

THERE IS ONLY ONE WAY TO CORRECTNESS IN EXPLANATION: THE WAY SHOWN BY POPPER

Abstract: If there is a universal method of correct explanation (reasoning), it will naturally be the method of reasoning on all subjects, and it will be applicable in all situations and all circumstances. Popper's theory-- method of falsification-- is the universal method of explanation and reasoning, there is no other way to explain correctly; it applies in all situations—practical or theoretical-- and is valid for all subjects—scientific explanations; it is the method of demarcation between science and metaphysics.

As the rational human beings, we all reason out, draw inferences and form explanations. The inferences and the explanations a person makes is based on the knowledge the person drawing the inference has on the matter under his consideration. If he does not know enough about the issue being consideration he goes and asks a person who has knowledge of the subject (on which decision is needed). A person's explanation emerges out of the knowledge a person has about the subject being reasoned—*my knowledge and my reasoning has an inseparable connection*. Wrong, incorrect or lack of knowledge is the cause of incorrect reasoning and incorrect inferences. Knowledge thus is an integral part of the process of reasoning; we in this paper argue the man has only one universal method of correct knowledge as such of the correctness of one's explanation: long forgotten, Sir Karl Popper's theory of knowledge, his criterion of demarcation between science and metaphysics (and between right and wrong explanation as well as the reasoning behind any explanation).

Keywords: freedom, free will versus determinism, teleological causality, Popper's theory of knowledge, trial and error learning process, learning from mistakes made, the universe as a flow of quantum gravity energy, velocity's relation to length, mass and time, falsifiability is the only valid test of science.

The one Crucial Aspect of Rationality: Popper's Theory of Knowledge

Imagine yourself to be the first person on the earth, you wonder about the earth, the sky, the stars, and your presence here; the only way you have to know about what is all this (and what is your place in it), is to speculate on it: form a conjecture, postulate or a theory (a belief) about it. Thereafter you make an observation and if the observation goes contrary to you belief, the logical deduction is that your belief (your logical reasoning) is wrong; you have learnt from the mistake made, you have gained knowledge. After this, you make a new conjecture, and when that too is falsified you reject it, you have further progressed on the knowledge path. If on the other hand, if you inference is correct, it reinforces your belief, it strengthens the available knowledge you had. Thus, every reasoning and decision and the knowledge of its outcome are an integral part of the processes of improving knowledge and the way we obtained is by successive steps at falsification. There are three aspects to the theory of reasoning: a) its relation to knowledge and b) and the process of improvement of knowledge (and the process of the improvement of the ability to reason)

is that of trial and error progress of knowledge; the process given to us by Sir Karl Popper and c) there is only one way know about the correctness of the results of the trial and error, once again it is Popper's demarcation criterion that gives guidance. The above three aspects apply to all situations and all kind subjects: theoretical, practical, scientific or metaphysical, whatever. These three issues are the foundations of reasoning and crucial assertion lies in the last part of it all; *there is no other way to correct explanation and correct reasoning.*

Theoretical Reasoning

Much of what reasoning in science is theoretical, and as we have tried to prove there is only one method to reason. Theoretical reasoning gives us knowledge, improves upon our knowledge. As argued above if our inference from our line of argument is wrong, we have learnt from mistakes made, if right, it reinforces our belief (on the subject on which decision was arrived at. There is only one way to reason, there is only one way to the progress of knowledge and there is only one way to know if our inference being right or wrong (there being no concept of good or bad in scientific discourse)!

Practical Reasoning

Viewed in the way we have reasoned on reasoning there is no difference in the method of reasoning: it validly applies to both practical or theoretical reasoning—the goals may be different, in theoretical reasoning the goal is the search of truth, in practical reasoning it will be the goal (expectation of some self-interest or some altruistic outcome, generally self-interest within the parameters of the limits law or social norms that apply) of the person reasoning and making decision. There is a common method, a common and binding process applicable to all situations. The man has no other way to reason--whether the circumstances be practice or theoretical-- there is one causality, one process to going about reasoning. No different (or same) genus, no different species. No distinction whatsoever. Distinctions are not a part of the process of the reasoning (or explanations and reaching inferences), distinctions may lie in the goals to be achieved or in the criterion of the judgement of the results of the decision (here good or bad may be a valid description). We may say it is the 'effect' of the reasoning where the difference lies, the process of reasoning is no different from the theoretical process. On the role of others—whom we consult before reaching a decision—since the effect of the decision is on us and us alone, it is immaterial if we have ourselves reasoned out or sought the help of the others. To argue the point, we are stressing—the knowledge and explanation relation-- we say that at every given moment we have a certain level of knowledge, on the basis of which we reason out (explain) and draw inferences (and act). This is the known knowledge in the hand of an individual and individual acts accordingly. If the result is good his knowledge is reinforced, if wrong not good, he has advanced in his knowledge: he has learnt from his mistake! Thus, in our view there are no defective manifestations of our rationality, there is a *defective manifestation of our knowledge* (inadequate knowledge). And to it we add that there is only one process to the advancement of knowledge

