

THE HYPOTHESIS

Hierarchical Space-Time

FOR CONSIDERATION AND JUDGEMENT

Abstract

PRESENTISM speaks to the transcendental *à priori* intuitions of space and time, and the momentary arrangement of an actual universe; its precepts, though, are subject to impurities and to what IMMANUAEL KANT calls *à posteriori* intuitions. KANT uses the terms *à priori* and *à posteriori* to divide and classify aspects of sensibility and understanding; *pure à priori* referring to the *form* of intuition and conception, and *à posteriori* to content and matter; *form* being that which makes the capturing of experience possible. It should come as no surprise, then, that no *form* or *substance* is brought to mind by terms which deal with thoughts and things ethereal. Physicality underpinning cognition, being as unreachable as space and time, is given over to physics and metaphysics as different questions. Today, physics is abuzz with information theory, and the current question drawn up on the back of computer science is "It from Bit or Bit from It?"; in metaphysics it is "Form from Substance or Substance from Form?", in theology "All from One or One from All?", and last but not least "Present as Measured or Measured as Present?". Questions concerning the creation of information, the nature of space and time, gravity, and the *forms* and *substances* of cognition deserve a single hypothesis. Substances *metaphysical* and *forms* once beyond our reach are being brought into the physical domain proper, and with every addition metaphysics becomes more concrete. Continuing evolution of metaphysics, philosophy and cognitive mechanics means we are now in a position to defend unification. Defence, though, demands words which remind us that things once ethereal are being treated as real or logically certain; to that end we use the words *fabric* and *canvas*. All this, so we can present both a cogent exposition of hypothesis and defend creation's *form* and *substance*.

Essay

We now know that the neural fabric at the seat of sensibility is little different in lower animals, and the brain's superior structures and activity influence the mind more than previously thought. On the back of theoretical correlations between the neural *canvas* at the seat of our intuitions of space and time, neural *forms* and *fabrics* which make understanding possible, and the separation of *ideas* and *intuitions* from *conceptions*, as given by logic and philosophy, we find, amazingly, that we still agree with KANT'S assertion that the idea of space and time is transcendental. Thanks to KANT we can now use the word *transcendental* to refer to things material/immaterial within, and *metaphysical* to things material/immaterial without; a distinction which allows us to speak of a hierarchy where *fabric transcendental* sits atop *fabric metaphysical*. Those who understand *metaphysical* to mean "without substance" may struggle for a time with its hierarchical meaning, this, on top of the words *fabric* and *canvas* which imply spatial extension in every element, and this whether we are speaking of neural networks, society, or the fabric of space itself.

Banishing insubstantially helps banish scepticism, but, we do not shy away from the certainty that all things truly immaterial, i.e. happenings, spring from material, cell and fabric. That said, we admit we are short, by a whisker, of bringing all references to substances without extension into the physical domain proper, that is, gravity. Nonetheless, in the following pages we present for judgement a hierarchy of "*fabrics à priori*" from which all things spring, even the subatomic phenomena described by the standard model of physics. We say the fabric of space, properties of which are defined here, can satisfy the definition for "thought" given herein also.

Correlations between subcellular neurophysiology and the mechanics of choice, arrived at via novel developments in the mechanics of artificial neurons, add weight to theoretical correlations mentioned. On the back of these unspecified developments, theoretical correlations, and logical relations between intuition and conception, we develop a plausible scheme for being by dividing neural fabric on a grand scale. This grand division gives us a *canvas* for transcendental *à priori* intuitions, and the *forms* and *fabrics* which give us our transcendental *à priori* conceptions, and a division which places conceptions hierarchically above and structurally within intuitions. This, in turn, leads to hypothesis which speaks of *hierarchical space-time* and the separation of intuition from conception at every level of reality; this includes a description of the internal structure of a black-hole and that which precedes a Big Bang.

