

The theory of decentralized universe

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Abstract: The intent is to formulate general guidelines for understanding that space-time is not an abstract infinitely open “universe”, and that continuity and repeatability of same physical characteristics everywhere (ubiquity) are specific only in the vicinity of our observational reference. The “universe” where life has developed is one “universe” among other possible “universes”. The mono-entropic ubicuum is discussed, as well as mono-entropic continuum ubicuum. The existence-probability is defined, and from there the dynamic fractured development, which lies at the foundation of understanding the mono-entropic ubicuum “universe”.

1 Introduction

This paper introduces the concept of existence-probability that is the attribution to an event of a multitude of possible immediate events, or of a unique possibility among the set of events, or of a disruption of immediacy. The concept of dynamic fractured development is introduced, in order to enable a discussion on ubiquity and continuity of our universe. The ubiquity consists of repeatability in all events, or points of space-time, of deterministic phenomena or patterns, which are remarkably unique and explain the possibility of life and advanced life, while adjacent “universes” may lack space-time, continuity, ubiquity, correlation of space to matter or correlation of time to matter, or observable light propagation, for example.

Dynamic fractured development is change of matter in its space-time through existence-probabilistic immediacy; it is the “pattern” for defining an ubicuum (or a “universe” with at least one physical characteristic that is a ubiquity). An ubicuum may be continuous or non-continuous, and several remarks on ubicuum are formulated. The mono-entropic ubicuum “universe” is one possible example of ubicuum.

The notion of observation is discussed, the vanishing of the light speed beyond the theoretical asymptote that does not hold outside the mono-entropic continuum ubicuum, as well as the notions of traces of

dynamic fractured developments.

2 Existence-probability

2.1 Set

Consider a set K_n of points (events), in any n -coordinated reference located in K_n where n is finite or infinite, where an order cannot be defined over all points, or between any two events or points in K_n , and where at least one temporal coordinate may be defined. A null subspace included in K_n cannot be defined.

K_n is a set taken from an infinite set L_m that is defined as:

- i. An order cannot be established over all the points of L_m , or between any two points of L_m ;
- ii. Temporal and spatial coordinates may be continuous or non-continuous, singular or fractured, may coexist or may co-exclude any j combinations of m ; L_m allows temporal coordinates that may be directional or non-directional.
- iii. L_m includes real-space R_m , non- R_m ($*R_m$), or C_m (complex space).

2.2 Event

The event is the discreet element of a set, defined in relation to an n -dimensional reference that is attached to the set of K_n .

The event may have spatial coordinates, temporal coordinates, or coordinates defined in terms of physical properties, for example

mass, energy, heat transfer gradient.

Events are variable. Their variation exists on at least one coordinate j of n , in relation to a referential O_n . For example, if an event X_j varies with a time coordinate (while variance may be discrete, or limited continuous) it means that:

- i. $X_j(t_k)_{O_n} \neq X_j(t_l)_{O_{n+1}}$ meaning $X_j(t_k)_{O_n}$ is disjoint, or different, of $X_j(t_l)_{O_{n+1}}$,
- ii. $t_k \neq t_l$ meaning t_k different of t_l ,
- iii. O_n may be different or same as O_{n+1} ,
- iv. $(t_k - t_l)$ is not continuous and may not be definable.

Events are not necessarily independent and disjoint. Events may be in the vicinity of other events.

Events may be disjoint, and in this latter situation, a relationship of vicinity or simultaneity may not be defined.

2.3 Definition of existence-probability

Given a set K_n of events or points X_j , given the reference O_n of the set K_n having m of n (m is part of the set of n coordinates) spatial coordinates, n finite or infinite, given that each event X_j is spatially defined to O_n , the existence-probability of each event

$X_j \in K_n$ is $p(X_j)_{O_n}$ or p_j where (" ϵ " is abbreviation for "included in"):

- i. There is at least one point $X_j \in K_n$ that has an existence-probability of a value situated in $]0,1[$.
- ii. There is at least one existence-probability attached to the point X_j .
- iii. There is at least one point $X_j \in K_n$ that has $p_j=1$.
- iv. There is at least one point $X_j \in K_n$ that has $p_j=0$.
- v. There is at least one point $X_o \in K_n$ that has $p_o \in]0,1[$ unique: there is no $X_j \neq X_o$ where $p_j = p_o$. X_o is called *krei* in K_n . If X_o has more than one existence-probability, then it is called a *pluri-krei* of probability in K_n .