which is the trial and error learning process, learning from mistakes made. In this context, what is irrationality, incorrect knowledge; irrationality and lack of knowledge (or wrong knowledge) go hand in hand, and the two are one and the same thing! And we find no distinction between explanations that are theoretical or practical, we will not dwell on it anymore, and attend to the crucial aspect of why have scientists (specifically physicists) adopted wrong methods of reasoning—other than that argued by us above—have arisen; why have they misled themselves as well as others? Why has falsifiability been abandoned?

We trust that complication on the method of explaining or reasoning (and the more significant part of our irrationality in reasoning) has arisen in the way physicists have argued and misled everybody for the last over hundred years! It is they who have done the greatest harm to the above absolute theory of explanation! And all of it because they never could leave determinism and even look beyond it: in the direction of free will! We must show how freedom and free will make the needed correction on their wrong beliefs and how it compels us to return to the correct method of reasoning. Tribute of falsifiability! Tribute to Sir Karl Popper!

Reasoning and the Blunder Physicists Have Committed

Most of what our scientists call knowledge is either of the falsified or not-falsifiable variety; thus it is the misunderstanding on reasoning that has entered by irrational reason that physicists have built around their subject; it is their arguments that are flawed, not the science of reasoning. It is they who have abandoned clear reasoning for the sake of flawed science they have wrongly built. Much of our physics, chemistry and biology have moved away from this principle (supposed to be the replacement of common sense knowledge by superior scientifically informed accounts) are in fact naïve accounts of physical, chemical, and biological phenomena. So when it is claimed that scientific knowledge has moved beyond falsifiability it is because scientists have moved away from correct logic (and common sense) because they have not found the correct way to advance their subject. *It is wrong to debunk the falsifiability principle and embrace theories that are either of falsifiable variety or not falsifiable!* The arrogance of scientists has kept the crucial founding principle away, falsifiability is under attack because it is too hard a path to follow. As is clear by now, I emphatically go by falsifiability and stress that it is the scientists who have gone off track; they are the ones who are flawed! This paper debunks the idea that makes falsifiability flawed, blaming falsifiability is premature, correcting the relativistic and non-realism based physics that needs correction. To prove my point I will discuss the errors built-in in a) the theories of creation of the universe, b) theories of relativity and c) quantum mechanism.

Briefly, we can say that it is physics which suffers from two serious maladies. The problem has arisen because science never chooses to look beyond determinism, and within determinism there is no solution to the two issues: relativism and non-realism. Once the fundamental correction is made both the disorders correct rather easily, and the subject gets rid of its complicated and wrong mathematical arguments, which has made the scientists say that subject is beyond ordinary logic.

We discuss one by one three wrong aspects of physics at the *foundation level*: the chance creation of the universe (with and admitted zero chance), the relativistic nature of the universe, and the non-realism based foundation of its quantum mechanics foundation (with no connection to classical physics or even to its theories of relativity).

Error in the Theory of the Creation of the Universe*

We believe that universe—space and time—are matters own creation. The method has been the method of trial and error. It is an absolute law of quantum gravity which has the right value combination of the fundamental constants of nature i.e. velocity of its flow (same as the absolute velocity of light c), the gravitational constant G , and Planck's constant h . The matter reached the right combination of these values by the process of trial and error (Popper's theory of the progress of knowledge). There would have been several failed attempts before the right values in the right combination would have been reached. Thus, if I have said that space is an absolute flow of energy, formed from a huge number of tiny fermion-particles-connected together (whose spin distinguishes it from the otherwise predominant flow of light) and that light rides space flow, velocity and nature of space flow is an *absolute* as that of light, physicists can have no objection to it; they have accepted the absoluteness of velocity of light for a long time, and I am only asking that space flow, though slightly different in nature, may also be made a part of it.

And if I argue that time is the delay of this spread of (or the flow of) space, t of the d/t at velocity c , (i.e. the equivalent of the delay in spread of space from instant level or infinite value), or say that its quanta connections have a rotation equivalent to the delay, there can be no scientific objection to this too.

