Myth, Religion, Pseudoscience, Establishment Science, and Real Science

(New directions in the future of science)
Version 0.7

“The man with a new idea is a crank until the idea succeeds"

Samuel Langhorne Clemens (Mark Twain)

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Introduction

Today as we sit looking back at the 20th century, we see science as one of civilization's greatest triumphs. Or more precisely it is science *and* technology that has produced modern life. And the result is that today even the poorest of the poor live lives that would have been the envy of kings suffering in the squalor and cold of historical times. But by the same token as a knife can be used to cure as well as to kill, so science and technology has developed monitoring and tracking of subjects and slaves that would have been beyond the dreams of the most imaginative despots of history. Privacy is quickly slipping into history as are the interesting ideas of freedom and self-determination that came and now seem to be pretty much slipping back into history.

In short, in historical times civilizations ran on human power, which is to say slavery and all that went with it. And of course, since slaves were obtained through the plunder of war, war was one of the things that went with it. The so-called "industrial" revolution changed that system from the use of biological work-power (human and animal) to the direct conversion of energy of various types to do the things that humans and animals used to do. Beginning with the steam engine that directly converted the energy in flammable materials (wood, coal, oil etc.) to mechanical motion, a myriad cornucopia of devices fell out of the 20th century. In particular devices utilizing electricity play a salient role in the development of today's civilization. So much so, that at the beginning of the 21st century one is amazed to find that while there are still humans living in grass huts in the middle of the African jungle pounding corn with a log in an old tree stump, one discovers that those very people living in the grass huts can be called on their cellphones from any place in the world! Of course now wars are fought over control of energy sources rather than for sources of slaves.

And the rise of chemical work-power has led to world-wide communications and transportation that has created an amazing uniformity among humans. The rise of India and even more so China as sources of inexpensive goods has flooded the world with the devices and materials of "modern" life. These vast populations had been driven so far down into slavery that when suddenly free to work for one's own benefit rather than in service of the few, they drove themselves far harder than was ever possible as slaves. The result of this production coupled with rapid and global communication is an amazing uniformity creeping over the world. Bales of used T shirts gathered in California are distributed to marketplaces in the third world such that "Berkeley" T shirts are as common there as they are on the Berkeley campus! Native costumes with a few minor exceptions have tended to become nothing more than dress up for holidays and special occasions.

Thus, from the viewpoint of day to day humans living their lives, these changes (if they think about them at all) have come from "science". While this is not strictly true since we will be separating science from technology here, nonetheless, in the popular mind "science" gets the credit. But the problem as we shall see is that in fact *too much* credit has been given. What has happened is that science has been given so much credit that it has been transformed into a religion and as is often the

case with fame, one can be destroyed by one's own success. Political groups which include college professors and intellectuals of a leftist political stripe have attempted to codify aspects of science into hard and fast dogma of religion. In particular, science has become the flagship for atheism with whole empires (the former USSR for one) worshiping certain misinterpreted aspects such as Darwinism and materialism as a church dogma in a state religion based upon these theories. Needless to say, if belief is based upon dogma then it isn't science anymore.

What Exactly is Science?

Science, as mathematician author John L. Casti has pointed out, means different things to different people. These include:[1]

Science: *A set of facts and a set of theories that explain these facts.*
Science: *A particular approach, the scientific method.*
Science: *Whatever is being done by institutions carrying on scientific activity.*

Of course all of these can be and sometimes are simultaneously true, but generally speaking Casti notes that the nonscientific public usually opts for the last or possibly the first while actual scientists usually go for the second as their first choice.

Facts, Theories, and Explanations

Let us talk about the first choice. The universe is filled with *facts*. Everything you see going on about you every day are facts relating to the operation of the universe. Every human, every animal, every vegetable, every mineral indeed every invisible operation that takes place from moment to moment are facts of nature. The number of these facts is immense. We won't use the term “infinite' because that is a mathematical term generated by fantasy and does not relate to real actual facts we are talking about here. The point, however, is that there are so many *“facts”* occurring at any given minute that it is literally impossible for the human mind, let alone the brain, to comprehend them.

Thus, we can imagine that all actions in the universe comprise a massive computer database filled with information that is constantly changing. In one philosophical view that database represents our “*reality”*. The non-science public confuses the volume of facts with how “smart” one is. A clear example of this thinking is the television show Jeopardy. Here how “smart” you are is demonstrated by an ability to recall “facts” with respect to a wide range of human experience. The more access you have to “facts” presumably the smarter you are and the more likely to win the game. It should be no surprise that in a demonstration the IBM computer “Watson*”* beat two former Jeopardy champions who together had racked up over five million dollars in winnings. And in a later challenge the IBM machine “*Deep Blue”* beat grand master Garry Kasparov at chess. Which leads to the questions: Is my computer smarter than I am? Is the phone book smarter than I am?

The answer, of course, is no, my computer is not “smarter” than I am. A collection of facts is not equivalent to intelligence. We have already noted that the “facts” of the universe are far too numerous for the human brain to comprehend. Therefore we must examine the second half of the first definition which is to say that there are *“theories”* which *“explain”* the facts. This is going to take a bit of

1 Casti, John L., “Paradigms Lost”, Avon Book, N.Y., p 11.

explanation itself.

A phenomenon can be “understood” by simply having a data base of everything related to it, but with complex phenomena the database (even if you could access it) as we noted above is too complex for the human brain to comprehend. But if you discover a “shorthand” relationship that allows you to quickly produce ANY relationships found in the above database, not only have you compressed that database into a compact form, but you finally have a chance at understanding what is going on.

An example of this kind of thing was that recently I found an old computer printout I made years ago that was a table book of sin x, cos x, sin x/x etc. I had made it on a large IBM computer for my use. However this was all done prior to the invention of the HP pocket calculator. People used table books in those days. There were mechanical calculators, but those were just for addition and subtractions and possibly (with much noise and effort) multiplication and division. But once the electronic pocket calculator was on the market I instantly bought one and bingo! Now not only that huge printout, but a VAST number of other functions of many types were *all* crammed into the mathematics inside that little box that William Hewlett made sure could fit into my shirt pocket! Table books instantly became as obsolete as photographic film or cursive writing today.

The point is that the *theory* is a methodology that allows you to write a portion of the database of the universe using less steps than just printing the data out one number at a time. For example, one might consider the database of all the positions of the planets in the solar system from some time $t_o = 0$ to some future time t. This would be all the positions for any time within that interval. On the other hand one might use Newton's theory of gravitation to create a mathematical model which with a few calculations gives us the position at any time we choose. Hence Newton’s description is equivalent to the full data base and yet is far more compact and useful since you do not have to store all the values for times that do not interest you.

But is it an “explanation”? The answer, no matter what you've been told on PBS is no, it is not. An explanation is something that gives you more than just a set of database values at some certain time. It gives you causality. If I have some set of initial conditions and want to know the value of the “facts” that result from those conditions, Newton may give us a simple set of operations for getting that information. But the information is singular and naked. It comes out of the black box with no hint of why such a thing should be true no matter how many times we check to see that it is indeed true. The calculation box might as well be labeled “magic” from our viewpoint. An “explanation” can't just say “magic”. In fact, Newton is not even the only way to get those database values. The older theory of epicycles *also* produces the same database! In fact, it is a methodology that planetariums still use to generate their displays. Clearly more is involved here than just reproducing data.

Causality

Causality is a natural law in the earth. Quantum musings to the contrary not withstanding, all current events are determined by past events and never by future events. Therefore an “explanation” is always a set of causal connections. The initial conditions cause these things to happen which in turn cause those things to happen and so on until we reach a final stage where our final results are caused to occur. This is something not provided by Newton's law of gravitation. There are no mechanisms discussed nor any causality implied. A key mistake here is that so many people when they see an equation which is modeling reality: A = B, think automatically that B is *caused by* A. Nothing could be

further from the truth. The mathematical statement only says that A and B are equal, which is to say have the same value. What *causes* each one is something that must be determined separately.

This problem is widely seen in the use of the mathematics of field theory and Maxwell's equations to model electric and magnetic phenomena. Maxwell's equations are widely assumed to be causal relationships when in fact no such thing had been determined. The late professor Oleg Jefimenko has looked into this matter and has said:[2]

"There is a widespread belief that time-variable electric and magnetic fields can cause each other. The analysis of Maxwell's equations presented above [in his book] does not support this belief. It is true that whenever there exists a time-variable electric field there also exists a time-variable magnetic field... but as we have seen, neither Maxwell's equations nor their solution indicate the existence of causal links between electric and magnetic fields."

[ ] *brackets throughout this paper indicate the author's comments added to quotations.*

What this means is that the statements one finds all over textbooks and the INTERNET that electric and magnetic fields "create each other" while a clever way to "explain" how radio waves travel through space is simply wishful thinking and dead wrong according to the Maxwell model. As Einstein has been reported to have said, "Everything should be as simple as it can be, but not simpler". It is common for people to use what is termed "Occam's Razor" as "proof" of their statements and theories. This is the idea that given a choice of theories or hypotheses, the simplest one is the "best" which is to say the "correct" one. It is logically obvious that the simplest theory could indeed be totally wrong. Hence, the Einstein quote is often called "Einstein's Razor" which points out that the simpler viewpoint is better only so long as it is correct. Simple theories that do not reflect reality are useless, which explains how Occam's Razor used as a "proof" of the correctness of a given theory or idea is nonsense.

However, Occam's razor is a valid judge of scientific theories because it represents how "compact" the explanation is compared to the actual data. The "best" theories generate the most data from the fewest operations. A theory which takes as many operations as there are numbers in the data is really no explanation at all since it is equal in complexity to the database itself.[3]

So if causality is a natural law in the earth, how is it that it has been ignored in many cases? Two examples of non-causal models are the advanced and retarded waves of electromagnetics and the similar Feynman-Wheeler theory of the absorption and production of photons. In the solution and evaluation of Maxwell's equations, there often arise solutions which do not correspond to physical reality. In engineering these are generally termed "non-physical results" and are simply ignored. One such non-physical result arises from the fact that both advanced and retarded waves are proper solutions to the Maxwell model of wave propagation. Hence, one can have a source sending waves into the future traveling outward at some finite speed such as the speed of light in a vacuum and arriving at some distant point at a later time. This effect is termed "retardation". These "retarded" waves are what are typically observed in nature and are the "physical" product of electromagnetic action. According to the Special Theory of Relativity, these waves are true and the propagation velocity of them can never exceed the speed of light in a vacuum. Indeed Special Relativity assumes that for *all* phenomena that

2 Jefimenko, Oleg, D. , " Causality, Electromagnetic Induction and Gravitation", Electret Scientific Co. Star city, 2000, p16.

3 Casti John L., "Search for Certainty", William Morrow & Co., New York, 1990, p350 ff.

transmit energy (and hence information) including particles, energy can never be transmitted faster than the speed of light in a vacuum. No faster than light (FTL) communications have ever been satisfactorily demonstrated to date.

However, this does not mean that such apparent communications are not possible. Even if we suppose that due to a law of nature that energy never propagates faster than the speed of light in a vacuum, once we allow additional dimensions an *apparent* FTL transmission can occur. As an example consider a "world" that consists of the xy plane.[4] For denizens of that world the speed of transmission between any two points is always found to have a velocity, c, the symbol for the speed of light in a vacuum. For example these beings could stretch a fiber optic cable between points A and B and would find a certain time for transmission of data from A to B over the "distance" between them.

Now let us admit of an additional dimension. And furthermore "warp" that plane around into a sphere. Now the distance between two points is still measured by the surface inhabitants to be some X between A and B. But if light were transmitted though space from a source at A and received at B, where the path is not along the surface of the sphere, but taking a shortcut though its interior, suddenly we have an apparent information transmission that is going faster than light. Of course there really is no information being transmitted faster than the speed of light, but it is only that the inhabitants of the world are unaware of the additional dimension and it's geometry which gives rise to the apparent anomaly.

Note that due to the principle of relativity two events that occur simultaneously, but are separated by some distance, can *never* be the cause of each other. Even in the case where events are at the same location (as in Maxwell's equations) there can be problems if any information from the future is needed to produce the result. Of interest here is that not only retarded waves from the present to the future are proper solutions to electromagnetic equations, but also *advanced* waves from the future back to the present are valid mathematical solutions as well. Examination of such solutions shows they can produce amazing effects such as the perfect transmission of images despite the noise of a turbulent atmosphere. The only problem is that one has no ability to access any advanced waves. Nevertheless, interesting results have been obtained by simply guessing what these advanced waves might look like and especially if one introduces a delay which allows a knowledge of a portion of the "future" because by having a delay the "future" is already in the past and can be measured.

A similar situation occurs in the Feynman-Wheeler theory of light. The true nature of light has been a major puzzle of modern physics. Einstein was confused[5] as well as were all who came after him. In the 19th century everybody knew what light was: It was simply a wave in the luminiferous aether! Charts were made showing how it was all one big electromagnetic spectrum of waves from radio to cosmic rays. Except, of course, that by the 20th century things were clearly not that simple. The photo electric effect where light ejects an electron was shown by Einstein and others to involve energy transfers far too rapid to be due to waves. They clearly were some kind of particles. These so-called light particles were termed "photons". But oddly these particles when averaged over great numbers produced trajectories that were essentially identical with the patterns expected when waves are

4 See Books, "Flatland" by EdwinAbbott, "Flatterland" by Ian Stewart, and "Sphereland" by Dionys Burger that give fictional accounts of these "worlds".

5 Albert Einstein said, "*All the 50 years of conscious brooding have brought me no close to answer the question, 'What are light quanta?' Of course today every rascal thinks he knows the answer, but he is deluding himself.*" Quoted in 1951 by Raymond W. Lam.

diffracted. As usual when reality becomes too confusing to understand the “experts” simply lapse into hand-waving, undefined jargon, and fast talking. In this case they termed it “wave-particle” duality. What does that mean? Obviously it means nothing at all. It's smoke and mirrors to “explain” a mystery.

It is important to note here that while many simply pretend that the solution of the wave equation that represents the energy deposited from diffraction, by two slits for example, due to waves is identical to the statistical deposit of particle energies by photons when there are large numbers of them, such a view is incorrect. Mathematically wave theory is based upon a “continuum”. This is a typical mathematical “space” which is imagined to be composed of an infinite number of “points” of zero dimensions and produces mathematical solutions that are continuous, differentiable, etc. yada yada. But in the photon case one has discrete particles hitting the detector. Nothing is continuous. But if one has large numbers of these particles, one can then “fit” a continuous curve to them and it is this fitted curve that is essentially used as if it were a continuum for the wave equation solution above. The basic operations of the energy transfers are not the same at all.

Maxwell noted that so far as is known energy can only be transferred from place to place by two means: One is by waves in a medium and the other is by the kinetic energy of moving particles.[6] The mystery of light is that when particles, “photons”, are sent at a pair of slits one at a time, a pattern is generated by deposited energy that is on average nearly identical with that obtained if waves were sent at the same slits. The reason this is a serious problem is that we can make sure that the “photons” are each only going through one of the two slits on the way to the detector, yet somehow the final energy pattern is the result of two slits! Somehow the particle “knows” about the presence of the other slit and even whether it is open or not while going through the opposite slit! The photon does this even though the geometric extent of the photon has been measured and is clearly insufficient to reach the other slit.

Enter Professors Feynman and Wheeler. Well, if the proved laws of physics won't explain light, then why not try to explain it with some laws that are known to be wrong? And they did. Their idea is to imagine that the particle (the “photon”) is really just waves as the 19th century assumed. OK. But then how does one explain the rapid transfer of energy? The idea they came up with is this: A photon is really a packet of waves, in fact, two waves. In electromagnetics if one solves the wave equation, two valid solutions appear. One is the standard retarded wave which propagates through space and the other is an *advanced* wave coming to the present from the future! The standard procedure is to simply discard the advanced wave solution as “non-physical” and impossible.

But Feynman and Wheeler noted that if one allows this non-causal “wrong” solution, when one has a summation of the two waves an interesting thing occurs: Photons are created and absorbed instantaneously! This solves the problem of energy transfer being too rapid for waves! The two waves are created together to make a “photon” and later cancel each other out to represent the photon being “absorbed”.[7] The fact that the theory is pure fantasy based upon assuming a law of nature known to be wrong is simply spice for science!

This leads one to asking if causality is indeed a law of nature. The 19th century “action at a distance” which defined faster than light transmission was later proved to actually occur at the speed of light, and the supposed instantaneous action was deemed bogus. But today in the 21st century the old

6 Maxwell, James Clerk, “A Treatise on Electricity and Magnetism”, Dover Edition, Volume II, section 641 p278.

7 Paper: Wheeler, J. A.; Feynman, R. P. *Interaction with the Absorber as the Mechanism of Radiation*. Reviews of Modern Physics 17 (2–3): 157–161 (1945)

idea is having a comeback in quantum mechanics where such “action at a distance” has been renamed “non-local” interactions to cover up the fact that what is being discussed is non-causal phenomena. One can easily suspect the word games so common in modern science are in play here.

To conclude this section we will now take a quick tour of the fringe and ask what is the religious view of causality. Strict causality as we have been discussing above gives rise to a conclusion that the entire universe is naught but a huge mechanical device. Once started this device just runs like a computer program with each action determined by all previous conditions. Some religions promote such an idea saying “it is written” or what happens is “the will of God”. Presumably God's will is not limited by causality. However, some religions do not limit man that way either. They espouse something known as “free will”. And in this version of causality, it seems that man is free to choose his actions. The bottom line being that while most of materiality is destined to obey causality, the mind of man is not. Man it seems, according to this theory, can either simply “coast” and allow his past thoughts and experiences to determine his future choices or has the ability to actually go against those influences and choose some other action. An important point in this freedom to choose is that most of physical reality is *not* free to choose. Physics, chemistry, biology, electricity, atoms and so forth all must obey causality. It is only that small portion of reality that comprises the mind of man where this “free will” resides. And presumably the mind of God has free will as well. The bottom line here being that theories that ignore causality do so at their peril, but that there are suggestions that there may be exceptions which keep the universe from being some enormous mindless machine.

If we now return to our original discussion of what is science and the view that it is a set of facts “explained” by a theory, we now see that while causality allows us to “explain” what is going on by saying that this set of circumstances causes these things to happen which in turn cause those things to happen and so on until we trace to our final result, the fact that causality may break down at the level of the mind of man, puts a kink into our faith in science. We can start our “explanation” as before saying that this causes that etc. but then at some point we may arrive at a situation where we much say that these circumstances confronted a human mind and it *decided* to act a certain way. So what is the “explanation” for that “decision”? There is none because causality has broken down and thus the “reasons” for that decision cannot be traced back to a first cause. We have suddenly discovered a fly in our science ointment!

The Scientific Method

So having discussed the goals of science one now must ask what kind of methodology can be used to achieve those goals. To review the operations of science we noted that the existence of the universe and it's operations create vast numbers of facts which we called “data”. Portions of that data can be determined though observation, measurements and recording. Obviously the dataset is constantly changing with time. In science, however, we can operate over a time-interval starting with conditions now and attempting to predict conditions at a later time, or one can operate all at one time such as asking if I build a bridge thus and so, what will it's characteristics be. The necessity of causality is much more obvious in the first case than in the second.

Note that if one has a database of a certain collection of some facts of the universe, one could produce “results” by simply printing out that database. In this case the problem is that the “result” is as complex as the data and hence no more easy for a human mind to comprehend. This “null” case is therefore of no interest to science or the scientific method. Science, on the other hand, is a search for a

way to be able to reproduce and data or subset of data in our database at will but by only using a few well-defined operations. In other words the scientific method is all about trying to find a compact generator operation that can quickly and accurately generate the facts describing what goes on out there in the universe. These compact generator methods are called “laws of Nature”. Recall that we have already noted that these “Laws of Nature” are not “explanations”!

An approach that has proved quite successful at achieving this goal, is to create an analogy between what is going on in nature and mathematical models. In truth, mathematics is simply a compact consistent language that can used to describe changes in our data or relate one part of the database to another. Like any language, mathematics is pure fantasy. It is made up symbols, made up rules and made up operations. But mathematics as a language has the advantage over normal speech of being far more logical and consistent. It is a defining rule of mathematics to always be self-consistent no matter what assumptions (axioms) were used to start it's construction. Oddly self-consistency cannot be proved using *only* the system itself[8], but such self-consistency does provide a feature that is extremely useful in our scientific quest. This feature is that one creates a mathematical analog that correctly describes some portion of our data and then using the rules of that mathematical system manipulate our statements into different forms, we can assume that those new forms are equally correct. In other words the newly created descriptions will work as well as the original. Showing that such manipulations were done correctly and according to the self-consistent rules of mathematics is termed a “proof”.

This approach achieves two things. The first is that our manipulated forms may indeed have fewer steps to produce data than a simple printout. In other words these new descriptions can represent *laws of nature!* Discovering these laws of nature is clearly the goal of science. And the other thing that can be achieved is that our new descriptions can create new unexpected results that may even be in a different portion of our database. In other words manipulating our model can create predictions of what should be expected of reality. Since reality is real and mathematical models are fantasy, there is no guarantee whatsoever that nature will operate in that way. Hence all such predictions are merely suggestions even though they stand as “proofs” guaranteed mathematically valid according to the rules of mathematics. But since the mathematics is just an analog of reality each result must be verified as “true” by observation and measurement of reality. In other words the mathematics must always be shown to agree with reality through what in science is termed experiments.

Therefore the scientific method consists of several parts.

1. The observation, measurement and recording of reality.

2. Creation of a language model of less complexity than the data itself, termed a theory, to allow human comprehension of what is going on, typically using the language of mathematics.

3. Manipulation of the created model using the rules of it's own system to predict new and unexpected results to be produced from the data.

4. Verification of the predicted results by actual measurement of reality with judgment of the validity of the model dependent upon the validity of the predictions.

8 Casti, Johm L., “Search for Certainty”, William Morrow & co. New York, 1990, pps 380-381.

As usual there is a “catch” hidden in this pat description. The “catch” is that there is no real methodology for step number 2. How exactly does one create a model, mathematical or otherwise, that can describe great swaths data while comprising only a few relations and operations.? Einstein said: “*A theory can be proved by experiment; but no path leads from experiment to the birth of a theory.*”[9] Thus, it is seen that hope for the “scientific method” to be merely a certain methodology that can be followed rote, even by a machine, to lead to all the laws of nature is suddenly beginning to start to run into difficulties.

Can a Computer do the Scientific Method?

Since there is no formalism for the generation of the shorthand “laws of nature” Step two above is described by words like logic, intuition, inspiration, and arts which suggest the “open” nature of the creation of mathematical models that reflect to some degree the operations of reality. It is interesting that in the post-Einstein era the mathematical complexity and seemingly strange conclusions of Einstein's theories have created a kind of worship of mathematical models as being more real than reality. The idea is that somehow the universe at a fundamental level operates as a mathematical formalism and if one can just be smart enough to discover the *correct* mathematics, then all true laws of the universe can be generated using the operations of that formalism. While mathematical models have had great scientific success in both describing nature and predicting new relationships and laws, there is no evidence that the above view of mathematics as an ultimate description of nature at the fundamental level is true. And as we shall see, even by the rules of the mathematical models themselves, without considering how true they are to nature, there are problems in trying to use the formalism to discover all the relationships that are true. As we shall see it has been shown that it is impossible for mathematics to do this.

So for the moment, forget about how scientific mathematical models are created but just concentrate on the mathematical development of new laws and predictions using rules of the given mathematical formalism on the model taken as a given. The question we then ask is that given the rules of a certain mathematics and the starting relationship can one develop a mechanical means, like say a computer program to discover all the true relationships that follow from that beginning? The mathematician John L. Casti has looked into this question and discovered interesting results.[10]

First we must ask what exactly do we mean by a “computer”. Today when even home computers have massive storage of programs and data and operations that are lightning fast, it turns out that ALL computers can have their operations duplicated on a simple device known as a Universal Turing Machine with a long paper tape for storage and a scanning head that can read on write on that tape that we imagine in our minds. Sure, it isn't a practical machine but it is an important thought experiment because it allows one to derive the laws governing all computing machines. This universal computing machine was invented by Alan Turing the British mathematician famous for breaking the German “enigma” code machine in WWII. Of course mere genius is insufficient to find appreciation and while never accused of being a pseudoscientist, his brilliant code breaking work during WWII was given minimal support until he went over everyone’s head and wrote to Winston Churchhill personally. But after the war, worse than being a kook, he was convicted of being a homosexual which removed

9 Einstein A. The Sunday Times July 18, 1976.

10 Casti, John L., “Search for Certainty: What scientists can know about the future”,William Morrow and co. New York, 1990.

him from all government work and prevented him returning to the United States where he had previously done work at Bell Laboratories. He was forced to undergo hormone treatments and the inquest into his untimely death by cyanide poisoning left so many obvious questions (like the apple thought to contain the cyanide that caused his death that was ruled “suicide” was never even tested for poison) that the proceedings seemed more of a cover-up than an investigation.

Through the use of this formal machine one can get a glimpse of how science works to discover the laws of nature. The mathematical analog attempts to discover the laws of mathematics through operations in this computing device which is to say what we normally term proofs. For example in geometry one starts with a few certain basic assumptions and rules. The using just the allowed operations of geometry one proceeds Euclid-fashion to develop all manner of relationships between lines, points, circles, triangles, perpendiculars and all the rest. The study of geometry thus consists of showing “proof” of each of these new relationships by a series of valid steps. The same thing can happen with numbers. If we have a long seemingly random number one way to have the computer print out that number is to simply command it to print each digit. But now there are as many operations as there are digits in the number. There is no simplification. But for certain numbers such as the square root of two or pi (as in certain relationships in geometry) there can be methods called algorithms of few steps that are capable of generating long seemingly random numbers. These algorithms are analogous to the laws of nature. And indeed, some of these “special numbers” and the algorithms that generate them are exactly what is found inside my HP calculator.

We know that for certain numbers like say the “rational numbers” which are generated by one number divided by another, that the result produces repeating patterns after a while. Thus beyond a certain point all digits to infinity can be “computed” because at the end there is simply the description of the repeating pattern and the program is finished. Irrational numbers do not repeat and hence can remain random to infinity. Therefore if a number can only be described by printing each digit, it is termed random by definition. Oddly, this means that of all the possible numbers the vast majority are random!

This in turn leads us to what is termed the “halting problem”. This is to ask if we have a computer generate a certain number will the program ever stop as finished? We can see above that for rational numbers it can eventually stop once the digits start repeating, while for random numbers it never will. So then we ask the question can one write a program that will look at your given program and determine *in advance* if it will ever halt or not? Turing himself answered this question in the negative. No such program is possible in a general situation. Obviously such a program can be written in specialized cases like our rational-random numbers above where one knows that certain calculations will halt, but the true question is a generalized algorithm that works for all programs. There is none possible.

What this result gives us is a hint at the limitations of computers being used to give us “truth” which is to say all the true statements of arithmetic. Since German mathematician David Hilbert at the International Congress of Mathematicians in 1929 showed that *all* mathematical systems can be reduced to arithmetic, this becomes a generalized law for the entire scientific method no matter which mathematical system is used for a model.

The halting problem then leads to a related problem of complexity. If one sets out to write the shortest program to generate a certain number, how can one determine if any given program is actually

the shortest possible? Gregory Chaitin considered this problem and approached it by defining the complexity of a number. He defined the complexity of a number to be the length of the shortest program for a Universal Turing Machine that will print out that number. This allows us to derive our previous statements on random numbers by defining random numbers to be those whose shortest generator programs are as long as the number itself. In other words, just the digits being printed one by one. Thus, pi is not random at all. There are any number of programs of fixed length for calculating as many digits of pi as you want.

The question then is what has all this to do with the scientific method? For one thing it means that since we've seen that almost all numbers are random that mean that there can exist no program for producing those numbers other than the trivial one of just printing the numbers in sequence. Casti puts it this way:[11]

"What Chaitin discovered was that no program of complexity n can ever produce a number having complexity greater than n. Therefore the program of complexity n can never halt by outputting the number specified by Chaitin's phrase. This fact constitutes an algorithmic complexity version of the resolvability of the halting problem."

Or as Chaitin himself put it: *"A ten pound theory can no more generate a 20 pound theorem than a 100 pound pregnant woman can birth a two hundred pound child."*

Thus, Chaitin's theorem says that if we have some program, there always exists some finite number t, that is the most complex number the program can generate.

The bottom line here is that the scientific method comprised of modeling reality with mathematical formalism and then using that formalism to predict new relationships that are tested against reality and so forth that was and is widely held to be *the* way to discover all "truth" in the universe, clearly is not as promising as was once thought. In short, this method pushed to it's limits soon meets a brick wall of unsolvability and this in turn limits our ability to create scientific theories.

The science fiction writer Rudy Rucker has estimated this limitation.

The number t, above in Chaitin's theorem can be estimated as:
t = complexity of all human knowledge + complexity of Universal Turing Machine in question + program overhead.

If we take as a first pass estimate that all the present-day human knowledge of physics, chemistry, mathematics and all other sciences can be reasonably described in 1000 books, and say that our Turing computer can also be described in 1000 books and throw in a million as program overhead, and since an average book contains about a million bytes or about 8 million bits, we see that that t is certainly less than 16 billion. Thus, Chaitin's theorem tells us that our scientific theories are powerless to tell us anything about phenomena that are of complexity greater than 16 billion.

Casti says:[12]

11 Casti, Op. Cit. P. 355.
12 Casti, Op. Cit. P 357.

"The bottom line then is that if any worldly phenomena generates observational data having complexity greater than around 16 billion no such machine (read: human) will be able to prove that there is some short program (i.e. theory) explaining that phenomena."

But equally important, Chaitin's theorem also says that the machine can never tell us if such a simple explanation *does not* exist either. Therefore we see that beyond a certain level of complexity, there may indeed exist true laws of nature that provide simple explanations for our observations (data), but that our scientific method is incapable of either finding those explanations or even of proving that that they do or do not exist! Casti notes: [13]

"Complexity 16 billion represents the outer limits to the power of human reasoning: Beyond that we enter the "twilight zone" where reason and systematic analysis give way to intuition, insight, feelings, hunches and just plain dumb luck."

And we suggest that where Casti is pointing, though he does not say so, is directly at an indication that the missing link in the current accepted scientific method is that the paranormal is required to extend our scientific knowledge beyond it's current limitations. Ironically, current practitioners of the scientific method rarely admit of these limitations and moreover, resist any suggestion of the paranormal having an existence let alone a place in science to the point of unscientific irrationality.

One might argue that while the above may be fine for computers, science is done with the human mind. But I would point out that initially we restricted ourselves to just the mathematical models side of the scientific method which makes our computer arguments clearly more reasonable. The mathematician Kurt Godel examined the mathematics of all this long before computers and the conclusions are inescapable. The Godel theorem is that in any mathematical formalism (arithmetic) there exist true statements that cannot be proved using only that given formalism. Hence there is a difference between truth and proof. It's easy to see that this same idea was expressed above. Indeed Godel's theorem can be cast in various versions according to Casti including those discussed above:

Godel's Theorem – Formal Logic Version

For every consistent formalization of arithmetic there exist arithmetic truths that are not provable within that formal system.

Godel's Theorem – Informal Version

Arithmetic is not completely formalizable

Godel's Theorem – Complexity Version

There exist numbers having complexity so great that no computer program can generate them.

Godel's Theorem – Turing Machine Version

13 Casti, Op. Cit. P 358.

No computer program can ever generate all the true statements of arithmetic

Godel's Theorem – Diophantine Equation Version

There exists a Diaphantine equation having no solution – but no theory of mathematics can prove the equation's unsolvability.

So at this point we have examined “science” and discovered that science consists of observing and measuring the facts of the universe which are assumed “true”. The way these data are understood by humans is to find simple relationships termed “laws of nature” that can generate approximations to the actual data both in predicting results and producing values from various sets of initial conditions. These “laws” are described in language following the rules of the language and typically for consistency and compactness, mathematics is the language used. Generally speaking, since mathematical systems are invented with the axiom that they are internally self-consistent, the problems of the semantics of spoken languages are avoided. The formal operations of mathematics are then used to develop new “laws” in the form of models that are tested against measurements and if in agreement with nature are adopted as additions to knowledge. This whole process is termed the “scientific method”.

The scientific method to date has enjoyed great success in providing human understanding of the universe and nature and this has led to unbridled optimism as to it's ability to discover all the “truth” in nature even if we have not done so yet. But as we have just seen such enthusiasm for this modeling method is over-optimistic in that one can show just on the mathematical model side alone that there are considerable limitations to the amount of “truth” that can be discovered using the formalism. Clearly there are truths of nature that exist that cannot be found by this “scientific method”!

The bottom line here is that those who have attempted to adopt the scientific method as a substitute for religion and a path to the secrets of the universe are going to be severely disappointed. Also, those who regard mathematics as more real than reality, will find that mathematical fantasy and natural reality are two different things. And those who regard the human brain (not mind) as the ultimate key to unlocking secrets of the universe will find that the human brain being a version of a Universal Turing Machine is as limited as our machines. And lastly the irrational rejection of any and all data pointing to human capabilities beyond mere brain electrical and chemical phenomena by practitioners of the present form of the scientific method in essence hoists them with their own petard. In short, the very path out of these limitations pointed to by a variety of disparate observations and events is pointedly denounced and rejected by those who are so limited. Needless to say, such irrational prejudice and bigotry are not part of the scientific method or of scientific ethics.

“Norms” of Science

A closer look at the characteristics of science and the scientific method shows that none of this operates in a vacuum. Even though science pretends to be totally objective and above human frailty, it should be no surprise that science and scientists are as given to human and social foibles as any profession. In 1942 science sociologist Robert K. Merton[14] outlined what he termed the “norms” of

14 See. “Paradigms Lost” by John L. Casti, Avon Books, New York, 1989 pages 51-52.

science which represent the “ideal” characteristics that science should possess and scientists should strictly adhere to in their work:

Originality: *It is suggested that scientific results are always original and studies that add nothing new are not part of science.*

Obviously textbooks are not original and are part of science. Even more importantly a crucial step in the scientific method is the verification of the results of the mathematical model against experiment and reality. In this step it is considered a “norm” for widely distributed and independent researchers to repeat given experiments so as to solidly confirm the results so obviously their work is not “original”. The more confirmation the greater the faith in the proposed theory. Hence it is clear that there is originality in science but that it is not a necessary condition for science. Of course one could argue that repeated confirming experiments are in fact “new” results.

However, the basic “laws of nature” that are being described and verified above clearly are expected to be original. In other words science “contributions” are expected to somehow add to the sum total of the knowledge of human civilization. This is a basic requirement of a PhD dissertation. Simply rewriting an old law of nature with new jargon and nomenclature does not meet the originality norm. Certain jargon-heavy sciences such as biology or medicine often become suspect under this “norm”.

Detachment: *Scientists are supposed to undertake their work with no motives save the advancement of knowledge. They should not have a psychological commitment to any given point of view. And this is advertised by the impersonal style of scientific communications.*

Needless to say, scientists are human beings. We all know very well the kinds of behavior that humans practice. For scientists whose income and funding for their work depends upon their reputation and the happiness of those providing the money, it is rare that some are found like Grigori Perelman[15] who turned down all prizes and honors, including the million dollar Millennium Prize for proving the Poincaré conjecture, saying: “*I'm not interested in money or fame; I don't want to be on display like an animal in a zoo.”* But as we shall examine further on, detachment is a fraud for a far more basic reason. Science is based upon a set of paradigms and today a materialist view has infected them to the point where these fundamental beliefs simply do not agree with the suggestive data from the real world. The net result is that a whole swath of topics are simply rejected without examination as being “forbidden”.

Universality: *All claims are given weight on merit alone and not on the religious, ethnic, social, personal or financial factors surrounding the individual. In short there are no privileged sources of scientific information.*

Obviously expecting this kind of perfection out of human beings is going to be met with some measure of disappointment. The way science is supposed to be compared to what many use to argue merit for their positions is best summed up by Nobel Prize winner Richard Feynman: *"It does not matter who you are, or how smart you are, or what title you have, or how many of you there are, and certainly not how many papers your side has published, if your prediction is wrong then your hypothesis is wrong. Period."* One egregious example of universality violation is the current attempt to

15 https://en.wikipedia.org/wiki/Grigori_Perelman

convince the public that the "climate science" of anthropogenic global warming is "settled" by the some kind of democratic vote among scientists. From our own point of view we'd note that Casti's admission of plagiarism in some cases does not in our opinion automatically invalidate the various ideas that Casti has published and we have discussed above. As noted, in science ideas are to be judged on their merit alone and not voted up or down based upon personal factors.

