

Preface

...the right hand side includes all that cannot be described so far in the Unified Field Theory, of course, not for a fleeting moment, have I had any doubt that such a formulation is just a temporary answer, undertaken to give General Relativity some closed expression. This formulation has been in essence nothing more than the theory of the gravitational field which has been separated in a somewhat artificial manner from the unified field of a yet unknown nature - Einstein.

What kind of a book is this? Does it live up to its hype? We suppose critics will have a field day with it as has always been the case when someone goes out on a limb further than the current *conquistadores* are wont to. This is not a book for those as it were ‘geocentric nay sayers’ who vehemently oppose anything new or who myopically adhere to the status quo. A roiling plethora of physicists these days are deeply troubled by the morose perversity of the conundrum experienced as a result of such ratiocinations; perhaps hundreds or even thousands struggle with additional dimensions, string theory → M-Theory → F-Theory and myriad other issues. Recently a colleague remarked ‘he was finally willing to pay the price to embrace the Everett Many World’s model’; I wanted to answer that I cared nothing for what was considered politically correct and would rather embrace the true intellectual freedom entailed in the fundamental epistemological foundations of science itself, seek only for the truth and apply due diligence to the tiniest indicia if even a scintilla of evidence warranted searching a seemingly spurious path to find it. In that guise ‘we let our hair down’ so to speak and explore avenues that have remained unexplored for far too long to their penultimate conclusions.

We hope thereby dear reader that you might keep an open mind if for no other reason than as an exercise in epistemology. It was the famous

paradox or antinomy, $R = \{A | A \notin A\}$ of noted philosopher Bertrand Russell who proved that $4 + 5 = 7$ [1]. Contrariwise we use no logical trickery but take the usual empirical evidence to follow ‘another’ path of interpretation. For example Hubble discovered cosmological redshift not a Doppler expansion of the universe which has fostered the ‘political’ mindset of the time.

We mentioned the struggle with ‘political pressure’ in the scientific community that even one of the greatest physicists of all time gave in to and withdrew (what was considered at the time *ad hoc*) his concept of the cosmological constant calling it ‘his greatest blunder’. We disagree, his greatest blunder was giving in to what was thought to be politically correct. It is said there has been little new in physics in the last hundred years. We insist as Smolin and others have said that this has occurred because of the pressure to be ‘mainstream’ and the severe punishment (being marginalized - no career, no publications, no funding) of those that veer off the beaten track. If science is allowed to be science, this may not have occurred because the seeds of all we relate in this volume have been available for planting for most of this 100 years war.

Admittedly this volume’s contents are *avante garde* in 2009, hopefully by 2012 they will be mainstay science if empirical tests are performed. Let us elaborate. This book has been pitched as a ‘Copernican class volume’. How do we know if we have deluded ourselves? More importantly, how can you the reader judge tommyrot and twaddle from truth? Too many of our friends and colleagues insist that the universe is only 4D. One said, ‘of course if you add more degrees of freedom you can do anything!’ Two of the major contributions of this volume are a design for universal bulk quantum computing (Chap. 11) based on a model for surmounting the quantum uncertainty principle (Chap. 9). History has generally shown that when a ‘correct’ theory is found it is elegant, logical and internally consistent and has broad explanatory power. Most saliently this little tome is full of explanatory power. But the point we wish to make regards empirical testing which is the main pragmatic task of science. Moore’s Law named after the founder of Intel, has shown for over 40 years that every 18 months the number of transistors on a CPU doubles and the processing speed doubles. Moore’s Law has never been wrong. In Chap. 11 you will find a graph projecting Moore’s Law into the quantum domain. This seems to occur about 2011 or 2012. The chink in making this prediction

more precisely is that the transition from the usual technology to quantum technology may involve a phase change like the one that occurs when one puts a stick into a pool of water – The image of the stick is bent by a certain small angle. Does such a transition angle apply here? In any case we challenge the quantum computing community to ‘immediately’ build a bulk universal quantum computing prototype using the empirically testable model presented here. Do not let Gordon Moore down. Do not let us down either for that matter because we have use for a special class of quantum computer required to develop new medical technologies.

We state our case(s) here matter-of-factly as axiomatic elements of the new noetic paradigm presented without too much in the way of humble apologetic mumbo jumbo ‘this is highly speculative’, or theoretical etc. That’s too boring for us and now should be obvious since stated up front. Pretty much all of our heretical views are empirically testable in the near term so we take liberty to play with your minds a little. Do the experiments then pick on us or not as the case may be because by then we would doubly deserve it. Why attempt to start such a puerile brouhaha? For two reasons: 1) As Smolin has said ‘we are in an era where brilliant young scientists are not given jobs, tenure or funding unless they rigidly adhere to current thinking’ [2]. Some of us are sick of this and we personally hope this volume finally has enough *chutzpah* to knock ‘Humpty Dumpty’ permanently off the wall. 2) Gandhi said, ‘first they ignore you, then they laugh at you, then they fight with you, then you win’. So put up your dukes...