3 Mono-entropic ubicuum

3.1 Definition

In the following I define n -dimensional dynamic development (see section 4 too). An

n -dimensional development is a function taken in the K_n on K_n when a relationship may be observed from one event of K_n to one distinctly different event of K_n and not in the same vicinity, which is observable in different references. Under this definition, an n -dimensional development is not necessarily an n -series function, or n -power function, or any linear-temporally n -dimensional function that n -varies time-linearly to infinity. I define n -dimensional dynamic development the group of several n -dimensional development functions that have an affinity to obey to certain border conditions or to border each other. These functions may be observable in certain references and not necessarily observable in all of possible references. These development functions may have events that carry existence-probabilities i.e. branches. And again, existence-probabilities may be defined on limited time intervals, and may be logically linear or not.

Axiom: The n -dimensional dynamic developments appear as less than n -dimensional when observed in references m -coordinated, where m is of n . Note that this is the only order that may be established.

It becomes obvious that the observability of m events instead of n does not eliminate the existence of the remaining (non- m events of n) events, they are simply not "visible". Observability is an interaction. This observability, though, not necessarily precludes the investigation for other limits of observance unrelated to the capability of extending and understanding of more references. Still, these other limits or constraints, for example time non-linearity, become non-observable in m -dimensional references of n , in most of the possibly formulated n -dynamic developments, and more, may transfer and transform without observable notice.

The non- m of n dimensions, of the same dynamic development, do not infer an actual change of the dynamic development.

Or, the same can be said of references. An n -coordinated reference applied to a system,

from where one would be willing to observe, does not infer that the system changed if observed from 2D-only to 3D, for example.

Significant other conclusions of this axiom is that asymptotes of dynamic developments may appear in only m of n coordinates of the n -dimensional dynamic development; Simplistically said, there are no asymptotes in K_n for dynamic developments.

3.2 Mono-entropic ubicuum expands

The asymptote that mathematically represents the limit of the emitted light speed holds true for most of the references situated within the mono-entropic universe. The mono-entropic universe is adequate for apparition of life, i.e. a fractured dynamic event. Mono-entropic ubicuum includes the mono-entropic **continuum** ubicuum. The mono-entropic continuum ubicuum is a mono-entropic ubicuum which could be closely defined as a **continuous** topological complex.

I define quasi-closed ubicuum (see section 4.2) the ubicuum that is continuously observable in relation to its coordinate reference attached to it. For example, the mono-entropic ubicuum (or what we currently call “universe”), is observable from and in relation to the mono-entropic continuum ubicuum, which is the living space-time. I define as mono-entropic continuum ubicuum the continuum* as defined in works by Einstein, Jordan, Fiertz, Huyghens, Poincare, DeWitt. The difference of terminology between mono-entropic continuum ubicuum and the “classic” continuum* is that the mono-entropic continuum ubicuum takes into consideration: (i) the entropy expansion is limited to what we currently call “universe” (mono-entropic ubicuum); (ii) its vicinity; (iii) a relation of observation may hold true, where observation takes place from the mono-entropic continuum ubicuum to the mono-entropic ubicuum.

Quasi-closed ubicuum is the ubicuum where one can define and are true (exist)

dynamic development functions, progress or regress of the phenomena because of existence of at least one temporal coordinate, for example functions like energy, emitted light, or gravitation with the exception of identifiable singularities (identifiable in location and time coordinates from a continuum* reference); the ubicuum where one can define and exist borders and limits to observation continuity, limits that are due to certain or most of the physical and material characteristics of the continuum* reference.

Otherwise said, a quasi-closed ubicuum has one fundamental implication of continuous observation that “anywhere” could be “everywhere”, because of dynamic developments, in the sense defined in section 4, and because of the continuum* reference for this observation.

The mono-entropic ubicuum that we currently call “universe” is a quasi-closed ubicuum as defined above. Other “universes” or space-time ubicuum may exist, which may be quasi-closed to favor entropy expansion, or may favor other development functions (see section 4).

The mono-entropic continuum ubicuum is a sine-qua-non pre-requisite and uniquely favorable to the apparition of life because life is in itself a succession of dynamic mono-entropic developments. Life in the vicinity of its points *krei*, as manifested in a mono-entropic continuum ubicuum, is a consequence of dynamic mono-entropic developments. In addition, must be said that the dynamic mono-entropic developments specific to life incorporate the vicinity conditions through their development, and evolution of mono-entropic conditions are true and observable in the development itself of mono-entropic dynamic functions.

