theory, creating an alternate, a new mental reality, one naturally depending on the human agent.

(17) As human agents, not only can I perceive phenomena in form of phenomenal engrams, I also can deal with phenomena that move around in space.

(18) This is reflected in phenomenal processes of my perception, partially under my control by means of
physical contact with external phenomena, not phenomenal engrams, in the real environment. This is important for my survival, for finding food, shelter and company with my fellow humans, and to procreate the species.

(19) It is also important for science by making experimental science possible. I am in physical contact with experimental subjects, with the laboratory bench and equipment, which I have constructed specifically for the sole purpose of doing experiments, action sequences which are then translated into linguistic records in my lab notes and subsequent theoretical analyses.

(20) Therefore, I cannot expect direct discussions of the gap by philosophers, who care nothing about the world outside my mental entities, noumena in Kant’s terminology, in opposition to phenomena.

(21) Although, indirectly the gap is a principal theme of all philosophy, at least since Plato’s cave amounts to an allegorical description of the gap.

Theme III: Bilateral Brain Function Confirms Kant’s Insightful Metaphysics

Synopsis: The two cerebral hemispheres of the bilateral brain, topping the central nervous system (CNS), are designed for a division of labor amongst the left and right brain halves that corresponds to Kant’s distinction between his two senses, inner and outer. His other pairs of mental opposites, understanding vs. reason, noumena vs. phenomena, and logic vs. geometry, are also likewise divvied up in the same way, between left and right brains.

Based on recent results from neuroscience, we here can propose that the left half of the brain commands Kant’s inner sense, whereby “the mind perceives its inner state in time”,8 while the right brain harbors the outer sense for perceiving “objects in space outside myself”, i.e., outside my soul vide infra, which functions in a spatial image geometric way (Kant, 1781/1787).

(1) Mental capacities harbored in the left brain, are aligned in character with the inner sense, of the temporal-sequential kinds, i.e., logical, symbolic, or noumenal, based in description of remembered situations by means of verbal language, also a steady ongoing review of the past, often likened to viewing the world in a rear view mirror.

(2) Mental faculties located on the other side in the right brain are associated in type with the outer sense, being spatial-geometric in nature, i.e., empirical, sensory, or phenomenal, relying on depicting facts and ongoing events through the language of images, also an intent gaze into the future, attempting to anticipate what is to come by a view inside the crystal ball.

(3) Lateral specialization has been known for a long time from left brain processing and recording of verbal language in the named Wernicke’s and Broca’s areas. Roger Sperry was awarded the 1981 Nobel Prize for his famous work on split brain patients, who had their corpus callosum cut as a cure for epilepsy. He was able to demonstrate that the right brain can identify words with a designated object yet not pronounce the word. In the right brain, I have his outer spatial sense, geometry, and phenomena. That the brain avails itself of image language, typical for right brain processing, is known & familiar to us from our dreams, and also is used in early writing systems, such as cuneiform and its clay envelope predecessors (Schmandt-Besserat, 1992).

(4) Left and right lateral specialization of brain functions, the division of labor between the two cerebral hemispheres parallels & indeed serves to verify much of what Immanuel Kant had taught 250 years ago about a two-fold nature of the human mind in the Critique of Pure Reason. Thus, the lateralization of the brain is

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8 But there is no perception of the soul herself, Kant’s noumenon.
profoundly related to his metaphysical discoveries concerning the transcendental foundation of his brand of philosophical psychology.

(5) This has been becoming clear due to work done by teams of researchers; at the beginning in the second half of the preceding century, they were advanced by Brenda Milner and her students Mary Lou Smith and Patricia Frisk, drawing early attention and a growing literature on mental defects occasioned through lateralized brain trauma or surgical excision, as for relief of epileptic seizures. Without noting specifically the parallel Kantian aspects, they found that the right hemisphere carries the duty of the outer sense while the inner sense is domiciled in the left cerebral hemisphere (Milner, 1971; Smith & Milner, 1989; Frisk & Milner, 1990).

(6) Brenda Milner was awarded the 2014 Kavli Prize in neuroscience by the Royal Norwegian Academy of Science—jointly with Marcus Raichle, discoverer of the DMN, both cited in this paper for their fundamental contributions to scientific philosophy.

(7) Concerning left/right brain specialization in the hippocampus, there are recent remarkably precise and far-reaching results by Iglói, Doeller, Berthoz, Rondi-Reig, and Burgess (2010) to the effect that “…the hippocampus predicts and supports navigation via sequential representations in the left hippocampus and allocentric spatial representations in the right hippocampus”. This is exactly congruent with Kant’s two senses in his characterization to an absolutely astounding degree. There are applications for arithmetic learning, vide infra (Burchard, 2011; 2014; 2016; H. Burchard & J. Burchard, 2016).

(8) Further work was done in recent year in conjunction of several labs (Doeller, King, & Burgess, 2008; Bird, Capponi, King, Doeller, & Burgess; 2010).

(9) Remaining puzzles could be resolved by giving more play to the Kantian inner/outer sense characterization, e.g., the following quote refers to boundaries of imagined scenes, and therefore clearly falls under the left-lateral inner sense (Bird et al., 2010, p. 11694): “The left lateralization of the boundary effect is apparently at odds with neuropsychological evidence that visuospatial processing in the medial temporal lobe is right lateralized”.

(10) It is noteworthy that the authors appear to expect right-lateral brain activation (wrongly), ignoring that the imagined scene is perceived by Kant’s inner sense and therefore left lateral (quoted from H. Burchard & J. Burchard, 2016).

(11) Modifying Kant’s pre-modern transcendental language, I would say he could agree that phenomenal engrams are stored in the right cerebral hemisphere as images in space by geometry, but noumena or noumenal engrams, mental items, in the left brain.

The long-standing embarrassment of phenomenal idealism can be laid to rest by distinguishing between phenomena, shiny structures within the environment and understood as pre-linguistic vs. phenomenal engrams in the brain, which are noumena in the second sense of Kant’s doctrine of two kinds of noumena (Burchard, 2014).

**Left Brain Symbolic Calculation vs. Right Brain Geometric Arithmetic Capacity**

**Synopsis:** The right hemisphere is for real events that occur at this instant as when I line up pebbles on the abacus, in a row of three geometric figures □ □ □, while in the left brain, we operate with imaginary objects, are free to imagine things as we please & can count mentally with number symbols 1, 2, 3,…

(1) Two types of human sensory-mental capacities for arithmetic can be discerned: A spatial geometric, primarily visual image but also tactile sense in the right brain, and a temporal logical sequential sense in the left
brain. To arrive at the best current account, I turn to mathematical-scientific philosophy (H. Burchard & J. Burchard, 2016).

(2) Gattegno is keenly aware of and distinguishes the two capacities (Gattegno, 2010) and relies on the distinction in devising learning experiences for his pupils.

**External and Internal Objects**

*Synopsis:* The difference is basic in Kantian metaphysics, although often hotly contested by some philosophers. The metaphysical gap’s two shores make the distinction easy, on my shore all entities are internal, on the opposite, external.

(1) In the *Critique of Pure Reason*, Immanuel Kant discusses two kinds of mental objects, noumena, those represented in external experience, called phenomena (φαινόμενα, and those experienced internally, called noumena, νοούμενα (Kant, 1781/1787).

(2) About both kinds, there is quite a bit of original confusion, as well as much secondary controversy, the latter presumably being an unavoidable corollary of the former (Burchard, 2005). It is one of the primary aims and purposes of this essay to clear up & remove the former, and thereby to obviate the latter.

