The Castle and elephants; Indescribable, undecidable, un-computable, and unpredictable

Castles can be fortresses, built to endure, but a sand castle is ephemeral. A castle in the air, however beautifully constructed, is vulnerable, lacking solid foundations.
The elephants have been added, (ironically), to 'lighten' this essay.
How do you know an elephant has been in your fridge?
Huge footprints in the butter.
In-congruent, yet, in a universe in which an elephant can fit into a kitchen fridge, its footprints may fit onto a slab of butter, and relative to a mouse's be huge. And it may have left its pink pajamas monogrammed E under your pillow.
Incongruity and ambiguity are important characteristics of the elephant joke realm. You can tell there is an elephant in your luggage by the trunk with big ears.
We can imagine, but do not live in the world of elephant jokes. I will try to explain the realities we inhabit, and experience, that can account for the physics occurring, without paradox. Including some of what we can know and some of what we cannot know, describe, decide, predict or compute.

Beables/ existing things: In the context of this paper, a beable is an element of Object reality (the really real); An existing thing that does not require observation or measurement for its being.
Object (Beable) universe: All that is existing. In one configuration. The configuration is ever changing.
Foundational time and passage of foundational time: Each new configuration of existence is a different Unitemporal-Now (-Now), or foundational time. The Object, (Beable) universe, and all material objects within, including living things, have an existence always *only at one time*, -Now; not spread across multiple foundational times. Change of the entire beable configuration is passage of foundational time.
The Past: With passage of foundational time, no beables remain 'behind' to become *the past.* All of existence is recycled into the new -Now. Material relics, records and memories of 'the past' all materially exist in-Now. Unlike Newtonian time, only -Now exists; time does not extend from eternity to eternity.
Observation products: Material observation devices and sensing organism receive 'sensory' inputs from the uni-temporal, beable reality, external to themselves. The inputs are processed. Observation products ('Image realities') are generated. Different observation products are generated by different observers, depending on the unique inputs received, depending upon their locations and states of motion relative to the signals in the local environment.
The Present: The observation products being experienced (or for a device, produced and possibly output) are that observer's Present, *now.* Those are not the external reality, but semblances generated from amalgamation of information obtained from the sensory input. (Primarily for humans, input electromagnetic radiation (EMR) and pressure waves. Though sensory input can pertain to any kind of stimulus arriving at a 'reality interface' able to process it into a product, different in kind to the input.

Einstein's presumption: In order to account for non-simultaneity of experienced events, past, present and future must all exist within a space-time continuum.
Reply: Only electromagnetic radiation signals, and other potential sensory inputs, need persist in a uni-temporal, (same time everywhere), ever changing configuration of existence. There needs to be differentiation between what exists independently of observation and what are products of the observation process. Potential sensory inputs in the environment, pertaining to different temporal origins, (configurations of existence) allow non-simultaneity of observed events. As what inputs are received when, depends upon observer locations and states of relative motion. Each observer's present is its own unique product; Generated using information obtained from the inputs received by that particular observer.
Agency and the 'open' future: In a uni-temporal universe, where there is no material future, (or past), i.e. the future is 'open'. There can be true agency, or making things happen. Organisms are able to play a part in the happening of the sequence of Unitemporal -Nows. The 'open', non-existing future, is called 'the Unwritten future'. That is different from potential sensory inputs in the environment, pertaining to material events that have occurred at earlier Unitemporal -Nows. That is also different from material happenings, changes to the -Now configuration of existence, 'set in motion' at earlier Unitemporal -Nows. The 'unfolding' of what has been 'set in motion' may be regarded as natural, *uncertain* Fate.
The [potential] 'Pre-written future': The existence of potential sensory inputs that may (or not) be received by observers can be called the [potential] 'Pre-written future'. The space time continuum idea (in contrast) is that observers passively encounter times that already are and that persist. Theoretically allowing time travel and preventing true agency.
What are observers? An observer is an organism, observer device or sensitive material that receives EMR or other 'sensory' input, leading to generation of a product. Objects that are not observers do not generate an observation product, though they can absorb input and remit some or all of it. An observation product is generated by processing the input. It has semblance to the external Beable, source, Object reality. The ways in which it differs allows it to be identified as product not source; 'Image reality', rather than observer independent Object (Beable) reality.

