

Scientific Principles of Space, Time, and Perception

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Abstract: In this paper, the scientific method is brought to task in explaining what is real and can be proven to exist in the real world, time and time again, not what is unreal, not what is stochastic, not what cannot be given any guarantee of measurable reliability in time. Here is defined a common scientific principle for space, time, and perception, to set a complete and consistent foundation for scientific principles of space, time, and perception, based on data that is real; certain scientific principles of space, time, and perception have become obvious through the course of the lead-up papers [1]-[17], and these scientific principles are presented in a consistent and complete manner.

Keywords: time; space; perception; science; principle; scientific method; knowledge; theory; reason; logic; perception; fact; objective; subjective; data; Gödel; symmetry; asymmetry; Einstein; big bang; dark energy; dark matter

1. Introduction

This paper outlines the key discovery of the “scientific” principles of space, time, and perception in the context of a proposed pan-theory [1]-[17]. These principles are derived from the analysis of 17 previous papers [1]-[17] detailing a new theory for time, an algorithm for measuring time in regard to space, and how such a process is able to derive all the known equations and constants relevant to physics theory and associated physical phenomena. The key discovery of the “scientific” principles of

space, time, and perception is essentially a process of putting logically constructed words based on a model of human perception to the ideas of time and space, and how such can be so, and **why** more importantly such is a requirement for scientific theory. Here, the scientific method is brought to task in explaining what is real and can be proven to exist in the real world, time and time again, not what is unreal, not what is stochastic, not what cannot be given any guarantee of reliability in time; the process here is to define a scientific principle for space, time, and perception to set a stable foundation for a scientific principle for their common utility as a pan-theory basis. Certain scientific principles of space, time, and perception have become obvious through the course of the 17 papers [1]-[17] thus far, despite paper 1 [1] starting off on the correct footing with the correct definitions for time and space, as it has been demonstrated. However, granted the greater lens of clarity that 16 [2]-[17] subsequent papers can offer to paper 1 [1], highlighted in this paper will be how simply and logically the scientific principles of space, time, and perception can be. The paper is constructed along the following sections:

1. Introduction
2. Theory, reason, logic, and perception.
3. Objective and factual perception of space and time.
4. Conclusion

One key feature that is evident through the papers [1]-[17] is that a pan-theory needs a common fundamental basis of logic that represents a common fundamental basis of what is real, all real ingredients, nothing insubstantial, and furthermore, that to develop an **objective** model/process for space and time, mathematically, requires there to be symmetries with associated fundamental physical laws, and of course asymmetries that are beyond those objective scientific laws; the **clearest** point that cannot be departed from is that one cannot just develop a theory of reality by creating a type of mathematical algorithm of laws that just happen all of a sudden and are timed arbitrarily, yet that any theoretical modelling of time and space should be an objective process of primarily accepting the physical real data that exists and then reducing that data down to basic principles of time and space that, as a theory, can harbour all that valid data.

2. Theory, Reason, Logic, and Perception.

Scientific theory today relies on both what is real and what is hypothetical. Real is what we can observe and directly measure, unreal is what cannot be, such as dark matter (DM), dark energy (DE), and aether. So, how can science come to be a mix of what is real and what is not real? Should not science be based on what is purely real while leaving the unreal to hypothesis? Hypothesis is a clear process of science, yet the aim of science is to prove hypotheses as real, and thus in the advent of a pan-theory, only “real” constructs should be considered “in” that pan-theory. To set the path of this paper ahead, the following are common definitions (Merriam-Webster) for the essential points of this paper:

- **Science** [18]:
 - 1: the state of knowing : knowledge as distinguished from ignorance or misunderstanding
 - 2a: a department of systematized knowledge as an object of study; the science of theology
 - 2b: something (such as a sport or technique) that may be studied or learned like systematized knowledge; have it down to a science
 - 3a: knowledge or a system of knowledge covering general truths or the operation of general laws especially as obtained and tested through scientific method
 - 3b: such knowledge or such a system of knowledge concerned with the physical world and its phenomena : NATURAL SCIENCE