(3) Kant himself contributed much to the confusion when he stated that cognition is received directly through perception, which is not true of course, as all sensory data connect me indirectly to their objects or origin. Effectively, Kant is ignoring the metaphysical gap that separates me from phenomena in my environment, leaving no chance for direct experience, this being a divine prerogative, as he himself so forcefully argues on frequent occasions.

(4) Experience of external phenomena, stored as phenomenal engrams, is right lateral, but noumena, Kant’s word for mental things, are left lateral, where I can live in an imaginary world.

(5) A *phenomenon* is a shiny structure in space, a part of the external environment. The origin of the word is from Hellenic (φαίνομαι, shine).

(6) Each time I experience a phenomenon in space, a *phenomenal engram* is created in the neurons of my brain as a memory trace (Jirenhed et al., 2017).

(7) As a manner of speaking, sometimes I may say that phenomena are external, but phenomenal engrams are internal to the human being, the latter being identified with my conscious experience of my world and of myself, with the brain in control of the central nervous system (CNS), which permeates my organism, my physical body. But, the body also appears to me as a phenomenon in space, and therefore is external as well as internal. This is so according to Immanuel Kant’s theory of my dual senses, outer spatial geometric vs. inner temporal sequential (Kant, 1781/1787).9

(8) By contrast, each human being is internal to itself, what Saint Teresa of Avila called my interior castle.

**My Left-Right Double-Ego**

*Synopsis:* I should concede that I have not one but two consciences, an experiential one in the right brain, where my understanding labors to cope with reality, while speech processing, symbolic calculation, reasoning and fantasizing are all left lateral.

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9 Inner sense also known as introspection to people in neuroscience and psychology, which is an inaccurate designation. With recent insights in lateral brain functions, as reported in this essay, and their identification with Kant’s inner and outer sense now made evident by new results on hippocampal laterality, one would hope that neuroscientists will adopt “inner sense” as the more appropriate terminology.
It came to me as not so small a surprise, when I began to look into the bilateral brain function with left and right lateral division of labor that of course the two sides of the brain must be giving me a dual consciousness.

As explained above, the left brain by Kant’s inner sense in the time dimension works with sequential data, verbal language representing noumena using logic, serial processing & symbolic calculation, but the right brain by Kant’s outer sense in three space dimensions has image data representing practically all phenomena that I ever may have experienced, analyzed using Euclidean geometry, figurative processing, tilings, and other spatial arrangements.

1) From the outset, I have been taking a more down-to-earth approach of consciousness, viewing this confusingly enigmatic part of my human existence as by-products of perception (Burchard, 2005). Accordingly, I am clearly conscious in two ways, by Kant’s two senses.

2) As an empirical verification of double consciousness, by the outer sense in the right brain, I am an observer of what is happening in the environment, and in the left brain, I am aware of how I feel about it, perceiving myself, as to its actions & emotions, by the inner sense.

3) The left brain records my inner world in its planning and meditation, logically, in a sequential manner, and thereby corresponds to & controls Kant’s inner, temporal sense, which represents to me things in my inner soul, what Teresa of Avila called my Interior Castle. Actually, this is my past, neatly arranged as an orderly world, cleaned up, sanitized & beautified in my left brain but the right brain is looking toward events to come, ready to jump like a crouched tiger.

4) I see myself acting, please read my January 2011 article FOS “…Role of Attention…”, and while I do I am engaged in planning my action, and reflect on it, recording the entire experience inclusive of the environment, events rolling on in it, its condition, other actors, and changing scenario as my action unfolds together with ancillary events. I do not perceive myself other than in my action and related planning steps & reflections upon everything that proceeds. But my recall of memory of thoughts and actions shows myself being aware of being aware and engaged in the vital functions of acting, planning & reflecting. It all comes together in interconnected neuron clusters in the orbito-frontal or frontopolar cortex, Brodmann Areas 10 and 11, primarily, that I have been calling ego clusters, where decisions are taken on how to proceed, anticipating the future.

5) Laterality considerations help further to throw light on the details of the full action-reflection sequence, the right brain being in charge of perceiving external events and responsible for giving feedback of success and failure as well as more generally updating constantly the inner representation of external circumstances. These phenomena as perceived in the right hemisphere are then fed to the left brain via the corpus callosum. The neurons in the left brain are doing the planning & reflecting, this levolaterality being the recipient of dextrolateral produced data and a consumer of such data.

6) There, myself the owner of this Antonio Damasio “movie-in-the-brain” do “make my appearance” in the movie, which is part of the movie showing myself integrated into the movie, as well as a kind of voice-over telling what actually happens and how I feel about it, tying it all together in one single holistic scenario and action sequence, which is called “my life” and “my world”.

7) A key concept is “receptive field”, which is increasing along sensory pathways running forward along dorsal & ventral tracts until it becomes universal in fronto-polar cortical ego clusters. The attribute “universal” or “global” implies these ego neurons perceive not just any one aspect of reality but reality itself, in particular reality as perceived, as anticipated in ego clusters. This also implies that reality as obtained in right-brain
phenomenal imprints is included in left-brain noumena, lending an air of actuality to its abstractions.

(8) In early sources, we can find anticipated versions of a conception of reality, as that which perceives itself in Immanuel Kant’s famous Transcendental Deduction, and Douglas Hofstadter in his “Strange Loop” absent neuroscience considerations, esp. brain laterality (Burchard, 2011).

Art History and Critique Reacts to Left-Right Brain Laterality

Synopsis: In art history and critique, it has long been known that image composition and laterality interact in essential ways.

Kant’s right brain outer sense in three space dimensions directs how we compose image parts involving Euclidean geometry, figurative processing, tilings, and other spatial arrangements, but always under lateral brain control.

(1) This lateral property of the brain is recognized clearly in NLP eye charts. There, additional insight of regions is indicated for in the up-and-down motions.

(2) In art history and critique, the importance of image laterality for composition of paintings has been noted for centuries. Today, the effect is understood by the left half of a picture being perceived in the right brain, while the right half is processed in the left brain, due to the optic nerve chiasma before entering the thalamus. This has been known for a long time, perhaps since Sir Henry Gray in 1858? But that the two brain halves act in division of labor is fairly recent, thinking about Roger Sperry’s discoveries dating to the 1960s and 70s.

(3) The right hemisphere takes in external data that are spatially organized, and directs actions on the external scene, moving limbs and objects. The left hemisphere takes in internal data that are temporally organized, and performs internal auditing functions, making & rehearsing plans.

(4) However, inasmuch as the right-lateral external sensory data are decussated to the left brain initially, presumably, both hemispheres share data, and we have to deal with data sharing and functional overlap, as verified by split brain experiments involving epilepsy patients conducted by Sperry and Milner.

(5) But not all related issues can be resolved satisfactorily when both brain halves receive sensory inputs under decussation of the optic and spinal nerves in a normal brain. Decussation causes right lateral sensory input to end up in the left brain, and vice versa, the left body half sends inputs to the right brain. Some of this can be understood, e.g., the left half of a painting is more present-tense or future oriented while the right half appears to be more plain spoken, past-tense like (see Figure 2).

(6) By contrast, right brain spatial dimensions inform me about the environment and my physical organism. These specialized reactions of the two cerebral hemispheres have a profound influence on how we perceive visual images which do involve both halves of the brain, so how is a unified perceived structure possible? The important consequences for composition of paintings has not been overlooked in art history, and in recent time, are mentioned fairly regularly in publications.

(7) To demonstrate this important effect, I illustrate with two example images. First, a famous work by early Flemish painter Jan van Eyck, his Arnolfini portrait, dated to 1434, and now at National Galery, London.