Indescribable

The configuration of the entirety of Object (Beable) universe existing-Now is unknowable and therefore all that is existing, its extent, and configuration is *indescribable.*
A truly objective Object reality is without any applied perspective. However, it is usual to consider material reality as having 3 space dimensions. Perpendicular and of the same kind. That gives mapping of Euclidean space. The 'block universe' has another dimension perpendicular to the others, giving traditional, four dimensional space-time.

Describing from observation. A different mapping.

Observation product spatial dimensions: Seen observation products, or those generated by a camera have a different arrangement of dimensions. There are 3 spatial dimensions; but not all of the same kind. The virtual perspective space dimension goes directly away from the observer as it looks 'into the

distance'. The height/vertical and length/horizontal dimensions are proportion spatial dimensions. Meaning an element of Image realities position on the perspective dimension will be proportional to the seen height and length. (If tilted away from the horizontal or vertical orientation, or if there is extent of the source object straight away from the observer, there will be corresponding size alteration along the perspective dimension.) The observation product's spatial dimensions do not form Euclidean space.

Virtal perspective dimension:

Professor Peter Corke, Professor of Robotic Vision at QUT, explains on the QUT Robot Academy web site [*], that when there is perspective projection from the 3D [outside] world to a 2D image, one dimension is in his words, lost. Looking at the Human 3D perception page, a number of ways in which that 'lost' dimension is 're-imagined' are listed. "Occlusion, height in visual field, relative size, texture density, aerial perspective, binocular disparity, accommodation, convergence and motion perspective. Each of these is explained on the afore mentioned site. *In these ways a virtual-spatial perspective dimension is perceived.* Virtual in the sense of a virtual image that seems to be in space where the brain thinks it should be from the input received. Vertical and horizontal dimensions are actual spatial dimensions of the image. As the 3rd 'spatial' dimension of the image is virtual the imagined apparent 3D space shown by the image is perpectival virtual space-time. That is the seen present and that differs between different observer perspectives.

Observation product time dimension: As transmission time affects when signals are received and processed together into a present Image or experience, Image reality observation products have a *virtual* time dimension. Rather than being perpendicular the transmission time dimension overlaps the perspective spatial dimension. Giving space-time but not as it has been known.

Signal transmission delay: Given that, the uni-temporal configuration of all that is in existence, the beaeble 'Object' universe, *cannot be known from observation.* The longer the signal has taken to get to the observer (the more change to the configuration of existence has happened) the more 'out of date' the space-time Image reality. Compared to what *is* at Uni-temporal Now, on the premise that change is continual. Astronomic Images are produced from received EMR, emitted from material objects as they were in earlier -Nows. Not from material objects as they exist -Now.

Perspectival virtual space-time:

The seen present is not an image of a singular uni-temporal time. There is an (I suppose it should also be called virtual) time dimension, in the same virtual orientation as the virtual perspective dimension. *Related to transmission time of the signal from which the image is formed. The products are not 3D Cartesian, nor such Euclidean space with 4th perpendicular time dimension, nor Minkowski space-time. That circles in the external material reality can be seen as ovals and parallel lines be seen as converging, and foreshortening of seen 'objects' seem important when thinking about what different observers of the same events will see.*

Foundational passage of time and the updating of the seen visual field (Present) image: This is not done all over at once. So, there will be further disparity between the arrangement of the content of external space and the perceived. What the individual's attention is focused on (affecting updating rate) is particular to that individual and the circumstances being observed. If a device, the updating may be all at once, or follow a particular spatial sequence, varying in rate for different devices.

Asteroid threat: The further away, the more ‘out of date’ the distance from Earth information. Obtained from EMR signals, emitted by the distant object. Like T Rex seen in the rear-view mirror (Jurassic Park, 1993 [+]). The warning: Objects in mirror are closer than they appear. The asteroid Object reality is closer than the telescope Image reality, product of observation, shows. As the asteroid approaches the position of the seen likeness gets closer and closer to the position of the beable asteroid. The signal transmission delay is decreasing, which gives apparent acceleration of the detected manifestation of the asteroid.
The decrease in transmission delay is not acceleration of the beable asteroid, as it exists independently of observation.
Fermi paradox: We cannot see Uni-temporal Now, as we are always generating the seen present from input arriving -Now, (after however long it has taken to arrive). This may be relevant to the Fermi (where are all the space aliens?) paradox.
***The speed* of time:** As each different configuration of all that exists is a different foundational time, it makes no sense to talk of the speed of time in relation to that beable reality. As change of configuration is not a singular distance over clock time. Change of observed present is to do with multiple signal receipts processed together but of different temporal (uni-temporal configuration) origin. That also does not have a singular distance over clock time. What is perceived when can also be affected by the processing of inputs. David Eagleman has done research on time flexibility, such as, of occurrence, duration and synchronicity of perceptions. [1]

Undecidable , unpredictable and un-computable

The problem of trying to describe *Objective* reality.