Furthermore, we speak of *à priori* fabrics as a hierarchy of domains which make the holding of knowledge without *intuitive-time* possible; we speak of a hierarchy where *à posteriori* is the inner state of *à priori*, this, complementing the certainty that information held in abeyance must be held in abeyance by something. Importantly, we compliment Einstein's *Special Relativity* also, but not the fourth dimension, and in dispensing with the fourth dimension we are able to depict primordial *form* and *content* and the thought (act of creation) which gives rise to the Big Bang.

Physics and Presentism & Philosophy and Cognitive Mechanics

I. Physics and Presentism are in opposition with regard to time. In physics a point in time exists, whereas the *present* is always a moment, and if it isn't it should be. When *Presentists* accept time as continuous, i.e. infinitely divisible, they fall into the same singularity (trap) that physicist fall into. Physicists conceive time as a fourth dimension, which is a real bugbear for *Presentists*, and this leads to the notion we call *block-universe*, but, the moment we accept that choice matters, we must conceive an infinite number of *blocks* and/or n^{th} dimensional space, and this gives rise

to the probability of alternate realities. To move past this apparent dead end, we take a few steps back and look to cognitive mechanics for a better understanding of space and time.

This understanding, though, can't avoid understanding a moment in time as something which accommodates *past*, *present* and *future*. Now, if moments accommodate *past*, *present* and *future*, divisibility of moments ad infinitum takes us to nothing and to contradiction; in contradistinction to nothing and contradiction, finite division takes us to a pure example where measurement itself must be a measurement of *past*, *present* and *future*. Folly, nonsense, or just another dead end? Maybe, but when terminology formalizes both the semantics and context of our understanding of *time* and the *present*, which complicate matters for those trying to define symbols and the rules of engagement which will sooner or later give birth to the field of cognitive mechanics, and this formalization helps that, and the exposition of a unifying hypothesis, all will be forgiven.

2. *Philosophy* and *Cognitive Mechanics* are not in opposition when it comes to space and time because our understanding is given by "intuition *à priori*" and "conception *à priori*" combined; one being no less important than the other. We look to the conceptual perspective first because it gives us a better view of the relationship between the two, and a better understanding of both. Conception *à priori* is a template *form* for capturing knowledge and holding it in abeyance; a *form* which is a receptacle for information. As opposed to intuition *à priori* which is given by a *canvas* composed of *forms* given over to capturing transient impressions made on sensibility from without; impressions KANT says give rise to transcendental phenomena.

Conception *à priori*, as a template *form*, makes compounding and abstraction of instances of intuitive phenomena captured by sensibility possible, and as a template *identity*, i.e. a template which can take on an identity, abstracts instances of phenomena recognised as instances or facets of itself. KANT would say conception *à priori* is a *form* for capturing information and holding it in abeyance, and RENÉ DESCARTES would say it is the means to a superior knowledge of objects; at its simplest, though, conception *à priori* is a template *form* within a template *fabric*.

Template *form* within template *fabric*, where *fabric* is composed of *forms*, is a template for conception where compounding of instances of intuitive phenomena makes abstraction possible, that is, a structured generalisation. Template *forms*, over time, become persistent representations of those objects which can generate recognisable intuitive phenomena. Superior representations, then, as identities, exist within a template *fabric* which accepts for compounding instances of relations which make possible the abstraction of context/principle. Superior representation must persist in numerous contexts concurrently, each being subject to a subset of relevant principles, and the number of minor *fabrics* set aside for this must be numerous indeed; insufficiency of minor *fabrics* making the world small.