(8) The compositional importance of laterality in a painting is an extremely subtle effect but easily demonstrated by doing a horizontal flip on a computer screen. The Arnolfini portrait, showing the married couple in Figure 2, is reproduced side-by-side with its mirror image, to demonstrate the interpretive power of laterality.
(9) In the original shown on the right side of the page, the husband, an important personage, is on the dominant, future-bound left half, with a serious if not grave facial expression, the wife docile, submissive in posture occupies the subordinate right half, the location for completed matters of the past.

![Image](image)

**Figure 2. Jan van Eyck, *Arnolfini portrait*. Original & mirrored, National Gallery.**

(10) With sides reversed, shown on the left-hand side in Figure 2, the man now is perceived as tolerant of & subservient to his wife who is glowing from within, having the importance of a female deity. She seems to be somberly contemplating her world, over which she is ruling. Only the painter’s signature gives away the switch, above the mirror.

(11) Second, we take a look at a landscape photo in Figure 3, showing Pyramid Lake, Nevada, looking SE from just N of Sutcliffe, NV.

(12) With our view sweeping over the lake toward the SE direction, as we take in the magnificent landscape, formed by the desert lake set among mountain ranges, our thoughts seem to be directed toward our own life. The dark hills of the Pah-Rah Range on the right side of the photo remind us of the past and its often difficult days that now are bygone and may not trouble us any further.

(13) Letting our eyes sweep toward the left side of the picture across the beautiful tranquil scene to the distant blue hills in the Southeast, our minds are directed toward our future with hopes for a pleasant and gentle life with an expectation of a prosperous existence.
(14) Somehow, although the brain knits these two experiences into one, yet some separation of the two senses noticeably influences perception, cf. above, the varying interpretations of the Arnolfini portrait & its mirror image. But here, we are illustrating the influence of a double conscious awareness on my emotions, as in the left side of the landscape, I am feeling a reflection giving meaning to my anticipation of a future world, while relegating the right half to the past, something I am done with.

(15) As another example of how brain laterality is important as a practical concern, some educators are aware of distinguishing the two arithmetic capacities, geometric in the right brain, but symbolic-linguistic in left-lateral situation. I may wish to take advantage of the distinction, when I devise learning experiences for my students. Such reliance in mathematics on Kant’s outer spatial sense of visual geometry is helpful precisely because it operates within the regime of the age-adequate Piaget concrete operations stage by avoiding overly depending on indirect symbolic processing (Piaget, 1952). Also vide infra, right brain arithmetic (H. Burchard & J. Burchard, 2016).

(16) In fact, my own physical organism like all things outside the functioning central nervous system is a part of the external world. Images of this outer world, as the visual records of experience, are recorded in the right brain, along with audio and other sensory records, vide infra, Schopenhauer cited by Magee.

Theme IV: The Brain’s Giant Super-Turing Logos Machine

Synopsis: The animal organism requires an interpretation, here referred to as a logos of phenomenal structures which it encounters throughout its lifetime. Accordingly, the bilateral brain, really the entire CNS, performs its principal function as a giant super-Turing logos computing machine consisting of multibillion neurons, freely synapsing & functioning as, performing the work of a logos machine, operated by a giant DNA computer, the symbolic left brain dominating logos discovery at least in most mammals or higher vertebrates.
The Super-Turing Logos Machine in My Brain

Synopsis: Recently, a new hypothesis for the brain of super-Turing machine capacity was proposed (Burchard, 2016): The total system of the estimated 84 billion freely synapsing neurons operating as DNA computers appears to perform far past the power of a Turing machine, presumably capable of non-recursive computations. It would then exceed the standard computing power of any individual computer that is limited by the benchmark of church-Turing computability, as expressed in church’s thesis, and so brings me a little closer to possessing an infinite divine spirit.

(1) The computational brain, the CNS, a powerful computing system, owes its existence to a special case of Darwinian evolution, the adaptation of the human organism to the metaphysical gap that separates an animal’s inner world from its outer environment. I prefer to think of it as the outer world, separate from my inner world, formerly my soul, what Teresa of Avila has called the interior castle (Teresa of Avila, 1577).

(2) The CNS performs neural system operations in a heuristic manner, by investigating phenomenal engrams reflecting environmental structures, and establishing for each its logos, linguistic descriptions of their identifying Internal Structural Historical Record (ISHR), putting into words pre-linguistic records of the historical background. In short, the CNS acts as a logos machine. The most fundamental aspect of this evolutionary adaptation is that through it, the brain offers to the human creature a world map, a logical structure of global context, which is my inner world, a veritable noumenal cosmos, a part of myself, my inner man (human).

The Logos of a Phenomenon

Synopsis: A phenomenon is not a shapeless entity, but in its structure richly exhibits its logos, identifiable as the ISHR, a (partial) record of its genesis subject to linguistic interpretation, as much of it as may have been retained within the extant phenomenal structure.

Overlooking this simple & fairly obvious fact by centuries of extremely bright individuals, all the many brilliant authors the great traditional—but unscientific—philosophy as it developed after Plato’s great foundational synthesis of all that could be known at his epoch, so many centuries before the emergence of modern science & technology, has been a chief shortcoming of the discipline, an omission that seems difficult to excuse. However, it probably was due to, and can be blamed upon, the very recent acquisition, late in human intellectual evolution, of the powerful methods of structural analysis made available by modern mathematics, perhaps even a fault founded in our native human inertia, each person’s fondness with their very own inner world model or cosmos, that happens to be the principal subject matter of this essay.

The cosmos within my cerebral folds, the up-to-the-minute maintained, updated, revised, and sanitized sum total of my life experience is my logos, my ISHR, and it is essential for me in my daily existence, so that I may understand the world around me despite being separated from it by the metaphysical gap (Burchard, 2005; 2011; 2014; 2016).

(1) What I have going for me is the structural wealth of the objective world, each object of interest, as I explained, being a phenomenon possessed of its logos, its internal structural-historical record, ISHR, like the blueprint of a house before it is built, but afterwards it is accessible reality as I walk its floors and hallways, look at its ceiling beams and hold a door knob, all of which being included in its logos (Burchard, 2005; 2011; 2014; 2016).

(2) What is new in this essay is that the two cerebral hemispheres, left and right, share in an amazing way
in a division of labor and responsibilities. Thanks to decades of work at neuroscience laboratories, as related above, I now have learnt & know of this astounding explanation for Immanuel Kant’s dualistic doctrine: The two senses are allocated separately to each of the two halves of the brain, the inner temporal, sequential sense, imaginary objects, noumena to the left brain, & to the right brain empirical phenomenal engrams of the geometric spatial outer sense.

(3) By virtue of my super-Turing machine, my cerebral neocortex that functions as a logos machine, which I share with other higher mammals, and with all animals in some less comprehensive but adequate form, as I have discussed for the famous—but misunderstood—Heidegger lizard (Burchard, 2016) I am able to discern phenomenal logoi, can identify external objects in space by their logoi, because the logos machine is able to decipher their ISHR, give a linguistic interpretation, and anticipate each objective phenomenon as a pre-linguistic structure (Burchard, 2016).

(4) The main point here is that the objective phenomenal world is not as fictitious as often has been surmised, proclaimed, and believed by philosophers including Quine (Burchard, 2014), but rather rich in structural details, which albeit non-material, are still real and accessibly real for me and my other fellow living animal creatures because of this special feature of our own ingrained logos, our ISHR, that it functions as a logos machine, answering Brentanos question.

Kant’s General Experience Identical With the Noumenal Cosmos, Synthetic Unity for Shadows

Top-Down Processing

Synopsis: Here, as in my earlier work, I explain that Urtheilskraft resides in my noumenal cosmos.