- **Principle** [19]:
 - 1a: a comprehensive and fundamental law, doctrine, or assumption
 - 1b(1): a rule or code of conduct
 - 1b(2): habitual devotion to right principles; a man of principle
 - 1c: the laws or facts of nature underlying the working of an artificial device

- **Scientific method** [20]:

principles and procedures for the systematic pursuit of knowledge involving the recognition and formulation of a problem, the collection of data through observation and experiment, and the formulation and testing of hypotheses

- **Knowledge** [21]:
 - 1a(1): the fact or condition of knowing something with familiarity gained through experience or association
 - 1a(2): acquaintance with or understanding of a science, art, or technique
 - 1b(1): the fact or condition of being aware of something
 - 1b(2): the range of one's information or understanding; answered to the best of my *knowledge*
 - c: the circumstance or condition of apprehending truth or fact through reasoning : COGNITION
 - d: the fact or condition of having information or of being learned; a person of unusual *knowledge*

- **Data** [22]:
 - 1: factual information (such as measurements or statistics) used as a basis for reasoning, discussion, or calculation

The key concepts here are **perception** and **facts**, leading to harvested **data** that is **real**. What is understated here though is how many ways **knowledge** can be presented as a **theory**.

- **Theory** [23]:

1: a plausible or scientifically acceptable general principle or body of principles offered to explain phenomena

What is understated here are the building blocks of theory associated to perception and data, namely the process of **reason**.

- **Reason** [24]:

1a: a statement offered in explanation or justification, gave *reasons* that were quite satisfactory

- **Logic** [25]:

1a(1): a science that deals with the principles and criteria of validity of inference and demonstration : the science of the formal principles of reasoning

Indeed, logic is the principle of reason, how those words of describing a concept are reached, ultimately underpinning the process of thought. Thought though can be purely hypothetical or it can be based on what is observed as fact in the here and now. In science, in being objective, what is relied on most is what is observed as fact, and thus what is perceived as real.

- **Perception** [26]:

1a: a result of perceiving : OBSERVATION

1b: a mental image : CONCEPT

What though is perception “perceiving” if not a **fact**, something real?

- **Fact** [27]:

1a: something that has actual existence; space exploration is now a *fact*

1b: an actual occurrence; prove the *fact* of damage

2: a piece of information presented as having objective reality; These are the hard *facts* of the case.

Key here is the concept of an “objective reality”, something that is “real”, as compared to what is subjective.

- **Objective** [28]:
 - 1a: expressing or dealing with facts or conditions as perceived without distortion by personal feelings, prejudices, or interpretations; *objective* art; an *objective* history of the war; an *objective* judgment
 - 1b: *of a test* : limited to choices of fixed alternatives and reducing subjective factors to a minimum; Each question on the *objective* test requires the selection of the correct answer from among several choices.

- **Subjective** [29]:
 - 1: of, relating to, or constituting a subject: such as
 - 1a: *obsolete* : of, relating to, or characteristic of one that is a subject especially in lack of freedom of action or in submissiveness
 - 1b: being or relating to a grammatical subject; *especially* : NOMINATIVE

In short, science in depending on observable data depends on what is observed as a fact, and thus the logic of reason employed by science ideally needs to recognise “how” one perceives, in observing **objective** facts. Scientific theory therefore needs to rely upon two key things in order to reach a logical and reasonable pan-theory, namely real observable data, and how one observes that real phenomena-based data. Yet, “*how*” one observes is an assumed trait in scientific congress, as it is considered as a unanimous construct of the human ability to be aware, that humans perceive reality in the same fundamental way/scope regarding space and time. Such though should not have scientific analysis refrain from understanding how that process of perception can be “related” to what it is that is being observed, and here the case in point is how perception relates with the idea of space and time on a fundamental level. One thing can be presented though as a fact regarding perception and the ideal scientific method, namely that “reason” must **abide by** the logic itself of perception.