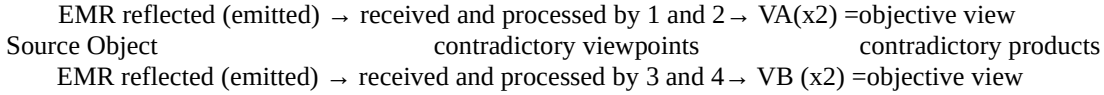
The reputation of science rests largely on the notion that it is objective. Not the product of individual bias or imagination or error. However, ‘objective’ is used in different ways. Some things, such as physical constants and units of measurement, are deemed objective by convention. Not requiring corroboration. Corroboration of view can be used for ‘reality’ checking. Providing evidence for a reality outside of the mind of the individual. But corroborated subjective viewpoint is not truly objective.
"The close examinations of scientific practice that philosophers of science have undertaken in the past fifty years have shown, however, that several conceptions of the ideal of objectivity are either questionable or unattainable. The prospects for a science providing a non-perspectival “view from nowhere” or for proceeding in a way uninformed by human goals and values are fairly slim, for example." [2]
What is the world independent of us? The sum of all possible views does not suffice. That still relies upon the imposition of subjective viewpoints. More accurate description is a completely non-perspectival condition. The state of a measurable is always tied to how it is measured or viewed. i.e. seen this way...or if this is done...|NO single perspective ->no single state. Without there being a singular state, **the** *state is undecidable, unpredictable and un-computable.*
Beables: John Bell's use of the word ‘beable’ differentiates those things that are subject to observation or measurement, as opposed to those things that are as they are such as the arrangement of the apparatus, its calibration and settings. One premise of this work is that, all existing things, (elements of

Object, (Beable) reality), are in their 'wild' condition beables, that are as they are, without applied context and perspective. By definition undecidable, unpredictable and un-computable.
Measurement: In order to conduct a measurement, what will be measured and how it will be done must be decided. Having established those constraints there is now an observable (something that can be measured) on which the measurement relationship can be established -resulting in a measurement state or value for the particular aspect of the observable, the measurable, selected for investigation. The measured state or value comes into being upon measurement. Its singular magnitude does not pertain to the beable object alone, unobserved. In this way there is differentiation between "wild" beables (that are as they are, unobserved), mentally constrained observable, measurable (particular aspects of the observable that can be measured), and measurements or observations (outcomes of the measurement process). Think of the observable as a collection of measurables, which may or may not be selected for measurement- rather than a "wild" entity. "Wild "meaning both unconstrained and of many possible values/states, like a wild card or Scrabble blank.

Objectivity: The generalization that, macroscopic reality is objective, therefore observers should agree has dubious validity**.** If observer perspectives are similar enough, they will generate similar observation products from similar EMR input. However, views can be dissimilar and give non-corroborating, contradictory opinions.
Consider two scenarios. A spinning globe and a six-sided box. For each object there are four observers; two on each side observing the object between them. The observers one side are called 1 and 2. The other side are 3 and 4. The view of the object generated by 1 and 2 will be called VA and that generated by 3 and 4, VB.

2 observers at each pole of the globe.
Seen orientation of spinning VA =/=VB. Opposite views constructed from mutually exclusive data sets. Globe (observation product) is seen to be spinning clockwise by one pair of observers. It is seen to be spinning anticlockwise by the other pair of observers. Knowing the orientation of spin seen, a prediction can be made that if observed from the opposite pole the opposite rotation will be observed. Source object spin cannot be given without a 'seen this way' point of view being imposed. Object's spin unseen=/=VA or VB or VA plus VB. There is no view of the globe without an observer. Rather than being in a superposition of the two outcomes VA and VB it has co-state potential meaning it could be viewed either way.