(1) Although Kant did not explicitly address the question of origins or foundations of my capacity for judgment. However, Kant does make reference to the internal—noumenal—cosmos in both of his Critiques of Pure Reason (A-edition) and Critiques of Judgment Power under the name of “general experience”, being implemented through the process of top-down processing. Also one experience, interconnected experience, or even experience in general (Kant, 1781/1787; Brook, 2006).

(2) Here, I am taking his general experience as identical with my noumenal cosmos.

(3) As a result, my brain, and that of any animal whatsoever, must engage in a complicated process of untangling the data stream coming from the external universe (U-data). The process goes through a cascade of neural evaluator-centers, and is never instantaneous and cannot be bottom-up, which would be extremely slow, and probably impossible in real time. Instead, all perception relies strongly on context-dependent feed-back, in fact on the animal’s resources of global context, based upon vast banks of data from prior experience, which are built up slowly and reworked continuously to strengthen reliability, a process continues and endures for a lifetime, consuming 20% of the animal’s energy budget (Raichle et al., 2001; Burchard, 2014).

(4) Noumena are exclusively experienced mentally, things, of whose exact nature I have no knowledge experiencing them by their actions and effects on my life only, some other entities being known only as they float about in my mind. They are distinct from and opposed to phenomena (φαινόμενα, radiating things I perceive in the environment, the world about and around my own person).

(5) Worth pointing out at this point is the thought that radiation is not really a physical process but an unobservable, metaphysical, noumenal temporal entity, that becomes known to exist inferentially only from the observed energetic events, such as a screen lighting up.

(6) Observe that here I am committing myself to the basic scientific ontological point of view, an observer
facing the experiment under preparation, spread out on the lab bench in front of myself. This decision would be implicit in and apparent from almost every one of my sentences in this essay.

(7) I perceive a phenomenon, some environmental structure, because I have receptors for energy of various kinds that is being radiated from and by it toward myself and impinging upon me (Burchard, 2005).

(8) These receptors include my eyes, catching incoming light, energy in form of photons emitted from the environment, including by the way my own biological body, also my ears, hearing sound from aerial vibrations transmitted from distant tremulous events, e.g., thunderclaps, or odor, chemical energy from molecules entering my nostrils, or various other organs being impacted by chemicals, molecules, which are de Branges waves, and numerous others, as heat, pressure, etc.

(9) A great deal of clarity has been gained already through a careful consideration of perception (Burchard, 2011), the processes in my neural apparatus in which raw sensory data, incoming bouts of energy of various kinds, are subjected to substantial reworking leading to me recognizing a phenomenon. To recognize phenomena is not intended to imply that they are given, cf. Sellars’ Myth of the Given.

Theme V: Scientific Perspectives on the History of Thought & Religion

Synopsis: Based on this comprehensive cosmic logos of life, the views & theories of this essay, I am in the unique position to offer some relevant, competent, and material explanations as to the scientific facts behind philosophy religion, treated as neural output. Historical aspects relating to the noumenal cosmos are discussed; its importance for contemporary philosophy and religion is recognizably left brain matters the place of free will, religion, the Kantian thing by itself. The latter perhaps may be identified best as quantum foam.

In classical philosophy, the human mind rehearses noumena and their practical aspects, a left brain affair, with scientific evidence lodged in the right cerebral hemisphere, if any playing a secondary role in philosophical discussions.

I need religion, which I experience in my left brains, because reality is incomprehensible, something atheistic materialists do not wish to understand or admit.

Deciding on the steps to include in action schemata, an animal exhibits freedom of will.

The metaphysical gap could be said to have been the hidden agenda of philosophy as well as cryptic motive of religious devotion since the dawn of humanity in the Pleistocene, when my lineages began to separate from my hominoid relatives.

(1) Possibly, philosophizing could be seen best as externally verbalizing the ceaselessly running cortical circuits, the recently discovered DMN, engaged in a continual effort of trying to make some sense at least out of my existences in this chaotic, messy, unreliable and often dangerous world of ours.

(2) The result is countless studies some beneficial, others deleterious, and ever remaining nebulous, but science can help to clarify matters.

(3) This is a sketchy treatment, in the third major part of this essay, of my new take on philosophy, the perspective that I have gained and endeavor to gain on the history of thought, in several respects.

(4) How classical philosophy amounts to the human mind ruminating its noumena and their internal systematics, and possible practical applications of such studies, some beneficial, some deleterious.

(5) How classical philosophy failed to discover the organismic side of science and philosophy and hence developed into a paranormal fringe by consistently missing or ignoring that science and philosophy are biological functions with an organismic basis. Philosophy never was quite right, and put correct & valuable
discoveries in an incorrect and deleterious way, thinkers constantly misleading themselves and the rest of us, developing schools instead of insights.

**Plato’s Cave as Allegory Presaging Accessible Pre-linguistic Structures and the Metaphysical Gap**

*Synopsis*: I am impressed about Plato’s prescientific awareness of the metaphysical gap expressed in his Cave allegory by him in contemporary terms.

1. Historically, Plato gave what is probably the best account of the metaphysical gap in his famous cave allegory.

2. Plato expressed his sense of alienation from reality, which must have been stronger than anything that I am experiencing, with most of science still two millennia in the future and life on Earth miraculous beneath a mysterious heaven.

**Classical Philosophy Verbalizes Noumenal Engrams**

*Synopsis*: Classical Philosophy as Expression of Noumena. Philosophy being only slightly more transparent about its subject matter than religion could be seen as overt expression of the noumenal cosmos in prescientific comprehension of reality.

1. Philosophy has misinterpreted herself from the prescientific beginnings. Plato’s cave as an allegory of the metaphysical gap was an excellent guess for what I now can understand rationally.

2. I understand the digital-linguistic nature of life in general and of the human brain in particular in its capacity to deal effectively with accessible reality as a part of the chaotic, even hostile material universe.

3. In fact, I may mimic Plato and likewise choose an allegorical description the situation in which prescientific philosophy found itself, in terms of the two shores of the Heidegger chasm, which is another name for the metaphysical gap.

4. The philosopher is standing on the noumenal shore, the L side, the shore where I live, the one I know and believe I understand, while the opposing cliff of reality, the chaotic hostile universe, the U side, still remains shrouded in the mists of dawn looming in the far distance.

5. Early prescientific philosophers did not know and could not have guessed that phenomenal engrams in cerebral neurons encode accessible reality linguistically, *vide supra* (Burchard, 2011), and noumenal engrams encode the universals of Aristotle and his scholastic students.

6. This general subject area has been my long-ongoing project of applying science and mathematical logic directly in the examination of traditional issues that have persisted within philosophy.

7. A lack of scientific approach to the question what am I has been a concomitant of a lack of esteem for my natural endowments with the key resource of *Urtheilskraft*, judgment power, through reasoned, holistic understanding in form of a noumenal cosmos of myself, in this my world.

8. This imperfection has affected the philosopher deeply from the beginning.

9. Not seeing the far shore of the chasm, not even guessing that there is such a ravine between himself and reality, however, accessible it may have appeared to him in his utter ignorance of cells & genomic control, much less quantum physics, all he had for source material to cogitate were those very shrouds, or clouds, that blanketed his world from his mental gaze, as Plato, possessing superhuman deep insight, sketched so admirably in his cave allegory.

10. But searching through the folds in the curtain that was hiding scientific reality the ancient thinker for the most part was distracted by the weave of the fabric, the noumena burgeoning without count in his dialectics.
(11) It leaves me with a fading taste in the mouth, while trying to ingest a shallow study subject, the unreflective human being, man or woman in need of help from intellectuals.