Of course it takes very little digging to find that in science as practiced today, there are indeed "privileged sources of scientific information". Below we will examine the way in which belonging to the establishment science "club" gives great weight to your arguments, while those outside the formal training, education and employment of that group are pretty much regarded as "pseudoscience" which means that no weight is given whatsoever and indeed, it is not even considered necessary or proper to even bother to examine the claims in order to ridicule them and reject them out of hand.

Skepticism: *No scientific statement is taken on faith. All claims should be examined for errors and invalid arguments. All mistakes should be reported at once.*

The above Feynman quote gives a list of the standard tricks used to circumvent skepticism. Appeal to numbers and to authority is standard. Most of these come down to being just an adult version of the teenage lament: "But mom! ALL the kids are doing it!". Even worse, is that undue influence due to financial considerations and authority allows the subversion of the so-called "peer review" process for the purpose of making sure mistakes (especially embarrassing ones) are not reported at once.

Public Accessibility: *All scientific knowledge should be freely available to everyone.*

Given that scientific research is to be done only for the knowledge and not other reasons, it follows that the research is not owned by the researcher. Note that there is supposedly a division here between science and technology. It is accepted that engineers, inventors and even those with scientific training can be hired and paid to develop technology that then becomes the property of the either the developer or the entity paying him. It is not considered out of line for inventors to "own" their ideas for the life of the patent or for companies to pay to develop secret "proprietary" information or for governments to pay for development of classified technology. The idea of temporary "ownership" of inventions through patents is that profit from such ownership encourages more inventors to produce new ideas that benefit civilization, though the purpose of patents are not to insure that inventors get rich. However, the ideal of science is to discover the laws of nature. And how nature works is considered to be the property of all humans living here. Needless to say there is great temptation for those paying for information to find advantage in keeping it to themselves rather than turning it over to civilization. Examples are too numerous to mention.

Patents have a rather limited life and the reason for such is that even technology is destined to become the property of the human race as a whole. When the patents expire the protected ideas are then property of the entire human race and free for anyone to use for any purpose including profit. It should be obvious that given human nature, such idealistic values are soon to have certain humans trying to find ways around such magnanimity and attempting to keep not only technology but the very laws of nature for themselves alone. And the major way in which this occurs is through the use of government authority to "classify" the science arguing that "national security" demands that human civilization not be advanced and held stagnant so as to preserve some *status quo*. Needless to say the public is asked to blindly accept the word of those in power that such restrictions are necessary to protect everyone.

Given the well-established nature of many politicians, blind acceptance is probably not a good idea.

However, the light at the end of the tunnel for this century can be seen in the rise of the INTERNET. In spite of efforts of the old system to maintain tight control over public access to science information through fees and lingering respect for science publications that determined what was and was not published, the vast and worldwide expanse of information finding it's way to the INTERNET is giving rise to the growth of a true public accessibility that previous science only pretended existed.

In summary, Casti notes:[16]

"Anyone involved with the way scientific practice actually works will immediately recognize that these prescriptions are violated every day in both trivial and not so trivial ways... What is disturbing, to some anyway, is what appears to be an increasing incidence of violations of the spirit of science, at least as it's embodied in these norms. Such an increase pace of corner cutting in science seems especially evident in the last decade or so, certainly aided and abetted by science's Faustian bargain with government funding agencies."

I remind you that the above was written in 1989 and in many ways things have not changed for the better since in spite of the explosion of the Information age. Old ways die hard.

Pseudoscience

Generally speaking pseudoscience is a pejorative term used by scientists and those trying to control science for political reasons to inform the public and all scientists that the idea to which this term is attached is not to fall under the above "norms" for science whereby it would be skeptically viewed, but carefully examined for errors and invalid arguments and be allowed to be freely accessible by the public. In other words, the term "pseudoscience" is a signal that whatever is so labeled must be rejected out of hand without any examination whatsoever. The term is very akin to heresy in a religion.

Obviously this attitude flies right in the face of the ideals of free and open discussion of ideas that are supposed to characterize science. The argument here to justify these actions is that pseudoscience is obviously "false science" and thus, not science at all and therefore not deserving of the consideration deemed appropriate for actual scientists. Ideally, true scientists, we note, are not judged by education, training, titles or employment, but only by their work on the topic under discussion. If the topic is considered taboo then person mentioning that topic is given a negative label and driven from all discussions no matter how relevant the topic or how extraordinary the quality of the work may be.

This sort of thing can be seen for example in the documentary by Ben Stein "Expelled: No Intelligence Allowed". The mere mention of the term "intelligent design" creates a great wave of backlash that wash all science careers overboard. Another can be seen in the affair of "cold fusion" where tenure and extensive reputation was not enough to prevent them from being summarily booted out of the club. Later, we will examine how it is the paradigms of today's science create the violent reactions to heresy. The reactions aren't due to a lack of proper science methodology, but rather to the fact that the subject in question is going against one of the base paradigms of what is believed in

16 Casti, John L., "Paradigms Lost", Avon Books, New York, 1989 p52.

science today. The net result is heresy that gives the inevitable reaction of burning at the stake.

But the above isn't all there is to pseudoscience. Indeed, some science is in fact pseudo which justifies the above actions in the minds of the actors. Let's face it. Science today is a great and wonderful story. It was only a few short years ago when humans were freezing in shacks and hauling stuff round (including their own butts) with horses. The explosion of technology in the 20th century and beyond is to the man in the street something akin to magic. Vast powers in the hands of even the poorest humans all arising from some kind of mystical considerations that even the high priests of science can't explain so anyone can understand it!

Humans love power and they love to impress other humans. Of course one way to impress other humans is to do something impressive. But that is difficult and often involves a lot of work like going to school for years. So there is a temptation to take a shortcut. Just pretend you are are a scientist, spout a bunch of incomprehensible theories and who could tell the difference? Add to this the fact that media and journalists are always looking for a "good story" where journalistic standards of truth in reporting are minimal if not entirely ignored and you have a ready advertisement channel for imitation science. The public, which sees real science and fake science as equally confusing babble, is happy to settle for either! And that fact sets the teeth of real scientists on edge.

Real scientists with degrees training, published paper, patents, titles, employment and all the rest are incensed at these fakes who are grabbing a share of the adulation and wonder reserved for themselves as the high priestly caste of learning. Hence there is little wonder that the reaction is more akin to the Spanish Inquisition than to a scholarly debate over the merits of ideas. But, the danger of over-reaction is that good and creative ideas get preemptively thrown out with the bad. So having explained all this, it is instructive to take a look at some characteristics of so-called pseudoscience just as we did for science "norms" above. Casti lists some of these in his book "Paradigms Lost".[17]

I would point out that Casti is very much a believer in science as a religion and in the need for the extermination of all science heresy in spite of the fact he provided much of the inspiration for the above discussions of the scientific method and it's limitations. He blasts pseudoscientists as he calls them in this section trying to point out the errors of their ways in much the same way as I am about to blast him pointing out the errors of his ways. This should be an interesting debate. [Italics are quotes from Casti's book]

Anachronistic Thinking: *"Cranks and pseudoscientists often revert to outmoded theories that were discarded by the scientific community years, or even centuries, ago as being inadequate. This is in contrast to the usual notion that crackpot theories as being novel, original, offbeat, daring, and imaginative."*

It's not that this is entirely untrue even among true cranks. I've seen a common poster on the INTERNET who has virtually every paper of 19th century "greats" down pat and is convinced that science ended there. Also people lacking in science education tend to be better able to understand theories of an earlier simpler time. But that is not the end of the story. For example, science for some reason, has decided long ago to reject the 19th century idea of an "aether". This being the medium that was supposed for the waves of light to propagate in. When Michelson and Morley found no evidence

17 See Casti, "Paradigms Lost", p 57ff

of the earth plowing though the aether (termed aether drift) 19th century science was puzzled. Then when Einstein assumed that the speed of light is always the same no matter what the velocity of the source (Michelson showed this was true by experiment too) somehow everyone (but not Einstein) concluded that the so-called aether did not exist. The new fashion was to assert that waves traveled through space in "nothing at all". A popular college freshman physics textbook[18] worded it this way:

"It is necessary to have a medium for the transmission of mechanical waves. No medium is required for the transmission of electromagnetic waves, light passing freely, for example, through the vacuum of outer space from the stars."

So is light not a wave and thus needs no medium? Nobody knows. Einstein had no clue as we saw above and today nobody knows any more than he did. Einstein in fact pointed out that space does indeed have properties and thus there must be an "aether" no matter what name you use for it. And now we have the LIGO experiment asserting that they found gravity waves. So if there are waves, then what is the medium? This is an important point, so I'm going to dwell on it. Waves BY THEIR VERY DEFINITION are energy stresses in a MEDIUM where those stresses are transmitted from one point to another so the energy spreads throughout the MEDIUM. To say that there are waves without any medium is like saying there is behavior without anything doing the behaving (and scientists say that too!) Of course aether is a very popular anachronistic theory of cranks. But the difference between pseudoscience cranks and the cranks *in* science is that the outsiders say things like the speed of light depends upon Newtonian mechanics which is to say depends upon the velocity of the source. Cranks in science know that this assertion has been measured many times and is completely wrong. But they then assert that "waves" propagate without need of a medium. One can't tell the cranks from the "scientists" without a program!

Take some time to browse through the musty old journals of the library of any major university and you will quickly discover that an absolutely amazing amount of measurements and experiments have been done by some extremely capable and talented investigators. It's easy to dismiss these old studies as "anachronistic" and laugh at the ideas and fashions of previous ages. And science of today loves to assume that these previous works are basically incompetent, a position that shows no actual study of previous work as well as massive egos. Hence, the past, when viewed through the spectacles of modern understanding can prove a treasure trove of new ideas that are actually old ideas that were ignored, or fell out of fashion or simply never developed beyond their initial discovery. To ridicule ideas because they are *old*, is not science. In science ideas are only rejected because they are wrong, which is to say do not agree with observations and measurements. It is standard journalistic fare to take some new theory or ideas that are currently popular and all the rage, and then dig out old quotes and research that was pointing the way decades or even centuries ago, saying that there is nothing new under the sun.

Casti then goes on to discuss the relationship of "creationists" with the theory of uniformity. His discussion is rather unenlightening, but the topic is of interest in the discussion of reactions of science to so-called "pseudoscience". The idea of uniformism began by James Hutton in 1785 as an alternative to the biblical explanations of geology and gained strength as the theory of uniformity due to publication of "Principles of Geology" in the 1830s by Charles Lyell whose reputation led to the theory being accepted as total unquestioned dogma. The theory is that all geological rules are constant

18 Halliday and Resnick, "Physics for Students of Science and Engineering", John Wiley, 1960, Vol II p. 393.

over time and that explains *all* changes. Rivers wash out canyons, wind and rain wears down mountains and oceans build up sediment so that all geology can be explained by these slow gradual changes still going on today. Obviously there is some truth to this idea. However, it is equally obvious to even the most uneducated crank that things like earthquakes, volcanoes, and even meteor strikes exist and cause changes. Yet I remember seeing the theory of uniformity gravely intoned on television as truth just as PBS still does with theories today. I remember having knock down, drag out, arguments with professors over uniformity. They staunchly argued for it with undying faith no matter how many catastrophic events were pointed out to them by me. But here's the rub. About this time, the theory fell out of favor as the asteroid theory of dinosaur extinction gained popularity. So I then I went back to the same professors and put the "new" dogma to them. Oh, they said, nobody believes in uniformity! Everybody knows it's wrong. I said what about our arguments. They just looked me in the eye and told me they never argued for uniformity because "everybody knows" that it is wrong! You see my problem was I thought I was in a discussion of science when it was actually a discussion of religious beliefs. Oddly enough, I was recently "banned for life" for being a "crank" from an INTERNET physics discussion forum because I only *mentioned* the theory of uniformity. I didn't even voice an opinion as to it's validity. Even worse I mentioned it in the "lounge" forum and not even in the actual science discussions. Clearly, this topic is still an emotional hot button among establishment science people.

Casti asserts that "creationists" pretend that Uniformitarianism-Catastrophism dichotomy is still a "live debate" when it's not. I guess he's with the "I never argued uniformity was the only truth" crowd. What is obvious is that there is some science embarrassment here and it's being covered with bluster. I would simply ask that since geology is clearly changed by *both* slow processes *and* short term violent events, how can one argue that it is not still a "live debate"? Every change must be examined for how much change was due to each and every mechanism. The only debate that is over is the silly one over choosing whether changes were due only to slow processes or only to relatively rapid events.

Seeking Mysteries: *"Scientists do not set out in their work to look for anomalies. Max Planck wasn't looking for trouble when he carried out his radiation experiments and Michelson and Morley certainly were not expecting problems when they devised their experiment to test for the luminiferous aether"*.

While the above examples are certainly true, the overall effect of this statement is very misleading and I presume intended to mislead. Casti discusses what he calls "an entire school of pseudoscience devoted to enigmas and mysteries". His implication that mysteries are of no importance to science and should be ignored since we *a priori* are certain none of them are relevant. Needless to say one does not have to review the "norms" of science to realize that this is nothing but a load of religious dogma and is totally anti-science.

Sure, there is a place in science for those who fill in the blank spots in handbook tables. Certainly that is needed. But that is obviously not where major advances in science come from. To review what science is, I'll again note that it's all about finding a simple model that can generate vast quantities of data with just a few steps that humans can understand. If the model does not generate correct data then the model is simply wrong. It does not matter how much of reality the model correctly describes. If there is just ONE place where the data generated is incorrect then the model is wrong. As Feynman said: Period. What this means is that advancing science, which means developing new theories, which we already noted cannot be done completely by mechanical or mathematical means, which means "discovering" new laws of nature, is most effectively done by the method of looking at mysteries! Mysteries are precisely where current science does not fit reality and that is where

the hints reside that a new theory is needed! As the physics of music professor, the late A. H. Benade, once told me: “Don't be like the guy who lost a quarter over there, but is looking over here because the light is better!” Sure, Newton’s laws of mechanics describe a great deal of observed phenomena in our universe, but if you travel fast enough they are clearly wrong. And where they are wrong is *exactly* where scientists need to be looking to discover the next more correct laws.

So when Sir William Crookes Saw D. D. Home rise off the floor, what are we to think? The science of pseudoscience would tell us that Crookes was an idiot, a fool, a kook, a crank who knew no science and was so easily fooled that he was tricked because “everybody” knows that this is “impossible”. When the Nobel prize winning Curies studied ESP and the like, presumably the “explanation” was that since everybody knows such things are “impossible” it's clear that at one time the Curies were top scientists, but being interested in “mysteries” shows that their brains were burned out by radiation! Come on! Everybody knows that a person can't control their heartbeat with just thought, whether they are a Yogi or not! What is clear here is that these attacks bear no relationship to science at all and fall well within the purview of politics and propaganda. Let us allow Sir William Crooks to defend himself:[19]

“Will not my critics give me credit for some amount of common sense? Do they not imagine that the obvious precautions, which occur to them as soon as they sit down to pick holes in my experiments, have occurred to me also in the course of my prolonged and patient investigation? The answer to this, as to all other objections is, prove it to be an error, by showing where the error lies, or if a trick, by showing how the trick is performed. Try the experiment fully and fairly. If then fraud be found, expose it; if it be a truth, proclaim it. This is the only scientific procedure, and it is that I propose to steadily pursue.”

Obviously, Sir William has a very clear understanding of the scientific method and science “norms”. His critics like those who dismiss all pseudoscience without any examination or explanation, obviously either do not or are purposely ignoring it if they do.

Appeals to Myth: *“Cranks often use the following pattern of reasoning: Start with a myth from ancient times and take it as an account of actual occurrences; devise a hypothesis that explains the events by postulating conditions that obtained [prevailed] at that time but that no longer hold; consider the myth as providing evidence for support of the hypothesis; Argue that the hypothesis is <u>confirmed</u> by the myth as well as by geological, pale-ontological or archaeological evidence. This is a pattern of circular reasoning that is absent from the blackboards and laboratories of science.”*

Dr. Casti is clearly a very smart fellow, but we think he needs an example to go with his analysis.

Let us start with the “science” that the mythical city of Troy is just a great story. I mean Homer obviously made the whole thing up, whoever Homer actually was. This is a given. But then enter the “cranks”. Someone starts with the pseudoscience idea that perhaps one should take the account of Homer as a description of actual occurrences. So next a theory needs to be devised taking into account the changes that no longer hold. Well, for one thing the sea coasts have changed and where once there was water, now there isn't any. Thus, a theory is developed as to just where the ancient harbors

19 Tart, Puthoff, Targ editors: “Mind at Large”, IEEE Symposium on the Nature of Extrasensory Perception, Hampton Roads Publishing, Va, 2002 (Original 1979)

described in the myth would be located today. The myth therefore provides the evidence to support the hypothesis. Of course the difference here was that archaeologists actually went and ***dug*** at the supposed location of the mythical Troy and oddly the existence of the city was confirmed by geological and archaeological evidence. In short, the ruins of the ancient city of Troy (and much more) were found at precisely the location the "myth" said it was located. Casti is correct that this kind of thinking is absent from the blackboards and laboratories of science. Which is presumably why "science" never bothered to look for or find the ancient city of Troy. "Kooks" had to find it.

Casual Approach to Evidence: *"Pseudoscientists often have the attitude that the sheer quantity of evidence makes up for any deficiency in the quality of the individual pieces."*

Given the Feynman quote earlier which included the phrase "*certainly not how many papers your side has published"*, we can just pretty much accuse both science and pseudoscience of this fault. Let's just call it a human frailty. A particularly prominent current example is the constant harping of those promoting an energy tax to stop the supposed destruction of the planet by carbon dioxide emissions on the so called "fact" that more that 80% of all scientists agree that there is global warming caused by man made (anthropogenic) carbon dioxide emissions. Never mind that all climate warming models (more than a hundred) over time have *all* been shown to be totally wrong by overestimating the projected warming compared to actual temperature measurements. Presumably the "casual" argument for funded science and is that a democratic vote among scientists trumps any actual measurements.

Irrefutable Hypothesis: *"Given any hypothesis, we can always ask what it would take to produce any evidence against it. If nothing can conceivable could speak against the hypothesis, then it has no claim to be labeled scientific. Pseudoscience is riddled with hypotheses of this sort. The prime example of such a hypothesis is creationism..."*

The purpose here is not to take sides in various debates between warring factions which in this case is the war between evolutionists, creationists and intelligent design. All have a religious basis and are argued as such. Creationists start with the bible, take it as historical fact and use that as "proof" that God created the universe as described there. The problem with this view is, that as seen in the "Myth" section above, that while extrapolation from a myth by suggesting it might be true, is a valid way to engender scientific progress and discovery, in this case the last step is missing. That step is where the observations and experiments of science *validate* and confirm that the original myth was indeed attempting to describe something true. Without out that last step, it's all just fantasy and speculation as much as any science fiction novel. Evolutionists, on the other hand reject any myth as the basis of creation and instead ascribe it to "chance". Pretty much the theory is "shit happens". For some unspecified reason suddenly out of nothing there was this mythical "big bang" and the entire universe spewed out in primitive form which then over time by random chance developed life and all the things we see today. And the intelligent design crowd try not to side either way and look for evidence that the current state of the universe was assisted into it's present form by some unspecified intelligence, be it aliens seeding a planet or of the earth, Gaia, possessing consciousness as you do or by some other means, but still rejecting that what is seen today could possibly be due to dumb luck as evolution asserts.

The problem here is that ALL these views are basically religious and irrefutable. Even worse, they could ALL be in some sense true at the same time or they could all be wrong at the same time. The whole question, while of interest to humans, is basically one huge speculation with no real data to base

it on despite the protests of all sides that *they* have something. The truth is that "beginning and end" are concepts that humans accept and find comfortable, but there is zero substantiation for the idea that our world and indeed the entire universe must have a "beginning". There is plenty of evidence that the universe changes with time, but what is the justification that shows that what *we* experience as time, is necessary for all that exists. Certainly we observe things *changing* as time goes on, but that does not give any support for the actual existence of beginnings and ends. In short, the assumption of a beginning is an irrefutable hypothesis! Concepts of "forever" or "infinite" or "points" or lines of "zero dimensions" are bandied about in science as if they were real things and made sense, but in truth they are pure fantasy. As Einstein noted, the only thing he was sure the term "infinite" applied to was human stupidity.

Spurious Similarities: *"Cranks often argue that the principles that underlie their theories are already part of legitimate science, and see themselves not so much as revolutionaries but more as the poor cousins of science."*

Casti then goes on to use biorythms as an example and it is a good example. The true test of science isn't if it sounds like proven data but rather does the new idea *itself* produce valid data. In the case of Biorhythms it sounds valid since the study of circadian rhythms which due to day and night are far from surprising, and also the fact of certain rhythms tied to lunar timing known to women and police. So Biorhythms creates a set of monthly charts of different frequencies which supposedly are tied to various biological functions. So far so good. There is nothing here that is outside the speculations of science. The problem is that these "frequencies" are not tested for validity. They simply sound good. In this way a "Hollywood script" is created much like science fiction that has all the right trappings of science and gives an image of science but in fact is all fiction or to word it at different way, lies.

But as long as we are pointing fingers, I would point out that science is not immune from using the popular imagination to bolster it's image and reputation, not to mention bank accounts. Science, in spite of the "norms" of objectivity and honesty has been very much a creature of fashion. New discoveries spark the imagination and science is quick to capitalize on the popular fascination. I am thinking here of the medical sciences in particular. The record of "cures" is long and arduous. Electricity is discovered and pretty soon a huge electric shock is the cure for every known disease from brain fag to the vapors! Tesla invents a "better" and more impressive shocking coil and immediately medical "science" is on the quack bandwagon running electricity over every part of the body and up every opening! No, it does not stop. Then radium excites the imagination and now radium is the new miracle cure. Modern chemistry has created a vast business of poisonous pharmaceuticals many of questionable efficacy compared to doing nothing. In their book, Myonihan and Cassels quote the president of the Chemical giant Merck who "*wanted Merck to be more like chewing gum maker Wrigley's. It had long been his dream to make drugs for healthy people so that Merck could 'sell to everyone.*'" [20]

Things are no different in the modern world. Now there are laser cures and even computer cures! Well the latter is what you'd call quack or pseudoscience, since the "flying computer cure" is a room with all these PC computers on wires "flying" around the cancer patient to effect a cure. And of

20 Moynihan, Ray and Cassels, Alan, "Selling Sickness". Nation Books, New Yori, 2005 ISBN 1-56025-697-4

course science and it's spokesmen laugh and ridicule this nonsense...except the cancer cure rate for incurable cancer by “flying computers” is sometimes FAR higher than any of the official cures used by accepted medical practice, which is zero! But nobody in science dare ask “why?”

Explanation by Scenario: *“It is commonplace in science to offer scenarios for explanation of certain phenomena, such as the origin of life or the extinction of the dinosaurs, when we don't have enough data to reconstruct the exact circumstances of the process. However, in science such scenarios must be consistent with known laws and principles, at least implicitly. Pseudoscience engages in explanation by scenario alone i.e., by mere scenario without proper backing from known laws and theories.”*

Did you catch that? In science when one is totally ignorant of something it's OK to make up something that sounds good provided that it's done “properly”. Pseudoscience, he asserts does not do it properly. One need look no farther than “science” programs on Public Television (especially on the subject of evolution or cosmology) to find examples of such science fiction. Casti is a huge fan of science fiction scenarios quoting them widely in his books as if they were science and not “scenarios”.

And he is right that there is a big difference between good science fiction and bad science fiction. Any Hollywood “B” movie can illustrate it. Good science fiction only inserts the “fiction” in places where what really is going on is unknown. The rest of the story is exactly correct according to the laws of nature as known at present. Hence when I see a fictional science fantasy and people are doing things that do not happen in reality such as electrocuting bad guys with car batteries or creating a vaccine in a salad spinner, I know that the script writer hasn't a clue what science or even life is about. On the other hand good science fiction is about ideas. It conjures scenarios that make you think. What if... and then you create a world that illustrates a point of view. BUT in good science fiction the fantasy is located all in unknown and not known areas. Nobody knows if Captain Kirk can have a device that transports him and his crew to a planet's surface on a radiation beam, or if one can really make a trombone or food in an advanced technology box called a “replicator”, so the story works. But there is a fine line between good science fantasy that makes one think and disaster that makes everyone laugh. There is a case in a TV space series where the captain is told sensors show the enemy less than 5 microns away! Unfortunately microns is a real word in science with real meaning. The writer obviously just thought it sounded “scientific”. The upshot was the captain was told the enemy was about to land on the paint on the ship!

So to conclude we see that scenarios are indeed used by both pseudoscience and science because they work so well to indoctrinate the public. They may not know science, but everybody loves a “good story”. And if PBS uses pat scenarios to push their view of the theory of evolution and cover up the holes in the theory, or to push some wild fantasy of cosmology created by people with next to no real data because they've never been more than a few steps from their own neighborhood, this is no closer to science than quacks promising solutions to all the worlds ills painted in pat little stories and anecdotes. Good science fantasy whether from cranks or Gene Roddenberry is a *thinking tool*. It doesn't make up known science but gives ideas and new viewpoints for the unknown part. And the interesting thing here is that in being limited to the unknown parts of science and life, it is focused upon *mysteries* which is another name for the unknown and which as we have seen above is supposed to be a common feature of interest to kooks and quacks. Oddly by his own definitions and love of good science fiction Casti has outed himself as a crank!

Research by Literary Interpretation: *“Pseudoscientists frequently reveal themselves by their handling*

of the scientific literature. They regard any statement by any scientist as being open to interpretation, just as in literature and the arts, and such statements can then be used against other scientists... In this regard the pseudoscientists act like lawyers gathering precedents and using these as arguments, rather than attending to what has actually been communicated.

The essence of this item is the difference between true discussion and skepticism in science and the tricks and rhetoric of a debate team. The problem is that once an author or idea has been termed "pseudoscience" nobody in science feels compelled to maintain the standards of science discussion. Since the "pseudoscientists" in question are typically though not always outside of the "boy's club" of science, not only do those proposing ideas not understand scientific debate, but also those in science feel that they do not need to adhere to such restrictions. The result is easily seen to degenerate into media propaganda wars and public relations tricks with little actual science manifesting on either side. Instead, all the tricks of lawyers and debating societies are dragged out with innuendo, name-calling, appeals to authority, *ad hominem* arguments, slogans, emotive language and all the rest.[21]

It is important to note that once a "crank" idea is released either through publication of a book, article or even INTERNET website, this is considered "going public" which is viewed as bad form among scientists. If you think about what this means, you surmise that therefore no establishment scientist may engage in an actual public discussion of the scientific issues. Bad form. And since the "pseudoscientists" are NOT considered part of science, they are therefore "public" which makes any discussion with them off limits. Hence, it is no surprise that scientists make sure there is no discussion of science issues by never reading the work in question. This insures that all debate is reduced to the level of rhetorical warfare. And that is exactly what takes place not only by scientists who may be aware of the issues, but purposely ignore them, but also by media voices who also gleefully join the fray in spite of the fact they have no science knowledge to back up their "debate". What happens instead is the employ of all the debating tricks listed in Appendix I.

Refusal to Revise: *"Cranks and crackpots pride themselves on never having been shown to be wrong. It is for this reason that the experienced scientific hand never, under any circumstances, enters into dialogue with the pseudoscientist... They always reply to critics, but never revise their position in light of it. They see scientific debate not as a mechanism for scientific progress, but as an exercise in rhetorical combat.*

Thus, in this last one we see that since scientists "never under any circumstances" will discuss the ideas any new ideas presented by someone labeled "pseudoscientist" there obviously can never be any discussion nor consideration of them. This very fact shows why scientists feel justified in rejecting the new ideas as worthless without ever even having read the ideas the person is suggesting. Since there will never be a true discussion of the ideas, why bother to even read them, let alone think about them? Needless to say, such unthinking reliance on dogma instead of honest discussion quickly moves science from the realm of the "norms" above and into a discussion of religion.

A major argument of those labeled pseudoscientists according to Casti is "anything is possible". Of course a better version would be that "anything is possible when you are just making it up!" While cranks can argue half a day that their wild and crazy theories are "possible" and therefore should be considered next to establishment science theories, the truth is that ALL theories in science rise and fall

21 See Appendix I for list from http://www.don-lindsay-archive.org/skeptic/arguments.html#scenario

by whether they make correct predictions. What “everybody knows is true” is not good enough in science. Nor is “anything is possible”. If some crank says Troy is where Homer said it was, either Troy is there or it is not. Rhetorical debate on this question is of no value whatsoever. If Velikovsky says that one should find the surface of Venus to be much hotter than the rest of the planets, then either the temperature is high there or it is not. Carl Sagan on TV pooh-poohing that such an idea is nonsense not only has no scientific value, but worse gives science a black eye should the surface temperature of Venus actually be melting metals, which probes have shown it does.

The Velikovsky Affair

Immanuel Velikovsky and the “Velikovsky affair” is one major incident in the war of science against the outsiders that can provide much insight into the process. Nothing ruffles the feathers of establishment science like a mention of Velikovsky (Except perhaps a mention of Nikola Tesla). And this oddly remains true in spite of most of the issues raised in his books being settled one way or another by space probes to the planets in question. Clearly there is something political going on beneath the surface. A number of factors seem to have combined to create this major irritation of establishment science with Velikovsky. One factor is the provincialism of science even among disciplines and especially among cosmologists where fantasy rules and data is sparse. Outsiders engaging in speculation is considered a grave offense and trespass upon the rights and privileges of those creating cosmic scenarios for PBS. There is great potential for disruption if alternative scenarios are purveyed to the public creating confusion and doubt as to which of the speculations is to be swallowed as “fact”. Another factor is that his first speculative book was published in 1950 at the height of the uniformitarianism dogma mentioned above being accepted as “fact”. Velikovsky's books from the title onward challenged that dogma that volcanoes, earthquakes, meteors, and certainly not comets simply never have had any effect nor can have any effect on the planet and it's geology. It had to be made extremely clear that if establishment science was to do a 180 on this dogma it would *never* be allowed for the public to even have a *hint* that it might be some outsider who precipitated the switcheroo. And even worse, was the fact that Velikovsky wasn't some high school dropout still living in his mom's basement who could easily be dismissed as a “kook”. Velikovsky had science credentials and furthermore his books are filled with scholarship and references. Casti notes, in spite of his excoriating Velikovsky as an anti-science crank and kook, that “...his work represents an imposing piece of sustained scholarship...”. But clearly scholarship outside the “club” has no place among the “members” as he continues “there are just too many inconsistencies in far too much of his historical, archaeological astronomical and physical data to take the arguments seriously.” One can immediately get the big hint here that it isn't the quality of the “scholarship” that is in question here but the very sciences brought to bear on the question that are felt to be in need of being ignored. More provincialism. Velikovsky's main sin seems to be that he attempted an interdisciplinary approach to subject matter in area for which he supposedly did not have the credentials. No need to point out how much such an argument goes against the scientific method.

Immanuel Velikovsky (1895-1979) was a medical doctor, psychiatrist and psychoanalyst. In case you don't know, to become a medical doctor one first obtains a university degree then then spends and additional number of years studying medicine and in residency. Finally considerable study and practice in a specialty of psychiatry is added on top of that. Velikovsky also studied psychoanalysis under Freud's student Wilhelm Stekel. During his medical career he had about a dozen papers published in various medical and psychoanalytic journals. While I would not suggest that the current state of medical research (especially in 1939) is at the level of refinement found in the physical

sciences, clearly Velikovsky was certainly not the uneducated ignorant crank that scientists later made him out to be. In 1939 he migrated to the united states and about ten years later produced his controversial book.

I do have to bring this point up. In the academic community and especially in arguments about new ideas, the typical ridicule applied to the "pseudoscientist" is that they are cranks, kooks, nutjobs and basically insane. This seems to be highest of possible criticisms among university type brass hens. The logic seems to be that if someone suggesting a new idea is "insane" then nobody needs to feel bad about ignoring everything they are saying. Furthermore, there is the implied threat that if anyone starts supporting the new idea, you will bring the same accusations down on your own head which should be enough to scare you off. However, the irony here is that *none* of the critics who are railing against the "pseudo" ideas including Dr. Casti, a mathematician, have the credentials or the authority or the training to make such a diagnosis of someone's state of mental health, while ironically and obviously Dr. Velikovsky DID have the scientific training and credentials to make such a diagnosis of his critics such as establishment spokesman Dr. Carl Sagan. What will become clear in this book is that due to the paradigms of science, a whole host of topics are automatically listed as "forbidden" and any discussion of them will result in rhetorical attacks and it is mutually agreed that the norms of science shall not apply to these topics.

It is not the purpose of our discussions here to go through Velikovsky's theories of catastrophe and the planets point by point and rack up some kind of "score" as establishment science continually tries to do. Such an attitude is patently as unscientific as was the attempted censorship of Velikovsky and his books. As the point was made above, myths are not scientific treatises. They are "good stories" that relate to some event or events that impressed humans enough to tell the story over and over. Allegories and embellishments are to be expected. The value of myth to science that we are promoting is that within those stories there could be a grain of truth that can give direction to a search for scientific data. It is nonsense to demand as Casti does that *every* factoid in a myth must be true or the myth has no value in science. If one wants to find the location of ancient Troy, then if Homer is telling you where he thought it was, why should science turn up it's nose at the suggestion, rejecting it out of hand with no investigation whatsoever simply because Homer also wrote of fanciful sea monsters and the like. Apparently the attitude of science is that *we* will find ancient Troy ourselves and we don't want any hints from anyone outside the club. And then when it is found *we* can claim full credit for *our* discovery!

So what exactly was this horrible theory of planets that caused establishment and academic science to so froth at the mouth? In a nutshell, it went like this as gleaned from human mythology: The giant planet Jupiter for some reason expelled a bunch of material from the place of the famous red spot. This material in space appeared as a comet tail and all due to an atmosphere of nearly pure hydrocarbons. The "comet" careened near the earth causing disruptions in it's orbit and rotation, electrical discharges took place reversing the earth's magnetic field, and it then settled down in it's present orbit as the relatively "new" planet Venus. Based on this scenario Velikovsky concluded that one could expect the surface of Venus to be much hotter than the rest of the planets, that the surface should be relative "smooth" and there should be a particularity dense lower atmosphere, that Venus should be found to have a peculiarly perturbed axial rotation and that one should find evidence of an atmosphere that was once full of petroleum hydrocarbons. That's basically it. I will note that Velikovsky did *not* make the obvious speculation that petroleum found embedded all over the earth was somehow related to this more recent event rather than being fossil remnants of plants from millions of

years ago which science firmly believes to be it's source as some kind of variation of the processes that produced coal deposits.

It is interesting to compare the Velikovsky scenario to the story establishment science was peddling at the time his first book appeared. "*Of all the planets, Venus is the most like earth. It is the one which comes nearest to us, excepting our moon and some of the little bodies called 'asteroids' or minor planets. Eight-tenths as massive, more highly reflecting and two-thirds as far from the sun as the earth, Venus seems more fit on many accounts than any other of the planets to support life similar to ours."*[22] Furthermore, Venus was known to have a perennially impenetrable cloud cover assumed naturally enough to be vast amounts of water vapor. Thus, there is little surprise that the UFO "contactee" crank Adamski with his chicken brooder ship pictures claimed that he conversed with very beautiful angel-like beings from Venus. Today, even what were then his ardent followers frown and walk away when you bring up the subject of his claims. Before planetary probes, Venus as a garden of Eden with wonderful beings made perfect plausible scientific sense.

So what does the data show? Is this planetary "Troy" found right where the myth said it was or is it just human fantasy? Today we know for a fact that there are no golden-haired beings traipsing around the Venusian surface because it's hot enough there to melt lead! On the other hand that surface has many volcanic features including lava flows and it relatively smooth. Furthermore, the impact craters observed there show the planet to be quite "young". In addition the planet has a retrograde rotation that none of the other planets have. Finally, it has been measured that the atmosphere is very thick and dense consisting mostly of CO_2 in the upper levels. Other odd effects include an on-going slowing of rotation and the constant loss of hydrogen due to solar wind because it does not have the magnetic field protection of Earth. The clouds are not water vapor but dense sulfuric acid and sulfur dioxide. Indeed, water vapor is virtually absent from the planet. This is an important fact given that Sagan and others in establishment science attempted to blunt the correct prediction of a very hot temperature of Venus by Velikovsky (hotter than the planet Mercury) by creating a scenario that asserted the high temperature was simply due to the "greenhouse effect" and then later when that was shown not to work an "enhanced greenhouse effect" was proposed, and finally today the theory is the heat came from a "runaway greenhouse heating". The fact that no water vapor is present plus the fact that the dense clouds mean that no radiation reaches the surface pretty much relegates this theory to "plausible speculation". Apparently these experts do not understand how the greenhouse effect is supposed to work. Or do they?