2 observers on each side of the box, so that they can see 3 sides.
Seen orientation of box VA =/=VB. Opposite views constructed from mutually exclusive data sets. If VA shows sides abc VB shows sides def.
No sensory input originating from the obscured sides of the box is obtained so it forms no part of that observer's Image reality. Information about VA such as colour and patterns does not allow the VB colour or pattern to be certainly known. As the views are mutually exclusive and do not contain any information obtained from the obscured sides of the box relative to those observer's.



Material objects do not have absolute orientation of themselves. Orientation has to be relative to an observer viewpoint, or reference object/s. To fully describe the orientation more than one view may be needed. If one face of a die is seen, that only fixes one of the degrees of freedom. View of another face orthogonal not opposite is needed. The condition of the source material object requires that the two observers must *disagree* on the value of the face observed.
The outcome orientation of a coin toss depends not just on the coin but the method of "calling the toss". If the method is not specified at commencement of the toss even knowing all the motion of the coin, mass, velocity etc. the unique outcome cannot be decided, predicted or computed.

While on the topic of observation:

1. Mach's principle. Can be written in a number of ways. One version is: "Local inertial frames are affected by the cosmic motion and distribution of matter". S. Hawking & G. Ellis (1973). [3]

"You are standing in a field looking at the stars. Your arms are resting freely at your side, and you see that the distant stars are not moving. Now start spinning. The stars are whirling around you and your arms are pulled away from your body. Why should your arms be pulled away when the stars are whirling? Why should they be dangling freely when the stars don't move?"
S. Weinberg (1972). [4]

Reply: In support of local realism. There is not spooky action from the distant stars on the spinning observer. First, what is a reference frame? The reference frame of an observer contains what the observer sees as present. Using Special Relativity as the explanatory framework, the seen content of the reference frame is the observer's unique present slice of the space-time continuum. Using the explanatory framework, set out in this paper, what is seen by the observer is the 'Image reality' observation product generated from EMR received from the *local* environment. What EMR is received when is affected by the motion of the observer. As the person spins their arms raise up and outward from the body, as the arms try to move in a straight path but are unable because of their attachment to the body. That is the centrifugal fictitious force; Co-occurring with the observer generating the observation product from local receipt of EMR, affected by the spinning motion. A stationary view of the stars is generated from the local receipt of EMR when the observer is not spinning; Co-occurring with no centrifugal force, resulting in vertical hanging arms.

2. False assumption: both momentum and position can be known for a macroscopic object.
A fixed position precludes momentum which has a velocity term. Mass times zero is zero. True, a measurement can be made without significantly affecting the object, allowing another measurement to be made. But if it has momentum according to the observer, it cannot according to the same observer simultaneously have a fixed position. Those two attributes are mutually exclusive.

Back to, **undecidable. unpredictable and un-computable**

State latency and State transit uncertainty:

Dubious validity: Spin states as observation independent properties.

Before making a quantum measurement, what aspect of being is to be measured, a *context* is decided. *Restricting what is being considered.* Then the method by which it is to be measured, is decided, restricting the possible outcomes. Getting a singular outcome is method-perspective application.

Between choosing a context and applying a method-perspective there is possibility of different outcomes. Those possibilities will be called 'state potentials' and the condition of not having a singular state, (due to lack of application of the method-perspective) will be called 'State latency'. QM represents this intermediate condition as superposition of outcome states. Only after a 'measured this way' method- perspective has been applied can there be a singular state outcome. Bell's inequalities apply to fixed states, such as men with brown hair and men who need to wear glasses. They do not apply to states that come into being upon exposure of the constrained observable to the apparatus / method environment. States that can change upon retest with a different orientation of measurement. Violation of Bell's inequalities is showing that the outcomes are not inherent properties, to which the inequalities apply. Rather they are perspectival results of the measurement process.

Beables, measurement and quantum physics: When measurement context and perspective is chosen, but not yet been applied, the context-ed, chosen measurable is source of both/ all possible outcomes potential outcomes. (Compare this with the term 'superposition'.) An outcome made known by visual or auditory means is not a beable but an element of 'Image reality', an observation product; A switch. (Compare this with the term 'decoherence'). Different possible measured outcomes pertain to one selected measurable of a source beable. On application of the measurement perspective only one outcome is actualized. The perspective not chosen does not apply to another measurement in an alternative universe, it just is not actualized as a measurement.