(12) Though I may seem to be calling philosophers thoughtless regretfully, to break out of the realistic attitude is nearly impossible, except by the Heraclitian insight into the unclean & lost status of the world.

(13) Once I am made aware, forced by sheer daily suffering and misery, from the dangerous, deleterious and nefarious human & natural goings on, that the cosmic order is an illusion created in my own mind will be an experiential truth I can never forget except in moments of foolish exuberance goaded by some fortuitous event or circumstance.

(14) However, this cynical disposition must be counterbalanced with praise for the many beautiful people, who love life and for philosophers who present truly profound insights into the grandeur of human nature as did almost all of the many hundreds of names inscribed above the entrance to Plato’s academy.

(15) People are equipped by nature for how to know their way around, with a profound understanding of their world, way back from caveman days and before, based on their nature-given power of judgment owned by all animals for to cover pressing needs.

**The Stanford Mental Life 3D Experiments**

*Synopsis: Mental life* seems to be built upon a neuronal 3D structure, formed by how humans relate to future, past, and present as its three orthogonal coordinate axes.

Seeking to explore mental life, what kinds of mental capacities people believe are owned by humans, Stanford University psychologists found a 3D structure consistently prevailing, through a suite of different experimental set-ups, which they interpreted as body, heart, and mind dimensions.

This was revealed in her Ph.D. thesis by Kara Weisman (Weisman, Dweck, & Markman, 2017) and yields the **shadow in human conscious awareness of the structure of time**, which according to Kant’s transcendental metaphysics is anchored in his inner, temporal sense, the neuro-anatomical domicile of which is the left-brain DMN, the structure that carries the noumenal cosmos, the mental world in which Kara’s mental life goes over the stage of existence, that anchors me to my past and to my future, giving me no more than, but at least this much, a marginal competence in conducting my affairs.

(1) Interpreting her results in terms of the noumenal cosmos, I can discern the triple coordinate axes to be oriented in the farther expanses of cosmic future, past and present. So, of course, for all animals, human and otherwise. Next time you are inadvertent, and have a small mishap, say you drive your tire over the curb, as you pull out of the dairy store parking lot, or worse, as you go 70 mph over an exit ramp on the freeway, being inadvertent to the construction site warning signals.

(2) As revealed by her experiment, Kara presumably has shown how extended regions within the noumenal cosmos appear to our minds, by comparing how various organisms respond to temporal-induced challenges for their mental capacities.

(3) Remarkably, her three dimensions of body, heart, and mind indeed emerge, separated neatly as seen in Figure 4, when applying the Singular Value Decomposition to data tabulated in Kara’s supplemental information (Weisman et al., 2017). The data form a set of 40 mental capacity vectors in 21 dimensional real Euclidean spaces of test organisms or characters.
We can relate Kara’s result of a 3D mental life in terms of the Kantian two senses as clarified in this essay as a noumenal left brain temporal-sequential logic sense, preoccupied with analyzing the past, and a phenomenal right brain anticipating the future with a geometric spatial-image sense.

In addition to this principally two-dimensional outlook of past-temporal vs. future-spatial, Kara offers us a third dimension, the mind in the present, for which cerebral anatomy fails to offer us a ready-made location.

Kara’s mental capacities of the body belong to the future, in my interpretation of her work, of the heart to the past & of the mind to the present time, reflecting our existence as world-making human beings, coming to life through the 25 billion neocortical cerebral neurons chatting with each other through a trillion synaptic communication channels like so many friendly slipper animals—Paramicia—forming a debating society.

Remarkably, her three dimensions of body, heart, and mind indeed emerge, separated neatly as seen in Figure 4, when applying the Singular Value Decomposition to data tabulated in Kara’s supplemental information (Weisman et al., 2017). The data form a set of 40 mental capacity vectors in 21 dimensional real Euclidean spaces of test organisms or characters.

In as much as the noumenal cosmos is a mental world, one would think this is where mental live goes on. So, we should be able to relate mental capacities to the ingredients and structures of the cosmos. The cosmos is evolving in my brain as I age—and so it does in your brain—it is in a fluid condition as discovered by Marcus Raichle and his team at UWISC Madison (Raichle et al., 2001). As mentioned above, he was awarded the Norwegian Academy’s Kavli Prize for neuroscience in 2014, sharing it with Milner and O’Keefe. According to him, the DMN in the brain is ceaselessly updating, reviewing, and revising itself. It is the place in the brain where the noumenal cosmos is housed, I think. Antonio Damasio sees it as a movie-in-the-brain—I trust he means the same thing.

My own allegory for the cosmos in my brain is a pond, the waves rippling the surface are the present, the sediments accumulating at bottom are the past, and the sky, the atmosphere from where rain and dust blow...
into the pond, is the future, bottom sediments being reworked constantly by microbes, worms, snails, etc.

(7) Kara’s three bottom-up dimensions of mental life are body, heart, and mind. In terms of top-down noumenal cosmos, mental world, these dimensions appear to be quasi-temporal, the human animal crouched like a tiger to strike in the immediate future, while still dwelling on its past relying on tradition but also bent low in remorse, while surveying the present from the vantage points of a sovereign ego, i.e., future or right brain, past or left brain & present or prefrontal lobes in both hemispheres.

(8) There is prognostic anticipation of the future, as I describe in my 2011 paper, based on the literature at the time, as then cited. Among capacities of the human mind related to anticipation of the future are hunger pain, having free will, having intentions importance of self-initiated behaviors, self-propelled motion, but referred to the body axis in her 3D world by Kara (Weisman et al., 2017).

(9) The second orthogonal coordinate axis, Kara’s heart, seems to be eyeing the past, left brain association centers related to morality, etc., which belong to our stores for the past, she cites experiences of emotions, happiness, guilt, understanding how others are feeling telling right from wrong, exercising self-restraint, having thoughts.

(10) Thirdly, her mind axis seems to me best identified with those noumenal cosmos parts that are the seat of our proper momentary consciousness, the present, ego cluster in the orbito-frontal cortex, Brodmann Area 10, updated for the present, prefrontal lobes both sides ambilateral perceptual-cognitive capacities, perceptual experiences, vision.

Noumenal Cosmos & Common Sense

Synopsis: Despite wars devastating human civilization over and over again, undeterred by waves of “good thought”, and instead rather spurred by nefarious thinkers, in the end common sense always has prevailed.

(1) Commerce emerged as the most common sensical branch of human activities, based on the simple profit motive, the principle that everybody wants to make the most money he can, and work around all the obstacles put in his place by all the other agencies, some winning—others losing, but all simply endeavoring the best they can.

(2) How my common natural cognitive endowments nonetheless have allowed my ancestral clade to progress in correct insights and adequate practices, learning valuable skills and technologies, ignoring the schools of philosophy and the branches of religions: The rule of common sense despite wars among hierarchical power structures as well as the misdirected ideologies and sectarian, social, and ethnic groupings devastating human civilization again and again, one pitched against another.

(3) There is a vast literature about common sense, what it is, its variant kinds, several centuries in recent history but going back to Aristotle, yet to understand its origin in the human central nervous system (CNS) probably was not possible until recently and has never been attempted until now, when the fundamental insights finally have become available thanks to decisive advances in neuroscience, effectively that common sense is nothing but native human judgment power the source of which resides in the noumenal cosmos.

(4) Common sense should be seen as a not fault-free yet essential power of judgment, an awareness and imperfect understanding of reality founded in the human animal’s prescientific noumenal cosmos.

