

THE PARADIGM OF CONTINUITY

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While the Euclidean geometry and its further developments, for example the Euclid order applied to topological complexes etc., is an accurate representation of space-time location of matter, in a 3D reference attached to the human observer or the vicinity, the continuity of functions defined in the same space does not hold except certain concrete applications of matter where it has been rigorously demonstrated to be valid; The continuity and its “controlled” discontinuities, for example singularities, non-derivative conditions etc. that found their obeisant niches in the continuity theory, axiomatically took over and helped to build branches of science and theories in the human comprehension and expectations of all manifestations of static and dynamic events. We have seen the continuity of functions axiomatically translated from solid mechanics to gas mechanics, from human-size vehicles to sub-atomic and galactic phenomena, from low-speed dynamics to high-velocity and high-interaction dynamics, from non-life to life phenomena, and from binary logic to neurological functionality. Its truthfulness holds for certain phenomena, probably for most of them when taking into account the present scientific interests.

The paradigm of continuity is muddier by the mix of an incomplete understanding of determinism, or consequential determinism - consequences may still be deterministic even when they are not the result of application of a certain ingrained logic that was demonstrated in the initial state of matter, or event.

The paradigm of continuity is result of the conditions of observation and their axiomatic understanding:

1. Reference system coordinates.
2. Reference system scale.
3. Reference system in relative movement.
4. Irreversibility of observations.

1. Reference System Coordinates

The physical world has been explained through observations, interpretations of observations and theories to represent the undisputable repeatability of these observations when the reference system is consistently fixed to the human observer. The directions of freedom of movability of the human observer are the coordinates of the three-dimensional space, which is the vicinity of the observer, and these three directions of movability became the three-dimensional space that is formulated in all sciences. Divisibility and measurability of perceived space have been the foundation for derivability, integrability, dynamics, statics, biology and chemistry, earth and astronomy sciences.

Infinite divisibility is “perfect” continuity. The axiomatic condition of the reference system coordinates obliterates that there is no difference between the movement of inert matter object at human scale that has an identifiable start and end of movement, and the quanta jump, except that the aforementioned takes place in the vicinity of the human reference system and the last mentioned does not (see next paragraph 2.)

Another consequence of the axiomatic system reference is that the dynamics of movement of the object at human scale is reduced to the explanation of continuous dynamic functions through the duration of movement, while neglecting that the object in movement displaces matter not only of the object but also of the matter that the object is moving through, i.e. air or fluid that is matter as well, and more so the movement represents a continuity from one state of matter be this state static $q' = 0$ in the reference system of the human observer, to another state of matter be this state static too. The same displacement of matter, of the object and the matter surrounding it, if observed from another reference system located outside the human observer, be this another reference of microscopic scale attached to an ion for example, would be a different reality, a “cataclysm” of dynamic developments and collisions of innumerable particles and wave-particles where the mental definitions of the object like shape and color would be certainly unrecognizable; this reality would avoid the neglect and obliteration of events and displacements of matter that take place during this very simple movement. The same dynamics of the object and the matter surrounding it, if observed from outside the human observer, from another reference system of macro-cosmic scale attached to the inertial orbital center of a cosmic object distant from Earth, is a different reality - still real and complete on its own.

The axiomatic reference attached to the human observer had even more limiting consequences when analyzing the time coordinate.

The time coordinate is defined intrinsic to life and living condition. This intrinsic definition to human life attributes time with uni-directional, single parameter, deterministic function, divisible and measurable, while disregarding or impassing into incapability to explain phenomena, events, developments that are fractured from the continuity of human-scale life manifestation, singularities or instantaneous events, for example gene mutations, or synapsis “quanta wave jump or trigger” of communication. Small-scale intervals of time that are the duration of occurrence of certain events or developments are defined, in the axiomatic reference, as divisions of time Δt that should explain developments of function (or development) Δf , according to continuity and infinite derivability, while neglecting that Δt in another reference system may be a fractured, or a fractal, of the linear continuous time coordinate that lasted enough to develop a different function than f , having another dynamic and displacing matter at a different scale than f with different properties than f , for example mass $= 0$, higher heat exchange, or higher energy concentration, extreme speeds of movement for example, and taking space through a development limited within infinitesimal vicinity borders.

2. Reference System Scale

The axiomatic reference system has the scale of the human observer and the surroundings.

The consequence of the axiomatic scale and the axiomatic coordinates space-time of the reference system is that, for each and any mathematical and scientific theory, theorem and relation, I say: This is valid for what limiting conditions? When? Where? And the answer should be, for example: We preserve the axiom of continuity and this rationale of our representation of repeatability of observations capability, in order to use mathematical language as an expression of this representation. In a space-time of no continuity on any coordinate, with no continuity on any interval or instant of space or time, the sign of equality in a mathematical relation is not true.

One of the most significant differences between movements or dynamic events of matter in the mono-entropic universe are the effects of scale differences. Matter or materia must be considered the matter in movement and the matter obviously through which matter moves. In the mono-entropic universe, one characteristic resides in the compactness of matter, and any movement is observed and real when matter moves while matter is displaced at least in the vicinity of its movement.

In a continuum ubicuum, effects of discontinuity occur at the limits of observation of scale, while continuity and discontinuity are paradigms consequential to the unidirectional irreversible time coordinate that is inherent to the mono-entropic universe.

Singularities of the mono-entropic universe (non-ubicuity) that are enclosed in the mono-entropic universe spatially and in terms of materia, are traces of the existence (x-probabilistic) of non-mono-entropic universes that are “outside” or “foreign” to the mono-entropic universe.

