“Show Me the Mind of God…”, said Einstein, so let’s do it

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Abstract

Einstein said, “I want to know how God created this world. I want to know His thoughts...” [1] So, I think Einstein sought answers to such basic questions as: “Why don’t we have a universe of solely empty space, i.e., all nothingness, total ‘void’, with no matter nor energy in it, instead of our universe with some mass?” Finding good answers may seem impossible, but let’s creatively try to. Regarding the above question, for example, we note that the opposite of a ‘totally void universe’ is a ‘fully-filled universe’. But the ‘fully-filled’ option drags along with it, a huge load of other questions, possibilities, and problems to be worked out. Thus, perhaps those many other questions and issues, dragged along with it, is the main ‘reason’ why we have a universe with ’gross’ mass occupying only a very low fraction of all space, (i.e., only 10^{-19} or less). But still, some fraction of space, indeed! So, below we formally present our analytic method, involving comparing different possibilities and their merits. And give examples of that. And we conclude, like Einstein, that “God did not ‘play dice’, so-to-speak, when ‘choosing our universe’

Discussion

So, to help understand ‘why a particular reality exists’, we follow these analytic steps:

1… We first note a very important (observed) reality; and we dare to ask, “Why it exists”?

2… We then consider, instead, a different imagined ‘reality’ that would be the very opposite of the reality in (“**1**..”), and ask, “Why shouldn’t it exist also or instead”?

3… In general (except rarely as in step 4, below); we further examine the basic propositions in steps (“**1**..”) and (“**2**..”); above, as follows: We attempt to compare the amount of “merit” that each of those ‘opposite’ possible realities has. And so, here, we very likely, say, “If Reality Number (**1**..) has more ‘merit’ than number (**2**..), then there will generally be more of Reality number (**1**..) manifested in the universe than number (**2**..). (We will further discuss the term, ‘merit’ later).

And an equally important major principle in my article is this: In our example, at least “some of ‘Reality number (**2**..)’ will generally also exist, in the universe, even though a comparatively small amount.” I.e., Indeed, ‘some’ of ‘Reality number (**2**..)’, even though a lesser amount than Reality number (**1**..) -- because the ‘merit’ for existence of Reality Number (**2**..) --- was never established to be totally non-existent. That is, never established to be ‘Zero’ possibility.

4… Although rare – if some problem or discomfort arises in steps 1,2, or 3; we further attempt, to apply our 'reason', intuition, and 'common sense', if possible: We consider if what we seemed to observe -- is even possible to 'happen' or to 'exist'? And, thus, we also ask, "Was our observation accurate enough?". If it seems 'rationally or intuitionally impossible', we have to further consider that perhaps our observation was just superficial or a mirage, perhaps an 'optical illusion' or incomplete. Perhaps something we cannot see or detect is also influencing what we perceived. And so, we remain open-minded and ready for surprises. And ready for further illuminating discoveries. So, it's okay to remain skeptical, flexible, and creative. And open-mindedly ready for further analyzing, if our initial observation continues, with 'rational analyzing', to be hard to accept as a possible reality. More detailed discourse, regarding '4..', may be found under an optional 'Appendix' at the end of this article.

It should also be stressed that there are many miscellaneous major aspects of our detailed universe, and that each such aspect is generally the way it is because of weighting the merits of various amounts of many other major aspects of the universe, not merely one or a couple of other major aspects!

Additional Detailed Discussion and Clarifications:

We have used the crucial words, ('estimate the **merit** of') -- in this article. It is necessary to do so, even though making such estimate may have some 'subjectivity' to it, rather than exact mathematical 'objectivity'. And even a little 'art' may be useful in our estimating, not just 'cold' science. Some of our discourse, below, may involve 'our gut-feeling or intuition', but I think that's okay, because we are constructed of the same 'material' (internally) as the (exterior) material or 'material event' we are trying to analyze. I.e., And that may be partly the cause of our 'intuition', (its source)!

Another example of an important characteristic worthy of 'earning' 'merit' – is as follows: It generally increases the merit of, say, 'reality number 1'; instead of 'number 2', if that 'reality number 1' has a great number or range of quite rational possibilities (like different 'degrees of freedom') associated with it. For example, energy can have almost any speed associated with it: Low energy --- generally low travel velocity associated with it; or medium energy – generally medium travel velocity associated with it; or high energy – high velocity. Thus, a nearly 'infinite range' of velocities.