(5) Here, in this essay, I am proposing the point of view that philosophers, until today have been relying on just this common sense never mind how esoteric their considerations may be and how sophisticated their arguments & how convoluted their logic, with the exceptions of those who work in cognitive science, where the
approach is quite similar to scientific philosophy as defined in this essay.

(6) This essay is mainly about one specific case, to give an example of how this looks when worked out in detail, the two senses theory of Immanuel Kant, his inner temporal and outer spatial senses.

Holism, Quest for the Cosmos

Synopsis: Holistic philosophy hints at her organismic realization, the noumenal cosmos.

(1) Within philosophy, holism is widely popular as a systematic principle, founded on the insight that all knowledge and all truth of declarations is interconnected, a web of belief, a unified science, that taking topics separately leads to uncertainty and lack of a global context deprives me of reliability of what I know or believe.

(2) Noteworthy is that holism in philosophy is not a unified concept, and there is half a dozen separate kinds of disciplines, not holistic at all in their totality.

(3) Clearly, what people then could see during their brief existences were mere glimpses of a world completely unknown perhaps unknowable, life in a universe ordered in some way and composed of four elements earth, water, air, and fire, to which Aristotle added “aether”, a word used only by Plato, outside the terrestrial sphere, as a fifth.

(4) People in Plato’s time sought to view the existing order as divinely given and called it the cosmos. What order there was amounted to a wholeness, holos, and today I am still functioning the same, with all of my science even more confused than was Plato, who at least was actively engaged in seeking order.

(5) My holism is my attempt to tie it all together in a neat bundle that I can understand. The account of the world in my cosmos is still a long shot as it was for Plato, but the details differ. I need to make the cosmos itself a science topic.

(6) It is in my brain, but how does it function and what am I gaining from it.

A New View of Human Existence, Human Judgment Founded on the Noumenal Cosmos

Synopsis: I have a cosmic conscience that extends from the daily scene to the ends of the universe and to the quantum foam of virtual particles churning inside each proton and neutron.

(1) Here, I present an entirely new view of myself as myself owner of and endowed with an original & inherited, a native judgment power that resides in my noumenal cosmos. Here is my ability to decide causes of any kind, ranging from the conduct of one’s individual life, planning in the long run, making instantaneous decisions, or philosophizing over the deepest questions as performed by great thinkers over the ages.

(2) This vital resource is not error free, far from it, not 100% reliable for sure, may not give me optimal instructions for suitability of my behavior, indeed quite often, regularly leads to bad decisions and consequently bad situations, but I must judge using this, my common sense, which is based on the cosmos in the best possible way, even if it never is and never can be in a truly optimal form.

(3) I must always make my best efforts based on what I can derive from my internal world model to stay alive for another day or even for just one hour. It is all I have to go by (Burchard, 2011) Logos Machine & Global Context.

(4) I have a complete inner, noumenal cosmos as my world model, in my brain topping the CNS that harbors a logos-machine capable of extracting their logos-essence from phenomena defined by their internal historical structural record, ISHR (Burchard, 2011).

(5) In judging the environmental scene every second of my life I would rely on this internally stored world model which enters into every one of my daily well-considered actions.
(6) It provides me with the necessary global context required to render judgments, which can never be reliable if done in isolation, for discerning & figuring out what I must know about my world, my environment.

Quantum Foam, Ultimate Unobservable Reality

Synopsis: Recently, I have proposed (Burchard, 2014) that quantum foam should be identified with Immanuel Kant’s famous thing-in-itself, he calls it an “X”, from the symbol for a mathematical unknown, in the Critique of Pure Reason (1781/1787). Ultimate reality beyond empirical observation.

1. Kant’s definition of cognition contained in his notoriously difficult “Transcendental Deduction” (TD) of the categories, is that cognition comes about by and should be limited to empirical observations or facts combined with thought. Here, “thought” is based on what he calls “general experience”, also similar expressions, e.g., “one, or interconnected experience”, esp. in his third Critique of Judgment Power (Urtheilskraft). Cf. Andrew Brook (2006) for more.

2. What he meant is the internal world model, our noumenal cosmos, a cleaned-up, sanitized version, that we hold in our brains, of the chaotic, unsavory universe. It is the organized sum total of all that we have learned individually, but based on the tribal memory comprised in our DNA genome, acquired over the course of four billion years, kind-of tribal lore recorded in the genetic code.

3. What Kant in the TD explains, now is called top-down processing, white matter fibers running backward from the prefrontal cortex—orbital, behind the eye brows—where our decision centers are in Brodmann Areas 10 and 11, all the way back to the occipital visual cortex, area V1, and the higher-level centers V2, V3, V4, and V5 further forward. There are more fibers running backward for top-down anticipation, than forward for bottom-up processing. The human animal and all animals depend on top-down, because bottom-up is very inefficient. All animals need that internal cosmos.

4. I recall visiting the Roman Pantheon cupola on a high school trip, and being overwhelmed by the immensity of this 2,000 year structure. Going back next day, the whole experience had been incorporated into my noumenal cosmos and the thrill was absent the second time around. Of course, at age 17, I had no idea what was going on, and was bitterly disappointed.

5. Back to quantum foam, it is perhaps just something in our noumenal cosmos (~cosmetics, indicating a pretty version of messy reality). If Kant is right, the ultimate reality must be unobservable (he goes into quite a bit of detail on that aspect, disproving both atomistics and non-atomistics). According to his TD, if quantum foam is unobservable then we can have no cognition of it.

The Two-Stage Process of Deliberate, Free Will Action

Synopsis: In the acting human being, an elaborate planning and programming phase precedes actual execution of a pre-programmed action schema. Therefore, to understand free-will, we should examine this two-step process, i.e.,(1) planning and programming an action schema; (2) execution of the pre-programmed schema.

Without a proper understanding of the brain’s loop structure and of preprogrammed action schemata, discovered by Lorenz-Tinbergen, philosophers have tried to understand free will action with little to go by and with not much of a chance for success, as clearly implied by centuries of fruitless squabbles over this issue.

1. Psychiatrists and neuroscientists have long recognized the basic sensory-motor loop structure of the brain.

2. Initially at entry, control resides within the receptive wing of the loop, that begins in the occipital area of the brain, where sensation determines the current scene & its state of affairs, modified as I know now by
massive feedback based on prior expectations from the noumenal cosmos, from antecedent event sequences, and even by shortcuts through more basic circuits in the brain stem or spinal cord.

(3) From the sensory loop, control is passed to an executive complex properly thought of as my ego, located at the apex of the loop in the orbital prefrontal cortex, just above the eye brows.

(4) Ego’s executive functions begin with supervision of progressive sensory processing, through numerous centers of improving accuracy and competence of the phenomena that are being perceived based on past and present preconceived notions of what is actual reality and what is unreal.

(5) This process nearing completion, the brain is ready to send action commands, the executive ego centers select action schemes from among preprogrammed plans, or it may be forced to scramble and invent new schemes when faced with a novel set of circumstances. Finally upon return, control is taken over by the active loop, which under executive oversight proceeds to perform by the chosen schemes.

(6) I thrive as biological organisms when my brain is given the chance to develop a global context, a cosmic prospective, the cosmos, as a noumenal entity, to enter into the decision making process by making elaborate plans, by charting my course of action based on the total, global context, that is provided by the internal noumenal cosmos, Saint Teresa of Avila’s inner castle.

(7) Design, selection, and control of action schemes are voluntary and encompass my domain of liberty.

(a) Consciously plan the steps of a Lorenz-Tinbergen preprogrammed action scheme. Fix, design or select from recorded past action or tribal genome inheritance, the plan before acting, even if it is a split second decision. This is deliberate but could be habitual.