Matter in movement at the human scale, and we may take any example of living or inert compact dimensionally defined subject, displaces matter in its path and in the vicinity of its movement path with significant effects, while the effects of movement may propagate outside the vicinity of its movement path. Displacement of matter in the movement path and in the vicinity of its movement path has effects that are measurable in one or more of the typical characteristics of matter: weight, energy, heat transfer, volume, impulse, and consequences like displacement of center of gravity of displaced volume, transfer of energy from potential to kinetic, etc., that have undoubtedly consequences at smaller scale of displaced matter like increased atom movement, increased internal energy, adiabatic transformations of volume, and increased light refraction in molecules. The consequences at smaller scale than where the observed displacement occurred may constitute x-probabilistic causes of events, or events, that would not appear consequential to the observer. The same is true for consequences at significantly larger scale than where the observed displacement occurred - consequences may be x-probabilistic causes of events, or events, that would not appear consequential to the observer, for example events of developments such as krei, fractures, singularities, continuities or discontinuities, x-probabilistic border conditions, etc.

3. Reference System Speed

The speed of the axiomatic reference system is intrinsic and by definition zero (through continuous derivability). The human observer, when compared to the many other subjects in

movement at the same or different scale, is very “static”, and the locomotricity of the human observer is at a speed close to zero most of the time. By nature, the human observer has the most accurate observations, if not the only observations, when standing still, or when moving with a constant speed relative to the observed phenomena or dynamics, so that the human observer recognizes those definitory features of the phenomena identical to those learned previously at maximum capacity of observation i.e. at speed zero. The human observer cannot accurately observe phenomena that are at significant speed or at accelerated speed, however the details of observations may be decoded to bring them tot he same speed of the observer. The same is true for the duration of observation, because the human observer would not accurately distinguish phenomena that occur in significantly short times. Ideal conditions of observations are $q'=0$ speed of the observer, and $t = \infty$ duration of observation.

The paradigm of continuity includes that the functions, theories and relationships, in modern and classic science, are represented at speed close to zero, and that their applicability and truthfulness may be observed ad infinitum. This language of representation is correct and reflects reality in the vicinity of the observer.

4. Irreversibility of Observation

If the opportunity to observe a certain phenomena is infinite, and its repeatability may be confirmed or deducted always the same ad infinitum, the uniqueness of each instant of observation is evident, consequence of the deterministic and uni-directional time coordinate.

Observed existence is the x-probability. It is definable in any observation reference, in any “universe” including the mono-entropic universe. It is not function of the observation reference. The observation of events depends on the observation reference. Because the observer is human being that is a highly organized system of multitude of kreii x-probability events, the observation requires a minimum compatibility with the observed events that is ensured by locating the observation reference in a krei of the observed events. I am not convinced that the a-priori krei in an observed set of events is a sine-que-non of accurate observation.

Because the time coordinate cannot be attached to space coordinates as a linear coordinate of development and be it irreversible in any other reality than in an ubicuum universe, in a continuum ubicuum universe the notion of future i.e. present added with a sequential “next” becomes defined by completeness (present) or non-completeness (future) of matter while establishing in its movement the space that it occupies. In the following, non-matter spaces are spatial developments where characteristics of matter become instantaneously un-observable. While past and present are non-sequential and undistinguishable in terms of priority, future co-exists with all past and present, in all instances of non-matter spaces or spaces apparently unoccupied by matter, and future may be x-probabilistically observed. Past and present are altogether in instances occupied by matter, are distinguishable in terms of priority, and future may be observed when patterns or constraints of causality exist (constraints which practically may be “other” or “foreign” events, developments, matter movements,...) and that semantically may be formulated in variants of binary logic, symmetry, periodicity etc. The future, if it could

have been, has been, could be or will be, while observed is irrelevant to its linear temporality for a continuum ubicuum (and irrelevant for any ubicuum continuous or non-continuous) because of its coexistence with matter and including matter instances of space. The completeness of a space instance with matter exists (existed) already since infinity to infinity of matter. The (“flow” and) space-taking of matter accomplishes its own future, in an ubicuum.

The existence-probability is matter-existent and non-matter defined space instances of matter possibilities, where the paradigm of continuity in a continuum ubicuum is recognized truthful and by exception from an ubicuum, which itself is true among other ubicuum “universes”, all true x-probabilistic and coexistent with non-ubicuum states of materia developments.

In an ubicuum universe, time is linear and irreversible. Its continuity is true in continuum ubicuum enclaves of space-time and it may not be true in singularities of the ubicuum where traces of the surrounding universes are predominant while these singularities may be significantly large scale in space-time. The time coordinate is true in ubicuum and necessarily preconditioned by dynamical development of matter.

In a continuum universe where life becomes true, the fundamental principle is that movement, development, evolution-involution etc. displace matter - dynamical development x-probabilistically “flows” through the matter in its vicinity. Dynamical developments in continuum ubicuum, at smaller or larger scale, are space-time “eaters”, they “engulf” and represent to be truthful (observable, measurable, cause-effect inductive, and irreversible) when and only when taking (new) space and time coordinates that necessarily define matter in its development. Matter in a ubicuum has the “memory” of its flow through matter. The galactic-scale space-time of our universe is not a continuum ubicuum while it is an ubicuum, and the discontinuities, the traces of non-ubicuum and fractured developments result in possibility of matter space-time “memory” that is defined by x-probabilistic events.