The statements—space is an absolute flow, a part of absolute flow of light, and time is that duration that is equivalent to t in d/t which is also real, absolute and objective-- are very powerful ones; in no time it changes the discourse on issues of a) determinism b) theory of relativity c) the element of chance in the creation of the universe, d) solve the issue of realism in quantum mechanics. We will in this chapter fulfil the need of abandoning the idea that motion can only be relativistically explained and explaining relativity within a universal frame of reference, and show that all velocities are relative to one universal velocity (and an absolute frame of reference). The idea of absolute universal time and absolute motion (space here) comes back in reckoning (though as a flow, not stationary) to make the subject of physics simpler, less mathematically intensive, where the simplicity also solves many other difficulties (finding common grounds for relativity and quantum mechanics, and the problem of unification of all particles and all forces) the subject faces today.

Having begun with the presence of absolute space and absolute time, has for us emerged from the postulates-- which may be hard to accept--that world was born out of indeterminism and freedom (rather than deterministic rules that physicists apply) but as we say we are not allowed to quarrel with postulates, we if one is not happy with it, the only way is to falsify it! This postulate has another usefulness: it connects quantum mechanical uncertainty to the 'will' associated with matter and particles: the area of uncertainty is the initial freedom available to the particles, and all progress

of the universe is the extension and the enlargement of this freedom. Our beginning is free will and it is visible at the quantum level operations. Current physics with its deterministic base is faulty; space and time have been created by the willing operation at the smallest level—matter creates copious quanta flow in which quanta open-connect with other quanta- and close--to form long chain and the long chains connect with other chains in all directions to give us a three-dimensional space flow and if this is assumed to be spread of gravitational energy, we get quantum gravity energy flow probably as zero wavelength (and or with different rotation of its quanta spin half or spin two, against spin one) and having absolute speed c , If this is accepted, lo and behold! We have discovered quantum gravity that too of an absolute variety (with uncertainty provided)! We have also merged quantum gravity and quantum mechanics (and with the uncertainty of quantum mechanics in place, freedom in indeterminism has to have some limited uncertainty) which will pave the way for reaching an observer's interference free quantum mechanics; non-realism is purged out of QM.

Learning from Mistakes Improves Probabilities

The process of creation of the universe explained in the last sections has the following uniqueness's:

- a) a unique free will based theory which has total freedom where it lies, but it has boundary condition to contain it. Freedom is that of choices, freedom and independence of making choice are irrevocably connected, the important feature of this choice process is that it can only be analysed via the limits to freedom and the manner of it closing in, or the manner of it getting extended (within the area of freedom there is no analysis possible),
- b) The resultant outcome is that of trial and error learning: choices made in the past and rejected as incorrect adds to improvement of the next step, it is a learning process (learning from mistakes made in the past), this is and can be this is applied to the progress of knowledge, from less secure to more secure knowledge, we are much more secure on the probability front (it is progressively improving)
- c) This process is a step better as compared to the pure chance theory that is the norm at present. The difference between learning from mistakes and random processes is the difference between the random walk and learnt steady steps; it has been worked out¹ that it takes four times as long to travel twice as far if steps are taken in a random direction. This is one step of learning, with each learning from each mistake made the chances constantly and consistently improve; this is the difference between chance happening and change that improves with each step, with each learning.
- d) The uniqueness of our universe is the result of a chain of choices: choices made--wrong and unsuccessful results discarded--another choice made, this time, better because some wrong has been eliminated--again unsuccessful—better choice, and so on and on, till the correct unique process gets discovered. We must not doubt that a unique process describes the world and answers *all* question.
- e) Thus free will based progress improving probability- different from the mathematical theory of probability-- is not a part of determinism which the latter is, in that deterministic

theory there may be some limited different avenues of progress but there is determinism in every step; there is no connection between the first to the second to the next or one that will follow the previous one; freedom is different, it has an agent operating its will (like he is supposed to act), and within the area of freedom (freedom cannot be unlimited, it comes with boundary conditions) it is in control, no rules apply, nothing can be laid down in advance, no prediction is possible, not even statistical probabilities. From within the hopeless tangle of ideas we are choosing one: freedom with some laid down boundary conditions.