The intuitive canvas which accepts impressions, and in turn propagates intuitive phenomena such that impressions are made on numerous templates concurrently, is itself complimented by identity and context which accept for compounding facets recognised as their own. This, then, brings to mind a division of domains; a division of intuitive and conceptual domains which are complimentary but in opposition because identity and context must resist abstracting phenomena not their own. It brings vividly to mind an intuitive domain which feeds a conceptual domain, and a conceptual domain which evolves and grows to resist and oppose intuition. In summary, then, template *forms* within template *fabrics*, each being abstraction¹ within abstraction, that is, a

¹ When it comes to things immaterial or without extension the word *abstract* has a place, but, apart from gravity and some loose threads in the standard model of physics, metaphysics is now concrete, and with cognitive mechanics the ethereal meaning of the word will be relegated to the side line, and the flights of fancy of mathematics also.

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superior knowledge of objects within superior knowledge of relations, brings to mind something held in abeyance awaiting its moment as a thought raised above other thoughts. It brings to mind entities which can cooperate to gain a moment in time, but, before we look to complimentary opposition with the view to understanding the nature of the first thought, we must speak of *it*.

It from Bit or Bit from It?

What is an impression without that which captures it and makes of it something that would not otherwise be? Absolutely nothing. Transcendental phenomena which springs from impression is hierarchical in that intuitions and ideas precede conceptions and principles, that is, the template *forms* which comprise the intuitive *canvas* precede the template *forms* and *fabrics* which create information and hold it in abeyance. Moreover, what is an *idea* or *information* without that which makes it useful? Again, absolutely nothing. On the back of cognitive mechanics we say that information, i.e. the *bit*, is created by *it*, *it* being the thing which contains the *bit* and which gives information persistence, uniqueness, and the opportunity to contribute at a future time. We say "Bit is from Spot" because a place makes the uniqueness of *it* and *bit* possible.

DESCARTES, if he had *form* and *spot* today, would not flinch at the possibility that a template *form*, one which creates and holds information, can itself contribute to our understanding of space and time via *form*. This, superior to the contribution of a canvas who's function gives us *intuitive-time* and the very thing which makes possible a simultaneity² of impressions on a neural canvas which itself represents *intuitive-space*. DESCARTES, today, would not hesitate to take a cleaver to *space-time* on the back of neural activity which exposes grand schematic divisions, something not possible in his day; nevertheless, he divided the mind with such skill that his conclusions remain, even today, at the forefront of our understanding of truth and perfection.

KANT himself conceived of *pure à priori conceptions*, but our conception differs to his in that we give conception a template *form* and a *spot* within a *fabric*. Our conception of *conception* has evolved from the software engineering of artificial intelligence, compounded with the theoretical biology of Jacob von Uexküll³, and then neurophysiology and subcellular neurophysiology, and then philosophy, and this compounding giving rise to an abstraction that would not otherwise be. The following hypothesis is the cake cooked up, so to speak, by this abstraction, that is, by that which is a structured generalization.

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Time is a function of space, and our intuition of space is hierarchical, that is, the fabric of *metaphysical space-time* makes actual objects and change real. On top of that we have *transcendental space-time* which makes representation and abstraction possible, and "change as recognised" distinct from actual change. But the biological *à priori* fabric of *transcendental space-time* we divide into what we call the *à priori* canvas of *intuitive space-time*, and the fabric of *conceptual space-time*. With this we find *intuitive space-time* sandwiched between *metaphysical* and *conceptual* domains.

² Simultaneity, singularity and infinity are all of the class impossible. Simultaneity only is made possible by a trick.

³ Jacob von Uexküll (1864-1944), See "*Theoretical Biology*" published 1929, translated by D. L. Mackinnon, D.Sc.

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It is necessary to postulate the actual existence of objects if we are to ask material bodies to be subject to a pure substance which precedes their possibility, that is, the pure substance which makes places possible. The fabric of *metaphysical space-time* is that substance, and gravity also — the frequency of which makes a simultaneity of objects impressed thereon possible — that is to say, the frequency of gravity is the very thing which makes the *present* possible.