Schrödinger's cat and state transit uncertainty: The Schrödinger's cat thought experiment is a different kind of scenario from those in which there is not a singular outcome state because of lack of method-perspective being applied. Un-decayed and decayed atom, intact poison flask and shards, alive and dead cat are pairs of states of being that cannot temporally co-exist in a uni-temporal universe. They are sequential states belonging to different configurations of the entirety existing. The supposed superposition of states (in the experiment) is not state latency with co state potentials or merged state potentials. Instead they are quasi superpositions (not an Object reality) due to lack of knowledge of the condition of the entities prior to an Image reality being formed.

This could be called state transit uncertainty. While there is state transit uncertainty, the state, to which transition pertains is undecidable, unpredictable and un-computable. As random as the radioactive decay.

Quantum teleportation: Measurement of the state of one particle of a pair produced as opposites (or same) does not alter the state of the unmeasured partner. It has no outcome state until the measurement method is applied. It is not in a superposition of outcomes but has state latency. What has changed is knowledge about the particular state the partner would show IF the same measurement is carried out.

Predicting what the state will be found to be *if* the method-perspective is applied, is not the same as the outcome state being instantly actualized. Knowledge in a person's mind is not the same as the interaction of a particle or object with beable apparatus or method applied by a beable agent.

More on the un-computable:

Silly questions:

As a young child, I asked my father, who was working with a trowel, "what are you digging for?" He replied "elephants" I said that I knew it wasn't elephants but was told "Ask a silly question, get a silly answer." I had to ask, to avoid ambiguity, "*Why* are you digging?" (precision matters), to which the answer was; "I am weeding". Followed by enough questions to prompt "Ask your mother!"

I'm from a generation that grew up knowing nothing of the 'blue screen of death'. Or that a computer could be defeated by a single syntax error, a misplaced semi colon perhaps. Though we confidently knew, from popular culture, a killer robot given a question that will not compute will malfunction and its head explode!

What is the sound of one hand clapping? (Hakuin Ekaku [4]). Fizz, crackle, BANG!

What is the colour of a vacuum? "Does not"..err..BANG!

Nowadays, underwhelmingly, the AI Sophia calmly deflects the unanswerable, with "That is not a part of my programming". And Watson has won on the game show Jeopardy.

Douglas Adam's Deep Thought computer was asked "What is the answer to the ultimate question, of life, the universe and everything?" '42' is the famous reply. [4*]. Ask a silly question,… Although if Life, the universe and everything is taken to be a problem, a pragmatist might have answered, in far less time, 'a stiff drink, warm shower and early bedtime.'

Another kind of un-computability comes in the form of complexity:

Cellular automata: It has been found by Stephen wolfram that some cellular automata produce highly complex products, from simple re-iterative processes. [5]. It is not possible from the final product to calculate how it was made. Each step in the process must be followed to re-create it.

The configuration of all existence must be highly complex judging from what we know of local space and all scales. Though it may have developed by simple processes, like the cellular automata mentioned, it is unlikely that the all the necessary steps could be calculated, to represent the complexity of the entire configuration of existence.

More on the unpredictable

Highly complex systems and chaotic systems:

Some such systems: Climate, weather, global economics, people. Small changes input can lead unpredictably to large responses.

We are reminded that past performance of investments do not guarantee future performance.

Mild mannered people can snap.

What do you get if you cross an elephant with a kangaroo?

Big holes all over Australia

What do you get if you cross expression of will with unpredictability?

Un-computable, lampshade, hedgehog

Despite the best climate models, temperature rise is exceeding prediction. Feedback loops are accelerating global warming. Particularly methane and wildfires. Carbon dioxide in the atmosphere is at a level last on Earth 15 million years ago.
Peter Ditlevsen, a climate researcher at the Niels Bohr Institute explains two models of rapid climate change. One, seesaw like, can flip from one state to the other, if sufficient ‘weight’ is placed on one side. Such as CO_2 level. A ball ‘stuck’ in a trench is the other model. The ball pushed about by chaos-dynamic fluctuations off various kinds. Examples are violent storms, heatwaves, heavy rainfall.