(b) Decide to act. Here the “proactive” person has two chances to refrain from action, in both or in either of the two stages. Put the planned scheme into action. The execution then proceeds automatically, unless last minute intervention is taken consciously.

(8) I can make decisions by exercising my free will, as common experience rightfully confirms and which civilization depends on every day in the legal system as well as in everyday business, dealing with weighty matters that require decisions to be carefully arrived at, and where still, despite best efforts of all participants, grave consequences of taking a wrong turn are common occurrences.

(9) True, a lot of things I do are almost unconscious, but the reason is that I have practiced these activities regularly for a long time, doing them hundreds and thousands of times.

(10) When I button the cuffs on my sleeves, I later will hardly remember doing so. I have been executing this particular action sequence since I was six years old.

(11) These habitual activities are stored away in the brain stem and in neurons down the spinal cord, ready for repeated application that largely has become automatic, although always still capable of adaptation to circumstances under conscious control.

(12) Actually, there is a vast amount of planning, and even pre-planning, that goes on in my minds, as I am fully aware of, every moment of my life.

(13) Human decisions are discrete, linguistic acts, not inchoate urges. Modern materialistic philosophy has no concept of life being digital-linguistic, and instead mistakenly attributes human decision making to deep-seated und unanalyzable urges of a bestial origin.

(14) Before I even sit at a restaurant table studying the menu, I probably already have all kinds of plans and ideas of what exactly I would like to eat.

(15) This simple observation, that actions are preceded by plans, executed consciously in the orbital parts
of the prefrontal cerebral cortex, typically Brodmann Area 10 or 11, refutes almost all arguments that have been brought forward against the reality of free will, going back to Benjamin Libet’s experiment (Burchard, 2011; 2014; 2016).

(16) Here, just to mention one particular is Bryan Magee’s restaurant “proof” that I cannot rely on possessing actual freedom of choice (Magee, 1997).

(17) In short, I will what I am most strongly motivated to will by factors which I do not determine, and I then choose accordingly. The full point of what this means is brought out if I consider what the alternative would be like. If I were to say to the waiter: “Taking everything into consideration my preference today is for lamb chops, but please bring me a Dover sole”, both he and my companions would think I had taken leave of my senses.

(18) The simple refutation of his predetermined taste argument is that he ignores planning, as remarked above, the first of two steps required for taking action.

(19) Magee, instead of making deliberate plans like any reasonable customer, seems to envision an eater sitting down at table, being haplessly surrendered to his involuntary likes and dislikes that determine his “will”—this is part of his discussion of Schopenhauer’s equally laughable theories dealing with a will floating somewhere in a Platonic heavenly realm of abstracta.

(20) So, he believes that he is deciding on his restaurant menu on the spot—without ever getting a chance for planning and deliberation, a human automaton, so-to-speak, giving of himself a faintly ridiculous self-portrait.

(21) I would hope that he never will be sitting in any office making important decisions pertinent to my life.

The Cosmos Leaves Room for Religion & for the Residual Mystery of Existence

Synopsis: Deep mysteries always will stay with me, but perhaps it is time now for a sympathetic examination of religion from scientific philosophy.

Prima facie evidence is extracted out of accessible pre-linguistic structures, by ceaseless operation of the human brain functioning as a logos machine, but there is still the Heidegger chasm between on the one hand logos or thought or verbal language and reality on the other, a reality that he calls being.

In concluding this essay, even religion now makes scientific sense; I am able to cast religion in an entirely new light. The Evangelicals’ “God-shaped vacuum” is in your left brain which is trying to complete your noumenal cosmos, but in vain, it takes the divine power, there is no other logical, scientific explanation for the totality of my or anyone else’s total life experience.

The noumenal things today are explained by physics. In as much as theoretical science still is based on experiment, I should look at latest stands of quantum particle physics, QCD with its virtual quarks and gluons as what Kant was aiming for in his paralogisms of experience, and see quantum foam as what physical objects really are, as things-by-themselves.

(1) Atheists may try to make excuses and ignore our troubled reality, but it is no use trying to lapse into denial, the whole world is in pain & in chaos and is waiting for salvation.

(2) Religion lives in the left brain, a necessary complement to the unsatisfactory, never completely comprehended rationally, right brain world of experience.

(3) The job must remain unfinished, because of the Gödel incompleteness theorem, which is valid for
recursive axiom systems that are sufficiently rich. However, there is the surprising aspect that the computational brain now appears to be identifiable as a non-recursive super-Turing machine, so that Gödel’s results may not apply after all (Burchard, 2011; 2014; 2016).

(4) By all available evidence, the work never gets done; the logos machine works full time 24/7, and on its way passes through strange worlds in my dreams. The noumenal cosmos by which I am being served remains unfinished. The resulting global context floats on air.

(5) This universe in which I live ultimately must remain incomprehensible, *i.e.*, non-recursive, because uncountable (Burchard, 2005).

(6) Faced with a situation that cannot be resolved, as charismatic pentecostal evangelical Christians like to say, the human being’s organism provides for an internal construct often seen as a god-shaped vacuum but actually a structural component of the functioning organism, via neural structures of yet unknown nature & anatomy.

(7) The inner cosmos, from Hellenic κόσμος, orderly, beautified, cosmetic, as opposed to the outer chaos, is not much easier to grasp than quantum foam of quarks and gluons. It is, however, serving within myself as the living being I am, an important function, in contrast to the chemicals swirling in my blood stream.

(8) A human being will not be complete w/o some form of higher, divine power, coded into the cosmos, that god-shaped vacuum, experienced in ecstatic visions but actually harbored at the core of my inner self.

(9) Religion should be seen as a special way to prevent or cure malformed or pathological cosmos, *vide infra.*

(10) In fact, the human physical organism, although part of Damasio’s whole body consciousness, on the strength of a functioning central and peripheral nervous systems, also is a part of the external world like all things outside of the left and right cerebral hemispheres, images of which, being the visual records of experience, are recorded in the right brain, along with audio and other sensory records. Our dual experience of ourselves by both inner and outer sense was noted by Schopenhauer, an eager student and critic of Kant (Magee, 1997).

Religion & Brain Laterality

(1) The Good News: The human soul is alive and well.

(2) The inner man (inner human), the soul, struggles in life against the material universe but the soul provides an interior castle where people can dwell in relative safety amidst the turmoil and despite the disorder of the actual universe outside.

(3) The interior castle is a home for the tormented self, the place for it to which to return, and though exposed to chaos in its life, here in this stronghold self can reside in equanimity due to the soul’s capacity for having faith, which is access to a power that sustains, heals, and directs.

(4) Escape from chaos and return to interior castle, the story of Man’s Soul, its struggle to exist, has been reported in the tales of history and was central from the beginning universally addressed in the world’s writings and supplying their main subject matter.

(5) The lines of Helen Lemmel’s famous hymn “Turn your eyes...”, specifically the first verse, relate to Walter Hilton, my favorite Christian Mystic, his doctrine of the “dark Night of the Soul” as a spiritual refuge &

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10 Of course, there is also the minor issue of dealing with finite memory and finite computing time. Note that 80 year life expectancies, as well as nearly 100 billion neurons, offer a vast though finite computing potential.
protection.

(6) Helen’s verse describes the human soul engulfed in the darkness of her night, offering an escape by turning attention to Jesus, the Savior:

O soul,
are you weary and troubled?
No light in the darkness you see?
There’s light for a look at the Savior,
And life more abundant and free.