To distinguish between *metaphysical* and *transcendental-time* we postulate that the function (frequency) of the fabric of *metaphysical-space* has the same purpose as the function (frequency) of the neural canvas which gives us our intuition of time and what we call *intuitive-space*. Here, we speak of space as a neural canvas which accepts impressions made by objects, and distinguish it from *metaphysical-space* on which all particles with mass are impressed. We say the purpose of a biological canvas for *intuitive-space* is to give impressions thereon a *simultaneity* within *intuitive-time* where the refresh rate is consistent with animal evolution.

The moment we accept time as a function of extension, and identify purpose, we can take a cleaver to *space-time* in the same way KANT took a cleaver to cognition, which we admit is at right angles to that taken by DESCARTES. We put these pieces together in the following table with fingers crossed, and deal with layers as necessary components of an unconditioned hierarchy. Understanding what is meant by an unconditioned hierarchy is imperative, and so other things must take a back seat. In other words the recipe for the following cake is not provided, just the list of ingredients. It is now time to give measurement its moment in time because the clue to unification comes from *Presentism*, and without measurement the *present* does not exist.

Transcendental	Innermost	Conceptual space-time	Fabric	Information	Knowledge
	Inner	Intuitive space-time	Canvas	Boundary	Other & Self
Metaphysical	Outer	Metaphysical space-time	Material	Substance	God & Others

Measured as Present or Present as Measured?

PRESENTISTS see the question as *Present as Measured or Measured as Present*, a question which applies to everything. And that's a dire proposition for the universe because for something to be *present* it must not only be measurable, it must be measured from one minute moment to the next, otherwise it does not exist in the *metaphysical-present*. In other words the universe does not suppose that something can be measured, and on that basis grant it existence in absentia; for things to exist they must be measured by *metaphysical space-time*. For subatomic particles to exist they must be measured accurately and with frequency that boggles the imagination, and this by *fabric* which can measure each and every thing which has mass.

For the *transcendental-present* to exist, the intuitive canvas must measure impressions with appropriate frequency and accuracy, otherwise a simultaneity of impressions on *intuitive-space* is literally impossible. But we need not suppose the nature of that which measures intuition and conception anymore, because we observe impressions being refreshed on the neural canvas, and the impressions made by intuitive phenomena on *forms* and *fabrics* which create abstraction.

What, though, is a measurement in a *Presentist* universe when the *present* isn't just a moment which accommodates *past*, *present* and *future*, but where measurement itself is a measurement of

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past, present and future? We must think of a "thought" as a moment which accommodates *past, present and future*, and when we think of the measurement of *past, present and future* as thought, we have a definition for thought. Moments accommodating *past, present and future*, as thoughts given existence by structured measurement, are not unthinkable when we see politicians behave as if constituents do not exist while their intentions are not being measured. By linking structured measurement and structured generalisation we give birth to cognitive mechanics, this, though, is a longer story, and one for another day.

Separation, Aggregation and the Void.

We can say here that each layer in *hierarchical space-time* is an *à priori* fabric which exists so as to separate and measure things it makes possible, that is, the fabric of *metaphysical space-time* makes material and objects possible, *intuitive space-time* makes intuitive phenomena possible, and *conceptual space-time* makes the creation of information/knowledge held outside of *intuitive space-time* possible. But a very big question remains, that is, what precedes *hierarchical space-time*? In other words what precedes the fabric of *metaphysical space-time*, and how does fabric constitute gravity? What precedes the fabric which separates, as a question, is no different to the one which asks what precedes the unconditioned *form and content* we call Cosmos?

The answer is not crystal clear, but we make an attempt; we say the *void* is at the same time that which is nothing, and that which unites, but it is not space, nor is it that which separates. The *void*, being the domain where extension is meaningless, can not even make room for that which separates, and so we must think of that which unites and that which separates as complimentary and coexistent. We must think of the *void* as the backdrop to that which separates; in other words nothing is the backdrop to something, and it is the something which separates which makes room for all other things.