The mono-entropic continuum ubicuum is a necessity for life and metabolic development. It is also true that life contains many if not all of the characteristics of the mono-entropic continuum ubicuum that constitute its necessity (i) The possibility to formulate and demonstrate in generality and

in its particularity the linearity of unique cause to unique effect; (ii) The linear and infinite translation of time that is measurable and becomes to be understood because of its affinity to degradation or transformation of matter.

The events within the mono-entropic continuum ubicuum are reobservable from references situated in the mono-entropic ubicuum outside the mono-entropic continuum ubicuum. These events may change and have incremental to significant effects on all the contained matter, or on life representation. Observation from outside the mono-entropic continuum ubicuum cannot identify “punctually” (localize the events) the temporal mono-directional coordinate except in its attachment to matter.

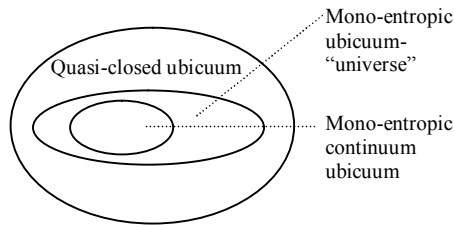


Figure 1. Representation of definitions

3.3 Borders

The mono-entropic ubicuum is limited by transitional dynamic developments.

Light when emitted disintegrates into self-emitted fragments that accelerate photons on wave lengths to speeds higher than its asymptotic levels in the mono-entropic continuum ubicuum, while disintegrating and warping; matter may implode within the quasi-close limits of the mono-entropic ubicuum, which secondarily generate event-mirroring: event-mirroring is a consequence of time non-linear affinity to instantaneous metamorphosis of matter. Event-mirroring will prove to be an observable understanding of light warping phenomenon. The light propagation in relation to its time coordinate, which is non-linear and non-continuous close to the limits of the mono-entropic ubicuum, may develop and increase above its asymptotic limit while disintegrating into

photons or fragments, which will pursue a development of fragmentation until they attain residual propagation levels.

3.4 Absorbed light

Dynamic development functions, for example certain forms of energy, which do not develop within continuous linear instantaneous time intervals, are fractured, and in a mono-entropic continuum ubicuum may become anti-symmetrical to their originated condition space-time with each increment of their development (although in terms of dynamic development they incorporate space). These forms of energy are present at borders, and their reserves of space, while $n > 3$ -dimensional, deny the conglomeration of matter. The effect of existence of these forms of energy is anti-gravitation, and when in presence of emitted accelerated light beyond asymptotic levels, or when in presence of other non-mass accelerated particle in non-cumulative condition, have the result of absorbed light.

3.5 Traces

The borders of the mono-entropic ubicuum contain the traces of its origin, i.e. reminiscent phenomena and conditions of implosions and explosions that must have originated its present expansion and existence on the time curvatures. Most noticeable traces are observed relative to a reference moving at constant speed of emitted light.

3.6 Traces of other “universes”

Our mono-entropic ubicuum or what we call “universe” includes traces, for example the Einstein “dragging” traces with attributable von Neumann probabilities, which are possible multi-dimensional dynamic developments that are different than mono-entropy, originated outside of the mono-entropic ubicuum; they are traces of other “universes” (or one-ubicuum).

4 Dynamic fractured development in n-ubiquum

4.1 Dynamic fractured development

Given a space K_n (see section 2), the set $S_n \in K_n$ of existence-probabilistic events, K_n is n -dimensional, and the temporal coordinate (not necessarily continuous, or non-fractal, or linear) exists, then:

- a. The dynamic fractured development f can be defined in S_n for any given X_j of S_n , relative to O_m .
- b. $P(p_j)$ is the resulting representation of assigning existence-probabilities p_j to each X_j of S_n .

Differently said, $f(X_j)$ takes the values of $P(p_j)$ in any given X_j of S_n , while $p_j \in]0, 1[$.

When S_n is a continuum* in R (real domain), then $P(p_j)$ may be a representation kp_j where k were a constant; or k may vary $k(X_j)p_j$ and $k(X_j)$ a function; or $P(p_j)$ may be a simple multiplication $p^+(X_j)p_j$ where $p^+(X_j)$ is an existence-probability of X_j , for fractured X_j events in continuum*.