Current theories are much dependent on coincidences. Smolin tells us: “If we are to genuinely understand our universe, these relations, between the structure of the large scale and elementary particles, must be understood as being something other than coincidence. We must understand how it came to be that the parameters that govern the elementary particles and their interactions are tuned and balanced in such a way that the universe of such variety and complexity arises. Of course, it is always possible that this is just a coincidence. Perhaps before going further, we should ask just how probable is it that the universe created by randomly choosing the parameters will contain stars. Given what we have already said, it is simple to estimate the probability...the answer in round numbers, comes to about one chance in 10^{229} .”² It has been the same problem for the biologists (theory of evolution) also. They too are afraid to ask the probability question, and when they raise it they supply inaccurate answers (discussion in my book on evolution: *Theory of Knowledge is Theory of Evolution* unpublished). They too have been, and are, happy to work with improbabilities. Smolin after explaining some possibilities (and explaining their irrationality) chooses one: “the only other possibility is much more mundane than these. It is that the parameters may actually change in time, according to some unknown physical process. The value that they take may then be the result of real physical processes that happen sometime in our past...it seems nevertheless our best hope for a completely rational picture understanding of the universe, one that does not rely on faith and mysticism.”³ This is closer to but not quite the way we expect things to have happened. The remote possibility that Smolin thinks to be applying—in the method that creation and progress of the universe is after all not that remote, only if we replace the progressive improving choice process of our theory with the pure chance process of the deterministic theories. The difference is in the process of learning that is now included! We know how we (human being) learn; we make mistakes and learn from experience. It is not too much if we extend the process backwards and give this kind of thinking learning ability to matter, and the truth that works out this way is that after several failed efforts at creating different kind of space (different velocities, density of mass, clockwise or anticlockwise rotation) accompanied with different charge of the electromagnetic waves) and then learning from the mistakes made, matter struck out one, or two that met the workable parameters that the universe has.

Speculation a little bit we may add that—seen from our point of view-- it is also just possible that if two combinations were found workable, there may be four universes, i.e., apart from the one we inhabit there are three more universes (two x two, clockwise and anticlockwise rotations). The truth is that Smolin’s idea of applying known and accepted biological principles to the evolution

of physics will not do; we need much more even in biology. We have to substitute a thinking acting, choice making matter--on its way to the teleological causality of advancement of knowledge and freedom--to analyse correctly what physics is and how is its history connected to what has emerged. In addition, we have also to have the process by which matter proceeds on this path. This is Popper's theory of knowledge and this is what we are going to apply to find answers to the questions that haunt physicists. There is only one unique, mathematically consistent theory of the whole universe (ours) and it is the one that matter has itself discovered—*by the process of trial and error*. This is not faith and mysticism; it is the real answer to the real problems that physics encounters. Only in this way, we believe we are going to get the correct answers to all the questions. But then the test of the cake lies in its taste. Before we move to the next section let us clarify a point that may be a cause of some confusion. In knowledge (or freedom advancement) there are two apparently distinct issues: the ability to advance-- the quality of efforts at the advancement of knowledge that may in some manner determine the speed at which advancement can come about-- and the advancement itself. For simplicity, we are taking them together and including the former in the process of knowledge advancement itself. We presume that advancement on both counts goes hand in hand.

The central thesis of it is that we are taking away the task of creation of the universe from the God (or any other unknown creator) and give the task to matter who proceeded to create the universe by trial and error process. This way we discount the pure chance theory of its creation of the scientists and also keep God out of it. We give up determinism and take the path of freedom, allow matter the ability to think and make choices. This is what we call the third alternative. When the task of creation to the universe is given to matter itself, we also have to provide a process for it, and here comes in Popper's theory of progress of knowledge. Matter armed with the ability to think and make choices and learn from mistakes made, means that it proceeds to the progress of knowledge the process of advancement of knowledge given to us by Popper (by trial and error process of learning). Trial and error progress adds progressively improving chance which adds additional probability; learning from mistakes made in the past gives better prospects of improved, viable, and progressively improving universe. Since progressively improving chance is better than pure chance we surely have an improvement over the pure chance theory of the creation of the universe (and that of all the happenings within it). Since chance creation of the universe, is rejected and substituted by an absolute flow of quantum gravity energy, it also leads to the explanation of all the issues in relativistic theory (with absoluteness well in place) and the taking away of the non-realism in quantum mechanics; this methodology brings back the age old values of philosophically satisfying realism and absoluteness and falsification, it ought also to be enough to take false arrogance (built around wrong theories) out of the scientist's minds!

In conclusion we may say that the statement: 'we (men) are not a product of pure chance (pure chance it is accepted to be unbelievable truth, yet believed to be a fact) it is the result of billions of years of dedicated trial and error efforts on a determined path of freedom or knowledge path' that the matter made and thereafter the living made that has cumulated in the advance evolutionary progress to man. If it is added that this precious life that we have got after such long efforts 'ought not to be wasted in seeking pleasure' it is not the statement of a religious bigot, it is the outcome of a sound principle from which the queen of sciences i.e. physics, is explained.