It is uncommon to be so brazen, so why do we do it? We want to make certain our point does not go unnoticed. Copernicus and Galileo were almost killed for their ideas; and the modern form of this ‘murder’ is reflected in Smolin’s manifesto noted above. Worse yet, it is said that it took about 150 years before Copernicus’ ideas became generally accepted. More recently for Einstein’s introduction of the photoelectric effect (initially considered absurd) it took ~15 years before the empirical work was performed. ‘Things’ seem to occur asymptotically quicker in current times. We suggest this can be so and hope to force the issue – 150 → 15 → 1.5 years which would be about the 2011 or 2012 predicted by Moore’s Law! Again please do not disappoint Mr. Moore; it would be breaking the law!

The main ‘claim to fame’ of this little tome’s is the semiformal introduction of a new cosmological paradigm called the Holographic

Anthropic Multiverse (HAM) which we have done our best to make ‘logically coherent and internally consistent’. In spite of its flaws which stem from our inability to have performed better at this point in time; there is no denying the breath of its explanatory power:

- Empirical model for surmounting the quantum uncertainty principle
- Design for immediate implementation of bulk universal quantum computing
- Redshift-CMBR as black body cavity-QED exciplex equilibrium
- QSO luminosity as gravitational shock waves
- Integration of G & EM in a manner supporting the new cosmology
- Design for de Broglie matter-wave antiballistic defense shields
- Putative new empirically testable derivation of M-Theory tension
- New protocol for SETI success that calls for a new kind of telescope
- A simple unified field equation with implications for the nature of the observer, brane tension and CMBR/redshift
- Reference to a companion volume that delineates the physical basis of awareness from the mind-body side of the anthropic cosmology

This is a reasonable list of accomplishments for any book and as we mentioned our bodacious claims are attenuated in the fact that most are empirically testable in the near term.

’t Hooft said “nature is much more crazy at the Planck scale than even string theorists could have imagined” [3]. This volume could just as easily have been called ‘The Nature of the Singularity’ because that is really what it is all about or ‘Demise of the Big Bang’ instead of being called the Holographic Anthropic Multiverse; but the chosen title has broader scope. In the sense of the above bulleted list we wish we could call it ‘Nobel Prize Giveaway Manual’. We are curious to see how many it spawns. Again don’t let us down; And yes, we have that much confidence, which may seem surprising in the face of the 2006 Nobel prize in Physics to John C Mather and George F Smoot:

“...for recording faint echoes of the birth of the universe. Their precise satellite measurements of the cosmic background radiation, remnants of the sea of light emitted by the new universe, have confirmed fundamental predictions arising from the Big Bang theory, leading to its further acceptance as the standard model of cosmology.”

Never has so much intelligence and pride been expended on something so wrong. "There are some ideas so wrong that only a very intelligent person could believe them." - George Orwell. Certainly Occam's Razor can only be applied if the choices it is applied to is correct. Hubble discovered a cosmological redshift relation not expansion of the universe. Certainly COBE has been a boon to cosmology but it would have been better if the Nobel Committee stuck with their statement 'They have been honored for their discovery of the blackbody form and anisotropy of the cosmic microwave background radiation'. Smoot went so far as to quote Kiyoshi Shiraishi in saying "It is impossible that the Big Bang is wrong" [4].

Consensus discourages dissent... It is the enemy of science, just as it is the triumph of politics. A theory accepted by 99 percent of scientists may be wrong. Committees... that decide which projects shall be funded are inevitably run by scientists who are at peace with the dominant theory. Changing the consensus on cosmology will be an arduous task, like turning a supertanker with a broken rudder. ...the competition of theories has been the driving force behind scientific progress. Isolated individuals and private companies have been the most fruitful sources of this advance [5].

We have decided to throw caution to the wind and not hold anything back. Parts are informal and highly speculative but included because they follow directly from the new model in unique and interesting ways. Other parts are as pragmatic, rigorous and as empirically testable as the current state of our abilities and understanding allow. It is said that the bigger the step and the farther ahead of its time the greater the challenge for acceptance. Nevertheless we are a product of the current *Zeitgeist* suggesting that this book's radical stance is timely. We know that to some it will be long overdue. What is it that drives the evolution of human consciousness? That could be a subject for a multi-volume series. The one-word answer is 'necessity'.