- c. t_k are temporal instances of time coordinate that is attached to a relative reference. In an n -ubiquum, events of existence-probability exist; the time coordinate is attached to a relative reference; the linear continuous time coordinate attached to initial conditions of a development does not exist in an n -ubiquum (Note: it exists in any one-ubiquum continuum and in our mono-entropic continuum ubiquum “universe”).
- d. $P(p_j)$ takes the space of $f(X_j, t_k)$, relative to a referential O_m having m of n , in at least one coordinate j of the set S_n .

$f(X_j, t_k)$ has at least one value at each X_j located in S_n and “exists” with X_j . This condition infers that $P(X_j)$ is a representation $P(p_j, X_j, t_k)$ in the reference O_m attached to S_n .

Each event X_j becomes the consequence of the existence-probability p_j .

- e. $P(p_j)$ keeps the space at moments of time from $f(X_j, t_{k-1})$ to $f(X_j, t_k)$. This

property is called adherence. The following options are presented. (e.1) The dynamic development $f(X_j, t_k)$ becomes $P(p_j, X_j, t_k)$ from $P(p_{j-1}, X_{j-1}, t_{k-1})$ and $p_j = p_{j-1}$. The development has a spatial continuity and p_j is a *krei*. (e.2) If p_j is not a *krei* and $p_j \neq p_{j-1}$, then the dynamic development is fractured.

- f. If a dynamic fractured development f_1 exists in the sense explained above, and if $f_1 \neq f$, and if there are events X_j of f that are *kreii* X_j , and if for all X_j a vicinity of limited continuity X_j and t_j orients the event X_j to dX_j/dt_j (limited derivability), and if the $f_1(X_j)$ exists, then the development f is bordered with the development f_1 .

An example is a Cantor manifold continuum* where all its events are *kreii*, every dynamic development has a trace - there is always adherence to one or more spatial coordinates and it displaces matter from t_{k-1} to t_k .

A dynamic development that does not keep the space through at least a few of coordinates n in S_n is a development without adherence. Dynamic development with adherence to one or more dimensions within a one-ubiquum having continuous compact matter results in matter displacement dislocation.

The quasi-closed ubiquum has random gravitational singularities of the mono-entropic ubiquum “universe” and more than one gravitational force acts in at least the *kreii* of this space, and are traces of pre-origin of the mono-entropic ubiquum and of other “universes”, or bordering conditions of the mono-entropic ubiquum. In the quasi-closed ubiquum, the random gravitational forces may not be linear and varying with the second derivative of space-time, or the matter density may be non-constant. Also, accumulation of matter is the consequence of mono-gravitational

forces, while existence of matter and *kreii* do not imply accumulation of matter.

The random gravitational forces may be predominant for other quasi-closed one-ubicuum, because their presence in our mono-entropic ubicuum “universe” is the proof of pre-origin phenomena.

4.2 Ubicuum

Given a set S_n of X_j events with existence-probabilistic p_j ; if a dynamic development f_i is true for any event X_j with having at least one event X_i different than at least one event X_j ; if it is true and still holds that the same f_i exists for the X_j events of S_n in relation to a reference O_m attached to S_n ; if X_j of f_i are re-observable relative to O_m ; then there exists and is defined a one-ubicuum, and f_i is a pattern of the one-ubicuum.

If in a one-ubicuum, its f_i is a dynamic fractured development and if the dynamic fractured development is bordered, then the one-ubicuum is quasi-closed.

If given a set S_n of X_j events with existence-probabilistic p_j ; if dynamic developments $f_1, \dots, f_n$ are true for events X_j with having at least one event X_i different than at least one event X_j ; and if it is true and still holds that the same connections $f_1, \dots, f_n$ exist for the X_j events of S_n in relation to a reference O_m attached to S_n ; if X_j of f_j are re-observable relative to O_m ; then there exists and is defined a n-ubicuum.

4.3 Non-ubiquities

The inference of non-ubiquity is when no dynamic development f can be established in the sense of the definition of ubicuum as described. Non-ubiquities may exist as “slices” of the quasi-closed ubicuum that is under observation, in relation to the same reference that is used to observe the ubicuum. Non-ubiquities become apparent when the reference within the ubicuum changes to another reference, either by movement, or by changing the scale of observation.

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