Therefore, what is the logic of perception for reason to abide to? It can be two things in a most basic sense, namely real or unreal, awake or asleep, awake or dreaming. Thus naturally, pure hypothesis would be the realm of what is purely unreal. The quest for science there is to bring a purely hypothetical construct into reality, and that means proving it in the real, and not leaving it in a mythical hypothetical dimension. The logic of being awake quite simply is being awake, being real, and the logic of being asleep is being asleep, of being unreal. Science aims to be real, and in aiming to be real, seeks “real” aims, real ends, and thus is required to aim for a pan-theory that is based on “real” ingredients alone; here, **reason** would **abide by** the logic of what is “**real**”. Such is not pure hypothesis as pure logic in the absence of what is real, a randomly chosen beginning to a random end, as indeed any pan-theory of science must be devoid of anything that cannot be proven in any real objective sense. Therefore, a pan-theory of science (in terms of the complete ability of human perception) can only ever be “1/2” the story of human perception, the other half being subjectivism, pure hypothesis, that which cannot be proven. Such is not to say that the subjective reality is useless and has no point to the real, as clearly the balance of subjectivism and objectivism is what makes human perception “what it is” as a holistic construct.

It is for this reason that a purely mathematical model that aims to derive a “reality” is still essentially a hypothesis if it lacks the basis of objective data in a waking perceived “reality”, objective data as facts gained through human perception addressing and surveying what is “real”. Simply, “logic”, especially mathematical logic, cannot be a **be all and end all**, it must be applied to something of relevance. Gödel [30] demonstrated that the certain calculation of natural numbers via axioms of choice can never be complete nor the axioms be disputed, simply because the entire process there is of a hypothetical nature, namely hypothetical axioms of choice as tasks of calculation for natural numbers. The essence of Gödel's incompleteness theorem is that one cannot have both completeness and consistency upon such a hypothetical basis. Or, in scientific terms, using mathematics as an a-priori to define the laws of physics will fail to produce consistent symmetries and thus laws of physics. Indeed, Gödel, not merely just highlighting the limitations of pure mathematics, was also quoted as saying:

“The meaning of the world is the separation of wish and fact.”...Kurt Gödel.

Simply, the idea of a theory of reality can be subjective and thus completely hypothetical and fictitious, or objective and data driven. Each theory among the many theories of science have a merit all of their own, and usually that merit is based on the amount contained therein based on what is “real” and “objective”. What is considered here, as has been considered in all the lead-up papers [1]-[17], is a theory that is purely objective and data-driven. It is therefore not a “complete” theory of **everything**, as it discounts at least 50% of what we as humans spend most of our time doing, namely being asleep and dreaming. Yet in regard to science, completeness and consistency is sought in being objective and factual.

3. Objective and Factual Perception of Space and Time

The idea of where we came from, where life came from, and when, is not the issue here. Such a thing can never be categorically proven, and thus must be considered in the realm of what is speculative and thus subjective. The issue here as with an ideal pan-theory of science is not subjective, yet an objective account of what is real and accountable, factual and objective, not what exists as a memory/imagination or in a dream state, whatever the case may be. That determination must be made, and “is” being made here in this paper, to set a fundamental basis of real data, both in a spatial and temporal sense, and what those “ideals” for real data are. With such a fundamental basis installed for this paper, one feature needs to now be acknowledged regarding the process of “constructing” a pan-theory, namely the idea of “argument”. The theme of argument here though, upon the basis of an objective and real perceptive account of factual data, is to reduce “everything”, all the data, to its most fundamental processes, and here the fundamental processes being considered are the processes of space and time, and how perception is associated to those basic processes, however they may be in an objective real sense.