That contrasts with 'Zero energy', having only **one** 'state', i.e., 'not moving at all', no 'translational' velocity. Therefore, I think, that there is a huge amount of energy in the universe (the reality in the universe), instead of there often being, relatively, many large regions of 'no energy', no movement, no travel velocity – our 'opposite considered reality'. And it seems like, 'since so many aspects of the universe are constrained by the difficulty of making a relatively great amount, density, or commonness of it' -- 'nature happily embraces the occasional easier opportunity afforded by a great range of energy possibilities offered. And makes 'the most of it', by going with the option of 'ultra-high-density energy (energy per volume) in the universe'.

Now, regarding weighing the 'merits' of possible realities; let us again suppose we imagine a fundamental reality that seems very difficult to exist. Like the existence of 'matter'. But it still can and does exist, at least partly because it only need-occupy a very small fraction of 'space', compared to the vast emptiness of most of the universe:

Let us ask, among other very difficult question or problems, "What amount of ultimate compact density should that basic matter have, i.e., say in units of 'kilograms per cubic meter'? And that question brings up another ultimate related question. "Should there be many different 'totally compact' densities of 'basic' matter in space, i.e., some, say, of density (10^{18} kilograms per cubic meter), and some of, say, lesser 'totally compact material density?

But that question brings up a lot of further questions and problems, like, "How would these different 'basic' densities mix and interact?" Because of the seemingly huge 'challenge' of 'there even being any mass in the universe at all'; as a reality – I think the '**merit**' of the favored possible 'realities', in this case, is this: "We go with the simplest reality, i.e., only one 'compact' density of matter." And that seems to be 'the reality' in the universe, indeed! And that simple reality saves us, the 'non-merit' of unnecessary, hard-to-contemplate, glut of complexities.

(Optional – Of course, when we say here, that "the result has Merit"; we do not necessarily mean that the 'outcome' pleases us or is praiseworthy. For example, if a careless driver gets badly injured – that 'too severe of fate' displeases us; but by 'merit' here; we just mean that the sad outcome well-exemplifies the logic of 'cause-effect'.)

Conclusions and Summary

We began this article, as prompted by the article's title – by proposing the primary question of: "Why, a particular set of realities exists in the universe, instead of different set?" And we exemplified, in the Abstract, a method, of how to successfully tackle that question, Thus, that Abstract was, by its self, sufficient to adequately achieve the basic goal of this article. And so my Abstract may serve as my 'Summary and Conclusions'. And illustrates our conclusion -- that "Our universe is not the 'result of chance'!"

And I also strongly recommend another of my article, "Particle Mass Ratios that nearly equal basic Geometric Ratios", **PDF** , because that article so clearly helped prompt, inspire, and guide my present article, and much of my other work.

There are, incidentally, already quite a few papers & videos online, on 'Why our unique world?' But in my opinion, all or almost all, fail to address that question, because they sadly evade it! Most give answers like, 'because God created the universe that way,' or 'because that's the way the Big Bang went bang', or 'just a random result of spinning dice'. And a few thinkers attempted a good answer, but just gave a wrong answer. And, I think that still worse -- some writers simply dismissed the question as 'without merit. Or 'not answerable' or a 'time-waster'.

But I conclude that there is, so-to-speak, worthy "**Rhyme & Reason**" to there being the particular universe that we find ourselves in, instead of a 'different universe' that would not quite match its merit, but which would still seem to be quite possible. And that 'Rhyme & Reason' is, to a significant extent, 'knowable' to us. And that is the major theme of my paper.

So, it seems to me, in a sense, that Einstein was right when he asserted, "**God does not play dice with the universe.**" ((Einstein believed that 'cause-effect' applied even at the most basic level, even if too small to well-measure or see it. (Thus, here, I do not much agree with Niels Bohr's retort to Einstein, to "stop telling God what to do". Bohr, along with most scientists then and now, have held that 'Heisenberg's Uncertainty Principle', is not merely a limitation in human's ability to observe details at an 'ultra-small' level. But that there is, fundamentally, a degree of 'randomness', instead of 'cause-effect', occurring in such ultra-small domains. And is a major reason why statistical analysis is the best tool to model realities.) Although I disagree, here, with the great Niels Bohr; I sort of appreciate how Bohr was somewhat upset by Einstein's seemingly 'over-boldness', 'cockiness', and seeming 'arrogance'.)) .