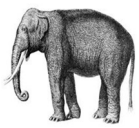
“Peter Ditlevsen's research shows it was the chaos-dynamical fluctuations that, during the ice age, triggered the dramatic climate changes. [6]. “This could mean that... major climate changes theoretically could happen within a few decades," Peter Ditlevsen [7].

“We will only be able to keep global warming to well below 2°C above pre-industrial levels if we effect unprecedented transitions in all aspects of society, including energy, land and ecosystems, urban and infrastructure as well as industry.” said Debra Roberts, Co-Chair of IPCC Working Group II.”[8]

Planting trees is not going to be the ubiquitous solution. Pleistocene Park is a project in Siberia, restoring the grassland ecosystem to prevent catastrophic greenhouse gas emission from permafrost melting. Including removal of dark 'lifeless' forest for more reflective grassland. Including the restoration of mammoths ("fat, hairy elephants would do") to the ecosystem. Benefits: Permafrost preservation, carbon sequestration, albedo effect, methane emission reduction.

Global warming is not the only threat. Ocean currents could flip to new patterns affecting heat distribution and causing rapid cooling of land masses. Volcanic eruptions are only somewhat predictable as the recent Whakaari /White Island eruption in New Zealand showed. Large asteroid impacts and even nuclear weapons used could also lead to darkening of skies, cooling of climate and crop failures. Rapid climate change is producing more extreme and less predictable weather.

The Covid 19 global pandemic is a wake-up call. That at some time there would be a global pandemic was inevitable. When exactly, was not predictable. As people stay in lock-down, many working from home, to prevent spread of the virus, greenhouse gas emissions have decreased. Air and water pollution have decreased. It shows how vulnerable we are as a species *and* how vulnerable nature is to our pre-Covid 19 lifestyles. Our greatest challenges may be protecting our planetary life support, while adapting to *more unpredictability*, with resilience, resourcefulness and flexibility.



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Georgina Woodward April 2020

End Notes

"An **elephant joke** is a joke, almost always an absurd riddle or conundrum and often a sequence of such, that involves an elephant. Elephant jokes were a fad in the 1960s, with many people constructing large numbers of them according to a set formula. Sometimes they involve parodies or puns."

Example: How can you know there are elephants in your swimming pool? By the swimming trunks.

"Elephant jokes rely upon absurdity and incongruity for their humor, and a contrast with the normal presumptions of knowledge about elephants…..key to the construction of an elephant joke is that the joke answers are somewhat appropriate if one merely overlooks the obvious absurdities inherent to the questions."

Wikipedia, elephant jokes, https://en.wikipedia.org/wiki/Elephant_joke 14/04/2020

Terminology

Visible universe and Observable universe pertain to products of observation and potential for obtaining such products respectively.

The space-time continuum and Block time have a time dimension, so the structure subsumes past present and future.

Beable: an element of Object reality (the really real); An existing thing that does not require observation or measurement for its being.

Object (Beable) universe is the singular configuration of all that is existing. The Object universe does not have a time dimension but is uni-temporal; the same and only foundational time everywhere.

Uni-temporal pertains to always being at a singular foundational time, though that time changes. Which is foundational passage of time, change of the singular configuration of all existing-Now.

Unitemporal -Now is the temporal expression for the existing beable configuration of all existence.

Kinds of future: *Unwrittten/ open*, (not actual) *future*, pertaining to Object reality. *Natural uncertain Fate*, pertaining to the change in configuration of existence and the material happening of events 'set in motion'. *Pre-written [potential] future*, pertaining to potential sensory information in the environment that may be received and formed into Present observation products.

Object (beable) reality pertains to content of the Object (Beable) universe; the material environment, transmission media and the potential sensory information therein.

Potential sensory information is potential stimuli or input in the external beable environment, that could be processed into an observation product or part of such a product.

Image reality pertains to the products generated by an observer using input stimuli or signals.

Reality interface is where input from the environment is converted to product of a different kind to the input. For a human being the reality interface is the peripheral nervous system, including the sense organs and those parts of the central nervous system that process sensory input. That processing includes forming perception, which requires associations, from (possibly diffuse) memory storage.

"John Stewart Bell (28 June 1928 – 1 October 1990) was a physicist from Northern Ireland and the originator of Bell's theorem",[among other works] https://en.wikipedia.org/wiki/John_Stewart_Bell