If a Static Universe model had been continuously embraced since first introduced by Newton in the 17th century in the same way the Big Bang has; it is possible we would not be in a different place now. We consider this unlikely because a lot of intellect would have been expended exploring avenues neglected for no reason other than political myopia:

- The Dirac Covariant Polarized Vacuum
- Photon Mass Anisotropy
- Anthropic Principle / Teleology
- Nature Of The Observer
- Physical Basis Of Awareness/Consciousness
- Completion Of The Tools Of Epistemology
- Extended Electromagnetic Theory
- De Broglie-Bohm Ontology To Complete Quantum Theory
- Additional Dimensionality
- Alternative To Quantum Gravity And Higgs Mechanism

This volume is a full spectrum of theoretical insights based on application of a new cosmological paradigm and the insights that naturally drop out of it - from more rigorous theoretical considerations on quantum theory to the raw speculations on SETI research. But there is another wrinkle going on from which we take license to speculate. We wish to take a step toward completing the tools of human epistemology as stated formally in the last chapter of a companion volume [6]. Epistemology has evolved from superstition to logic to empiricism. The remaining tool first proposed by Plato is the utility of transcendence in theory formation. Plato said, 'noetic insight is the highest form of knowing; no matter how broad ones knowledge base or how great ones intelligence noetic insight comes form beyond the individual'.

This volume is our attempt to institute a Galilean or Copernican class revolution. The subtitle of this volume summarizes much of our purpose in writing it. Specifically we make the case that cosmology takes the form of a holographic anthropic multiverse. Avenues of our approach have been unpopular during the last sixty years. While the terms holographic, anthropic and multiverse have each been around for various degrees of time; we believe we are first to merge them into a unified cosmology in a formal way. In the hope that the views presented are inspired we do not take a conservative approach. Where required to facilitate development of the model our approach is axiomatic. We justify our radical stance by evidentiary conclusions from the history of science; and in that sense hope our approach is bold enough to take part in implementing a second Galilean class revolution in cosmology. By this we mean that the history of science has shown that when the correct theory is found it has elegance, internal logic, simplicity and broad explanatory power.

In simple terms we build the Holographic Anthropic Multiverse cosmology by taking alternative interpretations of all the purported pillars of the Big Bang. We ask the reader to indulge us with an open mind especially if the ‘chains of myopia’ have tethered the minds eye rigidly to the currently popular Big Bang. At the time of Galileo it was inherently obvious to the same degree and built on what was considered sound logical deduction that ‘the heavier object would fall faster in a gravitational field’. We hope to show that today even with hundreds of years of sophisticated experimental development; we are prone to the same logical errors. As we have professed it is possible by using the tenets of anthropic cosmology to complete the tools of epistemology so that we are less and less likely to make the same kind of errors in the future in spite of our personal biases.

A surprising number of contemporary physical scientists do not accept dimensionality beyond four. The Euclidean line is deemed the real line because it is what our ‘eyes’ observe; but even in 3D dimensionality cannot be adequately proven. Newton gave us three; then Einstein introduced a fourth. String theory has struggled with thirty-two to twenty-six, eleven to ten and back again with M-Theory settling for eleven, as the parade continues with the recent addition of F-Theory cast in twelve for which we make a formal case for the ultimate basis of a Holographic Anthropic Multiverse (HAM).

While a reasonably large number of papers are published each year in cosmology, astrophysics, string theory and various areas of extended physical theory, not so many books are written and few of these have attempted to condense the arena and organize pertinent aspects into a coherent whole. This is due in part to the fact that the associated fields are relatively new and vibrant with evolution. Most workers confine themselves to narrow areas of research and typically spend little effort considering a larger framework. This suggests the time is ripe for monographs with the capacity to present order to the field. Our main purpose is not to present a review of recent thinking in order to survey and connect disparate pieces for the sake of adding coherence; but rather an attempt at engendering a grander new step forward based on numerous breakthroughs in our research and that of others related to the holographic cosmological model. The inherent purpose of an Anthropic Multiverse is life and consciousness, therefore intelligence in the cosmos is the evolutionary rule not the accidental statistical exception.

Not long ago cosmology was not considered a science; it was at best a

form of philosophical/theological rumination. Some still say ‘first comes speculation, then speculation squared followed by cosmology’. To this critic that is what Big Bangers have done and continue to do. Of course somehow this is what we all try to do to preserve our theories especially if the alternative threatens to shatter our world view. Aristotle thought experimentation was flawed and foolish; that only logic could lead to the truth. Why should cosmology ultimately have Multiverse, Holographic and/or Anthropic properties; and especially the integrated Holographic-Anthropic-Multiverse form we promote here? This is what we attempt in the volume.