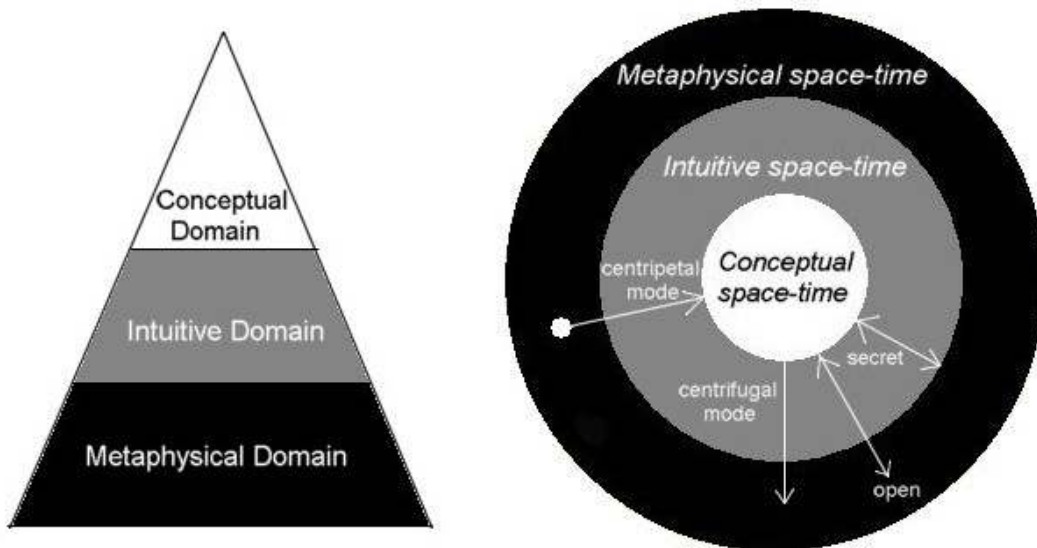
The *void*, being a potential answer to the nature of unity, is not an answer to aggregation. The means to the creation of material and its aggregation must then be given over to the fabric which separates, i.e. gravity. That the thing which separates and aggregates, being at the same time one and the same thing, is a contradiction; but, however hard we try to backtrack error, we find none, and find ourselves forced to acknowledge that the fabric of *metaphysical space-time* is both. The solution to this conundrum, lies in part with the proposition that gravity has two faces, one of which precedes the other. The fact that one face of gravity must precede the other is no less an apodictic certainty than the fact that centripetal must precede centrifugal, because centrifugal can not give rise to centripetal. Forced into the proposition that *metaphysical space-time* has two faces, forces us to concede that *centripetal fabric* gives rise to *centrifugal fabric*. Here we say the two faces of *space-time* are the two faces of gravity. What does this mean for the term *à priori*? Nothing, because *à priori* makes *à posteriori* possible; now the fact that fabric can be *à priori* and *à posteriori* at the same time, implied by the two faces of gravity, is not a contradiction in *hierarchical space-time* because the outer state is *à priori* and the inner state is *à posteriori*. This makes *hierarchical-space* a hierarchy of encapsulations without need of an outer boundary, only coincidence of fabric and backdrop. Gravity, as the foundational fabric from which all things spring, must separate, measure and encapsulate everything, and be the means to aggregation. In a hierarchical universe *à posteriori* is the inner state of *à priori*, and *metaphysical space-time* is the outer state and backdrop to *intuitive space-time*, and *intuitive space-time* is the outer state and backdrop to *conceptual space-time*.

Form from Substance or Substance from Form?

KANT'S classification of conceptions, as pure or empirical, is a division of *form* and *content* of significance; and the assertion that cogitation is *conception* united with *intuition* is elucidated by the suggestion that conceptions are pure only when divorced from intuition. Conception divorced from intuition is a thought in the making, and as knowledge held in abeyance is a template *form* with *content* waiting for a moment in time. Though eminently satisfactory, these assertions have no physicality, that is, the *form* and *substance* of thought and the nature of things unconditioned are both without extension. Higher ground given by hypothesis, gives us the form and physicality underpinning thought itself, but, in doing so demands evidence via something predictable and/or observable.