What emerges in the Velikovsky affair is not a battle of "real" science against "pseudoscience" kook ideas, but rather a battle of establishment scenarios against a speculation that turned out to be at least in part true. And that battle obviously took place not in the arena of science debate, but in rhetorical warfare and what the Russians term "administrative measures". Even before the book was published, attacks began.

"*Harold Shapley, probably the best-known American astronomer alive today, led an energetic attempt to stop the publisher Macmillan, from publishing the book, still before it's appearance, by an astronomer, a geologist, and an archaeologist in a learned journal. None of them had read the book. When it did appear denuciatory reviews were arranged again, in several instances by professors who boasted of never having read the book.*"

22 Abbot , C. G., "The earth and the Stars", Van Nostrand, New York, 1925, p.72.

" Velikovsky was rigorously excluded from access to learned journals for his replies. Then Shapely and others really got busy on the old-boy network. They forced the sacking of the senior editor of Macmillan responsible for accepting the Velikovsky manuscript. (He had been with the firm twenty five years) They forced the sacking of the director of the Hayden Planetarium in New York, because he proposed to take Velikovsky seriously enough to mount a display about the theory."[23]

Not only was Velikovsky excluded from replies in journals, but also quickly became excluded from speaking on most college campuses under the "speakers rules" of the era designed to prevent communists from speaking on campus. Popular establishment spokespersons such as Carl Sagan appeared on television making a case against Velikovsky and as late as 1967 Velikovsky relates: "*I wrote an article, "Venus – A Youthful Planet" and sent it to the editor of Science. I found it back in my mailbox less than forty-eight hours later, returned unread."* The paper was then submitted to the American Philosophical Society by a sympathetic member and what happened next is describe in the *Yale Scientific Magazine:*[24]

"The paper was discussed at the editorial board meeting of the Society and caused prolonged and emotional deliberations, with the board split between those favoring publication and those opposed to it. For several months a decision could not be reached... the decision was made, in order to safeguard the very existence of the Board to delegate the decision to three members of the society, not members of the Board. Their names were not disclosed but on January 20, 1964, Dr. George W. Corner, Executive Officer of the Society informed Dr. Hess [sponsoring member for the paper] that the decision had been made to reject the article."

"Subsequently It was also rejected by the Bulletin of Atomic Scientists. In that magazine in April 1964, an abusive article was published by a Mr. Howard Margolis attacking Velikovsky and his work. The editor of the Bulletin, Dr. Eugene Rabinowitch, in a letter to Professor Alfred de Grazia, editor of the American Behavioral Scientist, offered Velikovsky an opportunity to reply with an article 'not more abusive' than that of Margolis, or, instead to have some of his views presented in the Bulletin by scientist of repute. Then professor H. Hess submitted the article "Venus – A Youthful Planet" to Dr. Rabinowitch. The latter returned it with the statement that he did not read Velikovsky's book, nor the article."

There are, of course, a great many more examples in this story of the behavior of establishment science to any new ideas from outsiders. Basically, while presenting an image of complete and unquestioned scientific knowledge and expertise to the public, behind the scenes there is political intrigue, manipulations and basically a slap in the face to the "norms" of science. The story is not one as Casti presents it, of a crank with no qualifications presenting some fantasy that is obviously nonsense, it is instead a story of an establishment old-boy network using all their power and influence to override any actual open debate on competing ideas. The "norms" of detachment, universality, skepticism, and public availability obviously were felt to not apply in the case of any theory which did not support the current party line. And as in all politics, punishment was forthcoming down upon the lives of not only the author but any viewed as supporting him such as the fired editor of Macmillan.

What is also clear is that such blatant dishonesty, misrepresentations, censorship, strategic

23 "Velikovsky Revisited" by editors of the quarterly Pensee, Warner Books, New York, 1976, p. 38.
24 Yale Scientific Magazine, April 1967, p 8.

writing of attacks, and ignoring the supposed rules of science, can only in the end result in loss of the current respect the public has for science and scientists. As scientists behave as politicians and such behavior becomes public knowledge, the public will obviously move their opinion of scientists down into levels the public reserves for politicians. That is too bad, since science deserves far better than that even if some of the scientists themselves, do not.

Hence one can see that science has become not a question of which ideas are correct but rather a question of just *who* is getting credit for the ideas. Those not in the club must be stopped from getting credit at any cost. Outsiders need not apply. Casti, himself relates the story of Quasars,[25] where Joycelyn Bell (now Burnell) as a graduate student was running the radio telescope and discovered anomalous signals she termed "scruff". These signals turned out to be what are termed quasars today. The upshot however was that in the end, her boss and advisor Professor Hewish shared the Nobel Prize for the discovery of Quasars and Bell only got the chance to thank Hewish for giving her the job that led to "his" great discovery. The justification for Hewish getting the Nobel prize was that since he told her to scan the skies with the radio telescope, therefore he was responsible for anything she found! Such credit manipulation in science has been totally the norm forever. Honesty and integrity play no role in these games. Where I once worked, it was policy for bosses to simply add their names to any patents applied for by researchers. Even worse those such as technicians without the credentials to be "in the club" were often omitted from patents for their own ideas that they alone actually did the work developing. I recall being called into the office of the new boss and being asked to explain to him how "his" new patent worked. The technician who actually did the work (not me) was not included on the patent, of course. Neither was I included, but then I arrived on the project after it was well along and I had no intention of acting like the bosses. All this nonsense only stopped when it was made illegal to have names on patents who were not involved in the work. Only the threat of patent invalidation began to eliminate this dishonest practice.

The bottom line here is that scientists, like everyone else are human. They are motivated by human desires and do the things that all humans are known to do. The high ideals expressed by the norms of scientific inquiry are only that: ideals. The true guilt here is not so much at the failures to meet ideals, but rather at the lengths that have been pursued to cover up and justify these antics. It is one thing to manipulate the "system" to further your own career, but it quite another to subvert the entire meaning of science to try to prevent the "wrong" people from suggesting new ideas and theories in your field. The latter is FAR more destructive to civilization as a whole.

Nikola Tesla

"Today's scientists have substituted mathematics for experiments, and they wander off through equation after equation, and eventually build a structure, which has no relation to reality."[26]

Another place to obtain excellent knee-jerk reactions from scientists is a mention of the name Tesla. His name ranks right up there with expounding a theory of the aether or proclaiming Einstein was totally wrong in evoking an anti-kook official response. However from our point of view his story represents an interesting case that raises the question how does one tell cranks and kooks apart from a true genius ahead of his time? To anyone actually taking time to examine the story of Tesla and his achievements there is no question Nikola Tesla (1856-1943) was a true genius. With at least 278

25 See Paradigms Lost, p 2 ff.

26 Tesla, Nikola, quoted in: "Radio Power Will Revolutionize the World" in *Modern Mechanics and Inventions* (July 1934)

patents to his name and many ideas he did not patent, he virtually invented the 20th century. His patents include electric power transmission, electric motors, fluorescent lights, VTOL aircraft, radio, drones, robotics, the speedometer in your car used by everyone nearly up to the 21st century, and amazingly he actually patented AND and OR gates! Do you have any idea how many gates there are in a modern Intel I7 CPU chip? Even a modest per gate royalty would have allowed the inventor, were he not so far ahead of his time, to make Bill Gates look homeless in comparison! Though Tesla was a notoriously poor businessman, yet, with all this achievement he has been largely written out of history by establishment science. The invention given his name is the Tesla coil, a high voltage zapper finding little utility except for jaw-dropping "science" demonstrations and medical quack machines.

His first inventions were alternating current electric motors and dealt with electric power transmission. One needs to understand that back at the end of the 19th century while the industrial revolution was in full swing, factories had a character quite different from how they appeared in the 20th century. In those early days, one put a coal pile and steam engine out back of the factory. One hired a hand to shovel coal into it to keep it going all day. The steam engine was then hooked to a series of overhead axles with pulleys at each machine. Each factory machine was then powered by flipping a flat belt onto the pulley. The overhead maze of mechanics was complex and the array of driving belts cumbersome and dangerous. Even today one can still find old buildings where the maze of 19th century drive axles have not yet been removed. Tesla changed all that overnight.

The difference was that Tesla distributed power using electricity to motors that no longer used the complex and sparking commutators. Tesla once had a professor "prove" to him that no motor could ever be built that did not use a commutator. Needless to say, hubris is inevitably and inexorably followed by nemesis. No doubt if asked later, I'm sure the professor would have replied that he never said such a thing because "everybody knows" that induction motors do not need commutators. And it was not just an effective motor that could drive each machine, but Tesla recognized that the problem with the DC electric power of the time was that the voltage could not be stepped up or down. Hence people near the generator had too much electricity and those at the end of the line had too little. Tesla recognized that with alternating currents transformers could be used to step voltages up or down and even better, very high voltages could be attained for long distance transmission so current could be kept low and the cost of copper in the wires minimized. Tesla dreamed of harnessing the power of Niagara Falls to send power to New York city. A feat which he did indeed accomplish and I myself have visited his old power station building at the falls which still exists there. Tesla did experiments on AC transformers trying to optimize the costs, weight and efficiency and came up with 60 Hz as the optimum standard frequency which is still used today in North America though no longer so optimum due to better materials being available.

Revolutionizing the Industrial Revolution should have been enough for any inventor for a lifetime achievement, but Tesla did not know when to quit. He dreamed of wireless power transmission all over the world and worked tirelessly on how to do just that. Since you know well that in neither the 20th nor 21st century is wireless power transmission a daily feature, so it is here where accusations of being a crank begin to arise. But what exactly did he have in mind? Tesla began experimenting with mechanical resonance and in 1894 patented a gas driven vibrating engine.[27] In tuning this device to the resonance of objects he observed a number of effects. In particular he claimed that with a small device he could bring down a large building. No wrecking balls or steam shovels just a small motor like

27 U.S. Patent 514,169

device attached to a beam. Further he claimed that he has observed resonances in the strata of the earth! He even said that his vibrations could be used to explore for oil deposits! Surely this it total proof that Tesla was a kook and totally insane! Clearly he deserved the treatment he got later at the hands of science. Or did he?

Is it possible to bring down a building with a small motor? The answer, of course, is yes it is. I recall an Ohio State professor describing how he and his students back in the 1930s almost brought down a railroad trestle. They had bolted a motor with an off-center flywheel to the trestle and as they raised the speed they hit the resonance frequency of the trestle and got the motor shut down in time before the whole bridge collapsed. The power of resonance. Tesla discovered the resonance of the earth itself, which is widely used in studying earthquakes today. Tesla told the press that using resonance of the earth set in motion by tons of dynamite (No, not a small device the "size of an alarm clock") fired at the proper intervals he could rip the entire planet apart. It was the same principle as made the bridge unstable. And needless to say, today earth vibrations are used to explore for oil. He called his new science of earth vibrations telegeodynamics.

At this point Tesla began his quest for a world power distribution system. Having discovered the mechanical resonance of the planet he came up with applications:

"*Newspaper artists of the time went nuts with all manner of fanciful illustrations of his theory. Tesla's fertile imagination posited a series of oscillators attached to the earth at strategic points that would be used to transmit vibrations that would be picked up at any point on the globe and turned back into usable power."*[28]

Obviously this scheme is a bit less than workable for a number of reasons, one being the loss of energy as vibrations travel though the crust. But later Tesla reworked this scheme when he discovered an electrical resonance of the planet. The advantage of a lower loss electrical resonance over a mechanical one gave promise of a possibly useful scheme. So how did it work?

Actually it's pretty simple. Tesla discovered that above the earth is a layer of ionized air (now termed the ionosphere) that is conductive. Everyone in those days knew that the soil of the earth was conductive and this was why telegraphs used only one wire. Tesla grasped that these two conductive layers not only formed a huge capacitor (as is obvious) but long before WWII and microwave cavities being commonplace, Tesla concluded and tested that this "capacitor" about the earth was also a resonant structure. The idea then is simple. You get this resonator going by injecting power from powerhouses at any or multiple points on the planet and then by simply putting up an antenna any place on earth one can draw power out of this resonant system! Will it work? Well, nobody knows for sure. The theory is correct, but the question is how "lossy" is the resonator? The ionosphere and wet earth are far from perfect conductors. If there is too much loss then there is too much power lost heating the planet compared to that drawn off by users.

So how to test the idea? Well one way is to build a power plant and see. Tesla did small scale experiments in Colorado, but a true test would be a large tower and power station. Tesla got J. P. Morgan to fund such a station, though it's true purpose according to Tesla's own court testimony was transatlantic radio rather than wireless power. However, I have no doubt that with an operating power

28 Bishop, Gregory, "Wake up down there", Adventures Unlimited Press, Kempton Ill., See article "Tesla's Earthquake Machine", by Greg Bishop, p 268.

station and tower, Tesla could not have resisted testing his wireless power idea. It is interesting that Tesla is said to have remarked to Morgan that his wireless power system would place all current electric distribution equipment on the junk pile. Morgan dryly replied that such would be quite a junk pile! And Tesla immediately understood the vested interest in the current distribution system that Morgan and the others had. So was it fear of wireless power that caused Morgan to pull all funding for the transatlantic radio? Who knows? Tesla was known to spend money like water when he was in build mode anyway which could have been a factor. However, given the secret that the tower was to be a transatlantic radio communicator and given the delay in messages by ship from Europe at that time, there is little doubt of the great commercial viability of the project given the amount of transmitting power Tesla had designed into the apparatus. Today, radio engineers would quickly recognize Tesla's tower as a capacitively top-loaded dipole antenna far larger than anything in it's day. In any event, Morgan pulled funding when Marconi succeeded in transatlantic radio transmissions and eventually the tower came down and the wireless power tests were never run and the equipment scrap heap was never created.

But the tower and Tesla's tireless showboating for his wireless power idea resulted in building a "crank" reputation with the public. Furthermore, propaganda wars between the Tesla AC power system and the older inferior DC system which was being promoted by Edison further tended to erode reputations. And as Casti has ably demonstrated, establishment science does not regard a couple success stories as sufficient to allow the outsider to be recognized. What is demanded that *every* idea must be a success. Any failure and the mantle of crank falls upon your shoulders. Tesla's electric power patents should have funded anything he desired to do, but those patents assigned to his friend George Westinghouse came under fire by stockholders who were going to fire Westinghouse from his own company if Tesla pressed for them to pay the agreed upon royalties. So in an act of friendship Tesla tore up their contract. Probably his biggest mistake as it then placed him beholden to the financial community and people like Morgan for funding. As for Tesla advancing human civilization further at that point, Morgan is said to have once remarked about Tesla: "Nobody milks my cow for free!".

In the end even though the Supreme Court decided that Tesla was the true inventor of radio, science textbooks have written Tesla out of them. Edison, who was basically a back yard tinker appears in physics books, but Tesla is pointedly absent. And even Edison's greatest invention, the commercial research lab, is never even recognized as important. The lesson here is that science does not exist in a vacuum. Now, as back in robber baron days, he who pays the piper calls the tune. And significantly the use of accusations of "kook" and "crank" provide a control path for keeping vested interests, vested.

The key lesson from Tesla is that as soon as one abandons the open and honest nature of the true scientific method for the political manipulation of accusations of pseudoscience, it becomes very difficult to distinguish a genius from an actual crank. Both are likely to end up with "kook" names being applied because both are probably going to suggest things that rub establishment science the wrong way. And if one is unwilling to even read the works let alone give them a fair experimental evaluation, it is clear that one will never be able to separate the kooks from the geniuses. And it is no surprise that human civilization becomes the loser.

As a final remark we note that unlike Edison who was more a tinkerer and builder of devices, Tesla built devices and patented them for sure, but he also was a scientist who discovered features of the planet such as geological resonance and the conduction electrical layers of the atmosphere.
Corentin Louis Kervran

Long before the "cold fusion" of Pons and Fleischmann, C. Louis Kervran (March 3, 1901 – February 2, 1983) was theorizing the existence of low temperature transmutations. Kervran received a degree in engineering in 1925, but was largely a science autodidact who acquired science knowledge of exceptional depth and breadth. His inquiring mind consumed and covered medicine, dietetics, chemistry, physics, biology, ecology, microbiology, geology, agronomy and agriculture, mining technology, plant physiology, archeology and even nuclear science. Of course being self-taught and of such wide-ranging expertise was indeed a problem to the carefully subdivided disciplines of establishment authority where interdisciplinary interests are not encouraged, not to mention his theories of low temperature transmutations. Nevertheless he spend most of his working life after WWII working in nuclear and industrial safety issues for the French government.[29] And he eventually became a university lecturer, but establishment science (especially in America) is quick to dismiss the French as having lower standards.

So while the Japanese were sorely impressed with Kervran's ideas and supposedly put in his name for a Nobel Prize for the so-called "Kervran effect", back in America he was awarded the 1993 Ig-Noble prize for "improbable research" which is a supposed "joke" award given to work considered irrelevant, frivolous and mostly a waste of time so we can all laugh at it. Kervran was termed an "ardent admirer of alchemy, for his conclusion that the calcium in chicken's eggshells is created by a process of cold fusion."[30] The important thing about ridiculing the work of others is to ask that nobody engage their brains. Just "believe" and go with the flow and have a good belly laugh at the expense of others. It will make you feel better and get your mind right for all future evaluations of scientific work. Not much different from being sure "OJ did it" based upon all the jokes about him on late night television. The important thing in either case is to have your mind made up before you examine any facts. Note the clever hatchet job on Kervran in the quote in that there is no evidence he knew anything at all about traditional alchemy nor admired it and the use of the term "cold fusion" to describe "low energy transmutations" also tries to make use of the widespread ridicule of the cold fusion experiments and apply that ridicule to Kervran whether it fits or not. Since the "cold fusion" experiments were first reported in 1989 and Kervran died in 1983, the cleverness of skillfully attaching all the propaganda created to discredit Pons and Fleischmann to Kervran must be admired. Politics is all about impressions, not facts. Kervran used the term "low energy transmutations". Fusion was not mentioned.

Because of historical indoctrination it is going to be exceptionally difficult to provide the casual reader with any reasonable comprehension of this subject but we will try. Historically, alchemy was once a major pastime of what once passed for science. The ostensible goal was to be able to change lead into gold. This clearly was a story of interest to kings and other nobles of the time who often provided patronage for such "research". The alchemists on the other hand said in their philosophy the study of alchemy was all about the transformation of the alchemist himself. In other words transforming the "lead" of his personality to the spiritual "gold". In general the procedure was to repeatedly grind and melt and then cool and regrind and melt certain ingredients repeatedly until a certain substance was formed. This substance was known as the Philosopher's Stone. Once one had that, a tiny bit could be added to a pot of molten lead and it would change to gold was the story. It is important to note the temperature at which this reaction supposedly took place. Namely that of red heat, that of molten metals.

At the end of the 18th century a French scientist by the name of Lavoisier studied chemical

29 Membre du Conseil d'Hygiène de la Seine.

30 Quote on Kervran's "prize" from Ig-Noble website: http://www.improbable.com/ig/winners/

reactions and came up with his “law” that put an end to all dreams of turning lead into gold. His law simply stated that chemical elements never under any circumstances change from one element to another. Sure, elements can combine in myriad ways creating a host of chemicals each with it’s own properties, but the elements themselves if separated out from the combination are always seen to retain the amounts they had going into the combination. In short lead oxide can be separated into lead and oxygen, but the lead can never change into gold. Period. Millions of experiments confirmed this absolute rule for 100 years and any “pseudoscientists” disputing it would only bring laughter and ridicule on themselves. Alchemy was dead and buried. Settled.

Except of course that no matter what the “climate change” promoters tell you, nothing is ever “settled” in science. And the first crack in the wall was the discovery of radioactive elements in the 20th century. It seems that Radium and several other elements actually transmute themselves over time into lead! Interesting, but still not quite alchemy. But soon it was discovered that transmutations were not nonsense after all. Now “everybody knows” that when elements are struck with high energy sub atomic particles they can be transmuted into other elements either by splitting in two or by adding or subtracting particles to or from the nucleus. So suddenly alchemy is proven real, or shall we say almost real. The “almost” has to do with the energy needed to transmute and element. The energy supplied to particles to create transmutations is millions of times greater than say that found in a molten pot of lead and certainly much more than would be found in a living organism like say a chicken. So science could still feel free to laugh at alchemy as anything serious.

So what about chickens and eggs? Regardless of which came first, we do know much about chickens. One thing is that they lay a great quantity of eggs which are a wonderful source of human food. And of particular interest is the great amount of calcium that arrives each day contained in the daily eggshell. For this reason (and we used to raise chickens when I was a kid) it is necessary to supply a source of calcium to the chickens. We used to have a box filled with crushed oyster shells for them. If they do not get enough calcium they begin to lay soft-shelled eggs. These eggs have a rather leathery like coating and are soft and pliable. The hard calcium is missing. That was the extent of my childhood observations on chickens. Kervran went further. In his case his parents also kept chickens, but the chickens were not given any calcium. So Kervran began to wonder where all the calcium was coming from. He noticed that when the chickens were out in the yard they pecked incessantly at the flakes of mica which dotted the ground. And even more interesting, as a kid he observed that when his mother killed the birds and cleaned them and cut them apart, he could see sand and small stones but never the shiny flakes of mica. Where had they gone? Such were the observations and questions of Kervran’s youth.

Later in life his explanation would be that somehow the potassium in the mica was being transmuted into calcium and providing shells for the eggs. And again it is important to note that this transmutation was taking place at the chicken body temperature and not even as high as molten metal. And certainly not at the millions of electron volts employed by nuclear accelerators (atom smashers). So how could this be? Chickens are not walking atomic bombs. In chemistry it is known that there are ways to cause a reaction to proceed even when the temperature is too low for a “normal” reactions. Biological entities including you and I do this all the time with what are known as “enzymes”. Enzymes are catalysts that speed up chemical reactions causing them to take place where they ordinarily would not. The difference between an enzyme and a catalyst is that an enzyme is typically specific to a single reaction and set of reactants while a catalyst is more general in action. The question Kervran raised here is that could chickens possibly be producing a “nuclear enzyme” as a protective

mechanism to be able to produce eggs in the absence of a supply of calcium? And the implication here is that the famed alchemical "philosopher's stone" was in fact some kind of "nuclear enzyme".

As it turns out some historical research showed that Kervran was not the first person to notice the chicken-calcium problem and in the past several attempts had been made to actually measure chicken calcium intake and egg calcium production. Mostly these studies ran into wall Lavoisier. But I do not wish to imply that Kervran has it all figured out and nasty mean establishment scientists have gone out of their way to ridicule his break-through. No, it's not quite that well explained. There are energy problems with how such a transmutation of elements can occur without chickens exploding. The point is not to promote Kervran's theories as some kind of religious dogma, but rather to examine the more important aspect of how science treats a subject which presents data which everyone is SURE simply can't be so. And with that assurance, one can easily justify not bothering to look at the data at all and simply ridicule it based on your own religious believes which as we shall see later on are described as the grand material metaparadigms. These are fundamental assumptions of science so basic and so accepted that any suggestion that violates or even questions them is reason to reject that suggestion as "pseudoscience' or "unscience" and attack it, ridicule it and do all one can to undermine the author without even listening to what the suggestion actually was.

The scope of Kervran's application of his idea of the possibility of low temperature transmutation is truly amazing. He examines welders poisoned by carbon monoxide which apparently is a transmutation in the blood of some activated form of nitrogen. He studied the salt balance in Sahara oil workers. He studied the chemicals found in sprouting seedlings. He examined geological puzzles and the formation of rock layers classically deemed impossible. He looked at how a farmer's field laying fallow somehow regenerates lost chemicals and how spreading one chemical somehow regenerates a different one. He looked at dark formations on archaeological monuments which were highly suggestive of element transmutation rather than the more usual blame on pollution. He examined element transmutation in atomic tests from pressure (not from radiation) and he looked into a possible role of transmutations in certain medical conditions where certain elements are lacking. He examined bacteria found in the earth and playing a suggestive role not only in the restoration of soils, but also in the commercial use of bacteria as a means to concentrate ore in mining.

In short, Kervran's life's work is far too vast for me to even begin to summarize it here and you aren't going to be able to do much looking into it yourself unless you read French because as far as I know only two books have been translated into English.[31]

So the final question remains: Was C. L. Kervran onto a great secret of life or is this just the hum of a humbug putting the "pseudo" in science. By now it should be obvious that the way to find out is to rigorously apply the "norms" of science and with a skeptical attitude test the ideas against reality. Or one can take the usual path which is to award an "Ig-noble" prize, make fun the whole subject, if possible kill all supportive publications and end the person's career and give yourself a great belly laugh and pat on the back for "saving" science from heresy and error! And since C. Louis Kervran is dead he can't defend himself or his ideas.

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31 Kervran, C. L. "(the discovery of) Biological Transmutations", English translation by Crosby Lockwood, Beekman Publishers, Woodstock NY,1980 (original French 1966) ; Also Kervran, C. L. "Biological Transmutations", English Translation by Michel Abehsera, Swan House Publishing, Binghamton, NY, 1972 (A compendium of Kervran's first three books (1962,1963,1964))

But no matter. Dead or not the attacks go on. I can give a personal example of how science and the media work together to keep “cranks” “in their place”. Some time ago I checked Wikipedia for an article on Kervran and his work. As you may know Wikipedia is a public encyclopedia supposedly written by it’s readers. It’s a very interesting idea and has produced an amazing compendium of information on an astounding array of topics. And as such has attained great popularity even if some of the articles are less than factual.

The article I found on Kervran was very minimal and therefore I personally wrote a nice even-handed factual article on Kervran and his work pretty much attempting to be skeptical and follow the norms of science. It was up for a while but clearly this rubbed certain readers and wikipedia editors the wrong way. Slowly and inexorably my article was transmogrified before my eyes! The facts I was so careful to include slowly disappeared one by one. The “norm” of a skeptical but fair view of Kervran’s work was replaced by a “spin” that painted it all as pseudoscience. And emphasis all shifted from science to political events such as his being awarded the Ig-Nobel prize complete with emphasis on the hatchet-job quote I gave above. This is not an isolated incident for Wikipedia. One can look up just about any “forbidden topic” of establishment science and find the article is either a propaganda piece for establishment views or in the process of transformation into one. I suggest these literary “transmutations” of establishment science discussions which are widespread far beyond the online Wikipedia probably deserve a scientific investigation of their own.

Myths

Let us dig deeper into the resistance of science to use human myths as guideposts to serious research. What are myths? Generally speaking myths seem to originate from events that somehow greatly impressed the humans viewing or experiencing them. The Trojan war for example. Myths often answer great questions of humanity. Where did our people come from? Myths can explain the universe and how it works. Myths can also serve as reenforcement of social order or ways of doing things. Myths also are enjoyable. Journalism is based not so much on accurate reporting of events but rather the generation of what is termed “a good story”. Humans of all ages love a good story! Novels and fiction clearly demonstrate that accuracy and reality are way down on the list of things that make a good story. Movies, television entertainment, computer games, and even politics are based upon fantasy that is mostly invented and in fact did not actually happen to real people no matter how employees may discuss last night's TV program around the water cooler as if it were actual events that happened to real people.

But there is another human trait operating here as well. And that is a human search for truth. For humans to enjoy and value a good story, the story must somehow reflect real true operations of the universe. Thus, a novel or movie or TV program may be filled with imaginary people living totally imaginary events, but the piece will not be deemed “good” by viewers or readers if it does not seem to them to somehow reflect the truth of human existence. And the truth of how the universe actually operates. In other words not just any fantasy will do. The people and events can be made up out of whole cloth, but the underlying interactions must somehow reflect reality.

How “good” a story is to it's audience is important in mythology, because to find it's way through history the myth must be good enough that humans value it enough to remember and repeat it generation after generation. It would appear the greater the underlying truth the more likely it is that the

myth will be repeated and saved through history. Another contributing factor to the longevity of myths is that by having persons and events being fiction, they are not nearly as threatening to those in power in various ways. But is not necessary that a myth be total fantasy. Great deeds are also sung and indeed may be somewhat amplified as to their details. What I am getting at here is that if one assumes as is often done that myths are synonymous with fantasy and contain no truth, this would be totally wrong.

Ironically, myths are very much like science! In other words myths are written in a special coded language. The language may vary according to whom the myth was important and what it's purpose was. For example American Indian myths are full of animals and animal behavior that have great meaning and symbolism in the Indian daily life. Greek or Roman myths may have God and Goddesses engaged in all sorts of stories. The point is that like the scientific method we discussed earlier, a myth plays the role that mathematics plays in science providing a language analogy to reality. There is all the reality data of the universe as History soul-powers on and then there is a language system that is used to try to describe some of those workings in a shortened form that humans are capable of comprehending which in science are termed “laws of Nature”. And if myths are coded in fantasy, we'd also point out that mathematics, the language of science, is 100% fantasy as well.

And now we begin to see how myths are not the opposite of science but actually a different form of science. And this implies that it may be possible to perform a translation from myth symbolism to either modern language or even to mathematics that science often uses. Thus, rather than the attempt by say Velikovsky to translate ancient myths from their world-view to ours being “pseudoscience” and something to be ignored, it is more likely that such transliteration might produce new insights to our own investigations. Hence it should be no surprise that Troy was found where Homer said it was or that Venus surface temperature was hotter than all other planets as a result of attempts to extract actual facts out of the coding of mythology.

Hence from this short discussion, it is seen that the attitude of establishment science that “appeal to myth” is the mark of a crank and that no science must ever be discussed with cranks, leaves science holding the wrong end of the stick. It should be obvious, that because accuracy and truthfulness are not important in myths, separating a true fact from the “story” can be something of a trick. Myths cannot be taken at face value either. The whole application of myth to science is analogous to starting with the James Bond books and then using them to see what one can learn about MI5 and the CIA in say the 20th century. To say that it's all fantasy and *nothing* can be learned from them is obviously an unthinking and superficial view. James Bond and all his action are fantasy. Thus, if one is to act like Dr. Casti and demand that *every* detail in the myth must be shown to be true or the entire myth must be rejected as nonsense, the rule is clearly non-productive. In truth, some things in there will be true and indeed can give valid information about the operation of intelligence agencies and their agents. Some things will be exaggerated, and some things will be pure fantasy. The key to this whole procedure is that the scientific method is skeptical. Each fact must be checked against all other sources for validity. False details are rejected and exaggerated details scaled back, but those that prove true can give insight that may not have been there before.

Indeed, in this way one can learn new things, new science, from a myth, from a movie, from a novel, or from a television program. The function of myth and as we shall see of religion in science is to provide direction. To provide hints at places to look for facts, to suggest certain measurements or observations that may be instructive or produce new insights and results. The myth is not a proof of anything. In science the validity of your theory is determined solely by how accurately it is able to be

verified by experiments, measurements and observations. But we should recall that bugaboo in the scientific method: step number two, where Einstein pointed out that no experiment leads to a new theory. But what we have now just seen is that in this unlikely of locations, the myth, there resides hints we did not have before suggesting new theories. Untested new theories to be sure, but in the testing one can separate the erroneous ideas from promising ones. Interpreting the myth is not the destruction of science and something to be fought and trashed, but rather our first new attack upon the problem finding some kind of formalism for the intransigent step two in the scientific method.

Religion

Religion takes us a step further out. Unlike myth where the fiction of the stories is recognized and yet there is also recognized value underlying the fiction in providing "explanations" to human conditions and life in spite of the overarching stories not being fact. Religion on the other other hand asserts that no matter how strange the stories, they are indeed fact and must be accepted and believed as told. This is termed dogma. Dogma is simply stated. There is no test against reality as there is in science. Unlike myth, dogma is in ordinary language and is not coded or at least is not supposed to be coded. If dogma seems not to agree with reality the explanation is that the believer does not understand the dogma.

But if we ask how dogma comes about, there are fascinating hints that tweak our imaginations. Generally speaking religions are started around a personality, typically a man. Such a founder must be a a very strong personality and a doer of impressive deeds in order that his followers are sufficiently impressed so that the stories are carried on long after the founder is gone. This parallels a myth where some great event or question so fascinated human beings that they keep repeating the story as best they can. Typically, to be impressive these deeds exceed the abilities of ordinary humans of the period. And followers witnessing these deeds and being impressed, attempt to record them as best they can. And those stories through time continue to be repeated as accurately as possible which, due to life in general and at times church politics may actually not be so accurate at all. But in the end down the road it all ends up being the religion.

So now the problem can be better seen. Suppose there is this native tribe, never having seen advanced civilization. Or one might imagine the Starship Enterprise circling a primitive planet. The contact of advanced technology with primitive life, is sure to create wonder. And this gives rise to cargo cults and what becomes "revelation" to leaders in the primitive community. What we might term ordinary things are termed "miracles" by them since such deeds to not exist in their lives. And lest you think that a Star Trek analogy is out of the question, I'd suggest that an open minded reading of religious dogma is highly suggestive of such contact. Ezekiel and the "wheel", Moses getting messages up the mountain, prophesy at Fatima, Mohamed making a quick UFO trip here and there. etc. And even when such technology is not revealed from visiting beings, it's observation is revealed and we have demonstrable deeds like walking on water or changing the material make up of items which we are forced to describe as transmutations.

Many are familiar with the "miracles" of Jesus, but this is not an isolated case. We recall Moses and the parting of the Red Sea, and I have read stories of mere yogis. In one such story a man practicing Yoga had developed his mental skills until he managed to change his begging bowl to solid gold. A man going by saw that golden bowl and made a mental note to come back and steal the bowl. The Yogi reading his thoughts just threw the gold bowl out the window in front of the man. Impressive

deeds, impressive story. It's how religions get started.

The wild suggestion we are going to make here is that seeing how religions seem to be based upon happenings that suggest advanced science knowledge, it may be possible to work backward through the dogma as we did with myth, looking for an advanced theory that may underlie the miracles. It is not a simple task. Remember that the stories all started when primitive peoples viewed an advanced event and tried to describe it using only their vocabulary and understanding. Hence while there are Indian legends of "sky people" and the like, the stories are often filled with the animals and animal behavior of their common understanding. Then add to that the fact that the stories have been repeated and carried on for many generations certainly can introduce errors and modifications in spite of the insistence that the dogma be maintained as exactly as possible. Stuff happens.

Generally speaking religion is all about exact repetition of stories so that they are preserved as accurately as possible. This is why the stories are dogma and not subject to change. Changes are called heresy and every effort is made ot stamp out the source of such changes. Science, on the other hand, is all about testing ideas against reality so religion and science have come to be at rather cross purposes to each other. Casti noted that this divide can be looked at three ways:[32]

Two Realms: *Science and religion have different spheres of jurisdiction.*

Concordance: *Religious and scientific explanations of Nature can be brought together on the same plane.*

Partial Views: *Science and Religion can illuminate the same reality (whatever that may be), but from different perspectives.*

Casti opines: "To my mind only the last possibility makes any sense whatsoever. The first leads to the all too depressing territorial disputes that so much blood has been shed over through the years, while the second is self-defeating since scientific views are always changing. As a result, a theology that attaches itself to one scientific family today will surely be an orphan tomorrow."

In view of Casti's opinion it is interesting to note the way evolution and materialist science has been adopted by many as a religion. If you think I exaggerate, I'd point out that such has been the state "religion" of whole empires such as the USSR. In Casti's view such theology is bound to fail.

While it is common for people to talk about the two realms of religion and science especially to attempt to defuse a clash between the two by talk of religion covering "spiritual" matters while science covers "material" things, one has to ask just what "spiritual things" are. We are suggesting that so-called spiritual phenomena are basically extra-dimensional phenomena. This means that "spiritual matters" even though little studied or known are just as much a part of the total universe as anything in the rest of science. Thus, a separation as in the 'two realms" idea is false and also bound to fail.

This means that both religion and science are trying to describe events and phenomena in the same universe and thus opens the door that religious and scientific "explanations" can indeed be some how be made to coincide, hopefully coincide to some degree with reality. The apparent differences in

32 Casti, John L. "Paradigms Lost" Op. Cit. p. 65.

this view are just a matter of language and terminology. Of course the religious dogma may not even be true to the original descriptions and even that as we recall was probably made by primitive people attempting to describe events well beyond their experience. And on the other side, science is never "settled" which immediately demonstrates that the science descriptions are by definition imperfect as well! Clearly a certain amount of experiment and scholarship would be needed to pick truth out of the two views.