Turn your eyes upon Jesus,
Look full in his wonderful face,
And the things of Earth will grow strangely dim In the light of his glory and grace.

(7) In view of the bilateral brain, I now can fully and rationally understand her beautiful and widely admired hymn by remembering that all of my worship and prayers can only proceed by activations of the noumenal left hemisphere.

(8) Helen Lemmel, refrain:

Turn your eyes upon Jesus (in your left brain)
Look full in his wonderful face
And the things of Earth will grow strangely dim (in your right brain)
In the light of his glory and grace.

(9) Here, the refrain indicates how the escape comes about—by voiding the reality of the external (material, non-spiritual) world.

(10) In complete consonance, Walter Hilton, a 14th century Middle English cleric and lawyer, writes about the great benefits, the blessings of the dark night of the soul, when she is lost in full impenetrable darkness of her midnight experience, the state of utter uncertainty, weariness, trouble, and despair, exactly then is she protected from the “noonday devil”, the temptations for sin and just plain mischief. Here is the chief passage from Book 2 of his “Ladder of Perfection”—I & all wish to be perfect, do not we—Hilton’s Middle English in translation from Tudor and Stuart England.

(11) For though withal thou feel and perceive within thee

the presentation and profferings of vain thoughts,
and pressing in of fleshly affections; nevertheless thou art in this profitable darkness, ...
they do not take away the profit of this darkness,
for the soul shall by this means in time
come to restful darkness.

(12) Two centuries later, this was to be popularized by Saint John of the Cross, the friend and lover of Saint Teresa of Avila.

(13) Incidentally, Heidegger’s concern with being very likely was centered on his own, and consequently, most of his published writing could be grasping for an uncertain mental reality, but much of his public service would be in the grip of a contorted political ideology.

(14) Live’s deep mysteries emerge from science and mathematics, they separate me from the reality of the environmental world—often referred to as the material world by those who like to take a narrow view—but I
carry in myself records able and sufficient to account for the facts.

(15) I arrive at the observation that science, scientific philosophy, has before it the task of investigating the metaphysical gap as a cognitive gap.

(16) There will be a learning process. Think of your brain as scar tissue, acquired by you individually in response to combined trauma of your life experience, and over the timespan of four billion years through the adversities met by our clade, the human tribe.

(17) Synapses form and memory traces code inside neurons massively when I learn new stuff. This can be quite painful, which is an experience that all must get used to, in the long years of schooling, or face failure in life later on.

(18) ...there is no gain without pain in the brain...

(19) Concurrent with the constantly changing in environment, a series of phenomenal engrams may be recorded in the right brain, parallel with left brain mental records of the temporal sequence, the time line, of events. The combined records constitute an experiential process.

(20) In science, especially on the experimental side, especially when actually performing an experiment, I am in physical contact with the environment, with my lab equipment, materials, models, records, etc. External phenomena are recorded in memory as phenomenal engrams, involving activity in the right cerebral hemisphere.

(21) By contrast, a traditional supercilious highbrow philosopher is relying almost exclusively on his left brain, as he or she is sitting at the desk writing, or perhaps seeking inspiration while taking a stroll in a nature setting, but only coincidentally in physical contact with the environment, which would require right brain activity.

(22) There even is an additional parallel in Heidegger’s metaphysics. Martin Heidegger’s chasm separating Physis from Logos, facing each other, the two opposing shores, across the near-bottomless void of the abyss, must be seen as existing in a curious parallelism with Kant’s sensory inner/outer split.

(23) A theoretical scientist will mentally rework and absorb experiments, recording observations, thoughts and calculations in a back-and-forth between both brain halves.

(24) Nonetheless, as here explored, in principle all mysteries about how the gap is being bridged should be resolved, short of ever bringing into direct experience the distant shore of the Heidegger chasm, although I grant finite depth of the abyss—mechanical action of language driven machinery seems to be all there is to life.

(25) Eventually therefore, I am able to see the bottom of the canyon, the opposing cliff still shrouded in the mists of dawn, in as much as the brain, the CNS, which is the biological-physical mechanism that overcomes the gap, is nothing but a non-recursive super-Turing machine made up of 100 billion neurons, approximately, subject to scientific philosophical investigation.

(26) What Saint Augustine of Hippo called the City of God and Saint Teresa of Avila’s her inner castle, but what Thomas Hobbes called the civil commonwealth is formed in the right brain as the spatial world constituting an outer cosmos of geometric images, and perhaps musical language sounds.

Pathological Cosmo

Synopsis only: Not to be overlooked, in this generalized survey of human intellectual capacities, their historical manifestations & current condition, are pathologies of the cosmos, such persons suffering from all kinds of malformations of their inner world model or self-image, even organic failures. Included among likely
examples may be atrophies of vital brain areas, Alzheimer’s, Parkinson’s, pancreatic cancer, and childhood leukemia. Cf. the section about religion, which can be seen as way to deal with cosmic disturbances. Scarcely understood by experts in applicable fields, ignored or unknown but always alien to civilized life, these aberrant personality types are recognizable in their odd, risky, and possibly lethal condition. These unwholesome brains often develop in early childhood, from partial causes hidden in societal structures or from just plain bad company. Countermeasures seem ineffective, and may present their own negative side effects—who would fix a broken cosmos—recovery depending on favorable circumstances, even a miraculous conversion experience.

Without a healthy cosmos, without religion, many brilliant people leading godless lives have fallen ill with psychosomatic diseases of various kinds, such obvious brain diseases as schizophrenia, bipolar, alcoholism, Alzheimer’s, Parkinson’s, PSP, but also, heart, cancer, etc. Even criminality is linked to frontal lobe atrophy, a brain disease.

**Summary and Conclusions**

To bridge the metaphysical gap is being able to survive, and this is accomplished by means of a complex central nervous system that operates to provide my whole-body consciousness (Damasio, 1994), through the data streams by Kant’s inner, temporal, logical, sequential sense in the left brain, and by his outer, spatial, geometric, image sense in the right brain. From the noumenal cosmos, realized in both cerebral hemispheres, I derive the power of judgment, which is the chief purpose & function of the cosmos, not perfect, but I have the capacity for charting a course of action of my own choosing. At any given time, I am reflecting on the current status of myself as well as of my external environment, fitting all inside my orderly cosmos as faithfully as possible.

(1) The marvelous aspect of the cosmos is that my own organism, the body, is reflected in both halves of my brain. I can see the mosquito sting on my skin, and I can feel the itch in that precise spot. Roughly, I can think of the cosmos as an extended map of my environment, and of myself as well of course, that is being updated, modified and adjusted constantly by incorporating into it sensory inputs from the U-data stream, but also from memory and reworked associations of my past animal experiences.

(2) In this form, the definition of the cosmos may well apply already on the ciliate level of Paramecium.

(3) In many of its aspects, the cosmos represents in actual brain function what most closely resembles the traditional soul, especially when taken together with the neuronal ego cluster mostly responsible for rendering judgments and rising to decisions, located in polar frontal neocortex, Brodmann Areas 10 and 11, and related others nearby.

(4) The fronto-polar neuronal Ego cluster is filled with changing items that constitute signals from the cosmos. Forcefully influenced by the plenitude of the U-data stream the ego cluster at the polar apex of the brain in orbito-frontal cerebral cortex is active and in control of my, the individual’s thoughts and actions. Ego or self continually is engaged judging the environment, deciding on what action to take next, in direct linkage to thalamic nuclei through white matter tracts.

(5) Based on most recent sensory data, ego sends executive commands to motor cortex activating pre-programmed action schemes standing by at the ready for immediate performance of vital motor functions and endocrine secretions.
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