Opt'l., Author's 'credits' to others

I will keep my 'footnotes' and etc. to a minimum, to keep this article as short and simple as possible. But I just want to express my thanks to those who helped me, as follows:

My thanks to many early Greek philosophers (such as Heracllitus and Democritus) and to Hegel -- all who stressed the importance of contrasting opposites. And to Descartes and Hertz. . And to Richard Courant, (who, briefly discussed 'Combinatorics' and their merits – when analyzing basic 'shapes'; in geometry) [2]. And, my thanks, also, to many other scientists and philosophers, although too many to list here, who also helped, even if to a lesser extent.

Appendix (Optional)

Below, we optionally consider in more detail -- examples of what we seem to observe, but which may not be a 'holistic view' of what is fundamentally happening. And what we seem to observe may sometimes even be 'misleading' – i.e., it is just a perception by our senses that serves very well our evolutionary and daily needs.

(a)… Note, suppose two large bodies seem to (so-called 'gravitationally') 'attract' each other, even though there seems to be nothing 'between them' 'pulling them' together, and nothing visible 'pushing them' together – i.e., visibly pushing against their opposite faces and volumes so they are 'pushed together'. Nor 'pulled together'. And we can even ask, and should, "Do 'attractive forces' even really exist', or, instead, do invisible 'pushing forces' only make it appear that the bodies are 'attracted'?

(b) … Note also, the following, even though perhaps more challenging: We have likely often observed that, apparently, "two 'hard' solid objects travel toward each other; then seem to crash 'head-on' against the other, and rebound straight back from the one-other." I.e., like two moving

'pool-balls'. But we could and even should also ask, "If two such objects actually crashed together like that, would the 'rate of change' of momentum (and velocity) of some of their material, at or near the collision point, be 'infinite', according to Newton's 'laws'?" The duration of time, that some of each object's material remains actually 'crashed' or touching the other, in this example, seems like such 'contact' time would be 'infinitely small'.

Thus, the rate of momentum change, there, would be 'infinite'. And then the forces or pressure there would also be momentarily infinite! But that ('infinity') would be virtually impossible to imagine, i.e., that such sudden 'reality' could actually arise -- seems 'irrational'. (I.e. that 'occurrence' would be what some scientists call 'an irrational singularity'.) And, thus leave us wondering, "Did that really happen, or is there something else involved that also 'went-on', but perhaps too small for us to see, but solving the mystery", i.e., without such irrational 'singularity' arising?

Newton addressed 'problem (a)', above. And regarding 'problem (b)', the 'Eleatics' philosophers of 'ancient' Greek helped address that problem. And I think 'problem (b)' was rendered quite solvable by Max Planck. ((I.e., Now for a very optional and technical comment: In my opinion, I note 'Planck Constant', has 'units' (or 'dimensions') of 'angular momentum'; and that can aid our comprehension. It implies that there may be no perfectly 'hard-straight-on' collisions. And, thus, that, like small 'eddy currents' -- all collision and interactions involve 'curved motion'. Although often with 'radius of curvature' too small to see. So, the collision just looks like 'straight-away' action. And even a little before Planck's time; many great 'Classical Physicists' modeled ethereal space as a 'Vortex Sponge' – with vortices consisting of frictionless 'eddy currents', and thus avoiding the conceptual problem of 'ultra-hard' collisions. I.e., thus, avoiding the 'problem' of a momentarily infinite 'change of momentum', infinite force and acceleration, an irrational 'Singularity', technically speaking)).

References, footnotes:

[**1**]…Timothy Ferris, Coming of Age in the Milky Way, (New York, Morrow, 1988), 177. ((The more complete quote by Ferris of Einstein was,"I want to know how God created this world. I want to know His thoughts, the rest are details")).
[**2**]…Robbins, H., Courant, R., What is Mathematics?, Oxford University Press, New York, 1941, Topic 3 in Appendix for Chap. IV.
[3]…This article was revised 4-30-2026 by adding footnotes, and by some minor rewording