Yet as Casti, notes, both sides can indeed provide illumination of reality from different perspectives. First of all is the fundamental point that religion is saying certain phenomena which science has not studied or even thought about are possible. Science experiments don't happen in a vacuum and don't drop out of nowhere. The first step in any investigation is to ask what is going on. If you don't ask the right questions and look in the right places you remain ignorant. The simple statement that this or that is *possible* is an enormous first step especially if the statement somehow is true. That directs your attention to operations of the universe that otherwise you'd have never even considered. Is it even *possible* to walk on water or change water to wine with due to focused thought? Is it even *possible* for someone to know the future or what someone else is thinking? Religious dogma says it is and that it happened and was observed, but what actually "explains" those kinds of assertions is left to an investigation. Mere dogma is clearly not enough. And that goes for dogma on BOTH sides. Science dogma is no more a true explanation than religious dogma.

This ever changing nature of science based upon what has been measured and observed, especially theories that are constantly changing and being "improved" based upon those observations, is an important observation given the widespread adoption of many scientists of an atheist point of view based directly upon the Darwinistic views of science. Typically, the claim is made that atheism is not a religion just the "absence of religion" but clearly this is nonsense since atheism is indeed a system of belief. And unsurprisingly, this atheist religion results in dogma being created and preserved. Atheists activists have managed to get actual laws passed demanding that evolution must be taught to school children as a "fact" and not as a "theory". The teaching of theory, no matter how well established, as fact is clearly anti-science especially in this case given the gaping holes in the historical record supporting the theory of evolution. The current result is not science against religion, but rather science *as a religion* trying to compete with other religions.

So how can religion and science support each other in a constructive way? Allow me if you will, one speculation of how this interaction might occur that we may use as a thinking tool. From religious sources of what dogma suggests is possible, one can surmise the following theory: *If one can hold a thought strongly and intensely enough in one's mind for a sufficient period of time, the aether (one can read this as "space itself") will respond to mind and assume the material shape of that thought.* Such a theory "explains" a great deal given as "fact" in religion. "Magic" is explained. "Miracles" are explained. Medical "cures" are explained. ESP is explained. Home rising off the ground in apparent anti-gravity is explained. Psychokinesis is explained. Transmutations of begging bowls is explained. Spoon-bending is explained. Even (dare I suggest it) resurrection from the dead might be explained and "virgin birth" becomes clearly within the realm of scientific explanation. If focused thought can transmute water into wine, it is little stretch to propose a "transmutation" changing a woman from virgin to pregnant without any physical, um, action. Likewise if focused thought can regenerate a dead body, it is equally obvious that the procedure likely also works in the opposite direction allowing one to kill by a mere thought explaining "witchcraft" and "black magic".

But as we saw, religion is not about to experiment or “test” this theory in the least. Religion is only about *preserving* the theory as dogma. Science, on the other hand is *all* about testing and examining such theories and comparing them with measured reality. The fly in the ointment here is that because of science adopting the trappings of religion, especially an atheist religion, any such experiments and tests are flatly rejected out of hand as heresy! Science and scientists simply reject without any examination whatsoever, this theory and all it implies as “pseudoscience”. Hence, it is obvious that all the battles we've seen between “science” and “religion” over doctrine isn't really a battle engaging science at all! It is a battle between the doctrines of two opposing different religions!

Actual science deals only with things that are observed and measured. Theories are never “fact”. No matter how many times one asserts that “the earth goes around the sun”, it can never be proven true until such time as one can demonstrate the location of a stationary point in the universe and show that this point is located within the sun! What we observe is not what is going around what as is popularly expressed, but rather that a solar-centric view results in a much more compact an understandable theory of planetary motion than the older earth-centric theory of epicycles. Neither can be said to be “correct”. They are theories. Ultimate reality is not known and is not likely to be known soon. And like all points of view, some are better for some things than others. I'd point out that planetariums today are all run with calculations using epicycles. It's more convenient.

Thus, the very “mysteries” that cranks bring up in their ideas, are seen to be the very things that religion is hinting need to be further investigated in detail by science. That orthodox science rejects these and a whole host of other “forbidden” topics and refuses to even examine any evidence or even discuss them with anyone, shows that orthodox “science” isn't science at all. It shows that men like Casti and Sagan are simply preachers for their particular brand of religion. Happily not all in science take this view. Paranormal research has been going on for a century and there are journals devoted to the study, and there are Nobel prize winners who have been engaged in the work. Orthodox atheist “science” has made every effort to marginalize this work, but more and more it is becoming difficult to try to keep people from examining the actual data rather than simply accepting the religious dogma of establishment atheist science.

The key point here is that REAL science does not reject ideas out of hand with no evidence, simply because “everybody knows” they aren't true. Such rejection of “forbidden topics” is religious dogma and not science. The key point that science makes that distinguishes real science from pseudoscience is whether or not the theory produces correct data. This is to say that the theory must correctly predict what will be measured in ALL situations. If any situation fails then the theory is simply wrong. Period. And it is this test and only this test that separates science from pseudoscience.

Paradigms

Science and scientists like to feel that somehow science is immune to the mindless dogma of religion being somehow “above” that sort of thing. However, as usual with humans assertions of perfection, they are usually exaggerated. Thomas S. Kuhn, the late professor of philosophy and history of science at MIT, published his highly influential book,[33] “The Structure of Scientific Revolutions” in 1962. This extended essay put forth the proposition that science at its very core operates with a set of dogmatic assumptions that are religiously accepted and defended which he terms it's paradigms.

33 Kuhn, Thomas S., See http://www.amazon.com/Structure-Scientific-Revolutions-50th-Anniversary/dp/0226458121/ref=sr_1_1?s=books&ie=UTF8&qid=1459014526&sr=1-1&keywords=thomas+kuhn

Basically a paradigm is a set of assumptions that all the persons in a group such as scientists carry about with them as an agreement as to what constitutes a problem, a solution and a method. Hence at any given time science or more exactly those working in the field of science will share a set of assumptions and beliefs that color everything they do and shapes and directs their work. It is like a pair of colored spectacles they put on to work or an explorer's map that outlines what we know and don't know. And more importantly where one can go and where one should *not* go.

John Casti notes:[34] *"Since people become so attached to their paradigms, Kuhn claims that scientific revolutions involve bloodshed on the same order of magnitude as that commonly seen in political revolutions, the only difference being the blood is now intellectual rather than liquid – but no less real! In both cases the argument is that underlying issues are not rational but emotional, and are settled not by logic, syllogisms and appeals to reason, but by irrational factors like group affiliation and majority or "mob" rule. As Kuhn states it, ' There is no standard higher than the assent of the relevant community. The transfer of allegiance from one paradigm to another is a conversion experience that cannot be forced.' "*

One need go no further than the science discussion groups on the INTERNET to quickly observe rationality is nowhere involved in the discussions either on the side of science or on the side of "pseudoscience" of so-called kooks. The basic "scientific" arguments used are that the person promoting a given idea is ignorant, uneducated and basically insane. Needless to say, the persons making these accusations usually do not have the academic, teaching or medical credentials to make a medical diagnosis of mental illness. The whole debate as Kuhn outlined above is about acquiring followers. It's all about getting as many other people as possible to chime in and support your paradigm. That is what constitutes the basis of "winning". And obviously such antics are basically political and totally anti-science.

The interesting thing about Kuhn's premise is that science does not progress as people imagine by slowly progressing in the accumulation of data and theories until the ultimate "truth" of the universe is discovered. Indeed, what happens is that science is ruled from behind the scenes by paradigms that are universally accepted which color all that science does. Eventually when science starts to accumulate data that does not fit the old paradigm a certain resistance begins to occur and a new paradigm is developed. The old paradigm believers do not give in easily. Huge battles ensue and if the new paradigm does explain more, eventually it will win and replace the old dogma with new dogma. The result is then described as a scientific "revolution".

Stephan A. Schwartz has brought the above into focus in his book on psychic archeology:[35] *"To begin to understand what Kuhn is saying, we must first deprogram ourselves of the myth and folklore with which laymen (and most scientists) are burdened. Perhaps the most fundamental of these myths is the assumption that science has, by the gradual accumulation of information over the centuries, consciously and purposefully moved toward the basic "truth" about the universe and everything in it."*

"This is a comforting thought, but almost certainly wrong, as Kuhn demonstrates by studying great scientific revolutions, including Copernican, Newtonian, and Einsteinian. His evidence makes clear that, for most scientists, this is neither their true premise nor their goal. Further he states that even if

34 Casti, John L, "Paradigms Lost" Op. Cit. P 40-41.

35 Schwartz, Stephan A., "The Secret Vaults of Time", Grosset and Dunlap, New York, 1978, p. 248-249.

scientists did have this as their aim, such an end could not be reached by the plodding, gradual accumulation of knowledge down through the years."

We note that in addition to what we have examined above, so long as science continues to use mathematics as it's "language" and the analogous model for the laws of nature, Godel has proved that so-called "truth" can *never* be achieved because there will always be additional true theorems that cannot be proved by the mathematical system.

Schwartz continues: " *Having said that some specific truth is not science's goal, Kuhn then argues with great persuasiveness that the real purpose is simply puzzle solving and that 'in its normal state... a scientific community is an immensely efficient instrument for solving the problems or puzzles that its paradigm defines.'*" [emphasis added]

The "problems and puzzles" to be "solved" are of course the mathematical proof of the theorems that lie at the basis of the scientific method. But Kuhn's point is that such solutions are only possible by the very restrictions and limitations of the paradigm. It is the very narrowness of the view that makes the depth of science possible.

One such scientific paradigm is the idea that the laws of the universe are unchanging and the the experimenter does not influence the outcome of the experiment. This paradigm limits science to the simplest of investigations. It makes life easy. It allows one to ignore when, and where and by whom an experiment was performed. An example of this can be seen in using the wavelength of light as a standard length for the meter. Michelson and Morley showed that the speed of light does not change as the earth supposedly plows through the aether. Hence in using light wavelength as a standard for length it is not necessary to define the time of year or the position on the earth for the measurement. But it is also interesting to note that this concept is within the *new paradigm* of the post-Einstenian revolution. Another paradigm is that there is only one space-time continuum so that the laws of nature one hopes to discover are uniform and unchanging throughout the universe. This means that any given experiment can be repeated at any time and in any place and by anybody and the same data should result.

The Rosenthal Effect

On the other hand one knows that in the social sciences things are not so pat. The experimenter often very clearly has an effect on the outcome. And "laws" observed are not so stationary often depending on the moods and attitudes of the subjects. In fact, even worse, the expectations of the experimenter tend to become a self-fulfilling prophesy. Psychologist Henry Reed wrote: [36]

"This disturbing fact is sometimes called the 'Rosenthal effect" named after the Harvard psychologist Robert Rosenthal who first discovered it. I'm going to go into some detail, because it shows in a way that is rarely considered, that our expectations are indeed self-fulfilling. It will make you think twice about how you interact with people."

Hundreds of experiments have confirmed that researchers given a certain hypothesis to measure, return from the laboratory with data that confirms their expectations. The attitudes of the experimenters are somehow communicated to the subjects. Reed notes further:

36 Reed, Henry, "On the Mysteries of the Mind", Original 1989, reprinted in "Edgar Cayce Modern Prophet" Gramecy Books, New York, 1990, p. 367.

"Smiles aren't the only thing that affect the experimental subject. The experimenter's sex and personality, need for power or approval, personal warmth, degree of anxiousness, and talkativeness all affect the way a subject responds in an experiment. It has even been demonstrated that whether the experimenter is sweating or not, or how fast the experimenter is breathing, also affects the subject's behavior."

Attempts to control it have met with failure after failure. Of course research into subliminal perception indicates that sensitivity to nearly imperceptible indicators is not out of the question, but this effect goes beyond that. This effect is so pervasive that it seems almost psychic. It has become a serious question.

"Even when experimenters conduct their experiments through remote control the effect is evident. In one case, researchers had the experimenters give their instructions to the subjects on a tape recorder. There was no personal contact with the subjects. Nevertheless, the experimenter's expectancy was somehow relayed to the subjects and affected the results. In another case experimenters used proxies to conduct the experiments. These assistants didn't know the experimenter's expectancies, yet they still affected the subjects in such a way to confirm those expectations."

It is often smugly argued that this is the difference between "hard" sciences and the "social" sciences. However, quantum mechanics has shown that "hard" sciences are not immune from an experimenter affecting an outcome. Quantum "entanglement" and other "spooky" effects as Einstein called them quite pointedly show that the event is disrupted by the measurement. It seems that the yardstick can dent the thing being measured. It has even been seriously argued that the moon would not be there if nobody looked at it or the most famous case of Schroedinger's cat which stays in a limbo state of neither alive or dead until someone opens the box and looks. And even worse is that now one must also ask if the observer expected to find the cat alive or dead!

The significance of the Rosenthal effect should not be underestimated in spite of it's lesser importance in hard sciences. I would point out that the enormous pharmaceutical industry has it's drugs approved or rejected for sale based upon studies of effectiveness upon large numbers of human subjects. If ever there was a classic situation for expectations to influence outcome this is it. Not only are vast sums of money at stake, but also the health and well-being of hundreds of millions of Americans if not the billions of humans populating the planet.

Dissemination and Teaching of New Ideas

All of this apparent pliability of the laws of nature is typically characteristic of "new" and "undeveloped" sciences like psychology as opposed to those in the "hard" science which is to say sciences which have achieved and hardened it's paradigm. And the strict limitations of a well-defined paradigm allows those in the hard sciences to regard those undeveloped disciplines as rather "unscience". Before a science has achieved and hardened its paradigm, new information and theories are communicated by books. Darwin's *Origin of Species,* or Newton's *Philosophiae Naturalis Principia Mathematica*. The authors viewed themselves as "natural philosophers" rather than "scientists", but Schwartz notes: [37]

37 Schwartz, Op. Cit.

"Despite the popular myth, since the twentieth century, ideas and propositions in the paradigm-achieved sciences (the "hard" sciences) have been communicated to peers not through books but through papers, seminars, and professional journals... As Kuhn notes, a scientist 's standing in the "hard" sciences is as likely to be diminished as helped by publishing a book, particularly if it is accessible to the general public or if it dwells unduly on the past. Just as there is an unwritten taboo against going to political authority to enhance a controversial position, so it is bad form to "go pubic".

This "taboo" against "going public" is enlightening in helping to explain the mindless and unfair attacks on Velikovsky and others whose published books were therefore seen as some kind of "end run" around the rules of science by a direct appeal to the public. On the other hand Velikovsky, like Darwin or Newton, found himself on the outside looking in and book was really his only option given the control exercised over the internal communications of papers, seminars and journals. Do not forget that the Royal Society at first refused to publish Newton's *Principia.*[38]

Schwartz continues:

"*The book in the form of a textbook, is currently the main processing mechanism used to condition aspiring scientists. It is essentially pedagogical propaganda and for this reason textbooks are molded to a very specific pattern. They report only the research that supports the paradigm and it's normal science techniques; rarely are alternative explanations of reality and the research that produced those explanations presented."*

"As he undergoes this educational process, the aspiring scientist not only learns a false tradition, but also tends to lose some of his empathy and ethical and philosophical overview of life. And all too frequently he also develops what in some cases is an extreme antagonism toward anything not consistent with his newly acquired perception of the universe."

In view of this, the irrational and illogical attacks we've seen above on "pseudoscience" which is to say "anti-science" or "unscience" quickly begin to make sense. If the paradigm is challenged or questioned, then whatever is challenging it is by definition *not* "science". And anyone challenging the paradigm is clearly an enemy of science and an honest debate with an "enemy" is certainly to be avoided at all costs so as not to inadvertently advertise the new ideas and unknowingly promote them as we saw in our discussion of "pseudoscience".

Thus, at this point we've come to understand that while groups of people can form who are interested in studying certain subjects, without a paradigm they are not a "science" but are a discipline. A discipline is a social grouping not a scientific one. Basically it is in the process of achieving a paradigm that makes a science. Paradigm-aspiring studies are disciplines. Hence some studies are simply not sciences at all. And it should be clear that all "pseudoscience" is not a science and hence there can be no communication at all between such a "discipline" and the sciences not only because the lack of unifying paradigm, but also because science develops dense jargon to support the paradigm and the disciplines still use ordinary language so even if science were willing to discuss issues with outsiders communication can't occur.

38 T. J. J. See,"New Theory of the Aether" series of papers in Astronomische Nachrichten beginning band 211, NR 5044, no4; ending with 8th paper Band 226, 8th paper p.407.

So if the basic paradigm is what restricts and limits science, but also powers it's depth, then one has to ask just how such limitations may be limiting and restricting human knowledge and progress by placing certain subjects that are outside the paradigm as “forbidden topics” that must never be examined or discussed.

The Grand Material Metaparadigm

A question now arises as to what are the paradigms that form an underlying basis not just for a given science, but those that underlie all the sciences. In reality these paradigms are what defines topics deemed off-limits and hence “unscience”. The important question here is whether these paradigms are as well supported by evidence as their universal acceptance by modern science would imply.

At this point we now take a closer look at the fundamental underlying paradigms that cause ideas to be classified as “unscience”. Unsurprisingly in this modern era these paradigms are materialistic. They have been termed, “The Grand Material Metaparadigm”.[39] These are very much a part of atheist dogma explaining the popularity of atheism among scientists and are even supported by those of a Theist belief in spite of the opposition of these paradigms to non-atheist viewpoints. A kind of “doublethink” among scientists goes on where the two opposites coexist by never allowing them to touch each other.

In short the Grand Material Metaparadigm consists of the following dogma:

1. The mind is the result of physiological processes governed by [only] bioelectric [and biochemical] postulates.

2. Each consciousness is a discrete entity

3. Organic evolution moves toward no specific goal but simply flows according to Darwinian survivalism.

4. There is only one time-space continuum and it provides for only one [uniform] reality.

A more detailed look at these same ideas has been stated by electrical engineer and parapsycologist Dean Radin PhD. In fact, he not only examines the Grand Material Metaparadigm in greater detail, but also provides an outline of an opposing point of view which can be more or less described as an Eastern Philosophy viewpoint.[40] “The Grand Material Metaparadigm” is what he calls the basic assumptions of “separateness science” with the opposite being “wholeness science”.

“Separateness” science: Basic Assumptions

1. The universe is made up of fundamental particles and quanta that are separate from one another except for certain connections made through fields.

2. Non-normal states of consciousness, dissociation, and so on, are to be studied in the context of

39 See Schwartz Op. Cit. P 260.

40 See “An interview with Parapsychologist Dean Radin” by Greg Bishop in the compendium book “Wake up Down There!” Edited by Greg Bishop, p. 281, Adventures Unlimited Press, Kempton Ill 60946, 2000.

the pathological. Consciousness is a by-product of material evolution and is an epiphenomenon with no intrinsic meaning or purpose.

3. There is no evidence for "drives" or "purposes" in evolution. What appears as a survival instinct is merely the result of natural selection: any organisms that did not have such a drive were selected out. There is no scientific evidence for anything in the universe resembling "purpose" or "design". The biological sciences use the word "teleology for convenience, but what it really means is that those structures and behaviors were ones that contributed to survival.

4. A scientific explanation of a phenomena consists in relating the phenomena to increasingly general, fundamental, and invariant scientific laws. Ultimate scientific explanations are in terms of the motions and interactions of fundamental particles and forces.

5. The truest information about objective reality is obtained through the observer being as detached as possible. A clear separation can be maintained between subjective and objective knowledge.

6. All scientific knowledge is ultimately based on data obtained through the physical senses. Such information is ultimately quantifiable.

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"Wholeness" science: Basic Assumptions.

1. The universe is a single whole within which every part is intimately connected to every other part.

2. The entire spectrum of states of consciousness, including religious experiences and mystical states, has been at the heart of all cultures. These states of consciousness may be and important investigative tool, a "window" on other dimensions of reality.

3. Human beings are part of the whole and there is no justification for assuming that "drives" such as survival, belongingness, achievement, and self-actualization are not also characteristics of the whole. Similarly, since we experience "purpose", and "values", there is no justification for assuming these are not also characteristics of the whole. The universe may be genuinely, and not just apparently, purposeful and goal-oriented.

4. There is no reason to assume that scientific laws are invariant: it seems more plausible that they too evolve. Hence, extrapolation to the Big Bang may be suspect. Evidence points to consciousness either evolving along with, or being prior to, the material world.

5. There is an ultimate limit to objectivity in that some "observer effect" is inevitable in any observation. Understanding comes not from detachment, objectivity and and analysis, but from identifying with the observed and becoming one with it.

6. Reality is contacted through physical sense data and thought inner, deep, intuitive, knowing. Out encounter with reality is not limited to being aware of messages from our physical senses, but includes aesthetic, spiritual, and mystical senses.

Looking in more detail at “separateness science” which is the current paradigms underpinning current science, one can begin to see cracks and sifting concrete in this structure just from the results of modern physics without looking beyond into the fringe. For example the Heisenberg uncertainly principle injects doubt right in assumption number one. This is also reflected in the second material metaparadigm. These measurements show that fundamental particles cannot be exactly defined as to position and motion. The idea of each fundamental particle of the universe being an isolated and separate entity is failing. Measurements show that at the scale of the very small individualism fades.

And this does not even yet address the idea separate consciousness. Quatum “entanglement” is a buzz word used to describe the fact that things axiomatically assumed to be separate actually are somehow connected and can influence each other at a distance in defiance of the laws of relativity. Clearly there are serious storms developing on the horizon here.

Also, the second axiom of separateness science is very telling. It asserts point blank that not only are all states of consciousness a matter of material physics and chemistry, (as metaparadigm #1 asserts) but also that any observations of additional states are simply ascribed to insanity! This provides an automatic defense mechanism to reject any observations failing to support the axioms of paradigm belief. The observer is clearly pathological and need not be listened to. Hence all such observations and reports can be rejected and ridiculed without examination.

As we begin to examine the variety of “forbidden topics” it will quickly be seen that each topic is in some way a direct challenge to one or more of the above propositions. That fact explains the virulent response of science to those new ideas.

Consider metaparadigm number four and “separateness” number four. The implications of this rule is that as we discussed above, all laws of nature are uniform over both time and space. Relativity even adds that all laws are uniform even when measured traveling at constant velocity. This means that an experiment of measurement is repeatable and will give the same results no matter where one is located, when the measurement is made or even if one is drifting at constant speed.

Another implication is that this reality consists of only three dimensions plus time. It has been termed “space-time”. The net result of this is that other “unseen” dimensions are not allowed. The ironic thing is the way scientists approach data that suggests otherwise. For example, while asserting that higher dimensional spaces are not part of reality, science at the same time asserts based upon astronomical red shift data that the universe is expanding and the “center” of that expansion is “everywhere at the same time”. And not only that, but gravity is the “result” of warps in space-time! If you think this sounds like some religious gobbledygook you are correct! It should be immediately obvious that a coordinate system of n dimensions requires additional dimensions if that manifold is to be “warped”, bent or have it’s center “everywhere”! To say that additional dimensions do not exist, yet space-time is “warped” is clearly patent nonsense.

Obviously there is a serious defect in the number 4 proposition as shown by actual measurements of reality. Unfortunately the answer from science is like the old Henny Youngman joke where the guy tells the doctor: “Doc, it only hurts when I do this!” And the Doctor says: “Then don't do that!” Simply ignoring any data that calls your basic paradigms into question certainly goes against the “norms” of science and the scientific method. It is exactly the opposite of science where we've already noticed that it is the very places where data does not agree with your theory that tells you your

theory is not quite correct and is the indicator that the whole question needs to be examined more closely. Hence the “kook” emphasis on “mysteries” is proper science not proof of “pseudoscience”.

Metaparadigm number one and “separateness” number six are another rule for which there is considerable contrary suggestive data accumulating. For virtually all of history this metaparadigm was replaced by one exactly the opposite. Religions of virtually all flavors taught that there is the persistence of consciousness after death. Whether crossing the river Styx, entering Valhalla, or ending up in heaven or hell the implication is that there is *something* that represents “you” that animates your body that persists once the body dies. The obvious explanation would be that the “persistence of consciousness” consists of the extra-dimensional structures that make up your being beyond the visible obvious 3D body. Thus, when your body, brain and all the electrochemical biological activity ceases, “you” then split in two with the 3D part terminating and decaying and the extra-dimensional portion continuing to operate at some level.

The point is not to use religious doctrine as proof of this thesis or even to point to phenomena such as the observed “near death experiences” as proof. The point here is that the atheist paradigm which assumes that all processes terminate upon death like cutting power on a computer prevents consideration of any alternatives such as the extra-dimensional one from ever being examined by science. Rather than starting with religious doctrine as a *guide* to potential effects to investigate and then applying the scientific method to these phenomena, the metaparadigm demands that any such suggestion be rejected without any consideration, with none of it's data examined, nor any of the results ever discussed. It is a perfect example of sticking one's head in the sand. The suggestion here is that this metaparadigm of science prevents the movement of science into areas which clearly need further work and promise greater knowledge. Rather than science rushing to look more closely at places where theory does not seem to properly predict reality, science instead has simply pretends that the data doing this either doesn't exist or proclaims that it is fraudulent and not valid science at all. Above we saw how “pseudoscience” was ridiculed for investigation of “mysteries” and that attitude is clearly justified in this instance by the metaparadigm that demands such obedience that science is willing to expel any member from it's ranks who dares question it. Which, of course, is a common tactic of religious cults.

The suggestion here is that such antics are wildly anti-science and those engaging in them deserve no respect from the public or anyone else. These sins are as egregious as when politics manipulates science to further some agenda such as faking data and recruiting science shills (often executives of science trade organizations) to promote some pet agenda (possibly some new tax) of those in power.

Metaparadigm number two demonstrates another aspect of how paradigms restrict and limit science investigations to make them easier and better able to produce results. In the way that science assumes that the experimental results do not depend on who is the operator, defining each consciousness as an independent entity does likewise. When phenomena are totally independent of each other they become related by simple coefficients. This makes problem solving much simpler. So if results do not depend on the operator, then that whole aspect of an experiment can be ignored. But it should be noted that if the outcome DOES depend on the operator that does not mean that there is no science or data available to be taken.

Indeed, science does know in part how to deal with such cases. Double-blind studies were

created for just such cases. But those tend to not be done in the “hard” sciences which are paradigm-achieved. Have you ever heard of double-blind particle experiments at CERN? Those sciences simply reject cases where such interactions might occur. Hence, in government studies of “remote viewing” where the attitudes of the experimenters or even witnesses can significantly modulate the outcome, protocols were instituted to deal with the effects, but most of science, especially the paradigm-achieved sciences are not nearly so advanced and simply reject the whole area of anti-paradigm study as crank kookery no matter what the evidence to the contrary. What this shows is that ignoring mounting evidence that the metaparadigms of science are not aligned with reality can only result in a major crisis for science as a major paradigm shift develops. And history of science shows that this is indeed the manner in which science progresses rather than by the popular viewpoint of gradual accumulation of knowledge and understanding.

Lastly there is the question of chance, Darwinism and goals. Closely tied to these issues is the question of “intelligent design” which clearly has been given pseudoscience status because it directly opposes and attacks Number three. In our modern era Darwinism and “chance” has been elevated to the status of a religion, especially by those of a leftist political leaning. Atheism for most of the 20th century was in essence the “state religion” of communist countries. The influence of the political left can be seen in the longstanding “wars” with religious fundamentalists over the issue. In that fight which started with Christians firmly in control of politics, has now ended with atheist view of Darwinism and evolution firmly embedded in law where some schools are even required to teach evolution as “fact”. Attempts by the religious right to pass laws requiring evolution to be taught as “only a theory” have found little traction. The obvious end result is that since nothing in science is “fact” and not subject to change, the political battle has resulted in the teaching of religious pseudoscience as official doctrine. Only the religion producing the dogma has changed.

One problem with evolution theory is that it's not entirely wrong! Bugs and bacteria do indeed readily adapt through many generations to become resistant to all manner of poisonous conditions. Moths can genetically change color to better hide from predators. One need only look at all the breeds of dogs to see that “unnatural selection” can produce wide genetic variations. But then dog varieties are a perfect example of “intelligent design” are they not? Thus, the true argument of evolution vs other systems is not did something as efficient and effective as a human being happen just by chance from environmental pressure, or was it the product of say some alien genetics laboratory which produced it because of some interest in providing greater perfection for the human “project”, but rather the true question is can these and any other theories of origin and modulation of species be discussed as science with reference to actual data and observations rather than just descending into religious wars pitting this dogma against that?

Again it is repeated that we are not arguing the “truth” of given viewpoints and facts. Only questions are being asked and alternatives explored. The purpose is not to “prove” any given viewpoint, but rather to widen the view so that the “big picture” can be examined without being severely limited by prejudicial rules. In this case the prejudicial rules being the grand material metaparadigms of the “hard” sciences. In the case of metaparadigm number three, the basic dogma is that life has no ultimate purpose. If there is intelligence behind the design of life, then this implies plans and goals for the design. This is how all designs are done by definition. To say that all of life is just the result of random chance takes all meaning away from it. This means that an electric motor has more purpose and intelligent design in it's creation than you do. Is that true? Only “real” measurements and observations by “real” science can hope to approach an answer.

And of course many religions totally disagree with the concept of purposeless life. They talk about “God's will” which may be a fuzzy concept but at least implies purpose. Mystics assert that all life is not a Darwinian struggle to survive as science asserts today, but is rather a “classroom” where beings of all types experience and learn about the structure of their universe which is assumed to be intelligently designed for the purpose. There are no answers here in these wild speculations so far, while they are many in the world who hold strong beliefs with no data to back them up, but if one does not ask the correct questions there never will be answers. When the very rules and assumptions upon which your study of reality is based limit your investigations such that certain dark corners are always off limits, then those corners will indeed never see the light of day.

This problem of hardcore belief of the learned causing the outright rejection of any actual facts as pseudoscience, unscience or anti-science or even the suggestion that such facts might exist, is nothing new for the human condition. I quote here one of the granddaddy of all pseudoscientists. A man very much ahead of his time but quickly dismissed and cleverly neutralized by giving him credit for the invention of something which had little to do with his discoveries. While Franz A. Mesmer M.D. was studying strange radiations, his peers while running him out of town obscured the truth by calling him the father of hypnosis. Very clever these humans. And Mesmer's opinion of all this?

"Even when certain truths, in consideration of their apparent abuse of human intelligence, are so distorted that they are misconstrued as being in a class with the most absurd errors, these truths have not lost thereby the right of being restored to the light of day for the happiness of mankind. I venture to say also that it is an obligation on the part of those who by their knowledge claim public esteem, to investigate those truths in order to remove them from the darkness and prejudice which envelop them, instead of curtailing scientific progress by a fatal skepticism."

Franz A. Mesmer

We began this discussion with the fourth metaparadigm which states that there is only one reality. Such a concept is important because it means that if I measure something and you measure the same thing we get identical results not only because you and I do not influence the measurement as per metaparadigm two, but also because my reality is the same one you experience. So we can compare our experiences because in identical circumstances with both supposedly experience the same things! Hence, the laws of science are not person or place or time dependent. This is an important simplifying assumption because if we each experienced our own separate realities the scientific method would be of reduced value. Everything we tried to study would be too ephemeral and plastic. Nothing could be easily compared. Which does not mean it could *not* be compared, but there would be added the need to include descriptions of the variability.

And yet, modern quantum mechanics is taking science precisely away from this metaparadigm. Things are observed to happen, but there is the suggestion that prior to that observation there was a “superposition of all possible outcomes” that existed before one of them sort of precipitated into our reality. The implication here is that metaparadigm four is no longer fitting our observations. The implication here is that at some levels multiple realities may indeed exist. One can argue that these multiple realities are not what we observe when we measure and observe things, and that is true, but the problem is that these multiple states lying behind our reality means that there is an uncertainty as to what exactly will be the given events precipitated! And that bottom line leads to the conclusion that our

reality is at best determined only by probability which is to say chance. Of course that does fit in with the Darwinian view, but the important point being made here is that there is growing evidence that these grand material metaparadigms are failing to match reality and observation. And when that happens in science it means that they are about to be overthrown by a science revolution and replaced by a new set that tries to eliminate the places where the old set failed to match our world.

It is not our purpose here in this introductory survey to discuss the material metaparadigms and "separateness" and "wholeness" axioms in great detail. Such a discussion can be found, for example, in Dr. Radin's several books, but what is relevant to this discussion is the fact that axioms of "wholeness" can be found is ancient myth and particularly Eastern religion which while certainly not representing any scientific proof, does support our thesis that myth and religion can provide some hints as to where science should start to dig.

It doesn't take a lot of work to gather evidence that the old metaparadigms are failing to match observations and that means a "new science" is ripe to emerge. Our question would then be just how is that "new science" to emerge and what kinds of things would it be studying? In short one needs to ask just what kind of things would the new axioms allow into the holy church of science. As Kuhn believed, these new rules cannot simply open the flood gates to every possible speculation. He noted that it is the very LIMITATIONS imposed upon science that keep efforts restricted to problem solving that made for the very success of science. Without some sort of restrictions, science lapses into philosophy and practical progress halts while fantasies are argued. Thus, the "new science" paradigms will also be limited and restrictive, but certainly different than those accepted at present. What those might be are part of our speculations here.

Forbidden Topics

In attempting to assess where science has come from and where it is going, a great deal can be learned by examining what may be termed "Forbidden Topics". These are subjects of study that so go against the grand material metaparadigm that no discussions of them are permitted, no studies are allowed to be published, and careers threatened or actually ended to make sure these subjects are never presented to the public as acceptable topics for investigation by science. In cases of resistance on the part of the researcher, the mass media and political influence will be invoked if necessary to remove the subject from popular view. Given that "going public" or appealing to political influences is considered "bad form" among scientists, it shows just how much important preservation of the metaparadigms is among establishment science.

These topics have been termed "forbidden" because of reactions from the science community that occur from any attempt to research, discuss, publish, fund, or promote such topics. The hapless scientist will discover great resistance up to and including the level of personal professional attacks. Any who give material or vocal support of the work will also be attacked. Should a choice be made to investigate, measure or observe one of these topics, it will soon be discovered that not only will the science establishment and media at their behest see that personal attacks are launched, but it will not matter how much education and science experience the researcher has, how many advanced degrees, how many books, papers, articles, seminars or publications they have authored in the past, how many patents they hold, what discoveries they have made before, or how many awards, even Nobel prizes they have received in the past, they will immediately be deemed incompetent in science and "kooks" in their thinking. In a way it is an interesting inversion of the science "norms". Your work cannot stand on

it's own, because as we've pointed out above, it will not even be read and all critics will refuse to discuss the actual issues you raise. Therefore, it simply will not matter how throughly you've proven your case, how careful and irrefutable are your measurements and observations, or how reasonable and logical your theories. Your actual work will never be the topic of discussion. The only topic placed before the public will be the question of your "sanity" for investigating an area where "everybody knows" what the results will be without ever having to do any actual observations.

If you doubt this, presented for your consideration is the case of Linus Pauling. The late Dr, Pauling was a scientist of immense reputation. Won many major and prestigious awards as well as chaired a top Chemistry Department for many years.[41] And he was the only person to win two unshared Nobel prizes: one for chemistry and the Peace Prize as well. But late in life, he became interested in a question that has teased humanity forever: The cure of the common cold. He became convinced that large doses of Vitamin C would do this. If he had he "invented" some synthetic complex chemical that pharmaceutical companies could sell making obscene profits there would have been no problem, but Linus went "off the reservation" by his alignment with "unregulated" vitamin/food supplement industry which big Pharma has been trying to strangle with regulations forever. It is not only attacks on the grand material metaparadigm that create "forbidden topics" but political and financial significance can also do the job in science today. The result predictably was virulent attacks on Pauling that continue to this day where all his previous achievements are regarded as of no significance at all by attackers including media "journalists" who couldn't a pass freshman college physics or chemistry course if their lives depended on it. The various Vitamin C trials he arranged were all dismissed as incompetent (as usual) and "debate" mostly centered on the question as to whether Pauling was a "kook". Especially high points for the "science" side of the debate came from the fact that while Pauling was suggesting that large doses of vitamin C could extend the life of terminal cancer patients, ironically he died of prostate cancer in 1994 (at age 93). Establishment "science" 1, Linus Pauling 0.