One observed fact in physics, a fundamentally and objectively observed fact, is that reality can be reduced to two paradigms, **space** and the **process of time**. Arbitrarily, space is given the added mathematical topographical condition of being 3-dimensions, and time as a type of 1-dimensional arrow from time-past to time-future, whereby space it can only be assumed exists in time-now. Those labels are there to allow the use of mathematics and geometry to survey the objective here and now reality in view of perception, to generate what is considered as “data”, real objective data. That real objective data is then amassed and organised in formulas which aim to link with other data regarding other phenomena in the objective factual reality in view. Understandably, the quest here is to link all the data with all the formulae upon a commonly defined space and time foundation (axiom). The feature here of any such pan-theory linking all the data with all the equations upon that commonly defined space and time basis is “consistency” and “completeness”, namely that the laws and associated phenomena are found throughout the observable reality being surveyed, and those laws do not change nor contradict each other, and that of course all the phenomena in that objective reality is accounted for. Such is what science calls “symmetry”, a universality of physical laws. The case presented here is that upon such the following should be the basic process undertaken in search for a pan-theory, in upholding the physical laws of symmetry:

- Defining reality with theory, reality as per what is perceived as an objective fact.
- Defining the theory, the structure of ideas exercised by perception in observation of reality, consistent with observed fact.
- Defining what perception is, perception as a way to account for reality, to be aware of and interact with reality.

For reality to be interpreted in the form of a theory therefore, it must, reality, represent a codex of theory, of formulation, relevant to our perception and presumably relevant to what is real:

- To define what reality is, is to rely on objective facts, pure data, substantial concepts, relevant to the here and now.
- To define perception is to accept perception as a basic feature of being aware of reality, of appreciating reality as a concept than can be understood in a theory formulated by perception in the here and now in upholding the laws of symmetry.

The aim therefore is to find the theory of reality by grappling with, most logically, what feature of “perception”, what “logic”, must be applied to reality to determine the best “theory” of reality in the here and now. Once again, to find the best “perception basis”, the best “logic” of perception, one must dive deeper than the notions of **true and false**, one must dive deeper than determining what is real and what is not real. Ultimately, one must accept what is real as a fundamental approach to a scientific theory of reality itself. One must be “objective” and rely on facts, while still acknowledging the process itself, the reference, of perception being utilised, in order to reach the required symmetries of laws of observable facts in the here and now. One must accept that symmetries, symmetries as the laws of observed data,

that consistency and completeness, would be universal, as a universal task of laws, one condition transposed to the next, in the here and now.

Yet the question remains, what sets the “timing” for the symmetries to play out in, what sets the “timing”, the flow, of the execution of symmetrical laws as fundamental operations and tasks in reality in the here and now? “*Where is the emphasis*” for the dynamic flow of time and how is that timed, whether the timing is stable or if it fluctuates, what determines such? Indeed, in the absence of a process of “timing”, all of what can be described as physical laws could happen in an instant, from zero task to the ultimate task, immediately, like an inertial-mass event connected immediately, like an entire virtual rigid structure going *kapoof* into and out of existence at random, or it can be spread out through time in a stable and consistent fashion, much like light is set at “c”. How does one know what sets that timing though? How is the “timing” a part of the cause-effect process of tasks prescribed, if there is one?

Indeed, how does such a thing as reality occur, how does it spread out through time if not for the temporal, real temporal paradigms, of past and future that our perception without question is capable of registering, such as in the form of memories (time-past) and premonitions (time-future)? There is a simple and complete way of solving this puzzle, and it accepts the fact that if space is confined to the here and now, that space exists primarily and solely in the “now” dimension of time, and that perception registers time beyond the here and now in the form of for example memories (time-past) and premonitions (time-future), then perception is primarily a process of time, and thus perception and time must represent a common modelling-structure, as presented in paper 10, The Conception of Time [10]. The following becomes clear using this line of thought:

- Space is a concept in the here and now.
- Time also exists in the here and now, yet owing to the nature of our perception must also exist in the past and future.
- If everything must exist in the here and now as a “symmetry”, yet time is beyond the here and now extending from time-past to time-future via time-now, then time-past and time-future must be “asymmetrical” constructs.