To cement *hierarchical space-time* in our understanding, we say that *intuitive space-time* is a biological canvas superior to the fabric of *metaphysical space-time*, and *conceptual space-time* is a biological fabric encapsulated by *intuitive space-time*, elucidating this with the notion that every instance of *à priori* fabric is a domain. We say that impressions made on sensibility and the intuitive domain, from without, by the objects of *metaphysical space-time*, are translated into phenomena which then contributes to the creation of abstraction, i.e. something that would not otherwise be.

The faculty of receptivity describes the translation of impressions and forward propagation of intuitive phenomena given us from without, this, the beginning of a mode of consciousness incomplete until intuitive phenomena propagated forward impresses itself on conception. This, then, as a spontaneous mode, is *centripetal*, that is, it is given from without. Impressions made on intuition from within, by conception, is *centrifugal*, that is, it is give from within; this the beginning of a mode of consciousness completed by actions which affect objects in and beyond the intuitive domain. When action affects nothing beyond the transcendental domain, the mode is secret; when action affects objects beyond the transcendental domain, consequences can impress themselves on transcendental domains from without, and that makes the mode open.



If, in the above figure, we look on the hierarchy as a moment in time, and see the impression made on the conceptual domain as the future of an impression made from without, and then work backward from there to see the intuitive domain as the present, and the metaphysical domain as

the past, we define for ourselves a *centripetal moment*. Given that impressions which give rise to intuitive phenomena are past relative to phenomena, conceptions which make impressions on intuition from within are past relative to the intuition they give rise to, and the consequences of intuition, whether secret or open, is the future of conception; and in that we define a *centrifugal moment*. These, then, are the two most familiar modes of consciousness, *centripetal* being a gift from without and a mode with past without and future within, and *centrifugal* being a gift from within and a mode with past within and a future without. But, while we're all familiar with these modes, and switch between them with ease, they're gifted by *hierarchical space-time*.

One from All or All from One?

Getting to grips with the unconditioned nature of *hierarchical space-time* requires that we now strip away biological fabric. So, for the above template to be universal, i.e. without exception, we must test its validity at both extremes, and make predictions. The most obvious extreme is the cosmological concentration of gravity we call a black-hole, at the centre which we supposedly find singularity. In *hierarchical space-time* singularity is not possible, only a conceptual domain made possible by an intuitive domain, and this intuitive domain in turn being made possible by an outer metaphysical domain.

The transcendental domains of intuition and conception, which we can now say constitute a black-hole, can not be comprised of biological fabric, but, we don't need biological fabric to test our hypothesis, only three distinct domains with relationships determined by a pure substance. For *centripetal* and *centrifugal* modes to be pure, and be given by something unconditioned, this pure substance must of itself give rise to the boundaries and distinctions between the fabrics of *hierarchical space-time*. That is, there must be sufficient cause and reason for the establishment of domains, and a reason for switching between modes; otherwise we don't have ingredients for pure thought, let alone something waiting for its moment in time.

If the elements which constitute the substance of *metaphysical space-time* are concentrated, such that the only idea or intuitive phenomena which can be captured at the outer boundary of a black-hole is the idea *centripetal*, then pure phenomena *centripetal* when impressed on the black-hole's centre must give rise to an inner domain which consists of those same exact elements, but oriented such that they represent the conception *centrifugal*. The boundary between metaphysical domain and intuitive domains is given by the point at which concentration excludes the presence of impurities. The boundary at which the exclusion of objects and all other substances, and at which the purification of fabric occurs, is equated with a black-hole's event horizon.

In other words the event horizon is the boundary between metaphysical and transcendental domains. The fabric of the conceptual domain at the core of a black-hole must in turn be distinct from the fabric of the intuitive domain, a distinction which requires inner fabric to be centrifugal. We now suppose that *inner fabric centrifugal* exists as a consequence of ever increasing pressure which forces the elements of the conceptual domain to turn around, so to speak.