Investigate any forbidden topic and media lies and hatchet jobs will abound, nothing will be allowed to be published, funding for current work will be in jeopardy even if it has nothing to do with the "forbidden" topic in question, continued employment will be put into question even with tenure, attacks on the work by colleagues who have not even read the work in question will be rife, and personal attacks suggesting mental problems will abound. No matter how much data or proof has been obtained in the subject area, none of it will be accepted or even examined. Furthermore any persons supporting your research in any way (such as the MacMillan editor and planetarium director in the Velikovsky affair) will also find themselves in jeopardy. Multiple Nobel prizes, as say in the case of Curies studying ESP, will be found to be totally unimpressive to critics who will make the case that even people who in the past have been shown to be smarter than everyone else, still can become kooks and suddenly become stupid.

The fact that large numbers of men of science of great esteem are willing to simply throw the norms of science and the scientific method publicly out the window in the case of these topics shows that "forbidden topics" represent something so important to be censored that great numbers of professionals are willing to act in a totally unprofessional manner. And of course such human behavior has been observed in the past where it is understood that the motor behind this great deviation is a deadly combination of religion and politics. The "science" religion is demanding a purity of dogma

41 https://en.wikipedia.org/wiki/Linus_Pauling

which we have seen in today's case is the grand material metaparadigm, while government funding of science as well as the post-atomic recognition of the utility of scientific advances (especially when kept secret) as a key to political domination and control of hegemony, induces government to be the “single payer” of the piper and thus, call the tunes.

In short, the situation in science today with respect to “forbidden” topics is virtually identical in social structure to the Inquisition of the Catholic Church. “Heresy” provides the danger to church underpinnings while political interests provide the hidden motivations driving the extreme actions deviating from actual ideology, which would be Christian values in the case of the Inquisition and the Norms of Science in the case of “forbidden” topics. The only difference being that today, heretics are not literally burned at the stake, but are just burned economically, politically, and reputationally by being drummed out of the profession by mutual assent of a majority of other members especially those in the higher echelons of power and reputation such as officers of universities, companies, government agencies, and science trade organizations.

In the list of “forbidden topics” that follows you will find that the scope and sweep of subject matter is so wide and universal that it was necessary in order to make some sense of it all to attempt to divide the topics into groupings where they are identified by one or more major features. Obviously this is a more or less artificial division and many topics straddle several of the headings we have listed though in general an attempt has been made to no duplicate topics and restrict them to the division that their major impact represents. For example anomalous archaeological artifacts are listed with archeology in spite of considerable governmental conspiracy evidence of the collection of such artifacts and their disappearance into the Smithsonian Institution's basement, never to be seen again.[42] Such disappearance is little surprise given that the view of establishment science is that the investigation of “mysteries” is a hallmark of pseudoscience. Hence the hiding of anomalous artifacts keeps establishment science “pure”.

What the reader will observe from the following list is an array of “forbidden” subjects that leaves virtually no science untouched. The fact that mainstream science has managed to keep these topics ridiculed and out of the mainstream consideration is itself a fact generating some amazement. There are only a couple of conclusions possible from this. One (the one you are supposed to draw) is that kooks abound in pseudoscience and science must work hard to “protect” the ignorant public from these erroneous ideas being presented as science. The problem with this conclusion only comes if one actually takes time to read the works in question and the evidence of actual respected scientists (or were, before they were drummed out of science, like say Pons and Fleishman of “cold fusion” fame) where credible data and careful measurements are found utilizing proper scientific techniques. The other conclusion (the one you are supposed to ignore) is that contrary to what college professors, popular “experts”, and PBS have repeatedly told you, there still exist vast areas of human experience and phenomena in the universe which science does not understand and cannot “explain” and in fact, is not even willing to admit exist!

So what does one do when a scientist goes “off the reservation” and starts collecting real honest-to-God data that starts to demonstrate that one or more of your Grand Material Metaparadigms is not correct? You know the answer: You refuse to read his research so you don't have to comment on the quality of the science in it, and then accuse the researcher of being “insane” with one of the many

42 Pilkington, Mark, “Far Out:101 Strange Tales from Science’s Outer Edge”. The Disinformation Co Ltd., New York, 2007.

words available to do this. The argument is then clear. If a person is “insane” then anything they say does not need to be taken seriously. End of argument.

Compiling a List of Forbidden Topics

The following list is far from complete, yet the most interesting thing about it is its amazing scope and sweep. One might have expected a short list with obvious erroneous ideas on it such as a “flat earth” or “politicians never engage in conspiracies”, but the range of topics where each represents more than just some myth or urban legend but rather there are many relatively serious books on each subject presenting a variety of historical and scientific observations many actually appearing in period mainstream science journals representing work by actual scientists rather then just popular writers.

Obviously the utility of such a list is not for it to become a list of “beliefs” to be accepted as fact (even though debunkers will accuse anyone who investigates these topics of “believing” in them), but rather a list of anomalies where there are suggestions of the failure of achievements of science to adequately account for what is going on.

One essential point to never forget it that it only takes the existence of just ONE carefully measured and verified exception to the laws and theories of establishment (or any) science as evidence the entire theory is somehow “wrong”. It does not matter how “correct” and how closely the rest of the theory agrees with observations. Something fundamental is wrong unless it agrees with ALL observations. Newton's laws are extremely useful and well verified over a great range of conditions and values, but if you go fast enough, one can easily show they are “wrong”.

This list was compiled in part by asking for “forbidden topics” on INTERNET discussion groups and much thanks is due those participants for their contributions. And that contribution also clearly demonstrates that in spite of the efforts of establishment science to neutralize all interest in these topics, public fascination with remains strong giving such establishment debunking efforts one tough row to hoe. If one ponders a bit on our original definitions of science as an effort to discover the “laws” governing all “data” in the universe, it becomes clear that the very existence of a list of out of bounds topics makes no sense whatsoever. Indeed, the creation of such a list strongly suggests an ulterior political agenda and one can note that this very work with it’s metaparadigms and rules is in a way a scientific study of the nature of such political lists. In short we have been looking at the relationship of science and politics to human nature and speculating on simplifying rules to help comprehend it.

Forbidden General Topics:

Parapsychology and paranormal bodily abilities:

Extrasensory perception (various kinds of perception of thoughts of others)
Telepathy
Remote viewing (distant viewings in present)
Prediction and Prophecy (Viewing probable future)
Viewing past (ESP archeology)
Viewing other dimensions and their contents (Astral, etheric etc.)
Viewing other realms and their contents (fairies, elves, gnomes, divas, etc.)

Psychokinesis (moving objects with mind)
Spoon bending (altering objects with mind including turning to gold)
Anti-gravity I (one's body rising from floor and floating)
Anti-gravity II (floating of large stones, monuments etc in construction)
Anti-gravity III (hovering UFO aerodynes etc.)
Mental healing (by thought power or prayer)
Psychic healing advice (includes Cayce-style medical advice)
Invisibility
Astral projection
Perception of unknown radiation (animal magnetism, Ode, Orgone, N-rays etc.)
Existence without food (Breatharians)
Feats of Yogis and Fakirs.
Weight gain/loss due to soul
Buildings (geometry) enhancing "supernatural" abilities.
Uri Geller (and phenomena)

Metaphysics and Rejected Science Topics

Alchemy (Kervran Effect, Low energy nuclear reactions)
Cold Fusion (Low energy nuclear reactions)
Kervran science (Kervran ideas applied to geology, agronomy, medicine, biology, etc.)
Astrology
Strange Rains (creature falls etc.)
ELF Weather making
ELF Earthquake making
ELF Tsunami making
ELF Mind control
Free energy generators
N machines
Moray generators
Keely machines
Tesla power transmission
Baxter effect (Paranormal plant perceptions)
Plant Sentience
Anti-gravity (UFOs)
Electrogravitics
EM cloaking fields
Dowsing
All Fortean events
Eugenics
Acupuncture
Velikovsky
Any suggestion myths might contain truth
Faster than light communications/travel
Aether theory
Relativity denying

Time travel
Stargate travel
Lunar effect on human activity (see astrology)
Inertial propulsion
Non-Newtonian Gyroscope effects (co-gravitation theory)
Non-Newtonian pendulum effects
Reaction-Free EM space propulsion (force-glove)
Electrostatic planetary fields
AGW deniers
Big Bang deniers
Relativity deniers
Self-replicating machines
FTL jets from Quasars (You can research the jets, but not the FTL jets).

Cryptozoology

Sasquatch (Bigfoot)
Abominable Snowman (Yeti – various species)
Mothman
British Puma
Nessi (Loch Ness Monster)
Lake monsters
Giant Squid
Aquatic Ape theory
Animal intellect
Animal speech

Archeology suggesting unacceptable past or present events.

Hollow Earth
Growing Earth
Cyclopean Walls
Pyramids (showing construction beyond present technology)
Anachronistic artifacts (Roman coins in America etc.)
“Impossible” old maps (showing views only obtained aerially or ice-free antarctic)
Ancient Aliens /Ancient astronauts
Alien “Custodians”
Gate and city at Tiahuanico
Nazca Lines
Crystal Skulls
Machu Pitchu
Atlantis
Velikovsky
Any suggestions myths might contain truth
Late pleistocene submerged cities and civilizations.

Prehistoric air evacuated maglev tunnels
Humans in early pleistocene (Human footprints in coal)
Intelligent design
Alchemical rock transformations in geology
Late pleistocene submerged cities and civilizations.
Any evidence of technology prior to 6000 BC.
Archeology based on ESP information (includes Cayce)
Real History
Fortean recorded events

Other humanoid lifeforms in the universe.

UFO occupants
UFO crashed bodies
Human abductions
Discussions of vast probability of other humanoids based on numbers of stars.
Criticisms of SETI
Intelligent design (Alien genetics laboratories)
Livestock mutilations
(also see cryptozooology above)

Rejected Medical science discussions

Chiropractic
Homeopathy,
Osteopathy
Naturopathy
Acupuncture
Traditional Chinese medicine
Ayurvedic medicine
Iridology
Fingernail analysis
Reflexology
Physiognomy
Spondylotherapy)
Phrenology
E-Meter
Hieronymous Machines
Rife Cancer Cure
Biorhythms
Stigmata
Alpha states and sensory deprivations
Engram theory
Man-made origins of new diseases (See Conspiracies)
Bacteria from deep underground

Vacuum bacteria in space
Bacteria in deep ocean trenches
Bacteria in ultra high radiation.
Water fluoridation
Mercury in tooth fillings
Human/animal hybrids
Mercury in mandatory vaccinations
School brainwashing
University brainwashing
TV brainwashing
(Political) Neurolinguistics
Nutrition vs thought pattern (i.e. eating meat makes people aggressive, poor nutrition triggers primitive survival instincts)
Lunar effect on Human Behavior
Memory erasure/replacement
Mind control

Government Conspiracies and classified projects

MKULTRA (Mind control) (Deaths of uninformed experimental subjects)
Secret underground military bases
Secret space bases and cities.
Air evacuated maglev tunnels (new and prehistoric)
Underground bunkers for government
Laser/nuke tunneling
Area 51
Face (monuments) on Mars
Fake moon landing
Structures on the Moon
JFK conspiracy
MLK assassination
Robert Kennedy assassination
John Lennon assassination
R. Reagan attempted assassination
Murrah building "help"
9/11 "help"
UFO cover-up
Roswell Crash facts
Roswell crash reverse engineered technology
Aztec crash facts
Classified anti-gravity U.S. stealth craft
Man-made origins of new diseases (Ebola, AIDS, Fort Detrick, etc.)
Widespread use of carcinogens (cancer now a leading cause of death)
Montauk experiments.
Project "rainbow"
Chemtrails

Secret organizations (Masons, Skull and Bones etc.)
Secret elite organizations (Bilderbergers, Trilaterals, CFR, RIIA, Round Table...)
Van Allen belt from Nuke testing
Ozone hole from chemical promotions and over-use
Lead poisoning from gasoline
Nuke testing causing cancer
Saturated fat promotion causing heart disease (grown to a leading cause of death)
Live bacteria bio-warefare testing on cities
Military psychopathy (PSYOPS)
Anything questioning the necessity of human labor
Anything questioning the necessity of money

A new kind of radiation (Aetheronics/Radionics)

Animal Magnetism
Odyle (Od)
N rays
Mitogenic Radiation
Orgone
Plasmonics
Radionics
Kundalini
Ki energy
Life energy
Ley Lines

Ghosts and phenomena related to the persistence of consciousness

Ghost phenomena
Near death experiences
Seances (apports, ektoplasm, direct voice, etc.)
Spiritism
Electronic Voices
Voices on tape
Posthumous Composers (Rosemary Brown)
Ouija board
Pendulum messages

Links of symbolism to events and personality

Palmistry
Numerology
Face reading
Astrology (also see metaphysics)
Astrobiology

Iridology (also see medicine)
Graphology
Crainiometry/Phrenology (See medicine)
Physiognomy
Tarot Cards
E Ching
Fingernail analysis (Also see medicine)
Given names meaning (symbology of name sounds)

Ultimate Science Forbidden Topic:

Any speculation or study that suggests there might exist conscious intelligences in the universe with greater power and knowledge than man is considered completely out of bounds unless there is the strong final conclusion that such a thing is extremely unlikely. In other words any topic that has the slightest suggestion that other humanoid beings with technical superiority to us might exist or worse that they may actually possess powers typically ascribed to God or "gods" is totally "forbidden"... In all cases the conclusion is required to be negative as to the existence of such a possibility. Such speculation is only allowed in science fiction where the term "fiction" self-debunks the speculations.

Any suggestion of such lifeforms (humanoid or otherwise) more advanced than man actually visiting Earth is likewise forbidden. This includes any investigations of a wide variety of evidence suggestive of such visits including UFOs, supposed abductions, cattle mutilations, crop circles and so on. Again, any such investigation or report of these things is required to end with a strongly negative conclusion rendering such "studies" mere propaganda instruments. Note that if such intelligences are visiting us rather than us visiting them that tends to be proof of their greater advancement.

It is very common for NASA and other establishment science spokespersons to breathlessly announce that there "may" be other life in the universe. But when one gets to the money remarks, you always find they are talking about the possibilities of organic chemicals on Mars or perhaps some simple bacteria at the absolute most. "More advanced" than man is never even hinted as even being possible.

Establishment spokespersons, when pressed, like to trot out the Drake equation to "prove" that man is the ultimate of creation the universe. But like most of cosmology the Drake surmise is mostly fantasy because we really have little actual knowledge beyond our own little neighborhood. The use of probabilities to justify the acceptance of scientific theories is not new or unusual. Quantum Mechanics, for example, is widely accepted yet is purely probabilistic at it's core. The simple ignored scientific fact is that if one considers the enormous number of stars in just our galaxy, the Milky Way, and you multiply that time the immense number of galaxies in the universe, one obtains a number so large that the probability of there being more than one earth-like planet developing intelligent life (let alone the existence of OTHER unknown conditions that might also produce a non-humanoid intelligent life of some sort) is so close to unity that any science "spokesman" ignoring this result does not deserve the title "science". Today we understand that the fact that parts of the sky are black does not mean there are not galaxies out there in that direction.

Yet another scientific fact of importance is that there has been a massive government cover-up of UFO data that has been going on since at least WWII. This assertion is <u>beyond doubt</u> as proven by

the government's own records obtained through FOIA.[43] The movement to end the cover up is called "disclosure" and has proponents both in and out of government. The scholarship behind this movement and the array of government documents revealed has made it difficult to dismiss as just a bunch of wild-eyed kooks.[44] Just what facts are being covered up is still an open question, but the existence of the cover-up is not. Obviously such cover-up activities are totally anti-science and against the science norms.

As a final speculation, let us make some final observations. If alien life-forms are visiting Earth, they are by definition "more advanced" than us in at least some technical aspects. And secondly while the existence of such "visitors" may be hotly debated and ridiculed as teenage hoaxes and the like, I would point out that no honest scientist who happened to end up standing at the site of some crashed advanced aerodyne with the bodies of alien beings scattered about can continue to insist that humans are alone in the universe unless they lie their butts off. Continued denial at that point can only exist through anti-science intellectual dishonesty. The same thing goes for a scientist who denies ESP as some belief of "kooks", but who somehow might find themselves across the table from some alien entity that is reading their thoughts and more importantly projecting extremely strong communications right into their skulls.

Grand Material Metaparadigms for the 21st century

Having just taken a close look at what science is as well as the current state of affairs, it is pretty clear that today science is building up to yet another revolution or two. The Grand Material Metaparadigm is about to change with a lot of fighting and noise. It should also be clear that if those practicing science were to adhere to the fundamental "norms" of science none of this noise would be occurring, but human beings, such as they are, want shortcuts and the Grand Material Metaparadigm provides a short cut for some who just want easy decisions about what to do and what to think based upon simple rules. When such a viewpoint is adopted then one is either for us or against us and religious wars ensue. The study of the nature of the universe gets pushed into the background.

Since presently there are only hints of dissatisfaction with the Paradigm it is necessary for us to speculate a bit on just what next Grand Metaparadigm will be achieved. But there are enough hints suggested so far that have begun to be developed in the work that has been performed on a variety of the "forbidden topics" that have been outlined above that we can use those hints without any real positively confirmed data to attempt extrapolate to a new Grand Metaparadigm. We will leave "Material" out of the name since it is clear that Darwin and Atheistic materialism based underpinnings are going to be facing severe opposition in the future as extra-dimensional phenomena find their way into science. However, the new metaparadigm is still going be valid for the material world and the laws under which that world operates and the way that world appears to its inhabitants. It can be no other way.

However, it is important to stress that the following speculations are just that: SPECULATIONS. Through the years there is one thing I've noticed and that is that when scientists are asked to predict the future, especially when "helped" by journalists writing some New Year's issue pot

43 Greer, Steven M. MD., "Disclosure", Crossing Point Inc. Crozer Va, 22932. 2001.

44 Dolan, Richard M., "UFOs and the National Security State: Chronology of a Coverup, 1941-1973", Hampton Roads publishing co. Charlottsville Va, 22902, 2002.

boiler piece on what life will be like X many years from now, the results are almost invariably crap. I cannot count how many articles I've read in popular science magazines assuring us all that by right now every home has some android personal robot standing at the kitchen sink doing our dishes. So how many personal robots are walking around your house bringing you drinks, making the bed, and doing the dishes? Answer: none. Such is nothing more than a journalist's cartoon level understanding of technology. But on the other hand, I'd point out that standing *under* the kitchen counter in many homes is a "robot" that does your dishes for you. No it doesn't have arms and walk around on legs like cartoon robots, but it does have a brain and possesses considerable skill in dishwashing. In many ways a modern dishwasher is more like a robot than a 20th century machine and getting *more* "robotic" all the time.

Thus, we caution the reader not to put too much stock in our speculations. The future is not fixed and as every stock trader knows, predicting it can be difficult since past performance does not guarantee future results. But these ideas are not wholly pie in the sky fantasy either. The idea is to take a long hard look at the "forbidden topics". As noted above, they are forbidden because they fly in the face of the Grand Material Metaparadigm. The fundamental metaparadigms change when there finally has been accumulated enough actual data against the old metaparadigms that a reasonable person can no longer continue to assert their validity. Thus, the engine driving the move to new metaparadigms is going to be the accumulation of irrefutable data with regard to the forbidden topic subjects and since we have already noted that establishment scientists uniformly refuse to read, to examine, or even to discuss any of these "pseudoscience" topics, they are going to be blindsided by the final accumulation of data that tosses out their grand metaparadigm. The result will be the predicted upheaval and science revolutions.

Our conclusion here is going to involve an estimate of certain ways in which the old point of view of the old Material metaparadigms will change to reveal new insight that will arise simply from looking at phenomena from a new perspective. One can draw an instructive analogy here with the Copernican Revolution. If one changes your point of view from all actions centered upon the earth whereby astronomical bodies are assumed to move as they appear to the earthbound observer traveling the skies about the planet, to a new viewpoint centered upon the life-giving sun of the system, none of the actual phenomena change. The firmament still appears to move as it always has appeared and planets still wander the skies with the same movements. And neither has any question (as we have pointed out previously) of whether the sun goes around the earth or the earth around the sun been resolved. A "stationary point" of the universe has not been discovered or even proposed. What has happened in truth is only that the theory which allows generation of the data of the observed motion of the planets (and much more) has been replaced by one which is not only simpler to calculate but also less complex to think about and hence much more accessible for the human brain to comprehend as an "explanation". As discussed above the less complex the theory the better it works for generating understanding of phenomena (assuming the simpler theory produces correct results in *all* cases).

In this same way it is hoped that the following changes in point of view can also result in greatly reduced complexity and hence greater comprehension by humans of a mass of phenomena represented by the portions of the "forbidden topics" data that actually proves true. It should not be forgotten, however, that we stand at the first moves of a scientific revolution and are not writing some textbook summary after all the battles are done and decided. Therefore these new viewpoints are clearly tentative in the extreme and are certainly not presented as some "answer" to all the unanswered questions of science and humanity to this point. However these new viewpoints *are* revolutionary.

They fly in the face of the old material metaparadigms and thus by definition are “unscience” and will remain so until the old paradigms are discarded and newer more accurate ones accepted, by which point one can assume it will be time to reject the new ones and go through the whole process again.

New Viewpoint #1. : The universe is a multidimensional manifold

The old Grand Material Metaparadigm takes a very narrow view of all the phenomena of the universe. “Material” here means something very specific. It means that all of existence occurs within our three common dimensions plus time. Space-time is the term used to describe this “material” reality. The possible existence of a greater number of dimensions than three is not only rejected but hotly asserted to simply not even be possible except for string theory which is so mathematically abstruse and so removed from any actual physical data it can easily be ignored as the musings of philosophers.

The justification for this current viewpoint is that on average human beings do not observe direct interactions with any theorized extra-dimensional manifolds. Hence it is not only a matter of “out of sight, out of mind”, but goes further to “out of sight, thus, cannot exist”. The last viewpoint in addition to not being in alignment with the norms of science, totally ignores the reported observations of many persons where there is a suggestion that some people can indeed perceive certain cross-dimensional interactions while the majority of people cannot. To assert that such persons are lying, hoaxing, delusional or are just “kooks”, is akin to tar and feathering some person describing an event he saw to a community who has never seen a piano or a virtuoso player where it was sworn that some person operated this large device with large numbers of levers on it that produced such amazing sounds that thousands of persons were literally moved to tears. Clearly this is kookery at it's finest to any “sensible” person, is it not? Obviously from our “enlightened” viewpoint the kookery is all among the “skeptics” when the scientific method is ignored.

What happens to one's thinking if one allows the universe to open up into greater numbers of dimensions. Well, this idea is not new and has been suggested in reverse in little pregnant book called “Flatland”[45] and some later extensions of the original ideas[46]. Humans have great difficulty imagining larger dimensions than their own 3D world. A 4D “hypersphere” can be described mathematically without too great a difficulty, but it is virtually impossible to visualize. So the “flatland” stories take the analogy the other way by reducing things to an imaginary 2D world termed “flatland”. This allows us to visualize this “world” from two viewpoints at once: One from our 3D vantage point being our description of what events are taking place, and secondly from the 2D viewpoint of the creatures that inhabit our fantasy “flatland”. The Flatland reader is expected to make the logical leap by analogy from the 2D-3D story to a 3D-nD new viewpoint.

Looking at this “flat” world we can observe that indeed there can be 2D creatures that live and work in this space who do not extend off their plane. But at the same time we can imagine “higher” creatures, such as a sphere. Suppose this sphere passes through flatland? To us we simply see a sphere passing through a plane where a circle is formed by the intersection of the two geometric constructs. No big deal. But to the flatlanders, they see blank space where suddenly a microscopically tiny “circle being” forms and begins to grow and it grows and grows until it reaches a certain size and then begins to shrink and shrinks smaller and smaller until it is totally gone! The Flatlanders have just witnessed “magic”. They have witnessed a religious “miracle”. They have seen things that their “science” cannot

45 Abbott, Edwin A., “Flatland”.

46 See also Burger, Dionys, “Sphereland”, Quill, HarperCollins publishers, New York, 2001, [two volumes in one].

explain! And doubtless those witnessing this event will be accused of being delusional and “kooks”. It's all about point of view. The direct analogy to OUR space and higher dimensions should be apparent. Reading and pondering the “flatland” books is obviously a worthwhile activity to understand a new viewpoint.

Notice also, that to Flatlander beings, higher order structures manifest in their world as “time” which is to say changing events like a circle-being appearing, growing, shrinking and then disappearing, While from our vantage point the sphere is quite geometrically stable during the whole operation.

Now one must consider if a Flatlander can tell if “he” is a circle or a sphere? How would “he” know? Is it possible that *all Flatland beings* are actually 3D geometrical figures like spheres and cubes while they only perceive their 2D intersection figures of circles and squares in their world? The question applies directly to humans. What if human beings exist not only in the material 3D space as asserted by the Grand Material Metaparadigm, but also have structures in additional dimensional manifolds? What if mind, the seat of consciousness, and even perhaps some memory have structures in other dimensions. And furthermore, what if upon death of the organism, when all bio-electric and biochemical activity ceases, only the 3D portion of the being ceases to operate while the other structures continue normal operations? Suddenly, the proposed persistence of these hidden extra-dimensional structures could mean that persistence of consciousness becomes a possible reality. “Life” after death starts to actually have a theoretical basis. “Near Death Experiences” are seen to be quick extra-dimensional trips with reports back of what structures were observed to be retained there. The key question to be investigated therefore would be just how much of consciousness is due to our 3D organism and what portion exists in extra-dimensional structures?

And lastly there is one more feature of “extra-dimensionality” to consider. If one considers two points in our 3D space and measures the time for light to travel between them it is found that this value never exceeds the value for the speed of light in vacuum. This is a basic postulate of the theory of relativity. Even if one postulates that light never exceeds this speed in ANY of the dimensions, that does not preclude faster than light communications in our world. The catch is that the distance between the two points in OUR 3D space may not be the same distance between those same two points in one of the OTHER dimensional manifolds. This is the “wormhole” idea. Thus, if we develop a machine that can send light into some other dimension and receive the return, that communication could very well occur so fast as to appear to us that light is traveling faster than it is permitted to do. It should be obvious that indeed light is not actually exceeding it's limiting speed, but it only appears to be doing so to observers because of their incomplete understanding of the multidimensional geometry and the illusion that what they are measuring as the distance traveled is not the actual distance traveled by the light.

The fact that our interactions with other dimensions are clearly subtle and tangential and tend to be observed only in special circumstances making them largely hidden (occult) from our view does not mean there are ZERO such interactions. No evidence at all of interactions might be suggestive evidence such dimensions do not exist, but there is evidence. The fact that the basic laws governing such interactions are not known and typically only persons with special talent seem to be providing much of the evidence does not negate the existence of such proposed dimensional structures anymore than the fact that only a few people become virtuoso violinists is proof that such musical talent can never exist.

There is suggestive data that we humans (and most likely many other forms of life) exist and have structures in all the dimensions simultaneously. However, for the most part, we are consciously aware of only our three dimensions and the passage of time. Observations indicate that connection to other dimensions may occur in “altered states” such as dreams, trances, or hypnosis and the like. At present there seems to be no reason that technology could not be developed to “view” these structures in other dimensional spaces. But obviously no such technology will ever be developed so long as science loudly denies any possibility of any additional dimensions beyond our apparent three.

New Viewpoint #2. : What is consciousness? What is life?

What is the meaning of life? That is the question that *homo sapiens* thinkers and non-thinkers alike have asked down through the ages with little progress. Science, in particular the Grand Material Metaparadigm number three, as we have seen above has answered that question of the ages in the negative putting forth the dogma that life has no “meaning”, which is to say “higher purpose” or “goal”, but rather develops by random acts of mutation which either survive or become extinct based solely upon their utility with regard to the survival of the species.

Needless to say, the basis for such a sweeping assumption is pretty thin. Even more telling is that the “meaning of life” has been declared long before there is even a well understood consensus of what “life” actually is! What is life? That would be the first question a thinker would need to ask before attempting to divine what the “meaning” of such life might be. First one must carefully define what one is actually talking about and *then* delve into the details of it. This subject is so central to science it is necessary to spend considerable time on it.

All of us are familiar with the phenomena of life as well as the rest of our material world. Somehow we tend to feel that there is some fundamental difference between even the dumbest human and a rock or a box of hammers. But is there a real difference which is to say something fundamentally different in structure for “life” or is it only a matter of degree given that rocks don't move around quite as easily as we do?

One thing that makes humans think that it is not just a matter of degree is something called “death”. When death occurs suddenly the active moving, talking, thinking, feeling, conscious organism become very much like the rock even though immediately after death one can argue that virtually all of that material chemistry, physics, and other processes have not really changed to any great degree. Yet something VERY fundamental has changed. Over the centuries the theory that was developed which is still very popular in pseudoscience circles is that there is some sort of “life energy” in the living being that makes the difference between living and dead. This discussion is still going on. And of course the other side of the “death” coin is that of reproduction. A box of hammers does not spontaneously acquire more hammers in the box. But this line is thin because crystals act very much like life in that they gather materials from around themselves to allow their orderly structures to expand and grow. Thus, one must ponder if crystals are some ultra primitive form of “life” and it must be pointed out that many rocks are crystalline.

To get a handle on this whole question of life and science we will consult one of the great scientists of modern physics: Erwin Rudolf Josef Alexander Schrödinger. Schrödinger is the man responsible for the equation bearing his name that is the basis of all modern quantum mechanics theory.

His theory is so fantastic and disconnected with reality one wonders how he was not run out of science forever as a kook and pseudoscientist, Yet, somehow all his fantasy managed to avoid the land mines of the Grand Material Metaparadigm and has become the dogma of today's "modern" physics. And of course one reason for this is that his theory actually produces results (more or less) that seem to agree with actual measurements and his care not to question the Grand Material Metaparadigm allowed his thoughts to become the basis of the atheist dogma of today's science without major opposition, rather than writing him out of textbooks as a crackpot as happened to Tesla.

Of interest here is that Schrödinger also pondered the question of what is life even though he readily admits in the work that he is but a "naive physicist" and is treading in dangerous multidisciplinary waters in which he quickly disavows all expertise in spite of the obvious fact that he is knowledgeable in these fields and thus carefully picks his way through the unscience mine field. His lectures on life will be discussed below, but first it will be instructive to review a few highlights of Schrödinger's quantum theory.

As has been discussed previously, energy (which is equivalent to information) can only be transmitted by particles or waves. Philosophically, particles can move about in true vacuum which is to say "nothing" at all and although Einstein simply assumed the axiom that particles cannot move faster than light in space there is no philosophical idea limiting the maximum speed of particles to c. But it is observed that electrons etc. can never seem to be made to go faster than c and the closer you get to c the more and more force is needed to accelerate the particle just a little bit more. Thus, there are two possibilities here: the first being Einstein's assumption that nothing can go faster than light and the second being that particles actually COULD go faster than light if only one could find a way to get them going that fast. In other words, the limitation is in the known acceleration mechanisms and not with a limitation of possible terminal velocity of the particles if some appropriate method to get them moving that fast could be found. One should note that electric fields which are a typical way to accelerate electrons, propagate through space at the speed of light in vacuum of space and hence are not likely candidates for moving a particle faster than they themselves are traveling.

Waves also carry energy across space, but philosophically waves by definition require a medium and a further point is that a medium to be correctly described mathematically by wave theory must be a continuum. Hence all wave theories such as Maxwell's electromagnetics or the Schrödinger's quantum equation require a medium that is a continuum. If we compare particles and waves we see that things on the sub-microscopic scale like electrons crashing into a metal vs electric fields flowing past a radio antenna seem much the same as the difference between sunlight pouring upon the earth vs an asteroid crashing into it. This is why a quantum theory was necessary. At very small scales with atoms and tiny atomic particles wave theory was observed to simply not apply. Even worse various changes such as in energy all seemed to take place very rapidly in discrete fixed steps. The very nature of the realm of the very small seemed to be the polar opposite of a continuum. Hence, it was termed the quantum world.

All this unexpected crazy behavior was then described by Schrödinger using of all things, a WAVE equation! The Schrödinger equation is given below:

$$i\hbar\frac{\partial}{\partial t}\Psi(r,t)=\hat{\boldsymbol{H}}\Psi(r,t)$$

This is a wave equation. Don't worry if you don't understand it. It's solutions are wavefunctions typically given the name ψ. Here is how it works. Say you have a quantum-sized particle like an electron in a "box" which would be some restricted space, maybe the space around an atom. The connection between math and reality is that one can solve the above equation for that "box" and get a set of solutions that are valid for that structure. OK, but what do they mean? Well, measurement shows that if you start trying to find where the particle is in the given box you get a lot of measurements showing it all over the place, but it is not as likely to be some places as others! On the other hand if you take those wave functions you calculated and take the absolute value and square them, you find that the result pretty much agrees with the measured probabilities of where the electron can be "found"[47]. Where the squared wavefunctions have the largest value, is where it is most likely that the particle will be found. Note that you "find" an electron by it's catastrophic interactions. It's like the asteroid hitting earth. You then plot those positions to get your "probabilities" of where in general it might be located in that particular "box".

That is the basis of modern quantum theory. And an inquiring mind would immediately want to know just what is the medium of these wavefunctions? And there is no answer. Modern physics just proclaims that there is no aether or any other medium. We are left with a theory of "probability waves in nothing at all". If you think that makes no sense you are absolutely correct, but yet it is the only theory that can even take a guess (probability is about taking an informed guess) at what is going on at the level of the very small. Schrödinger is the man who somehow put all that together.

Given that introduction, Schrödinger's thoughts on life can be explored and they are equally interesting.[48] He homes right in on the very topics that have been stressed here. His first observation is that atoms are very small and very numerous. This is important because his theory is for life to work based on natural laws. These laws are all mathematically based upon theories of a continuum. Hence, the great number of atoms allows an approximation of the quantum atomic structure to look to the body as a smooth continuous material just as a polished block of gold appears solid and smooth, while it can easily be shown that at the atomic level it is mostly holes and tiny discrete particles stuck together. Hence Schrödinger's theory is that the mechanisms of biology and life are not operating with the reality of the atomic universe but are all using a continuum approximation so that the math works!

And he makes another point similar to one made above. He notes that atoms are so numerous that it would be impossible for the human brain or any other mechanism to comprehend and deal with the complexity of the effect of a single atom or even a few atoms shifting around. Even if the information were somehow available to the organism, there is far too much of it to allow it to be credibly used. This gives a second reason for organisms operating on an approximation to reality rather than reality itself. Science has discovered this same methodology over and over in life. For example, you think you are seeing reality when you use your eyes to examine the world around you, but study has shown you do not. In truth your eyes perceive images which are then shipped to the brain where they are interpreted by algorithms and models the brain has created for itself and the output of those

47 We do not wish to engage the reader in a tour through mathematical fantasy, but since the wavefunctions are "complex numbers" (means involves the imaginary square root of -1) the actual probability function is actually given by the wavefunction value times its complex conjugate. And to be absolutely correct this probability function produced by this complex squaring is actually not probability, but rather probability density. If the reader understands this point, great, otherwise don't worry about it.

48 Schrödinger, Erwin, "What is Life?", published in 1944 based on lectures "What is life? The Physical Aspect of the Living Cell" delivered under the auspices of the Dublin Institute for Advanced Studies at Trinity College, Dublin, in February 1943. (.pdf file available on the INTERNET)

models is then passed on to your consciousness for you to interpret as “reality”. And you usually do. However, the fact that you are perceiving a model and not reality is shown by the effects of “optical illusions”. These effects are skillfully designed to “fool” the brain recognition models and drive the viewer to conclusions that obviously cannot be true, yet your brain keeps telling you they are true!