One of our boldest premises is the suggestion that there is no quantum gravity. This is not a deal breaker in our view for the holographic principle because ‘t Hooft’s motivation for intruding the principle to aid the development of quantum gravity is only entailed in the quest for a fundamental unified theory. Without a quantum gravity this quest still exists; but in a different form. Feynman said:

...maybe we should not try to quantize gravity. Is it possible that gravity is not quantized and all the rest of the world is?...Now the postulate defining quantum mechanical behavior is that there is an amplitude for different processes. It cannot be that a particle which is described by an amplitude, such as an electron, has an interaction which is not described by an amplitude but by a probability...it seems that it should be impossible to destroy the quantum nature of fields. In spite of these arguments, we should like to keep an open mind. It is still possible that quantum theory does not absolutely guarantee that gravity has to be quantized.

We use standard abbreviations for acronyms such as QT for quantum theory; we mention this here because we took the most liberty with terms for dimensionality or dimension, D with usage such as 3D, 4D, XD, HD which spelled out would add pages to the volume.

Shortcomings - we could try to be sufficiently arrogant to pass ourselves off as string theorists, but we don’t really want to be as it’s a life-long career path. So we merely dabble to make certain points because ultimately we have another time consuming agenda which will appear in future volumes.

The SETI work in Chap. 13 is our most speculative, but it falls right out of the anthropic portion of the HAM all on its own. We hope

someone will finish inventing the interdimensional Q-Telescope proposed by the time the SETI-I program is considered a failure.

The QSO luminosity work is reasonably OK, needs a little more work for full rigor. Gravity is after all a classical theory and needs to be extended; not as quantum gravity which our theory says doesn't exist. The integration of the two principles is at unitarity not with each other.

The defense shield, maybe we got away without putting in actual engineering diagrams; but the perceptive reader will notice that all these threads are based on the very same principles of manipulating vacuum topology. You understand how to get one; you get all the rest of them. Programming the vacuum for the defense shield isn't more difficult than ontologically programming a quantum computer; only that one needs the additional nanoscale programmable matter substrate to imbed it in a more clever L.O.V.E.R. (Laser Oscillated Vacuum Energy Resonator) configuration (see Chap. 9) to get sufficiently Gödelized¹ [7], whereas in universal quantum computing the resonance hierarchy for surmounting the uncertainty principle is simpler to arrange. And in the defense shield case (see acknowledgement at the end of Chap. 12) we're not sure just anyone should be able to build it. We believe all scientific discovery comes as 'revelation from God' and we wanted to leave a little wiggle room for God to play his hand in the *Zeitgeist*.

We had a sense of humor but use it up here to write our own review of this book: 'This insidious volume is a conspiracy by the international psychoanalytic community to drum up business during a troubled world economy; if you read it you will need psychoanalysis for the rest of your life...'

Finally we would like to thank Lou Kauffman, the Knot Series editor, for his confidence in us and hope we have not misbehaved to the degree that he needs to wear a 'Flak Jacket', at least until after the ink sufficiency dries.

¹ Gödelization – according to Gödel's incompleteness theorem a system cannot be completely understood in terms of itself. In this case cannot be sufficiently controlled from within its own limits.

References

- [1] Russell, B. (1908) Mathematical logic as based on the theory of types, *Am J Mathematics*, 30, 222-262.
- [2] Smolin, L. (2006) *The Trouble With Physics: The Rise of String Theory, the Fall of a Science, and What Comes Next*, New York: Houghton Mifflin.
- [3] 't Hooft, G. (1993) Dimensional reduction in quantum gravity, arXiv:gr-qc/9310026v1 1993
- [4] Smoot, G. & Davidson, K. (1993) *Wrinkles in Time*, quotation by Kiyoshi Shiraishi: *It's impossible that the Big Bang is wrong*, p. 69, New York: W. Morrow & Co.
- [5] Bethell, T. (2005) *The Politically Incorrect Guide to Science*, Washington: Regnery Publishing.
- [6] Amoroso, R.L. & Pribram, K.H. (2009) *The Complementarity of Mind and Body: Realizing the Dream of DesCartes, Einstein and Eccles*, Cambridge: MIT University Press.
- [7] Smullyan, R.M. (1992) *Gödel's Incompleteness Theorems*, Oxford: Oxford University Press.

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