With three distinct domains comprised of the very same substance (*extended pointy bits*), and reason why fabric composed of the same substance is different in each, we have the ingredients for *centripetal* and *centrifugal* moments of extreme duration; ingredients for the *unconditioned* existence of thought; ingredients for the two faces of gravity and two modes of consciousness. In other words impression from without gives us pure "intuition *centripetal*" which in turn creates pure "conception *centrifugal*", this, being the first instance of information held in abeyance, and something waiting for its "Big Bang" moment, so to speak.

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According to our own criteria, then, both the smallest and largest bodies point to each other from within, that is, from their *centrifugal* domains. But, we have no room to speak further of the mechanism which separates, and the means to the creation of material and radiation, all of which are composed of *extended pointy bits* in one way or another. In other words we have no room for the flip side to this hypothesis, and things small. Luckily, we don't need to, because, if we deduce in the near future that a black-hole contains a white-spot at its centre, i.e. conception *centrifugal*, by observing a disparity between the predicted diameter of an event horizon and the black-hole's gravitation, that is, gravity lower than it should be, we have a win for *hierarchical space-time* in three dimensions; and more ears to listen to the flip side.

The overall objective is to do away with the contradiction we call singularity; at singularity all things are secret, except gravitation, the very exception which constitutes contradiction. With *hierarchical space-time* we see bodies approaching the event horizon of a black-hole as being spaghettified into primitive "elements *centripetal*", and all material and radiation becoming *bug squat* at the event horizon ☉. This, putting paid, once and for all time, to the idea that space is consumed and destroyed by singularity, or removed into other dimensions, or nothing.

Pointy bits centripetal are the elements which constitute the *à priori* fabric of *metaphysical space-time*; the same elements which when sufficiently concentrated exclude the possibility of material and radiation. With the exclusion of impurities we have a persistent pure relationship between pure intuition and pure conception, and a primordial moment where the relative size of domains is the beer in the glass which allows the measurement of moments within moments; that is to say, a sequence of moments where measurement has nothing else to measure other than the *past, present* and *future*, and the approach of a new beginning, i.e. a new glass of beer. Cheers!

Cosmos

If by adding *centripetal* elements, we see the *centrifugal* core grow, and grow to overpower the *centripetal* shell, we have an inevitable Big Bang and an act of creation, that is, the creation of room for material and objects, and many thoughts, and the possibility of the aggregation of thoughts based on the one template. But, for a universe of material objects made possible by the explosion of a black-spot overpowered by its white-spot to be symmetrical, the white-spot must be perfectly symmetrical at the time of explosion, that is, it must point outwards in all directions equally. If this is to be the case there can be no other universes to which our white-spot points, otherwise the explosion must be asymmetric. Moreover, *hierarchical space-time* demands three domains, and this suggests that *metaphysical space-time* may contain galaxies which have not been spaghettified (consumed) at the time of the explosion. Describing an explosion of space, and what it may do to existing galaxies, is up or grabs. Furthermore, interactions between black-spots where encounters result in asymmetric ejection of conception, is highly likely, and anyone who has watered a lawn using a hose will know that asymmetric ejection of stuff from something spinning creates a spiral. However we imagine or simulate the ejection of the stuff of space, stuff which is the means to the creation of material, there are only two ways to image extended pointy bits coming together to form material. One configuration is nose to nose, and the other is tail to tail, either way they are equal and opposite, however, nose to nose is more likely in *hierarchical space-time* because that's what we get at the boundary between intuitive and conceptual space-time. Our task now, with our combined ability to jump tall building in a single bound, is to observe a perfectly spherical Cosmos; and if that's not possible, we can at least imagine, as Jacob von Uexküll would say, "*The Extended*". The End.