Another salient feature of life that Schrödinger examines is that of heredity. Reproduction is one of the features of life and inherited characteristics from your species down to the color of your hair can be passed on from parents to offspring. It is important to remember that Schrödinger gave his lectures on life in 1943 a decade before the discovery of DNA in 1953 by James Watson and Francis Crick as the repository of hereditary codes. Way back in 1927 Nikolai Koltsov proposed that inherited traits would be inherited via a "giant hereditary molecule", but it would not be surprising if in those days such speculations would have been considered pseudoscience kookery and not even examined. In fact, the whole idea of computer coding and the like had been little developed at this point, but with excellent insight and precognition Schrödinger proposed an “aperiodic crystal” as the repository of all information that is relevant to living things. Schrödinger wrote:

The non-physicist cannot be expected even to grasp let alone to appreciate the relevance of the difference in ‘statistical structure’ stated in terms so abstract as I have just used. To give the statement life and colour, let me anticipate what will be explained in much more detail later, namely, that the most essential part of a living cell-the chromosome fibre may suitably be called an aperiodic crystal. In physics we have dealt hitherto only with periodic crystals. To a humble physicist's mind, these are very interesting and complicated objects; they constitute one of the most fascinating and complex material structures by which inanimate nature puzzles his wits. Yet, compared with the aperiodic crystal, they are rather plain and dull. The difference in structure is of the same kind as that between an ordinary wallpaper in which the same pattern is repeated again and again in regular periodicity and a masterpiece of embroidery, say a Raphael tapestry, which shows no dull repetition, but an elaborate, coherent, meaningful design traced by the great master. In calling the periodic crystal one of the most complex objects of his research, I had in mind the physicist proper. Organic chemistry, indeed, in investigating more and more complicated molecules, has come very much nearer to that 'aperiodic crystal' which, in my opinion, is the material carrier of life. And therefore it is small wonder that the organic chemist has already made large and important contributions to the problem of life, whereas the physicist has made next to none.

The stature of Schrödinger is seen in that in the mid 20th century long before the human genome project, or the discovery of DNA he homed in on *both* the “aperiodic crystal” as the coding of life (though to call it the “material carrier of life” ignores the extra-dimensional aspects promoted here though if the word “material” is considered to be a qualifier describing the chemical portion rather than a statement that all life is nothing but “material” as is assumed under the Grand Material Metaparadigm then the statement can be regarded as correct as far as it goes) and the periodic crystal which will be suggested here as a basis of an explanation of so-called wave-particle duality. This can only be admired as absolutely amazing insight for the his times.

Another great insight Schrödinger made was the relationship of life and thermodynamic entropy. Again in the mid 20th century with Schrödinger speaking as what he calls a “naive physicist”, in which he disavows any claim to multidisciplinary approaches (even though that is exactly what he is doing) which clearly gets him off the pseudoscience hook where ideas generated from a study of other disciplines are found unacceptable in any single “hard science” specialty. It is very instructive to watch

how the great Schrödinger navigates the minefield of pseudoscience ridicule while skating perilously close to the edge of denying the grand material metaparadigms. With careful language he makes suggestions, but never really skates over the edge into abject kookery.

The breakthrough in relationship of entropy to life came out of some work of Claude E. Shannon of Bell Telephone Laboratories in dealing with an engineering question of communication channels.[49] Needless to say, especially in 1948, engineers were assumed to never have any ideas relevant to physics or science so it took a great many years for science to recognize the value of information theory and Shannon's results. Schrödinger, of course, can be excused for the oversight given that his lecture predates Shannon's publication, but it is telling that it has taken most of my lifetime for physics to even recognize the important relationship of entropy and information let alone embrace it. The “rules” of pseudoscience dictate that ideas outside your fence are not to even be read let alone considered or discussed. And there is little doubt that most of engineering is considered outside the “fence” of science in spite of widespread evidence in the modern digital solid state world to the contrary.

Even more telling is that physics and science already had the big hint from one of it's own towering figures. I am speaking of James Clerk Maxwell and his amazing insight with regard to what is termed his “Maxwell Demon”. With a Tesla-like precognition Maxwell homed in on the important connection between Entropy and information. The thermodynamic dogma is that all natural processes always increase the thermodynamic quantity known as entropy. In the theory of statistical thermodynamics entropy is related to the “disorder” of a system. Hence, it is preached that all natural processes always must proceed from order to disorder. This assumption gives rise to a number of wild speculations such as the coming “heat death” of the universe and so on.

So what if we had an “orderly” system of a box of two chambers with one gas in one and another gas in the other with a hole between them that can be opened and closed. If we open the hole, the gases from both sides escape into the other side until there is a uniform mixture of the two gases in both chambers. It's a classic process from order to disorder with entropy increasing (one can calculate the entropy of both states). In the natural world one never sees the reverse happen. No matter how long you wait those gases will never go back to their separate chambers. Scientists like to speculate beyond reality with mathematical fantasies saying things like there is a finite probability that all the air will end up in one corner of the room one day. The same argument might be made here saying that there is a finite probability that the two mixed gases could one day separate back into their respective sides. Such statements are patent nonsense. Beyond modest statistical variations in air pressure no room in the entire history of mankind has *ever* even had the air get thin on one side over the other let alone have all the air in the corner of the room.

But Maxwell then suggests the following thought experiment: What if you have a little trap door between the two chambers. And at this trapdoor sits a tiny “demon”. The demon can see the various molecules coming toward the door as they bounce around the boxes from thermal agitation. Now when the demon sees a given molecule heading towards his door depending on which kind it is he can either open the door letting it go to the other side or close it where it just bounces off and stays where it is. The gases separate and entropy goes the wrong way! Likewise he could start with a single gas at equal pressures in both chambers and only allow the gas molecules to pass into one of the

49 Shannon, Claude E., “ The mathematical Theory of Communication”, Bell System Technical Journal, July and October 1948.

chambers creating the all air in the corner of the room effect (or at least all air in only one chamber).

Physicists have argued over this since that time trying to show that such a thing cannot be built as a practical device and if you try in the end the rule of “increasing entropy” still applies. But it's all the speculation of angels on the head of a pin. Physics is still trying to force “steam engine thermodynamics” onto something which has more relevance to the digital age! Maxwell's phenomenal insight was that entropy is tied to INFORMATION as Shannon showed half a century later. The “missing” entropy has to come from the information the demon acquires as to the trajectory and type of each gas molecule. And this was exactly what Schrödinger was homing in on in his speculations on life.

The point is that life reverses entropy. That grand disorder of the dirt under my brick sidewalk much to my consternation constantly sprouts highly ordered weeds in spite of my best efforts to stop it from doing so! Under “steam engine thermodynamics” my sidewalk is clearly consuming entropy at a fantastic rate when everybody knows entropy should be increasing and the sidewalk proceeding from some kind of order to greater disorder, but such old school thermodynamics does not take into account the massive amounts of information stored in Schrödinger's “aperiodic crystals” found in the weed seeds in the soil under the sidewalk. As Shannon theorized, information represents entropy and a flow of information represents a flow of entropy.

Schrödinger comments on life such as the weeds that sprout through my sidewalk and their bringing of order out of the chemical disorder in the dirt by virtue of their seeds this way:

“An organism's astonishing gift of concentrating a 'stream of order' on itself and thus escaping that the decay into atomic chaos - of 'drinking orderliness' from a suitable environment - seems to be connected with the presence of the 'aperiodic solids', the chromosome molecules, which doubtless represent the highest degree of well-ordered atomic association we know of - much higher than the ordinary periodic crystal - in virtue of the individual role every atom and every radical is playing here. To put it briefly, we witness the event that existing order displays the power of maintaining itself and of producing orderly events.” [50]

But the point here is not to generate our own “pseudoscience” theory of life, but only to give a quick overview of new viewpoints that could change science in revolutionary ways once refined and confirmed. It is observed that a sealed jar of chemicals sitting at a constant temperature can grow crystals which are more ordered than mixed chemicals in the liquid. Thus, one can ask as we did above, are crystals life? The answer may take some work, but if you never look you'll never find the answer.

And we have not even expanded this viewpoint to include our previous viewpoint of multidimensionality! Issues of communication and consciousness, and self-awareness and persistence of structures have not even been addressed with respect to life and clearly these questions apply. It makes sense to ask if our multidimensional viewpoint above might equally apply to any and all forms of life whereby there are the known usual visible structures in our 3D while at the same time the “aperiodic crystal” might equally well represent a construction pattern for structures in “higher” dimensions. This is a very challenging viewpoint.

50 Schrödinger, Erwin, “What is Life?”, published 1944

If crystals could be life, then one can start asking if rocks are indeed "alive" and once you ask that question, one must entertain the question of multidimensional rock structures. In other words does the rock possess structures in higher dimensions that persists even if you hammer the rock to dust? Does a rock actually possess some kind of primitive consciousness? It sounds like a really stupid question, but since rocks are pretty inactive how would one know if it is aware of it's condition and what is happening to it? The same question can be asked of plants that while more advanced than rocks are similarly questioned about any consciousness. There is considerable evidence already supporting this viewpoint. Not only electrical effects measured by Baxter[51] but also the experiments of music upon plant growth and the high science of Jagadis Chunder Bose[52] who not only discovered "metal fatigue" using the viewpoint we are expressing but also performed many very interesting experiments on plants which of course have been widely ignored if not totally rejected as "pseudoscience".

The conclusion we are death-spiraling toward here is that if rocks are alive, then perhaps one could surmise that other entities even large ones like planets, stars or galaxies might have hyperdimensional structures may possess a consciousness and hence, like all life are self-aware and able to act upon their own "bodies". Communication with them could therefore be technologically feasible. Clearly this premise could also apply to the universe as a whole and this "super being" is what has been defined here as what man has traditionally termed "God" and consciousness is clearly a massive topic of tremendous scope and depth that has to date barely been nibbled around the edges and mostly has fallen victim to ridicule as "pseudoscience". Quite frankly there is already too much data from actual experiments of real scientists to in any way support such ridicule. To be sure details are still vague, but the topic can and has been clearly be studied by science.

Thus, this new viewpoint on life involves several aspects. One is a suggestion that the relatively recent discovery of DNA as the "aperodic crystal" repository of hereditary traits shows a relationship be information and the reversal of entropy that a growing living entity be it crystal, plant or animal represents. And the other side of this viewpoint is the speculation that just as man seems to show evidence suggesting structures in higher dimensions more or less matching the 3D physical body one can speculate that perhaps all of what we term "life" also possesses such extra-dimensional aspects. And finally this viewpoint includes a pondering of a hidden purpose behind these structures of life. The question being does it make sense that an electric motor has more purpose and meaning to its existence than the humans who designed it?

New Viewpoint #3. :Aether as medium for waves in space.

The original proposal of some manner of substance from the 19th century was to provide a logical medium in which light which appeared to be waves in space could be propagated. Aether provided the medium through which the energy contained in all light beams could be transmitted from one place (source) to another (observer). Clearly in "classical" physics the "modern" idea of waves propagating in "nothing at all" was illogical babbling patent nonsense. And it should be fairly obvious that little has changed over the years to debunk such a viewpoint.

If one cannot simply dispense with the aether problem, then one would be compelled to explain just how it works. If aether is the medium for light waves, then it is necessary to explain how the

51 Baxter, Cleve; "Primary Perception", White Rose Millenium Press, Anzo California, 2003.

52 Bose Ref. xxxx

transverse nature of light could be propagated when aether is theorized to be a thin, tenuous, flowing, swirling, gas-liquid like fluid. The propagation of sound waves in gases is well known and understood, but those waves are "longitudinal" which is to say the wave motion is in the direction of propagation. It is gas pressure effects that provide the coupling of stress at one point to the next that leads to wave propagation. All this works quite well. However, gases like air do not transmit shear forces. While sound waves in a large block of metal are easily transmitted as longitudinal waves *and* as transverse waves since metal provides linkage in both compression and shear, sound in air only can be longitudinal waves because gases such as air do not transmit shear forces except for the minor drag between smooth closely separated surfaces.

This tells us if aether is to be "luminiferous", it somehow though tenuous and flowing is still both elastic and able to transmit shear forces from one point to another. Hence we deduce that aether is able, like blocks of certain material or even ropes, to transmit transverse waves through space as well as longitudinal ones. Can we identify these longitudinal waves with various natural phenomena? Clearly transverse waves are identified with visible light. And electromagnetic radiation at frequencies both above and below visible light that is capable of being polarized would also correspond to transverse propagation. However, while it is now popular to talk about "radio photons", there is virtually no evidence that any such thing exists. Tesla believed that low frequency radio waves of his day were longitudinal and there is little definitive experimentation to disprove it. The problem is that when radio frequencies become low, the antenna structures needed to demonstrate polarization become unmanageably large. And furthermore, these large structures are much too near adjacent buildings, ground and so forth to make a definitive polarization determination. Nobody has put some large antenna out in free space as the true test for longitudinal waves. As a ham radio operator I can say that I certainly have seen polarization effects at microwave frequencies, but little definitive evidence of polarization effects at low radio frequencies though everyone pretends it exists and is real. Hence the question of longitudinal radio waves remains open for the moment.

But our thoughts have missed something that science actually has not! There is yet a third form of wave that can be transmitted around the galaxy. We have suggested that our 3D universe could in truth be part of a manifold of higher order dimensionality. Suppose what we take to be our 3D universe is in fact "warped" into some immense sphere. This clearly solves the "flat earth" falling off the edge problem in that if the universe is large enough nobody will be able to have the lifespan to travel in a "straight line" and end up back where they started. But warping our universe implies *higher* dimensions and our so-called "sphere" is in fact a "hypersphere" of greater dimensionality than 3. And this gives us an interface boundary between our dimensionality and the next manifold up. It is suggested that this boundary can support transverse waves and represent a little known type of radiation. It is said "little known" because among "forbidden" science these waves have been discovered, rejected by science, and then re-discovered over and over.

The details are not important here, but starting with Dr. Mesmer and continuing through Baron von Richenbach, and professor Blondlot and on to Gurswich, and even to Wilhelm Reich, this new and different "radiation" has been discovered, measured, named, and then forgotten over and over. Of special interest in the modern world is that this natural radiation on the interface appears to be normally quite strong and on several occasions considerable energy has been demonstrated to be able to be drawn from these energies. The devices of Dr. Moray demonstrated lighting large banks of incandescent lamps. And where this leads us in straight into "free energy" kookery!

Of course by the above suppositions, the energy is not really “free” except in the sense you don't have to pay for fuel and neither is it “perpetual motion” where conservation of energy is violated. The wave energy that one would tap on the interface is presumed galactic and quite real. In the past Tesla and others have surmised the existence of such tap-able energy, with the only question being could such a tapping actually produce useful work or would it be like a thermodynamic violation where useful energy cannot be extracted from two equally hot high temperature reservoirs even though both clearly are filled with large amounts of heat energy. Evidence so far in the “forbidden” literature is that it is the former rather than the latter case.

Finally, in discussing this viewpoint, it should not go unnoticed that from a political perspective, the control of energy is in essence the control of modern civilization. The existence of “free energy” that can be easily tapped without payments and permission of some controlling group represents a danger to political control at a very serious level. And serious threats lead to serious acts in politics.

But “forbidden” science literature suggests that there is much more to these “hidden” energies sometimes termed “radionics” or “psychotronics” than just running your stove and washing machine for free from a small box in the basement of your house. Work to date strongly suggests a hope for amazing science technology. These include realization of the famed Star Trek “tricorder” which can diagnose all diseases by analyzing body radiation and also includes use of these energies to produce medical miracles like regrowing lost limbs or growing a new set of teeth. There are also indications that such radiation can be useful for slowing or even reversing the aging processes. But all this speculation is science of the next age not this one. But by the time such comes into being, it will doubtless already be redundant as the power of mind to do the same things becomes better understood and comes into wider practice.

New Viewpoint #4. : Aether as the “Theory of Everything”

Nineteenth century physics looked at the transmission of energy and concluded that this was possible by only two mechanisms.[53] One would be by the Newtonian motion of material objects which was termed “kinetic energy” and the other was by the propagation of waves in some medium. The very definition of waves logically demands a medium in which the energy propagation is to occur. Light, because of it's properties was assumed to be a wave. That assumption, of course logically demanded some sort of medium for light waves to propagate in. This medium assumed to fill all of space was given the name aether or in those days often termed the “luminiferous aether” meaning “light bearing aether” to emphasize it's presumed function.

We have been arguing from a viewpoint that waves need a medium and that for things like electromagnetic waves such a medium must be akin to the mythological aether. And while aether has been argued as science, the word is certainly myth. Greeks viewed the aether as a seat of storms. Sophocles has Aeschylus speak as follows:[54]

Such is the storm from Zeus,
That comes as working fear,
In terrors manifest,

53 Maxwell, James Clerk, Treatise on Electricity and Magnetism, Dover, 1954, (original 1891), Vol 2, sec. 866.
54 See, T. J. J. See, , "A new theory of the Aether", Astromische Nachrichten, band 215, Nr. 5140, 6th paper, p. 86.

O Mother venerable!
O Aether! rolling round
The common light of all."

So is aether just a bunch of prehistoric pseudoscience babble or have we found the actual location of the mythical electromagnetic Troy? From our viewpoint on myths and religions it's a valid scientific question.

Even in our own historical period we have observed great civilizations rise and then fall. There seems to be some natural human political laws at work whereby the success of a civilization induces those in power to institute policies that eventually result in it's decay and rapid fall. If we push further back into prehistoric times there are hints of one or more very high civilizations that fell prior to our history beginning. One such civilization was said to be called Atlantis and existed on islands in the Atlantic ocean (the ocean supposedly named for Atlantis rather than the other way round). This civilization according to authorities like Plato[55] and pseudoscience like the Cayce readings[56] was very technically advanced. Some evidence of this is also seen in the various stone works such as pyramids and cyclopean walls that ring the Atlantic ocean. A characteristic of the supposed Atlantean method of construction is stones stacked together at odd angles yet with seams so tight even today a piece of paper will not enter the joint. The speculation is that this method involved sanding the large megaliths back and forth upon each other to create the precise but odd-angled fit that has proven to be quite an earthquake proof construction over the millennia.

So here is where this idea is going. Given a technologically advanced prior prehistoric civilization with colonies or outposts ringing the Atlantic, one might surmise the existence of advanced technical understanding of the time that just *might* have been passed on to our time period as myth or religion. It is suggested that the idea of aether just may be one of those advanced concepts, which seem to have come down to us through the Greeks. The track of the knowledge seems to be from Atlantis to Egypt where the Library of Alexandria was a priceless trove of such information before it was destroyed and then passed on to the Greeks and to us. It's pretty clear that if such is true, then we have the classic myth situation of advanced science trying to be comprehended by intelligent, but basically primitive and uneducated natives. A lot of the concepts are going to be lost. But this does stimulate the question if indeed the ancient concept of aether as a foundation to all phenomena in the universe just might have been advanced scientific knowledge that was lost through the trials and events of life on earth as the old civilization was lost to the seas and survival became more important than science.

Under Maxwell theory, aether was assumed to be a continuum which was a material infinitely smooth and fine-grained and in effect mathematically differentiable which was represented by the Maxwell electromagnetic model of the same assumptions. At the same time arguments raged over what exactly was the nature of this supposed substance. Some calculated properties of a "solid" stronger than steel and others proposed a super-fine wispy frictionless gas so thin that planets and everything else plowed right through it without any resistance slowing their progress. Such an event was termed "aether drift". The problem was that when Michelson and Morley went looking for this "drift" none was found. Nevertheless, the hint was there that aether was not going to be some ordinary material form of matter. It seemed to possess what were later to be called "super" properties such as superconductivity and superfluidity discovered in a later era. The basic quality of "super" features

55 See Plato, "Timaeus" and "Critias".
56 Cayce, Edgar Evans, "Edgar Cayce on Atlantis", Paperback Library Inc., New York, 1968.

being the lossless continuing transmission of energy in some manner. In other words aether possessed the absence of frictional effects of any kind.

And problems did not end there. When the ejection of electricity which is to say electrons, by light was studied, it was found that the properties of the interactions did not obey the laws expected to be observed if light were waves in a medium. Energy transfers were too fast and interactions very suggestive of kinetic energy and particles. Light at low levels was found to consist of tiny packets of energy-like particles which were termed “photons” the “on” implying a particle nature to the “photo” or light. Yet, when intensity was raised and large numbers of these “photons” were sent at a couple of slits, wave-like diffraction was observed. Individual light “particles” were not “diffracted” but rather in spite of the many individual particle-like interactions the *average* of these interactions over large numbers produced results that appeared to mimic solutions to the wave equation. Note that these results were *not* solutions to the wave equation as they were a statistical summation of large numbers of discrete interactions and did *not* represent the mathematical continuum of wave theory. On the other hand if one smoothed out the photon individual actions by averaging over large numbers the smoothed and converted equations clearly seemed to be wave equation solutions. This problem was termed the “wave-particle duality”, which as we noted above, puzzled Einstein his whole life.[57]

Einstein attempted to solve the mystery of light by making a bold assumption: The speed of light always measures the same value no matter what the velocity of the observer assuming he is not accelerating or decelerating. From this was developed a “theory of relativity” which was used to “explain” observed phenomena. Einstein did not reject the idea of an aether, as he pointed out that the empty vacuum of space is known to have many properties, this means that there must be something there which we could term an “aether” which gives rise to those properties. The rest of establishment science was not so logical and at first simply noted that with this new theory the idea of an aether seemed totally unnecessary and then after a time jumped to the little justified conclusion that aether did not exist at all. Quantum mechanics was developed explain the observed particle nature of light, but quantum mechanics and relativity proved to never quite be compatible with each other though each worked well in it’s own realm.

True Vacuum.

Given the above background one can now turn those ideas on their head to try to get a new viewpoint. What, we may ask, is then a “true vacuum”? Clearly it would be a region of space that would somehow have all the aether pumped out it. In other words it could be some container impervious to diffusion of the ultra thin and fluid aether through it so that the aether inside it could be pumped out. Obviously no ordinary material would do because as we all know matter is mostly empty space. It would be like trying to pump a traditional vacuum on a jar made of window screen. Not gonna happen. But one should note that once the vacuum was achieved, evidence that you'd done it would be that if light is a wave, it would no longer be transmitted through that vacuum and all the properties of free space (like say the impedance of space) would vanish!

So how would one produce such a “vacuum” experiment? Well, one clever way might be to not use a “container” at all which raises the question of exactly how one “pumps” the aether out of a region of space? One can surmise that because of the relationships of aether to electromagnetic fields

57 See footnote #3.

discussed below, an electromagnetic “pump” can be constructed perhaps spinning aether around electrically and using centrifugal force to expel the aether from the region of space. Tesla is rumored to have developed such an idea and the government is rumored to have built it, but as always the case in politics, one must assume that unlike science where one is usually dealing with honest reports of facts, in politics it’s all one huge house of mirrors and it is up to the investigator to correct and understand the distortions.

Another method would be to try to find a material impenetrable to the flow of aether. What might that be? What if we surmise that aether might be like water and actually have more than one state? What if there is the ultra thin gaseous state which is the usual condition in our world, but there is also a solid “frozen” state like ice would be for water. Our plan would be in essence to create a a region of perfect vacuum in space in the same way one could construct a canteen made of ice in which to contain steam or water vapor and then pump the steam out to create an ice vacuum bottle.

Note that what we are doing here is pure “blue sky” speculation. Most of the properties and ideas we are suggesting have little evidence even among the work in “forbidden” topics. Our goal is to try to guess some kind of new “viewpoint”. We are not making any claim that any of these ideas are correct. What we are claiming is that this kind of speculation will be the kind of “thinking tool” needed to break out of the old metaparadigms and into a new revolutionary scientific age. Do not forget our purpose here is to try to suggest ways to find new viewpoints that will lead to a science revolution, it is not to present some “kook” theory as dogma to be accepted as “fact” without any evidence to back it up! Science is not abut belief. The idea is to start everyone thinking!

Aether extension.

Having suggested the extension of the original idea of aether from some wave media filling all space allowing the propagation of light waves, we have added the idea of “frozen” aether which has no such properties. Next we can ask are there any other extensions of aether properties that 19th century science has missed? A suggestion comes right out of our first viewpoint! Namely that we can assume that if the universe consists of many dimensions and if those dimensional spaces contain structures related to our 3D existence as well as other unrelated ones, then clearly those spaces have *properties* and that directly implies that aether exists in those spaces as well. Hence, it can be concluded that aether is not just some material media for light but is also a multidimensional substance existing in all dimensions and giving them *all* their properties. Indeed it would be a worthwhile question to speculate if it is aether itself that actually defines the dimensions of space and the properties of the various manifolds.

If indeed aether is that fundamental to reality, it makes sense to start looking to aether as an “explanation” for a great deal more phenomena observed in the universe. In other words, if such a material as aether exists as we have speculated above, then it seems by logical extension a good candidate to be examined as the basis of some “theory of everything” as it is termed. Logically if one is to produce such a theory that explains *all* observed phenomena, it is clear that it must at the most fundamental level consist of some single “thing”. These single things are things are then multiplied and assembled to create, say, what might be termed “subatomic particles” which in turn are multiplied and assembled to form atoms which again are multiplied and assembled to form molecules which make up matter. Clearly if what is assumed to be the most fundamental building block has properties, then it's not “fundamental” because it has internal structure and perhaps even differing parts and that means

it is *not* “fundamental.

Thus from this viewpoint one can speculate that perhaps protons are actually bits of frozen aether. Electrons can be surmised to be the opposite which is to say tiny vortex “tornadoes” which represent tiny areas of “true vacuum” in the gaseous aether. In other words electrons are not just “nothing” but actually “less than nothing”! Our new speculated “viewpoint” says that these structures of matter can exist though more than just our normal familiar three dimensions.

Matter and electromagnetics

At this point we are led to speculate on a mystery as old as science: What is charge? Charge as we know is opposite in electrons and protons, and comes in only two varieties. Like charges repel and opposite charges attract. Furthermore, charge is only created or destroyed in pairs. In other words charge is “conserved”. If electrons are spinning “tornadoes” of true vacuum, one might also speculate that protons (which also have charge) must also have some kind of spin to them. It must be presumed that protons will have a tendency to “thaw” just as ice would. In doing so, it can be presumed that energy which is generally ascribed to “mass” by virtue of the $E = mc^2$ equation will be released as the “frozen” aether turns to gas. This can explain the nature of atomic energy where presumably enough vibration (heat) created by a conventional explosive can shake the atoms of certain elements enough that they expand back to gaseous aether with the release of tremendous amounts of energy.

A theory to explain why atomic explosions do not occur with ordinary matter could be that the electrons about the proton-bearing nucleus of atoms provide stability. Since electrons are a vortex we can assume they act as tiny pumps sucking aether as a tornado in a storm sucks air and debris from the ground. What if proton-electron pairs are actually pumping and spewing aether? Where does it go? Since it's not observed here, the obvious answer is into other dimensions! There it can collect about positive particles especially protons which by virtue of their opposite charges must be actually drawing in aether from those dimensions which happily acts as a stabilizer reducing the tendency of the solid aether to sublimate. The result could be stable matter that we all observe.

The key viewpoint here, however is the extra-dimensional flow of aether from the negative electron to the positive proton. Since aether has been assumed elastic (a property needed to transmit waves) the electron and proton are drawn to one another though these elastic connections in other dimensions. This viewpoint provides a speculation as to the nature of electrostatic fields and the nature of “charge”. This kind of phenomena has long been recognized in electrostatics where the fields describe forces analogous to fluid flow “sources” and “sinks”.[58] The relationship of charge to vortex spin shows in the fact that a vortex can spin in two directions, clockwise or counterclockwise, just as there are two types of charge, positive and negative. An interesting thought with respect to this viewpoint is that taking the “flatland” analogy, if one has say a clockwise vortex in the plane where one “lives” and it is spinning aether up and off that plane into a 3rd dimensions creating a “wormhole” that can transport aether, when that wormhole comes back down onto the plane forming another vortex if one traces the wormhole it can be seen that the new vortex at the far end will have a counterclockwise spin. Hence, a positive charge connects with a negative charge and vice versa. Indeed this viewpoint provides an “explanation” of the law that charges are conserved and hence always created in positive and negative pairs.

58 Halliday and Resnick, “Physics”, John Wiley and Sons, New York, 1960, Vol II, Fig. 27-5, p.575; compare to the source-sink fluid flow picture in the same books, Vol I, figs 18-13 to 18-15 pp. 386-387.

The explanation of magnetic fields with regard an aether theory have been a source of opposing theories among scientists who speculate on an aether as well as pseudoscience thinkers. Early on Euler proposed that magnetic fields were nothing more than a flow of aether. Others such as T.J.J. See [59] were convinced that magnetic fields were waves in the aether. Euler's idea seems to be better because it seems to explain more.

Since we have related the charge of an electron to it's vortex spin, one needs to examine just how a magnetic field could be created. If we speculate that when electrons are give an linear velocity by an electrostatic field, that somehow those forces flip all those aether vortexes into alignment whereby all the vortex spin vectors are parallel to the velocity vector of the electron. In short, all the electron "tornadoes" flip over so that their spins are about the direction of the "current". It can be easily seen that due to the elastic nature of aether, a circulation of aether is created about the wire carrying the current due to the flowing and yet elastic nature of aether. Therefore, according to Euler's idea this explains the well-known magnetic fields that form about currents.

Lastly one must ask just how it is that wires carrying currents can attract or repel each other when there is no electrostatic fields to produce the forces. The Lorenz relationship of velocity, charge and magnetic fields is the relationship that has been discovered and requires explanation. If a magnetic field is just a flow of aether and an electron is just a spinning vortex, then we can imagine the situation of an electron traveling through a magnetic field. As noted above the electron is spinning about the axis of it's velocity vector due to flipping over when it received it's acceleration. It is suggested that these aligned spins create a magnetic field about a wire, but say there is a magnetic field which is a flow of aether directed against the top of the wire. In this picture the aether spun by the electrons will be in the direction of the magnetic flow on one side and in the opposite direction to the flow on the other side. The aether builds up on one side and is reduced on the other creating a sideways force. The result is a pressure difference which creates a force which basically represents why in baseball a curve ball curves or a rotating cylinder has lift in a wind.[60] The end result is the Lorentz force law where charged (spinning) particles experience a force when traveling through a magnetic field (aether flow). All these things are at right angles to each other. The baseball analogy being the new viewpoint here providing speculation as to a possible source of known electromagnetic interactions between magnetic fields and moving charged particles.

The point here is that a "theory of Everything" must be just that. It must be valid on the smallest scale and also valid on the galactic scale. It must explain forces, it must explain matter, it must explain nuclear physics, it must not fail with any phenomena *including* multidimensional "forbidden" effects. This viewpoint suggests that the idea of an aether just might be a viewpoint that could unlock such a theory.

New Viewpoint #5. : Gravity and Anti-gravity

Having proposed a third kind of boundary extra-dimensional aether wave one then can begin drawing conclusions and logical extensions from it. One such such extension has to do with an old problem that puzzled Maxwell. This is the problem of field "curl". Curl is a mathematical field calculation that gives a measure of the amount of "rotation" at any point in space. It is one of the

59 See, T. J. J., Op. Cit.

60 https://www.grc.nasa.gov/www/k-12/airplane/cyl.html

essential operations in electromagnetic field theory. But Maxwell was puzzled as to how one could have a distribution of rotation at every point in a region of space? The problem is that the rotation is the same direction at every neighboring location. The only way Maxwell could think to solve this conundrum was with a "ball bearing" theory[61]. His thought was that you had the various particles of matter or "aether" in space each rotating in some manner in a given direction. A "curl" calculation at a given point would give the rotation of that particle. But the problem is that with all particles rotating the same way, their edges are going by each other in opposite directions! The only solution Maxwell could imagine was to place tiny "ball bearings" in the gaps to allow these particles to freely turn against each other without the edges rubbing. It's not a very satisfying solution to the problem and Maxwell wasn't particularly satisfied either.

The answer to Maxwell's ball bearing dilemma is an old observation by Airy that was pointed out by TJJ See in his large set of volumes outlining his aether theory.[62] What airy observed was that if one carefully watches a leaf on surface of the water as water waves come by the leaf is seen to move in a circular motion! In fact all the water molecules near the surface of the water are moving in circular motions as the wave comes by.

If we remember our viewpoint #1. and our extra-dimensional hypothesis, we can see that third type waves traveling on the surface interface boundary of our world hypersphere we discussed above create an analogous situation and this allows "curl" to be present at any point in our 3D space without any "ball bearings" needed! Thus, we now have a viewpoint and paradigm shift in classical electromagnetic theory that has occurred not only in static electric forces and an additional kind of radiation, but also in as basic an operation as the "curl".

The identification of a third type of aether wave, especially ones that we have suggested are constant, intense and full of energy, opens up another possibility as well. This would be a re-examination of the Feynman-Wheeler "shadow" theory of gravity. Those authors themselves point out that this is an old idea, but in essence one imagines the universe filled with some kind of waves. They did not specify the wave type, but we have suggested one. They propose that the universe is like some huge hollow reflective sphere (hypersphere!) where waves are bouncing around uniformly inside it. If we place some round object (like say a planet) inside this sphere, the forces created by the waves are equal from all sides and while there are forces, they all balance and no movement occurs. But if we place two objects inside the sphere they now cast shadows upon each other!

In the case of shadows cast on objects, just as is the case of sound waves with balloons filled with gases different from air, the waves create forces upon the objects. In this case the forces tend to push the two objects together. That "push" is interpreted as an "attraction" that people call gravity! Hence, so long as one is inside the wave-filled sphere there is a natural law of "gravity" where it appears that there is an attraction of objects to each other proportional to the masses of the objects. Such an idea might represent the long-missing "explanation" for how gravity works. As mentioned above this idea is very old, but the missing link creating acceptance of it was a lack of explanation of just what kind of "radiation" was involved and the extra dimensions needed for the production of such waves.

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61 Maxwell, James C. "XLIV -On Physical Lines of Force", Part II "The Theory of Molecular Vortices Applies to Electric Currents. Phil. Mag. Ser 4. Vol 21, #139, March 1861, pp338-348.

62 T. J. J. See,"New Theory of the Aether" series of papers in Astronomische Nachrichten beginning band 211, NR 5044, no4; ending with 8th paper Band 226, sondernummer. (2nd paper), band 211, Nr.5048, p.185.

But there is more. If we relate gravitational forces to third type aether waves, one can reverse that relationship and by finding the laws of those waves one can then manipulate the *radiation* itself and thus manipulate gravity forces. It is easily seen that the so-called “anti-gravity umbrella” is really nothing more than some radiation shield that blocks radiation coming from above the way some large planet up there might create a “shadow” and therefore creates the apparent attraction of gravity coming from above, or one might equally surmise that it is canceling the earth gravity “pulling” the objects under the umbrella down!

Suddenly we have a theoretical basis for two “forbidden” topics. One would be hovering UFO “anti-gravity” aerodynes and the other would be the construction of ancient monuments using massive stone blocks that are actually lifted and then sanded against each other to form interlocking “cyclopean” earthquake resistant walls or pyramids. In the case of UFOs reports clearly suggest an electromagnetic aspect with gasoline vehicles stopping (but not diesel) and instruments going crazy and noiseless hovering tending to rule out mechanical lifting forces such as used in helicopters.

There is no new “theory” here, just a new viewpoint, but there is much to think about. A very interesting aspect of all this with regard to UFOs is that the final report to the government UFO data collection project “bluebook” gives what they call “hard facts” where they swear on their mother’s grave that:

“There has been no evidence submitted to or discovered by the Air Force that sightings categorized as ‘unidentified’ represent technological developments or principles beyond the range of present-day scientific knowledge”

It should be obvious given the established high performance clearly observed with UFOs such as right angle turns, silent hovering, and extreme velocities that the only way the above statement cannot be a lie is if viewpoint #5 has already been examined by government scientists, found to be valid, studied in detail and developed as top secret classified research and projects. In other words UFO technology is known, understood and classified.

New Viewpoint #6. : Wave-particle duality

Let us now take a step back to our previous considerations and ponder a viewpoint with regard to light and the so-called particle-wave duality. The serious question asked since Einstein's time would be is light a wave or a particle? Or is it both and if so what logical explanation could possibly make sense that would demonstrate such a thing is true?

Today the term particle-wave duality has fallen out of favor as the obvious logical problems with it get attacked so there has been a return to the old deBroglie “pilot wave” theory. But it’s all just one huge whitewash job like a store manager changing all locations of the stuff on shelves or even moving the shelves themselves around to give the appearance of an exciting new store. Sorry, the store is not new nor exciting, just much harder to find what you are looking for.

But in turning the argument around and asking if waves can appear as particles, the answer, well known to electrical engineers and solid state physicists is a resounding yes! The “secret” if you will is repetitive structures such as crystals create mathematical solutions that are particle-like. “Holes” in

semiconductors, Phonons in optical crystals and quantized discrete energy levels and bands very reminiscent of phenomena observed with light. The inescapable suggestion from this is that the old mystic myths talking of the “fabric” of space or the “warp and woof” of space or the skein of time are telling us something much more than literary art in coded form: Space is NOT a continuum, but instead like the threads of a fabric is quantized in all dimensions. It is a 3D (and as we have already surmised nD) “fabric” of some kind of discrete structure woven together in an interconnected structure such that stresses are transmitted both as longitudinal and transverse waves as well as water-type waves on the dimensional boundaries. And it indeed is the very harmonic structure of space itself that gives rise to the phenomena of what is termed “photons” of light. Space is therefore a massive n-dimensional tenuous, flowing, drifting, expanding, contracting, silken “cloth” if one can make the mental leap from 2D to 3D fabric.