Conclusion for the purpose of this paper is that be taken note of that *reasoning* only through Popper's theory of knowledge –which we argue is the only method of reasoning—we have

explained the uniqueness of our universe and how acceptable probabilities get associated with it (progressively improving chance, instead of pure chance).

*Error in the Theories of Relativity**

The moment we say that space and time are absolute quantum gravity flow, we come in conflict with the theories of relativity. This result is, however, an inevitable necessity, what remains to be done is to explain relativity—both special and general—from this result we have got from the reasoning that matter has a will (and consciousness) and it is the creator of absolute space and time (as absolute flow). It needs a detailed explanation, but we may just specify the simple idea that makes it possible: if space and time or flows, then the length, mass and time are velocity related (since velocity created). This means that if velocity changes, the length mass and time also changes along with. This principle is the Lorentz transformation equations itself! We have only legitimized—given a causality to the equations! Similarly the entire issues in general relativity are also explainable from this length mass and time having a relation to velocity: the idea here which helps us achieve the aim is that though inertial velocities can show the effect without disturbing space and time flow, accelerated velocities have to curve space (space flow is creating length, mass and time and if it has to change it is space which has to warp to make it possible! Thus a) forces cause curvature and b) curvature is local curvature in otherwise flat space and c) there is neither the need of making an equivalence between presence of matter and general curvature in space, nor the need to give up the force view of gravity! Thus, it is easy to correct the theory of relativity of velocities it only needs the providing of matter with a will and allowing the matter to be the creator of the universe, as a flow of quantum gravity that is as absolute as the velocity of light! This absolute flow ensures that length, mass and time is velocity related as it is velocity created this is the law of Lorentz transformation itself)! We have relativity explained within an absolute. It is important to take note of the fact that reasoning adopted by us is the only one available, and without any hesitation ask for the application of falsifiability to it!

*Errors in Quantum Mechanics**

Altering required in quantum mechanics is not so simple to explain as it has been in the modification of the explanation of special and general relativity. It needs reworking the nature of particles and their formation out of absolute space flow disintegration (whenever and wherever the energy supporting space flow weans). There is a process by which particles are formed, and this process does not give atomic structure of the kind physicists work out now, the formation that will emerge from disintegrating space energy will be like that of the harmonic oscillator (physics utilize it to explain energy state of the particles, but have no way to say that it is the reality). We have real space and real harmonic oscillator particles, what requires to be added that the particles have a limited freedom relation with space flow (since they have emerged from it); it is this relation that is described by the uncertainty principle! The end result of the explanation of Quantum mechanics is that all particles are real harmonic oscillators (uncertainty is a real part of their bearing), the real

particles' (the harmonic oscillator's) motion in real space causes real waves in this media (real matter waves, separate waves, no a duplicate version of the particle); these real waves in real space (created by real particles, the harmonic oscillators) are standing waves because the accelerated velocities curve space around them. The reflection of uncertainty is easy, in this set up: uncertainty in the motion of the particles makes its motion fuzzy (fuzziness limited to the small uncertainty area) also creates limited fuzziness in the standing waves that the particle creates. This also makes it necessary that *there is no violation of the laws of conservation of energy/momentum—there are no fluctuation of energy/momentum in the vacuum, there is now a reservoir of energy/momentum—the absolute quantum gravity space flow—to take care of it!* Quantum mechanics does not all the weird totally artificial unrealistic Hilbert spaces, wave function with some understandable amplitudes etc. etc. physicists had to construct it because they were as always working on the deterministic line, never knew the fundamental cause (the reasoning) worked behind the universe (including its creation). The central idea that validates realism based quantum mechanics is that we have to begin from matter having a will and an inbuilt urge and ability to enlarge freedom (by the ability to make choices and advance on the path of knowledge by the trial and error process of learning, i.e. Popper's theory of knowledge). It has an *initial small freedom* (area of uncertainty) built in it, and it proceeds to increase it; this is the essence of quantum mechanics! This free-willed based explanation of the creation of the universe—which has helped us make a relativity free explanations of the issues in special and the general theories of relativity—it also is the foundation of the non-realism free explanation of quantum mechanics. It is the return of truth, the return of the *only method to reason* or to draw inferences, falsifiable and not falsified explanations.

Once again, the noticeable fact is the results and arguments have only one reasoning to dwell on: the logic of Popper's theory of knowledge--both for working it out and for accepting the correctness of it (theories)!

*There explanation on the creation of the universe, modifications of special and general theory and quantum mechanics explanation are abstracted from my forthcoming book, *Smolin Sir, I have the Answers* (which is in response Smolin's book: *Trouble with Physics* (my reference is at no 5 below).

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