Thus physical laws would exist as symmetries in the here and now relevant to space and time-now, yet outside the here and now would exist asymmetries, asymmetries populated by the notions of time-past (time-before) and time-future (time-after), populated by memories/dreams/imaginings, the “unproven”, yet still very essential, as indeed the memory (time-before) and forewarning (time-after) components of perception can be nonetheless annexed to **trust** in the distinction between what is real and what is not real. **Time** in the here and now as a component of perception nonetheless must represent the capability of formulating theory relevant to the here and now, and thus in the here and now is ideally tagged **mathematically** as “1”, consistent, whole, and complete.

In short, the concept of time must be the feature of perception, and thus an algorithm for time must exist central to time-now as a symmetrical complete and consistent construct, mathematically as “1”, which is how paper 1 [1] proposed the algorithm for time based on the temporal notions of human perception capability ([1]: p3-7). Following that proposal for the algorithm of calculating the flow of time using a model

of perception, papers 1-17 [1]-[17] brought to attention all the essential equations and constants of physical reality upon that new basis of time and space (and perception) definition, “pan” enough to be considered a *real* “pan-theory”.

4. Conclusion

A memory, as what is conjectured to have existed, is a subjective thing in comparison to the reality of what exists now, as any lawyer would know. Scientific theories therefore that depend on models of a “great beginning”, of a potential “creation period”, should ideally be left with the subjective process of human perception, of pure hypothesis, awaiting deliverance by the facts of what exists in the here and now. Indeed, if a model of science that is forged through real factual objective data in the here and now points unequivocally to a historical event that can only exist as a fact by such an association and dependence on here and now data, then let such be so. Yet to base scientific theory on a presumed notion of an initial historical big bang event and associated creation period that cannot be proven, a scientific theory that also leads to absurd physical constructs such as DE and DM (and aether), then such should be out of the question.

So too should the idea of any perceived object in physical reality, one or any, that has yet to be objectively explored and proven in the context of the required objective scientific discovery of fact, and not be labelled with an assumed local “real” trait, and here the case in point is the idea of the stars being solar systems. Physics and cosmology “data” is not in dispute, merely the story behind that data, as presented in paper 17 [17]; what is most open to abuse with story-telling, with the unreal and unverifiable, is that which still remains beyond the reach of actual human discovery, namely cosmology. Simply, if a big bang and associated creation of solar systems can be proven, then let such be so based on the analysis of here and now objective data, and not be used in trust alone as an a-priori itself standardising the process of scientific investigation by assuming the existence of concepts such as DE and DM that have no evidence of existence in our local reality ([17]: p6-8).

In light, therefore, of the fundamental basis of definition for time, space, and perception as presented in this paper and preceding papers, it becomes evident that the failure of Einsteinian relativity theory is its incorrect use of the concept of time, by using the concept of time and perception **completely** in a “now” reference while trying to fix those errors of perceptive and temporal relativity with what can only be asymmetries as per the suggestion that spacetime when “warped” would be a process of gravity (and thus mass) as the concept of symmetry-breaking, an absurd derivation given that mass and thus gravity must be concordant with the entire set of laws/symmetries in play, as being a “fact” of objective reality. Clearly, if the hypothetical big bang and associated assumption of the stars as solar systems (being the magnitude and processes of solar systems they are hypothesised to be) bear unreal fruit, namely DE and DM, then the perception of the stars and those associated scales of mass, size, and distance can only be brought into question, together with the underlying fundamental theoretical tool used to derive such unreal constructs (DE and DM), namely Einsteinian relativity. Quite simply, collating

a patchwork of theories using the basis of the big bang and Einsteinian relativity is more likely than not a process of scientific fallacy, failing to deliver to any great discovery in our local reality.

Conflicts of Interest

The author declares no conflicts of interest; this has been an entirely self-funded independent project.

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