Our *assumption* that space was a continuum came not only from thinking math was more real than reality, but also by simply carrying Maxwell's continuum theory forward with out bothering to question it's basic assumptions. The astounding success of the Maxwell theory in the 20th century certainly did not encourage anyone to begin to question it. But the dividing line between classical and “modern” physics is marked by the discovery that light which was thought to a simple wave in the aether of space clearly had behavior that was quite un-wavelike. The discovery of the “photon” marks that turning point and that opened a Pandora’s box of questions as to whether light was a particle (needing no medium) or a wave (energy transfer needing a medium but usually unable to effect quick energy transfers observed in light). Properties of both views were evident so the whole mess was termed “particle-wave duality” and swept under the rug for the time being.

The answer to this long-standing conundrum has been staring science right in the face all along, but only recently has it begun to be recognized. And the answer is that the Maxwell continuum model of space is simply wrong. Space is not a smooth Jello but rather a periodic fabric of threads and repeating structures. This is hardly a new kind of mistake. Look at piece of metal. Maybe some nice shiny gold to spark your imagination. It looks completely smooth and continuous. A continuum model looks to be a perfect fit. But physics knows different. That metal is actually mostly empty space. A neutral subatomic particle shot at it most likely will go straight through without hitting anything. The “atoms” that make up the metal are generally in 3D periodic arrays and that has a very significant mathematical result. It results in the odd fact that heat can actually be said to consist of “phlogiston particles” stored and traveling around the material. What does it mean when a totally discredited science theory like “phlogiston” or “action at a distance” rears it’s ugly head again? It signals a significant lack of understanding and the need to reexamine the whole question. In the case of heat, the “particles” in question have been termed “phonons” and what they are deserves some scrutiny.

If one has a material, say some insulator, and it has a periodic atomic structure, mathematically this gives rise to certain wave phenomena. The structure can support what are known as “normal modes”. Classically, these are pairs of opposite waves into which a discrete amount of energy has been locked. Even more interesting is that when calculated quantum mechanically these normal modes have the characteristics of particles. One of the critical properties of particles is the instantaneous transfer of energy as they are created or absorbed. The fact that in “normal modes” there are two waves with opposite polarity allows this same instantaneous transfer. This is the same idea toyed with by Feynman and Wheeler only they used two waves backward and forward in time since they did not consider space to support normal modes.

I can hear the critics already! This is no theory of light! It is just a bunch of pseudoscience kook babble! No one ever said this was a theory. We are presenting VIEWPOINTS, not theories. The development of actual theories is YOUR job, not mine here. The key idea is that space is not the continuum as typically imagined. The idea is that space is some kind of quantized periodic structure and it is that structure that gives rise to all the observed strange properties of light including the particle nature of "photons", transmission as transverse waves and the fact that the speed of light is independent of the velocity of the source. I would point out that such thoughts are not mine alone but that physicists are already homing in on "fabric" of space.[63]

"*There are two key distinctions between phonons and fundamental particles like electrons. Firstly, phonons are an effective description that only makes sense above a certain length scale, the lattice spacing. The other distinction is that phonons are gapless (massless), which means you can create one with an arbitrarily small amount of energy."*

"*Nevertheless, the tight mathematical correspondence between collective excitations in low-energy condensed matter and fundamental particles at high energy has led some eminent condensed matter physicists (e.g. Laughlin, Wen) to suggest that the fundamental fields of the Standard Model are really effective low-energy (compared to the Planck scale) descriptions of a more fundamental structure of the quantum vacuum [aether]. This structure would only become apparent on length scales too small to be resolved with current technology."*

The whole point of a new viewpoint is to take the new idea and sit down with it and then try to carry it through all the known observations of science. It is doing that in detail where new theories arise. Even more interesting, from the observed light phenomena, one can make guesses as to the actual thread count of the "weave" of the space "cloth". Clearly it is not active at radio wavelengths but is producing crystal effects as one approaches wavelengths of light. Comparing to the theory of phonons, one notes that the physics of sounds in solids is not the same as the physics of sound in air. The transmission of transverse waves in solids make one particular difference. And there is a relationship to nature of wave propagation wavelengths and the spacing of the crystal lattice. If space is a periodic structure, the same kind of effects should be noted with light.

The bottom line here is that the old Maxwell continuum theory has led everyone astray for centuries. Everyone simply automatically assumed that space was some uniform kind of continuous "jello" or perhaps a gas like air but with "aetherons" forming the material rather than gas molecules of the air. In short an incorrect viewpoint was applied to space until measurements began to show that there were problems with it. A new viewpoint turns it all around and that is where science revolution comes from.

New Viewpoint #7. Connectedness of all things

Having surmised an aether "fabric" consisting of some kind of multi-dimensional repetitive structure, one must then ask what is the nature of "threads" that compose this "fabric". Logic then tells us that there is really no reason that these "threads" themselves might not be a mathematical continuum! Indeed, there is no compelling reason that the entire "fabric" of the universe is not composed of one single strand or thread woven back and forth in some super "cloth"!

63 http://physics.stackexchange.com/questions/78442/what-is-a-phonon

But just what is this “aether” stuff that makes up everything. If you allow ourselves to philosophically muse for a bit one can surmise that if a material is THE fundamental building block of the universe, it must be ONE thing. If there are two building blocks then one must ask the question what exactly is the difference between these two things. If they are different somehow, then that implies they are not fundamental. This leads to a viewpoint that the basic material of the universe is one material which we have termed aether. Since somehow a single material is used to construct nearly infinite variety, one has to assume that a couple of things must be true. One would be that the patterns of reality are created by two things but those two things are not two different materials, but rather those two things are Aether and the absence of aether, namely true vacuum.

Such an idea gives rise to the speculation that given a single continuum “thread” *EVERYTHING* in the universe is connected to every other thing as mystics have always maintained. You “pull on something here” and the force travels over the “thread” due to its elasticity to every other place along the thread. Which immediately raises the question not only of the connectedness of all things, but also questions as if some kind of “wave” can travel down these “threads” rather than across them from thread to thread as light does which creates “photons”? Is the velocity of propagation down the thread the speed of light as it found from thread to thread? Or do the “super” properties of these threads which could be a “continuum” result in a far greater, even instantaneous speed of propagation? Dare we speculate that there might even be “action at a distance” down the “threads of aether”?

Hence new science can speculate that if a bird sneezes, just how soon does everything else in the universe, which is to say “God” know about it? We have defined “God” as the entire universe and all laws governing it. Such an all encompassing definition creates a much more logical and scientific basis for the dogma of religion than the standard story of “God” as some old guy with a long beard in the sky that the atheists love to ridicule. The key question raised by our viewpoint of “God as the entire universe” would be can such an entire structure be conscious and aware as is known of some of it’s lesser parts? We have already speculated on the consciousness of rocks and even planets.

Religion has taught that God is aware of everything and that one can ask questions of God and God will answer back. Well, the universe as the body of God automatically implies communication in the direction from you to God. Just as you are acutely aware of what is going on around your body it must be assumed that the universe as a conscious being must also be aware of it’s body. When you get a sore on you body, all your attention goes to that sore. It is not a stretch to assume that when comes to God, humans are that sore.

Communication in the other direction from God to you is not so obvious. Our observations show that such communications if they exist are from higher dimensions and not common in our 3D space. Thus, these communications like all extra-dimensional interactions tend to be occult and difficult to clearly demonstrate. Such has led to a great deal of scientific doubt, but as multidimensional physics becomes better known, it would be no surprise if such communications also start to become far more likely than assumed at present.

Another viewpoint speculation with regard to aether would be conservation of aether. In other words is the universe filled with a fixed amount of aether that can be neither created nor destroyed. Since we have speculated that all the data of reality is created simply by manipulating aether piling more here and less there in some complex patterns, one is led to a law of polarity. In other words

opposites must balance out. If you pile more aether here, you must do that by taking away aether from some other spot because the total amount of aether would be fixed. Hence to create reality by simple modulation of the aether demands symmetrical modulation because aether cannot be created nor destroyed. Such a law would be called polarity. For every fact that appears in our reality there is forced the existence of an opposite fact!

Previously we have speculated that aether can have different phases like water. It can take a gaseous form or a solid “frozen” form. But while this can greatly change the volume of space vs the amount of aether in it, it does not change the law of conservation of aether. The total amount of aether remains fixed no matter if it is expanded or not. Of course like Velikovsky’s theories, there is little proof of these viewpoints beyond hints found in traditional mysticism, but such hints do provide direction for research. To simply reject these ideas based upon their source rather than measurements is not science. It is not even pseudoscience. It is nonsense.

New Viewpoint #8. : Newton's laws, electromagnetic karma

If the viewpoints presented so far are stretched even further making use of occult tradition and mystic myth there are a couple of natural laws that seem to suggest themselves. One of these is the law of polarity which we have already discussed to some extent. Polarity suggests that if a certain phenomena exists so does it's opposite. Positive charge and negative charge, male and female, fire and ice, conductors and insulators, good and evil. Obviously this is a reach having strayed from science into literary and philosophical considerations, but it's not *that* far of a stretch.

What we have in mind is Newton's laws and in particular the law that states for every action there is an equal and opposite reaction. In mechanics one often considers forces and counter-forces that balance out in static systems. The same can be true of fields such as if we have two charged particles or two planets, the electric or gravitational force of A on B is opposite and equal to the force B produces on A. But there is a catch and that catch is time. If we suddenly move planet B it still feels the forces from planet A, but planet A being at a distance will not sense the motion and the changes in the force field of B until the gravitational field arrives there traveling at the speed of light and during that time the law of action and reaction no longer applies and forces do not balance.

Generally speaking the whole problem of “retardation” which is to say action traveling no faster than the speed of light is a much neglected subject in science. The reason is obvious that the such delays make mathematical calculations complex and difficult. However, given modern computers and computing methods it can be expected that science of the 21st century will not be as reluctant to tackle retardation as were the persons whose mathematics were done by pencil on paper.

Extrapolating, there can be noticed a similarity to the concept of “karma” in some Eastern Religions. This philosophy suggests that Newtons law of action and reaction operates on a large scale as well as smaller ones. If one murders someone, the law states that then you will eventually be murdered, if you live by the sword, you die by the sword, if you steal possessions, your possessions will be stolen. And this philosophy suggests these wheels grind extremely fine, to the last jot and tittle as the Bible puts it. (In case you don't know a jot is the smallest part of something such as “he has not changed his mind one jot” and a tittle is a tiny diacritical mark in writing or printing hence also meaning the tiniest part) The key point here is that all this is a suggestion that the law of action-reaction

which is to say the religious law of karma is in essence electromagnetic in nature.

This it not to say that karma consists of electric and magnetic fields, but does suggest an electromagnetic accuracy, pervasiveness throughout the universe, and an inevitability of action set by multidimensional physical laws that cannot be altered. And all this suggests that those who commit crimes and what is termed "sin" without reaction thinking they "got away with them" are simply misled by the retardation of the "reaction".

"Forbidden" topics such as the "readings" of Edgar Cayce suggest many interesting ideas with regard to these musings which clearly would be interesting new viewpoints to be investigated with the scientific method. It seems likely that indeed this will occur in the coming century.

New Viewpoint #9. : Electromagnetic Recording of history

In speaking of the Cayce "readings" those familiar with this work will recall that one of their most interesting features were descriptions of history or even pre-history. Cayce described it as going to some "hall of records" to "read" the past. Clearly a "hall of records" is some sort of symbolic expression for reading some sort of stored information which as we surmised above is likely electro-magnetic-like in nature. It's obvious that if such "records" of the past exist they have more data than just the Cayce stories of history. If such electromagnetic storage of past events is real then clearly there is here an amazing and useful source of direction in sciences such as archeology. It is little surprise that such psychic archeology, though amazingly productive and successful, is a very forbidden topic in science circles at present.

It is essential to remember that the debunker nonsense of dismissing Cayce readings or using ESP to find historical sites as "pseudoscience" is correct but totally (and probably purposely) misleading. Such methods *are* by our very definitions "pseudoscience" as Cayce or ESP does not give you data you can substitute for actual measurements and observations any more than myth or religion does. They only tell you WHERE to dig. *Science must to do the digging!* However it seems the main goal of debunkers is to defend the grand material metaparadigm. Thus, their goal it discourage anyone from beginning to dig! With no actual measurements the grand material metaparadigm cannot be effectively attacked. It insures that any discussion of these ideas simply reverts to personal beliefs and opinions and the "science" debate lapses into nothing but rhetorical warfare.

Reports of the success of such methodology in archeology can be seen in the cases outlined in the book on psychic archeology by Stephan A. Schwartz.[64] The "hits" recorded by Schwartz clearly would seem to provide data that is well above chance which debunkers constantly suggest is not true. But since as we have seen they are not allowed to actually read the data it's no surprise they are just making up results. If some method says "dig here to find xyz" and you dig there and find it and moreover, you have this method succeed many times, even if there are times when the method fails, that does not negate the successes. What failures imply is not that one should throw the whole method out, but rather that more study is needed to better understand the factors that control the whole phenomena. That is just common sense. But as we have seen above the grand material metaparadigm *requires* that every experiment be a success. Repeatability and independence of location or

64 Schwartz. Stephan A., "Secret Vaults of time", Grosset & Dunlap, New York, 1978.

experimenter are articles of faith in current science. Hence it does not matter if Velikovsky predicted a hot smooth Venus based on myth, he is rejected as a “kook” because a couple predictions did not pan out. One can see a certain logic here since a theory is rejected if it produces erroneous data in even one situation, but a theory is simply not the same thing as suggestions of where to dig.

We can speculate that because of the electromagnetic-like nature of operations of the mind upon the aether, there could exist another feature of importance. A record of all actions produced in the aether is left in the aether itself, specifically in the dimensions beyond three. Such remnants have been termed “Akashic records” in the mythology and philosophy of mysticism. These records seem to not so much be recordings in the aether of the actual structures and events produced in history, but rather a record of the human thoughts and emotions that produced that history. There seems to be no reason that technology to view these records could not be developed.

New Viewpoint #10. : Low energy atomic phenomena

At one time it was widely believed by humans that one material such as lead could be turned into another such as gold using processes that today we'd essentially call chemistry. Lavoisier and the periodic table of elements seemingly dashed those ancient beliefs and science adopted the paradigm that alchemy was “impossible” and was pseudoscience dreaming because as Lavoisier showed elements could chemically combine or split apart to form chemicals, but the elements themselves never changed. If you started with so much carbon, oxygen and hydrogen to begin with, no matter how you apparently changed their arrangements through chemistry, in the end there was always the same amount of each: carbon, oxygen and hydrogen in the pot. It was called Lavoisier's Law.

But in the atomic age that well-established idea had to change as the pat paradigms that everyone accepted as dogma proved not supported by facts. Indeed it turned out that radioactive elements were found to spontaneously change from one element to another and then later large subatomic particle accelerators demonstrated that you could “smash atoms” by firing subatomic particles at them and get them to either split apart or add on more particles changing them from one element to another. In other words, simply stated, alchemy proved true just as myth said it was!

Well, we should add partially true. While transmutation of elements was certainly proved true beyond doubt, it was not demonstrated that such transmutations, which is to say nuclear atomic reactions, could take place at the temperatures, energies and conditions of normal chemistry or even metallurgy. The accelerator reactions required much, much greater energies for transmutations to occur. What was termed “low energy” or “cold” nuclear reactions was still regarded as pseudoscience and impossible in spite of a grow body of evidence to the contrary. But then as we have observed, when one ridicules “pseudoscience” it is considered bad form to actually examine any its evidence or read any reports of observations of phenomena that “everybody knows” to be “insane”.

One source of such evidence was a Frenchman the late Louis C. Kervran. As far as science is concerned Kervran was the perfect pseudoscience “kook”. First off, he was an autodidact which is to say self-taught in science. Furthermore, although he was a French government official dealing with nuclear energy his science interests were wide ranging making him very well versed in a great many subjects including physics, medicine, biology, agronomy, geology and others. As we've noted a multidisciplinary approach to science triggers too many trampled toes and “not invented here”

syndromes to ever be considered as reasonable suggestions that should be investigated.

And Kervran was certainly not the first (proving the old “there is nothing new under the sun”) but seems to be the most comprehensive and thorough. One of his first questions had to do with a puzzle that science had considered and then shrugged off several times in the past. This is the chicken and the egg. The apparent mystery is while chickens are normally fed calcium so that they can form their daily eggshells, it turns out that in certain circumstances the chickens keep forming eggs with shell even when there is no calcium available. So how can they do this? Kervran's solution was that there is a low temperature biological transmutation of potassium to calcium. When the chickens had no potassium available they started laying soft-shelled eggs.

There is far too much detail in Kervran's life's work to be discussed here, but like Velikovsky it covered an astounding range of scholarship giving plausible theories for a great many anomalies that have puzzled medicine, mining, geology, biology, botany, agronomy, welding, and even atomic particle physics. And in addition, to theories, there were numerous experiments and careful measurements up to and including rock modifications by atomic bomb testing. One cannot call his work irrefutable proof, but it certainly represents a massive compendium of suggestive directions for new ideas in science.

Of course establishment science got to hide behind the fact that Kervran was French and virtually all his books were written in French of which only the first few were translated into English. Nobody was impressed enough to actually translate them and raise questions in the science community.

And to make sure things stayed that way, Kervran was awarded the “Ignoble” prize which is supposedly a light hearted satire on the Nobel Prize given to work considered kook or frivolous wastes of money. While it's all supposed to be a “joke” the message that low energy transmutations is a “forbidden topic” is clearly lingering between the lines to warn off any potential interested scientists.

Kervran's ideas are pretty simple. Just as in chemistry one can have catalysts and enzymes that can make reactions go at much lower energies and temperatures than is usually the case, he theorized the existence of “nuclear enzymes” causing transmutations as a survival mechanism in various lifeforms from soil bacteria on up. Especially interesting is his examination of the relationship of sea creatures to the large values of certain elements in the oceans.

It is interesting to ponder the nature of enzymes. People through the ages have dismissed traditional alchemy because it consists of many repeated operations all of them the same. The alchemist mixes heats and melts his materials, then when cooled he grinds the result and heats and melts them again. This is done over and over until some kind of change is seen. Chemical enzymes operate with structure. Their physics structure is such that it interacts with the reactants of the case in question so as to change the energy at which the reaction takes place. It is an interesting thought that the creation of such enzymatic structures is done by repeatedly adding elements to the basic enzyme structure and this is one one after the other by, you guessed it, by repeating the operations that add the chemicals over and over adding to the overall structure each time.

Kervran's work is quite a body of suggestion, but it does not end there. The famous “cold fusion affair of Pons and Fleishmann or perhaps even the “fusor tube” of Philo T. Farnsworth the inventor of modern television give strong hints of “forbidden” low energy nuclear science that sorely needs further investigation.

New Viewpoint #11. : The power of mind.

Today, nothing quite rubs establishment science the wrong way like someone taking “magic” and “miracles” seriously. Even phenomena as simple and straight forward as a Yogi controlling his own heart rate which has been measured and proved beyond any doubt, was until quite recently placed in the class of most absurd “pseudoscience”. And of course we've already discussed the case of Medium D. D. Home rising from the floor and that is simply one example of many. But they are all ignored and swept under the rug. Obviously none of this needs to be examined because “everybody knows” it's impossible. Well, perhaps “impossible” for the critics, but does that mean it's impossible for everyone?

Generally in science when some declares something is “impossible” they might as well use the short form: “I am ignorant”. The reason is obvious. The ONLY way a person can know if something is “impossible” would be to examine ALL POSSIBLE ways it might occur (using your superpowers, of course) and then determine that none of the possible ways apply! Do you now understand why the “short form” is equivalent? Have you already forgotten that transmutation of elements is “impossible” as is the existence of the mythical city of Troy? In science something is “not considered probable” with “impossible” relegated for use by journalists and other writers with no understanding of science.

In ancient times, miracles and magic seemed much more accepted than today. But in spite of common acceptance, it was clear that people who could perform magic and miracles were limited in number. They were “magicians” and priests and not the common folk. So clearly some special abilities or training were involved. We've read of throwing down a staff and it turns into a snake, of walking on water and changing water to wine. And you've read the yogi's gold begging bowl story above and you need to ask from a science viewpoint how much different is that from changing water to wine?

The new grand metaparadigm of magic and miracles is simplicity itself, and yet involves a number of our previous “forbidden” topics and new paradigms. In a nutshell it's all about mind and aether. An aether which exists and is the basis of everything including all forces and elements under the “theory of everything” is a grand creator and controller of all phenomena. And then the next logical question would be just how does one manipulate aether to generate matter and forces?

The answer to this question suggested by mystical evidence to date is simplicity itself. In short, *aether responds to mind!* The essence of being a priest, or magician or yogi or witch for that matter, is developing the ability to hold a singular thought in your mind for a period of time such that even here on earth where the aether is slow and sluggish, it can respond and form the image of your thought. The suggestion is that apports, transmutations, forces such as defiance of gravity, noises, electrical disturbances, or virtually ANY thought can be made to manifest if held in the mind steady enough and long enough.

Of course establishment science keeps foolishly demanding that every experiment be totally repeatable and be completely independent of the experimenter! That this is nonsense can be seen by trying to “prove” that there are no great pianists among humans by testing everyone with a piano who gets off the bus at grade school. See? They opine. This legend of great pianists is just myth. They don't exist except in the kook mind! Of course should the experimenters encounter a child prodigy by

chance, that would have to be ignored and discarded as a “hoax”. That is the problem when your measurements are designed not to see what is actually going on but rather to “prove” what you already know to be true!

An interesting thing about thoughts as a manifestor of phenomena is that they do not seem limited in scope by quantity or energy. It appears that one can as easily cure a cold by placebo belief or psychosomatic thoughts as one can part the Red Sea or change the weather. It is averred in the bible that a mountain can be as easily moved by thought as a mustard seed. It is not about the size of the thing moved but the size and focus of the thought moving it. That is the vast power of imagination and also the vast dangers in it as well! When something admits of great power, one needs to exercise great caution as well. It is not wise to be as the atomic scientists who set off the atom bomb anyway, in spite of calculating a possibility of setting the earth's atmosphere on fire and destroying the planet.

It is necessary to remember that science under the norms is the property not of governments, or corporations or individuals, but rather it's all about betterment of human civilization. Selfish misuse of the power of science not only can take the scientist down, but the sad fact is that the scientist when one starts looking into the highest levels of science can take us all down with him/her. Total destruction of all of humanity is not one of the norms of science. Even total destruction of our current civilization is not an acceptable result, although there is evidence that we as humans have indeed have “high” civilizations in the past that have crumbled and fell to nothingness when human activities get too far out line with nature.

Our conclusion for this viewpoint suggests from a long tradition of mystic writing and primitive experiments that there should be investigated a fundamental law of the universe that the condition and structures of *aether* that determine all things and actions, respond to mind and to strong focused thoughts in particular. Such response is said to be rapid in higher dimensions, but slower and more difficult in 3D space, but nevertheless still operates quickly if the thought is intense enough. In short, matter, forces and events can be created by intense focused thought and this law explains much of what was formerly rejected by science as largely imaginary and untrue such as magic, transmutations, apports, miracles, witchcraft, astrology, psychosomatic cures, even the direct effect of friendly fans on the home team's game. According to reports of classified government remote viewing experiments attempts have already been made to utilize such effects in attempting to influence certain foreign leaders remotely. In spite of all the tax money spent, the fact that much of the work was not classified, and that a large number of the principle investigators in the experiments have written books about the remote viewing project, its results, and how it was conducted, nevertheless the negative nannies persist in pretending it never existed and when that fails for lack of credibility, they assure us that the whole project was a total failure and banished to the rubbish bin of science. Needless to say such attitudes are not science by any stretch or even represent something useful to advance human civilization.

CONCLUSIONS

Having examined what science is, what the scientific method entails and what the limits of science are, it is clear that science is not the great savior of mankind slowly picking the ultimate laws of the universe out of the data of daily life. It has severe limitations by its very structure that limit science to largely puzzle solving. And to insure that it *stays* so limited certain grand material metaparadigms have been realized and promoted as science dogma. These limit the questions that can be asked and simplify the solving of the questions that are allowed to be attacked. And like all religions, deviations

from dogma are considered heresy and staunchly exterminated from the church. That such behavior has nothing to do with science can be seen by the total violation of the “norms” of real science by those running the inquisition. For example, a the policy of criticizing the unacceptable new ideas but refusing to even read the works presenting them shows an attitude so unscientific that any of the critics demonstrating it should be be themselves should be drummed from the profession as they are attempting to do with those who they find to be heretics.

When you observe these actions what you often see is not unlike the judge in a small town with a traffic speed trap that rakes in millions of dollars from those driving through and sits at on the bench of justice spouting off at the defendants pretending to be saving the community from the dangers of unsafe drivers when the truth is that the judge is part of a group of thieves robbing unsuspecting visitors at gunpoint (all cops are armed). Basically the fox is guarding the hen house. In science the same “holier than thou” acts are also played for the public and those trying to pull it off are just as guilty.

So having examined these questions, one can expect given the vast array of “forbidden” kookery in the viewpoints section, accusations against this author that he “believes” in all the viewpoints and speculations presented here. That what have actually been put forth as suggestions for examination are instead being presented as science fact. Such propaganda for a careful reader would obviously be total fabrication and fraud, but who today is careful? First off, science is not about “belief”. We've just examined how real science works and “belief” was nowhere in there, not even in the difficult part of creating theories. Secondly, in science there are no theories that are are “fact”. Everything is always tested against the observations of reality. When those experiments fail, the theory fails. Period. Thus, to “know” that something is “insane” without even bothering to read what it is and further to actually compare fantasy against reported results is so anti-science as to not be worthy of the slightest consideration by anyone. It does not matter how many titles that person has, how many prizes, how many papers they've published, what trade organizations or government agencies they head, or how rich they are, science is not determined by a democratic vote of everybody's opinion. Violation of the scientific method be it by fake “mouse painting” data, or “dry lab” experiments, or plagiarism, or blind repetition of dogma without any real testing of it is all considered science sin and rightfully often produce drastic repercussions... except for the last one… blind repetition of science dogma never seems to evoke any resistance or repercussions.

It is important to reiterate that the “viewpoints” presented above are not beliefs. They are not even theory. They are simply speculation based on suggestions found in the “forbidden” collection of ideas and some very preliminary experiments. None of these ideas can be considered science until throughly tested and measured and found to be valid. Even if verified, in science one still does not “believe” in them. Belief and faith is for religion not science. In science one can only talk about what has been verified so far. Nothing is ever “fact” and nothing is ever settled. It only takes ONE instance of phenomena not being predicted correctly by a theory for that theory to be considered in error. And it should be pointed out that what a person “knows” is also no proof in science. If something sounds crazy and contrary to everyday experience that is no proof that it is in error. The stars and planets and sun really do seem to circle about our Earth and locally the Earth sure seems flat! But the earth only seems a fixed point because we are riding on it and if one extends measurements far enough, the curvature of the planet can be measured.

But one cannot ignore the fact that true pseudoscience “kooks” do exist. The fame of Einstein, the explosion of technology (often confused by the public with science) and the great wealth of

founders of start-up technical companies creates great envy among certain people without the education, ability, or science knowledge to do real science (which typically is boring, hard work, takes lots of study, as well as money to perform investigations while the investigator does not get rich). And that envy induces them to pretend to be "great scientists" to claim some of that imagined fame. So they make up theories that sound wonderful often with their own jargon to make it more incomprehensible and make wild assertions as to what their methods can do or show.

So if Casti's method for pseudoscience detection is a failure, how can one separate the true kooks from the ideas that simply go against the grand metaparadigms of science? Well, the first test would be to ask that very question! Is what the person is proposing going against measurements or just against what science "believes"? Are they saying, for example, that speed of light changes speed depending on it's direction, or perhaps that the speed of light changes speed according to the speed of its source? These things have been measured many times and results have always been the same: The above ideas are just plain wrong. On the other hand, if Kervran states that atomic transmutations are possible at low energies that is a statement against what science believes. It only takes ONE such transmutation to prove science wrong. It makes no difference that Kervran was an autodidact without the "official" education to be an "expert". It makes no difference that his scope transcended a great many disciplines. It is not important that he was French. The ONLY thing that matters is whether or not experiment shows any validity to his suppositions. To show how shaky this whole "pseudoscience" house of cards is, I would point out that radioactive materials in fact DO transmute from one substance to another at room temperature! No, that doesn't prove every idea Kervran put forth, but it certainly makes the claim that such low temperature transmutations CANNOT take place highly suspect.

In short, the answer is very simple. To find what is real science and what is pseudoscience, one simply applies the scientific method to it being careful to adhere to the "norms" of science. So easy, so straight-forward, so simple, so why does everyone never do that? What political gain is there in telling the truth about anything? So as a human, should one do the "right thing" or do the thing that advances your position in whatever ways? And given human frailty, where people stand ready to advance their own interests above those of civilization, then the next best thing to a perfect world would be the understanding I've tried to put forth above so that real can be separated from fantasy, fact from fiction, sizzle from steak, myth from history, religious truth from dogma and real science from pseudoscience. The next great revolution in science more or less depends on it.

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65 Wikipedia.

automatically rejected without even reading them. Our point here is obviously that ideas stand on their own and are to be judged independently of personality. We are not impressed by high titles and honors nor discouraged by reputations as cranks and crooks. We have already stated our point that even the ideas of myth and religion deserve testing by science. But a few missteps or 1000 wrong ideas does not automatically render erroneous every idea the person has. Each idea must be tested by comparison to “reality”. In science nothing less will do.

Appendix I

A List Of Fallacious Arguments

"The jawbone of an ass is just as dangerous a weapon today as in Samson's time."
--- Richard Nixon

Several of these have names in Latin, but I mostly ignored that and used English.

If anyone is bothered by my using "he" everywhere, note that "he" is the person arguing fallaciously.

- **Ad Hominem (Argument To The Man):**

  attacking the person instead of attacking his argument. For example, "Von Daniken's books about ancient astronauts are worthless because he is a convicted forger and embezzler." (Which is true, but that's not why they're worthless.)

  Another example is this syllogism, which alludes to Alan Turing's homosexuality:

  > Turing thinks machines think.
  > Turing lies with men.
  > Therefore, machines don't think.

  (Note the equivocation in the use of the word "lies".)

  A common form is an attack on sincerity. For example, "How can you argue for vegetarianism when you wear leather shoes ?" The two wrongs make a right fallacy is related.

  A variation (related to Argument By Generalization) is to attack a whole class of people. For example, "Evolutionary biology is a sinister tool of the materialistic, atheistic religion of Secular Humanism." Similarly, one notorious net.kook waved away a whole category of evidence by announcing "All the scientists were drunk."

  Another variation is attack by innuendo: "Why don't scientists tell us what they really know; are they afraid of public panic ?"

  There may be a pretense that the attack isn't happening: "In order to maintain a civil debate, I will not mention my opponent's drinking problem." Or "I don't care if other people say you're [opinionated/boring/overbearing]."

  Attacks don't have to be strong or direct. You can merely show disrespect, or cut down his stature by saying that he seems to be sweating a lot, or that he has forgotten what he said last week. Some examples: "I used to think that way when I

was your age." "You're new here, aren't you ?" "You weren't breast fed as a child, were you ?" "What drives you to make such a statement ?" "If you'd just listen.." "You seem very emotional." (This last works well if you have been hogging the microphone, so that they have had to yell to be heard.)

Sometimes the attack is on the other person's intelligence. For example, "If you weren't so stupid you would have no problem seeing my point of view." Or, "Even you should understand my next point."

Oddly, the stupidity attack is sometimes reversed. For example, dismissing a comment with "Well, you're just smarter than the rest of us." (In Britain, that might be put as "too clever by half".) This is Dismissal By Differentness. It is related to Not Invented Here and Changing The Subject.

Ad Hominem is not fallacious if the attack goes to the credibility of the argument. For instance, the argument may depend on its presenter's claim that he's an expert. (That is, the Ad Hominem is undermining an Argument From Authority.) Trial judges allow this category of attacks.

- **Needling:**

  simply attempting to make the other person angry, without trying to address the argument at hand. Sometimes this is a delaying tactic.

  Needling is also Ad Hominem if you insult your opponent. You may instead insult something the other person believes in ("Argumentum Ad YourMomium"), interrupt, clown to show disrespect, be noisy, fail to pass over the microphone, and numerous other tricks. All of these work better if you are running things - for example, if it is your radio show, and you can cut off the other person's microphone. If the host or moderator is firmly on your side, that is almost as good as running the show yourself. It's even better if the debate is videotaped, and you are the person who will edit the video.

  If you wink at the audience, or in general clown in their direction, then we are shading over to Argument By Personal Charm.

  Usually, the best way to cope with insults is to show mild amusement, and remain polite. A humorous comeback will probably work better than an angry one.

- **Straw Man (Fallacy Of Extension):**

  attacking an exaggerated or caricatured version of your opponent's position.

  For example, the claim that "evolution means a dog giving birth to a cat."

  Another example: "Senator Jones says that we should not fund the attack submarine program. I disagree entirely. I can't understand why he wants to leave us defenseless

like that."

On the Internet, it is common to exaggerate the opponent's position so that a comparison can be made between the opponent and Hitler.

- **Inflation Of Conflict:**

  arguing that scholars debate a certain point. Therefore, they must know nothing, and their entire field of knowledge is "in crisis" or does not properly exist at all.

  For example, two historians debated whether Hitler killed five million Jews or six million Jews. A Holocaust denier argued that this disagreement made *his* claim credible, even though his death count is three to ten times smaller than the known minimum.

  Similarly, in "The Mythology of Modern Dating Methods" (John Woodmorappe, 1999) we find on page 42 that two scientists "cannot agree" about which one of two geological dates is "real" and which one is "spurious". Woodmorappe fails to mention that the two dates differ by less than one percent.

- **Argument From Adverse Consequences (Appeal To Fear, Scare Tactics):**

  saying an opponent must be wrong, because if he is right, then bad things would ensue. For example: God must exist, because a godless society would be lawless and dangerous. Or: the defendant in a murder trial must be found guilty, because otherwise husbands will be encouraged to murder their wives.

  Wishful thinking is closely related. "My home in Florida is one foot above sea level. Therefore I am certain that global warming will not make the oceans rise by fifteen feet." Of course, wishful thinking can also be about positive consequences, such as winning the lottery, or eliminating poverty and crime.

- **Special Pleading (Stacking The Deck):**

  using the arguments that support your position, but ignoring or somehow disallowing the arguments against.

  Uri Geller used special pleading when he claimed that the presence of unbelievers (such as stage magicians) made him unable to demonstrate his psychic powers.

- **Excluded Middle (False Dichotomy, Faulty Dilemma, Bifurcation):**

  assuming there are only two alternatives when in fact there are more. For example, assuming Atheism is the only alternative to Fundamentalism, or being a traitor is the only alternative to being a loud patriot.

- **Short Term Versus Long Term:**

this is a particular case of the Excluded Middle. For example, "We must deal with crime on the streets before improving the schools." (But why can't we do some of both ?) Similarly, "We should take the scientific research budget and use it to feed starving children."

- **Burden Of Proof:**

  the claim that whatever has not yet been proved false must be true (or vice versa). Essentially the arguer claims that he should win by default if his opponent can't make a strong enough case.

  There may be three problems here. First, the arguer claims priority, but can he back up that claim ? Second, he is impatient with ambiguity, and wants a final answer right away. And third, "absence of evidence is not evidence of absence."

- **Argument By Question:**

  asking your opponent a question which does not have a snappy answer. (Or anyway, no snappy answer that the audience has the background to understand.) Your opponent has a choice: he can look weak or he can look long-winded. For example, "How can scientists expect us to believe that anything as complex as a single living cell could have arisen as a result of random natural processes ?"

  Actually, pretty well any question has this effect to some extent. It usually takes longer to answer a question than ask it.

  Variants are the rhetorical question, and the **loaded** question, such as "Have you stopped beating your wife ?"

- **Argument by Rhetorical Question:**

  asking a question in a way that leads to a particular answer. For example, "When are we going to give the old folks of this country the pension they deserve ?" The speaker is leading the audience to the answer "Right now." Alternatively, he could have said "When will we be able to afford a major increase in old age pensions?" In that case, the answer he is aiming at is almost certainly *not* "Right now."

- **Fallacy Of The General Rule:**

  assuming that something true in general is true in every possible case. For example, "All chairs have four legs." Except that rocking chairs don't have any legs, and what is a one-legged "shooting stick" if it isn't a chair ?

  Similarly, there are times when certain laws should be broken. For example, ambulances are allowed to break speed laws.

- **Reductive Fallacy (Oversimplification):**

over-simplifying. As Einstein said, everything should be made as simple as possible, but no simpler. Political slogans such as "Taxation is theft" fall in this category.

- **Genetic Fallacy (Fallacy of Origins, Fallacy of Virtue):**

  if an argument or arguer has some particular origin, the argument must be right (or wrong). The idea is that things from that origin, or that social class, have virtue or lack virtue. (Being poor or being rich may be held out as being virtuous.) Therefore, the actual details of the argument can be overlooked, since correctness can be decided without any need to listen or think.

- **Psychogenetic Fallacy:**

  if you learn the psychological reason why your opponent likes an argument, then he's biased, so his argument must be wrong.

- **Argument Of The Beard:**

  assuming that two ends of a spectrum are the same, since one can travel along the spectrum in very small steps. The name comes from the idea that being clean-shaven must be the same as having a big beard, since in-between beards exist.

  Similarly, all piles of stones are small, since if you add one stone to a small pile of stones it remains small.

  However, the existence of pink should not undermine the distinction between white and red.

- **Argument From Age (Wisdom of the Ancients):**

  snobbery that very old (or very young) arguments are superior. This is a variation of the Genetic Fallacy, but has the psychological appeal of seniority and tradition (or innovation).

  Products labelled "New ! Improved !" are appealing to a belief that innovation is of value for such products. It's sometimes true. And then there's cans of "Old Fashioned Baked Beans".

- **Not Invented Here:**

  ideas from elsewhere are made unwelcome. "This Is The Way We've Always Done It."

  This fallacy is a variant of the Argument From Age. It gets a psychological boost from feelings that local ways are superior, or that local identity is worth any cost, or that innovations will upset matters.

  An example of this is the common assertion that America has "the best health care

system in the world", an idea that this 2007 New York Times editorial refuted.

People who use the Not Invented Here argument are sometimes accused of being stick-in-the-mud's.

Conversely, foreign and "imported" things may be held out as superior.

- **Argument By Dismissal:**

  an idea is rejected without saying why.

  Dismissals usually have overtones. For example, "If you don't like it, leave the country" implies that your cause is hopeless, or that you are unpatriotic, or that your ideas are foreign, or maybe all three. "If you don't like it, live in a Communist country" adds an emotive element.

- **Argument To The Future:**

  arguing that evidence will someday be discovered which will (then) support your point.

- **Poisoning The Wells:**

  discrediting the sources used by your opponent. This is a variation of Ad Hominem.

- **Argument By Emotive Language (Appeal To The People):**

  using emotionally loaded words to sway the audience's sentiments instead of their minds. Many emotions can be useful: anger, spite, envy, condescension, and so on.

  For example, argument by condescension: "Support the ERA ? Sure, when the women start paying for the drinks! Hah! Hah!"

  Americans who don't like the Canadian medical system have referred to it as "socialist", but I'm not quite sure if this is intended to mean "foreign", or "expensive", or simply guilty by association.

  Cliche Thinking and Argument By Slogan are useful adjuncts, particularly if you can get the audience to chant the slogan. People who rely on this argument may seed the audience with supporters or "shills", who laugh, applaud or chant at proper moments. This is the live-audience equivalent of adding a laugh track or music track. Now that many venues have video equipment, some speakers give part of their speech by playing a prepared video. These videos are an opportunity to show a supportive audience, use emotional music, show emotionally charged images, and the like. The idea is old: there used to be professional cheering sections. (Monsieur Zig-Zag, pictured on the cigarette rolling papers, acquired his fame by applauding for money at the Paris Opera.)

If the emotion in question isn't harsh, Argument By Poetic Language helps the effect. Flattering the audience doesn't hurt either.

- **Argument By Personal Charm:**

  getting the audience to cut you slack. Example: Ronald Reagan. It helps if you have an opponent with much less personal charm.

  Charm may create trust, or the desire to "join the winning team", or the desire to please the speaker. This last is greatest if the audience feels sex appeal.

  Reportedly George W. Bush lost a debate when he was young, and said later that he would never be "out-bubba'd" again.

- **Appeal To Pity (Appeal to Sympathy, The Galileo Argument):**

  "I did not murder my mother and father with an axe ! Please don't find me guilty; I'm suffering enough through being an orphan."

  Some authors want you to know they're suffering for their beliefs. For example, "Scientists scoffed at Copernicus and Galileo; they laughed at Edison, Tesla and Marconi; they won't give my ideas a fair hearing either. But time will be the judge. I can wait; I am patient; sooner or later science will be forced to admit that all matter is built, not of atoms, but of tiny capsules of TIME."

  There is a strange variant which shows up on Usenet. Somebody refuses to answer questions about their claims, on the grounds that the asker is mean and has hurt their feelings. Or, that the question is personal.

- **Appeal To Force:**

  threats, or even violence. On the Net, the usual threat is of a lawsuit. The traditional religious threat is that one will burn in Hell. However, history is full of instances where expressing an unpopular idea could you get you beaten up on the spot, or worse.

  > "The clinching proof of my reasoning is that I will cut anyone who argues further into dogmeat."
  > -- Attributed to Sir Geoffery de Tourneville, ca 1350 A.D.

- **Argument By Vehemence:**

  being loud. Trial lawyers are taught this rule:

  > If you have the facts, pound on the facts.
  > If you have the law, pound on the law.
  > If you don't have either, pound on the table.

The above rule paints vehemence as an act of desperation. But it can also be a way to seize control of the agenda, use up the opponent's time, or just intimidate the easily cowed. And it's not necessarily aimed at winning the day. A tantrum or a fit is also a way to get a reputation, so that in the future, no one will mess with you.

This is related to putting a post in UPPERCASE, aka SHOUTING.

Depending on what you're loud about, this may also be an Appeal To Force, Argument By Emotive Language, Needling, or Changing The Subject.

- **Begging The Question (Assuming The Answer, Tautology):**

  reasoning in a circle. The thing to be proved is used as one of your assumptions. For example: "We must have a death penalty to discourage violent crime". (This assumes it discourages crime.) Or, "The stock market fell because of a technical adjustment." (But is an "adjustment" just a stock market fall ?)

- **Stolen Concept:**

  using what you are trying to disprove. That is, requiring the truth of something for your proof that it is false. For example, using science to show that science is wrong. Or, arguing that you do not exist, when your existence is clearly required for you to be making the argument.

  This is a relative of Begging The Question, except that the circularity there is in what you are trying to prove, instead of what you are trying to disprove.

  It is also a relative of Reductio Ad Absurdum, where you *temporarily* assume the truth of something.

- **Argument From Authority:**

  the claim that the speaker is an expert, and so should be trusted.

  There are degrees and areas of expertise. The speaker is actually claiming to be *more* expert, in the relevant subject area, than anyone else in the room. There is also an implied claim that expertise in the area is worth having. For example, claiming expertise in something hopelessly quack (like iridology) is actually an admission that the speaker is gullible.

- **Argument From False Authority:**

  a strange variation on Argument From Authority. For example, the TV commercial which starts "I'm not a doctor, but I play one on TV." Just what are we supposed to conclude ?

- **Appeal To Anonymous Authority:**

an Appeal To Authority is made, but the authority is not named. For example, "Experts agree that ..", "scientists say .." or even "they say ..". This makes the information impossible to verify, and brings up the very real possibility that the arguer himself doesn't know who the experts are. In that case, he may just be spreading a rumor.

The situation is even worse if the arguer admits it's a rumor.

- **Appeal To Authority:**

  "Albert Einstein was extremely impressed with this theory." (But a statement made by someone long-dead could be out of date. Or perhaps Einstein was just being polite. Or perhaps he made his statement in some specific context. And so on.)

  To justify an appeal, the arguer should at least present an exact quote. It's more convincing if the quote contains context, and if the arguer can say where the quote comes from.

  A variation is to appeal to unnamed authorities .

  There was a New Yorker cartoon, showing a doctor and patient. The doctor was saying: "Conventional medicine has no treatment for your condition. Luckily for you, I'm a quack." So the joke was that the doctor boasted of his *lack* of authority.

- **Appeal To False Authority:**

  a variation on Appeal To Authority, but the Authority is outside his area of expertise.

  For example, "Famous physicist John Taylor studied Uri Geller extensively and found no evidence of trickery or fraud in his feats." Taylor was not qualified to detect trickery or fraud of the kind used by stage magicians. Taylor later admitted Geller had tricked him, but he apparently had not figured out how.

  A variation is to appeal to a non-existent authority. For example, someone reading an article by Creationist Dmitri Kuznetsov tried to look up the referenced articles. Some of the articles turned out to be in non-existent journals.

  Another variation is to misquote a real authority. There are several kinds of misquotation. A quote can be inexact or have been edited. It can be taken out of context. (Chevy Chase: "Yes, I said that, but I was singing a song written by someone else at the time.") The quote can be separate quotes which the arguer glued together. Or, bits might have gone missing. For example, it's easy to prove that Mick Jagger is an assassin. In "Sympathy For The Devil" he sang: "I shouted out, who killed the Kennedys, When after all, it was ... me."

- **Statement Of Conversion:**

the speaker says "I used to believe in X".

This is simply a weak form of asserting expertise. The speaker is implying that he has learned about the subject, and now that he is better informed, he has rejected X. So perhaps he is now an authority, and this is an implied Argument From Authority.

A more irritating version of this is "I used to think that way when I was your age." The speaker hasn't said what is wrong with your argument: he is merely claiming that his age has made him an expert.

"X" has not actually been countered unless there is agreement that the speaker has that expertise. In general, any bald claim always has to be buttressed.

For example, there are a number of Creationist authors who say they "used to be evolutionists", but the scientists who have rated their books haven't noticed any expertise about evolution.

- **Bad Analogy:**

  claiming that two situations are highly similar, when they aren't. For example, "The solar system reminds me of an atom, with planets orbiting the sun like electrons orbiting the nucleus. We know that electrons can jump from orbit to orbit; so we must look to ancient records for sightings of planets jumping from orbit to orbit also."

  Or, "Minds, like rivers, can be broad. The broader the river, the shallower it is. Therefore, the broader the mind, the shallower it is."

  Or, "We have pure food and drug laws; why can't we have laws to keep movie-makers from giving us filth ?"

- **Extended Analogy:**

  the claim that two things, both analogous to a third thing, are therefore analogous to each other. For example, this debate:

  > "I believe it is always wrong to oppose the law by breaking it."
  > "Such a position is odious: it implies that you would not have supported Martin Luther King."
  > "Are you saying that cryptography legislation is as important as the struggle for Black liberation ? How dare you !"

  A person who advocates a particular position (say, about gun control) may be told that Hitler believed the same thing. The clear implication is that the position is somehow tainted. But Hitler also believed that window drapes should go all the way to the floor. Does that mean people with such drapes are monsters ?

- **Argument From Spurious Similarity:**

  this is a relative of Bad Analogy. It is suggested that some resemblance is proof of a relationship. There is a WW II story about a British lady who was trained in spotting German airplanes. She made a report about a certain very important type of plane. While being quizzed, she explained that she hadn't been sure, herself, until she noticed that it had a little man in the cockpit, just like the little model airplane at the training class.

- **Reifying:**

  an abstract thing is talked about as if it were concrete. (A possibly Bad Analogy is being made between concept and reality.) For example, "Nature abhors a vacuum."

- **False Cause:**

  assuming that because two things happened, the first one caused the second one. (Sequence is not causation.) For example, "Before women got the vote, there were no nuclear weapons." Or, "Every time my brother Bill accompanies me to Fenway Park, the Red Sox are sure to lose."

  Essentially, these are arguments that the sun goes down because we've turned on the street lights.

- **Confusing Correlation And Causation:**

  earthquakes in the Andes were correlated with the closest approaches of the planet Uranus. Therefore, Uranus must have caused them. (But Jupiter is nearer than Uranus, and more massive too.)

  When sales of hot chocolate go up, street crime drops. Does this correlation mean that hot chocolate prevents crime ? No, it means that fewer people are on the streets when the weather is cold.

  The bigger a child's shoe size, the better the child's handwriting. Does having big feet make it easier to write ? No, it means the child is older.

- **Causal Reductionism (Complex Cause):**

  trying to use one cause to explain something, when in fact it had several causes. For example, "The accident was caused by the taxi parking in the street." (But other drivers went around the taxi. Only the drunk driver hit the taxi.)

- **Cliche Thinking:**

  using as evidence a well-known wise saying, as if that is proven, or as if it has no exceptions.

- **Exception That Proves The Rule:**

  a specific example of Cliche Thinking. This is used when a rule has been asserted, and someone points out the rule doesn't always work. The cliche rebuttal is that this is "the exception that proves the rule". Many people think that this cliche somehow allows you to ignore the exception, and continue using the rule.

  In fact, the cliche originally did no such thing. There are two standard explanations for the original meaning.

  The first is that the word "prove" meant *test*. That is why the military takes its equipment to a *Proving Ground* to test it. So, the cliche originally said that an exception tests a rule. That is, if you find an exception to a rule, the cliche is saying that the rule is being tested, and perhaps the rule will need to be discarded.

  The second explanation is that the stating of an exception to a rule, proves that the rule exists. For example, suppose it was announced that "Over the holiday weekend, students do not need to be in the dorms by midnight". This announcement implies that normally students *do* have to be in by midnight. Here is a discussion of that explanation.

  In either case, the cliche is not about waving away objections.

- **Appeal To Widespread Belief (Bandwagon Argument, Peer Pressure, Appeal to Common Practice):**

  the claim, as evidence for an idea, that many people believe it, or used to believe it, or do it.

  If the discussion is about social conventions, such as "good manners", then this is a reasonable line of argument.

  However, in the 1800's there was a widespread belief that bloodletting cured sickness. All of these people were not just wrong, but horribly wrong, because in fact it made people sicker. Clearly, the popularity of an idea is no guarantee that it's right.

  Similarly, a common justification for bribery is that "Everybody does it". And in the past, this was a justification for slavery.

- **Fallacy Of Composition:**

  assuming that a whole has the same simplicity as its constituent parts. In fact, a great deal of science is the study of *emergent properties*. For example, if you put a drop of oil on water, there are interesting optical effects. But the effect comes from the oil/water system: it does not come just from the oil or just from the water.

Another example: "A car makes less pollution than a bus. Therefore, cars are less of a pollution problem than buses."

Another example: "Atoms are colorless. Cats are made of atoms, so cats are colorless."

- **Fallacy Of Division:**

  assuming that what is true of the whole is true of each constituent part. For example, human beings are made of atoms, and human beings are conscious, so atoms must be conscious.

- **Complex Question (Tying):**

  unrelated points are treated as if they should be accepted or rejected together. In fact, each point should be accepted or rejected on its own merits.

  For example, "Do you support freedom and the right to bear arms ?"

- **Slippery Slope Fallacy (Camel's Nose)**

  there is an old saying about how if you allow a camel to poke his nose into the tent, soon the whole camel will follow.

  The fallacy here is the assumption that something is wrong because it is right next to something that is wrong. Or, it is wrong because it could slide towards something that is wrong.

  For example, "Allowing abortion in the first week of pregnancy would lead to allowing it in the ninth month." Or, "If we legalize marijuana, then more people will try heroin." Or, "If I make an exception for you then I'll have to make an exception for everyone."

- **Argument By Pigheadedness (Doggedness):**

  refusing to accept something after everyone else thinks it is well enough proved. For example, there are still Flat Earthers.

- **Appeal To Coincidence:**

  asserting that some fact is due to chance. For example, the arguer has had a dozen traffic accidents in six months, yet he insists they weren't his fault. This may be Argument By Pigheadedness. But on the other hand, coincidences do happen, so this argument is not always fallacious.

- **Argument By Repetition (Argument Ad Nauseam):**

  if you say something often enough, some people will begin to believe it. There are

some net.kooks who keeping reposting the same articles to Usenet, presumably in hopes it will have that effect.

- **Argument By Half Truth (Suppressed Evidence):**

  this is hard to detect, of course. You have to ask questions. For example, an amazingly accurate "prophecy" of the assassination attempt on President Reagan was shown on TV. But was the tape recorded before or after the event ? Many stations did not ask this question. (It was recorded afterwards.)

  A book on "sea mysteries" or the "Bermuda Triangle" might tell us that the yacht Connemara IV was found drifting crewless, southeast of Bermuda, on September 26, 1955. None of these books mention that the yacht had been directly in the path of Hurricane Iona, with 180 mph winds and 40-foot waves.

- **Argument By Selective Observation:**

  also called cherry picking, the enumeration of favorable circumstances, or as the philosopher Francis Bacon described it, counting the hits and forgetting the misses. For example, a state boasts of the Presidents it has produced, but is silent about its serial killers. Or, the claim "Technology brings happiness". (Now, there's something with hits and misses.)

  Casinos encourage this human tendency. There are bells and whistles to announce slot machine jackpots, but losing happens silently. This makes it much easier to think that the odds of winning are good.

- **Argument By Selective Reading:**

  making it seem as if the weakest of an opponent's arguments was the best he had. Suppose the opponent gave a strong argument X and also a weaker argument Y. Simply rebut Y and then say the opponent has made a weak case.

  This is a relative of Argument By Selective Observation, in that the arguer overlooks arguments that he does not like. It is also related to Straw Man (Fallacy Of Extension), in that the opponent's argument is not being fairly represented.

- **Argument By Generalization:**

  drawing a broad conclusion from a small number of perhaps unrepresentative cases. (The cases may be unrepresentative because of Selective Observation.) For example, "They say 1 out of every 5 people is Chinese. How is this possible ? I know hundreds of people, and none of them is Chinese." So, by generalization, there aren't any Chinese anywhere. This is connected to the Fallacy Of The General Rule.

  Similarly, "Because we allow terminally ill patients to use heroin, we should allow everyone to use heroin."

It is also possible to under-generalize. For example,

> "A man who had killed both of his grandmothers declared himself rehabilitated, on the grounds that he could not conceivably repeat his offense in the absence of any further grandmothers."
> -- "Ports Of Call" by Jack Vance

- **Argument From Small Numbers:**

  "I've thrown three sevens in a row. Tonight I can't lose." This is Argument By Generalization, but it assumes that small numbers are the same as big numbers. (Three sevens is actually a common occurrence. Thirty three sevens is not.)

  Or: "After treatment with the drug, one-third of the mice were cured, one-third died, and the third mouse escaped." Does this mean that if we treated a thousand mice, 333 would be cured ? Well, no.

- **Misunderstanding The Nature Of Statistics (Innumeracy):**

  President Dwight Eisenhower expressed astonishment and alarm on discovering that fully half of all Americans had below average intelligence. Similarly, some people get fearful when they learn that their doctor wasn't in the top half of his class. (But that's half of them.)

  > "Statistics show that of those who contract the habit of eating, very few survive." -- Wallace Irwin.

  Very few people seem to understand "regression to the mean". This is the idea that things tend to go back to normal. If you feel normal today, does it really mean that the headache cure you took yesterday performed wonders ? Or is it just that your headaches are always gone the next day ?

  Journalists are notoriously bad at reporting risks. For example, in 1995 it was loudly reported that a class of contraceptive pills would double the chance of dangerous blood clots. The news stories mostly did not mention that "doubling" the risk only increased it by one person in 7,000. The "cell phones cause brain cancer" reports are even sillier, with the supposed increase in risk being at most one or two cancers per 100,000 people per year. So, if the fearmongers are right, your cellphone has increased your risk from "who cares" to "who cares".

- **Inconsistency:**

  for example, the declining life expectancy in the former Soviet Union is due to the failures of communism. But, the quite high infant mortality rate in the United States is not a failure of capitalism.

  This is related to Internal Contradiction.

- **Non Sequitur:**

  something that just does not follow. For example, "Tens of thousands of Americans have seen lights in the night sky which they could not identify. The existence of life on other planets is fast becoming certainty !"

  Another example: arguing at length that your religion is of great help to many people. Then, concluding that the teachings of your religion are undoubtably true.

  Or: "Bill lives in a large building, so his apartment must be large."

- **Meaningless Questions:**

  irresistible forces meeting immovable objects, and the like.

- **Argument By Poetic Language:**

  if it sounds good, it must be right. Songs often use this effect to create a sort of credibility - for example, "Don't Fear The Reaper" by Blue Oyster Cult. Politically oriented songs should be taken with a grain of salt, precisely because they sound good.

- **Argument By Slogan:**

  if it's short, and connects to an argument, it must **be** an argument. (But slogans risk the Reductive Fallacy.)

  Being short, a slogan increases the effectiveness of Argument By Repetition. It also helps Argument By Emotive Language (Appeal To The People), since emotional appeals need to be punchy. (Also, the gallery can chant a short slogan.) Using an old slogan is Cliche Thinking.

- **Argument By Prestigious Jargon:**

  using big complicated words so that you will seem to be an expert. Why do people use "utilize" when they could utilize "use" ?

  For example, crackpots used to claim they had a Unified Field Theory (after Einstein). Then the word Quantum was popular. Lately it seems to be Zero Point Fields.

- **Argument By Gibberish (Bafflement):**

  this is the extreme version of Argument By Prestigious Jargon. An invented vocabulary helps the effect, and some net.kooks use lots of CAPitaLIZation. However, perfectly ordinary words can be used to baffle. For example, "Omniscience is greater than omnipotence, and the difference is two. Omnipotence plus two equals omniscience. META = 2." [From R. Buckminster Fuller's *No More*

Secondhand God.]

Gibberish may come from people who can't find meaning in technical jargon, so they think they should copy style instead of meaning. It can also be a "snow job", AKA "baffle them with BS", by someone actually familiar with the jargon. Or it could be Argument By Poetic Language.

An example of poetic gibberish: "Each autonomous individual emerges holographically within egoless ontological consciousness as a non-dimensional geometric point within the transcendental thought-wave matrix."

- **Equivocation:**

  using a word to mean one thing, and then later using it to mean something different. For example, sometimes "Free software" costs nothing, and sometimes it is without restrictions. Some examples:

  > "The sign said 'fine for parking here', and since it was fine, I parked there."
  >
  > All trees have bark.
  > All dogs bark.
  > Therefore, all dogs are trees.
  >
  > "Consider that two wrongs never make a right, but that three lefts do."
  > - "Deteriorata", National Lampoon

- **Euphemism:**

  the use of words that sound better. The lab rat wasn't killed, it was *sacrificed*. Mass murder wasn't genocide, it was *ethnic cleansing*. The death of innocent bystanders is *collateral damage*. Microsoft doesn't find bugs, or problems, or security vulnerabilities: they just discover an *issue* with a piece of software.

  This is related to Argument By Emotive Language, since the effect is to make a concept emotionally palatable.

- **Weasel Wording:**

  this is very much like Euphemism, except that the word changes are done to claim a new, different concept rather than soften the old concept. For example, an American President may not legally conduct a war without a declaration of Congress. So, various Presidents have conducted "police actions", "armed incursions", "protective reaction strikes," "pacification," "safeguarding American interests," and a wide variety of "operations". Similarly, War Departments have become Departments of Defense, and untested medicines have become alternative medicines. The book "1984" has some particularly good examples.

- **Error Of Fact:**

  for example, "No one knows how old the Pyramids of Egypt are." (Except, of course, for the historians who've read records and letters written by the ancient Egyptians themselves.)

  Typically, the presence of one error means that there are other errors to be uncovered.

- **Argument From Personal Astonishment:**

  Errors of Fact caused by stating offhand opinions as proven facts. (The speaker's thought process being "I don't see how this is possible, so it isn't.") An example from Creationism is given here.

  This isn't lying, quite. It just seems that way to people who know more about the subject than the speaker does.

- **Lies:**

  intentional Errors of Fact. In some contexts this is called bluffing.

  If the speaker thinks that lying serves a moral end, this would be a Pious Fraud.

- **Contrarian Argument:**

  in science, espousing some thing that the speaker knows is generally ill-regarded, or even generally held to be disproven. For example, claiming that HIV is not the cause of AIDS, or claiming that homeopathic remedies are not just placebos.

  In politics, the phrase may be used more broadly, to mean espousing some position that the establishment or opposition party does not hold.

  This is sometimes done to make people think, and sometimes it is needling, or perhaps it supports an external agenda. But it can also be done just to oppose conformity, or as a pose or style choice: to be a "maverick" or lightning rod. Or, perhaps just for the ego of standing alone:

  > "It is not enough to succeed. Friends must be seen to have failed."
  > -- Truman Capote

  > "If you want to prove yourself a brilliant scientist, you don't always agree with the consensus. You show you're right and everyone else is wrong."
  > -- Daniel Kirk-Davidoff discussing Richard Lindzen

  Calling someone contrarian risks the Psychogenetic Fallacy. People who are annoying are not necessarily wrong. On the other hand, if the position is ill-regarded

for a reason, then defending it may be uphill.

Trolling is Contrarian Argument done to get a reaction. Trolling on the Internet often involves pretense.

- **Hypothesis Contrary To Fact:**

  arguing from something that might have happened, but didn't.

- **Internal Contradiction:**

  saying two contradictory things in the same argument. For example, claiming that Archaeopteryx is a dinosaur with hoaxed feathers, and also saying in the same book that it is a "true bird". Or another author who said on page 59, "Sir Arthur Conan Doyle writes in his autobiography that he never saw a ghost." But on page 200 we find "Sir Arthur's first encounter with a ghost came when he was 25, surgeon of a whaling ship in the Arctic.."

  This is much like saying "I never borrowed his car, and it already had that dent when I got it."

  This is related to Inconsistency.

- **Changing The Subject (Digression, Red Herring, Misdirection, False Emphasis):**

  this is sometimes used to avoid having to defend a claim, or to avoid making good on a promise. In general, there is something you are not supposed to notice.

  For example, I got a bill which had a big announcement about how some tax had gone up by 5%, and the costs would have to be passed on to me. But a quick calculation showed that the increased tax was only costing me a dime, while a different part of the the bill had silently gone up by $10.

  This is connected to various diversionary tactics, which may be obstructive, obtuse, or needling. For example, if you quibble about the meaning of some word a person used, they may be quite happy about being corrected, since that means they've derailed you, or changed the subject. They may pick nits in your wording, perhaps asking you to define "is". They may deliberately misunderstand you:

  > "You said this happened five years before Hitler came to power. Why are you so fascinated with Hitler ? Are you anti-Semitic ?"

  It is also connected to various rhetorical tricks, such as announcing that there cannot be a question period because the speaker must leave. (But then he doesn't leave.)

- **Argument By Fast Talking:**

  if you go from one idea to the next quickly enough, the audience won't have time to

think. This is connected to Changing The Subject and (to some audiences) Argument By Personal Charm.

However, some psychologists say that to understand what you hear, you must for a brief moment believe it. If this is true, then rapid delivery does not leave people time to reject what they hear.

- **Having Your Cake (Failure To Assert, or Diminished Claim):**

  almost claiming something, but backing out. For example, "It may be, as some suppose, that ghosts can only be seen by certain so-called sensitives, who are possibly special mutations with, perhaps, abnormally extended ranges of vision and hearing. Yet some claim we are all sensitives."

  Another example: "I don't necessarily agree with the liquefaction theory, nor do I endorse all of Walter Brown's other material, but the geological statements are informative." The strange thing here is that liquefaction theory (the idea that the world's rocks formed in flood waters) was demolished in 1788. To "not necessarily agree" with it, today, is in the category of "not necessarily agreeing" with 2+2=3. But notice that writer implies some study of the matter, and only partial rejection.

  A similar thing is the failure to rebut. Suppose I raise an issue. The response that "Woodmorappe's book talks about that" could possibly be a reference to a resounding rebuttal. Or perhaps the responder hasn't even read the book yet. How can we tell ? [I later discovered it was the latter.]

- **Ambiguous Assertion:**

  a statement is made, but it is sufficiently unclear that it leaves some sort of leeway. For example, a book about Washington politics did not place quotation marks around quotes. This left ambiguity about which parts of the book were first-hand reports and which parts were second-hand reports, assumptions, or outright fiction.

  Of course, lack of clarity is not always intentional. Sometimes a statement is just vague.

  If the statement has two different meanings, this is Amphiboly. For example, "Last night I shot a burglar in my pyjamas."

- **Failure To State:**

  if you make enough attacks, and ask enough questions, you may never have to actually define your own position on the topic.

- **Outdated Information:**

  information is given, but it is not the latest information on the subject. For example, some creationist articles about the amount of dust on the moon quote a measurement

made in the 1950's. But many much better measurements have been done since then.

- **Amazing Familiarity:**

  the speaker seems to have information that there is no possible way for him to get, on the basis of his own statements. For example: "The first man on deck, seaman Don Smithers, yawned lazily and fingered his good luck charm, a dried seahorse. To no avail ! At noon, the Sea Ranger was found drifting aimlessly, with every man of its crew missing without a trace !"

- **Least Plausible Hypothesis:**

  ignoring all of the most reasonable explanations. This makes the desired explanation into the only one. For example: "I left a saucer of milk outside overnight. In the morning, the milk was gone. Clearly, my yard was visited by fairies."

  There is an old rule for deciding which explanation is the most plausible. It is most often called "Occam's Razor", and it basically says that the simplest is the best. The current phrase among scientists is that an explanation should be "the most parsimonious", meaning that it should not introduce new concepts (like fairies) when old concepts (like neighborhood cats) will do.

  On ward rounds, medical students love to come up with the most obscure explanations for common problems. A traditional response is to tell them "If you hear hoof beats, don't automatically think of zebras".

- **Argument By Scenario:**

  telling a story which ties together unrelated material, and then using the story as proof they are related.

- **Affirming The Consequent:**

  logic reversal. A correct statement of the form "if P then Q" gets turned into "Q therefore P".

  For example,

  "All cats die; Socrates died; therefore Socrates was a cat."

  Another example: "If the earth orbits the sun, then the nearer stars will show an apparent annual shift in position relative to more distant stars (stellar parallax). Observations show conclusively that this parallax shift does occur. This proves that the earth orbits the sun." In reality, it proves that Q [the parallax] *is consistent with* P [orbiting the sun]. But it might also be consistent with some other theory. (Other theories did exist. They are now dead, because although they were consistent with a few facts, they were not consistent with all the facts.)

Another example: "If space creatures were kidnapping people and examining them, the space creatures would probably hypnotically erase the memories of the people they examined. These people would thus suffer from amnesia. But in fact many people do suffer from amnesia. This tends to prove they were kidnapped and examined by space creatures." This is also a Least Plausible Hypothesis explanation.

- **Moving The Goalposts (Raising The Bar, Argument By Demanding Impossible Perfection):**

  if your opponent successfully addresses some point, then say he must also address some further point. If you can make these points more and more difficult (or diverse) then eventually your opponent must fail. If nothing else, you will eventually find a subject that your opponent isn't up on.

  This is related to Argument By Question. Asking questions is easy: it's answering them that's hard.

  If each new goal causes a new question, this may get to be Infinite Regression.

  It is also possible to lower the bar, reducing the burden on an argument. For example, a person who takes Vitamin C might claim that it prevents colds. When they do get a cold, then they move the goalposts, by saying that the cold would have been much worse if not for the Vitamin C.

- **Appeal To Complexity:**

  if the arguer doesn't understand the topic, he concludes that nobody understands it. So, his opinions are as good as anybody's.

- **Common Sense:**

  unfortunately, there simply isn't a common-sense answer for many questions. In politics, for example, there are a lot of issues where people disagree. Each side thinks that their answer is common sense. Clearly, some of these people are wrong.

  The reason they are wrong is because common sense depends on the context, knowledge and experience of the observer. That is why instruction manuals will often have paragraphs like these:

  > When boating, use common sense. Have one life preserver for each person in the boat.
  >
  > When towing a water skier, use common sense. Have one person watching the skier at all times.

  If the ideas are so obvious, then why the second sentence ? Why do they have to spell it out ? The answer is that "use common sense" actually meant "pay attention, I

am about to tell you something that inexperienced people often get wrong."

Science has discovered a lot of situations which are far more unfamiliar than water skiing. Not surprisingly, beginners find that much of it violates their common sense. For example, many people can't imagine how a mountain range would form. But in fact anyone can take good GPS equipment to the Himalayas, and measure for themselves that those mountains are rising today.

If a speaker tells an audience that he supports using common sense, it is very possibly an Ambiguous Assertion.

- **Argument By Laziness (Argument By Uninformed Opinion):**

  the arguer hasn't bothered to learn anything about the topic. He nevertheless has an opinion, and will be insulted if his opinion is not treated with respect. For example, someone looked at a picture on one of my web pages, and made a complaint which showed that he hadn't even skimmed through the words on the page. When I pointed this out, he replied that I shouldn't have had such a confusing picture.

- **Disproof By Fallacy:**

  if a conclusion can be reached in an obviously fallacious way, then the conclusion is incorrectly declared wrong. For example,

  > "Take the division 64/16. Now, canceling a 6 on top and a six on the bottom, we get that 64/16 = 4/1 = 4."
  > "Wait a second ! You can't just cancel the six !"
  > "Oh, so you're telling us 64/16 is not equal to 4, are you ?"

  Note that this is different from Reductio Ad Absurdum, where your opponent's argument can lead to an absurd conclusion. In this case, an absurd argument leads to a normal conclusion.

- **Reductio Ad Absurdum:**

  showing that your opponent's argument leads to some absurd conclusion. This is *in general* a reasonable and non-fallacious way to argue. If the issues are razor-sharp, it is a good way to completely destroy his argument. However, if the waters are a bit muddy, perhaps you will only succeed in showing that your opponent's argument does not apply in all cases, That is, using Reductio Ad Absurdum is sometimes using the Fallacy Of The General Rule. However, if you are faced with an argument that is poorly worded, or only lightly sketched, Reductio Ad Absurdum may be a good way of pointing out the holes.

  An example of why absurd conclusions are bad things:

  > Bertrand Russell, in a lecture on logic, mentioned that in the sense of

material implication, a false proposition implies any proposition. A student raised his hand and said "In that case, given that 1 = 0, prove that you are the Pope". Russell immediately replied, "Add 1 to both sides of the equation: then we have 2 = 1. The set containing just me and the Pope has 2 members. But 2 = 1, so it has only 1 member; therefore, I am the Pope."

- **False Compromise:**

  if one does not understand a debate, it must be "fair" to split the difference, and agree on a compromise between the opinions. (But one side is very possibly wrong, and in any case one could simply suspend judgment.) Journalists often invoke this fallacy in the name of "balanced" coverage.

  > "Some say the sun rises in the east, some say it rises in the west; the truth lies probably somewhere in between."

  Television reporters like balanced coverage so much that they may give half of their report to a view held by a small minority of the people in question. There are many possible reasons for this, some of them good. However, viewers need to be aware of this tendency.

- **Fallacy Of The Crucial Experiment:**

  claiming that some idea has been proved (or disproved) by a pivotal discovery. This is the "smoking gun" version of history.

  Scientific progress is often reported in such terms. This is inevitable when a complex story is reduced to a soundbite, but it's almost always a distortion. In reality, a lot of background happens first, and a lot of buttressing (or retraction) happens afterwards. And in natural history, most of the theories are about how often certain things happen (relative to some other thing). For those theories, no one experiment could ever be conclusive.

- **Two Wrongs Make A Right (Tu Quoque, You Too, What's sauce for the goose is sauce for the gander):**

  a charge of wrongdoing is answered by a rationalization that others have sinned, or might have sinned. For example, Bill borrows Jane's expensive pen, and later finds he hasn't returned it. He tells himself that it is okay to keep it, since she would have taken his.

  War atrocities and terrorism are often defended in this way.

  Similarly, some people defend capital punishment on the grounds that the state is killing people who have killed.

This is related to Ad Hominem (Argument To The Man).

- **Pious Fraud:**

  a fraud done to accomplish some good end, on the theory that the end justifies the means.

  For example, a church in Canada had a statue of Christ which started to weep tears of blood. When analyzed, the blood turned out to be beef blood. We can reasonably assume that someone with access to the building thought that bringing souls to Christ would justify his small deception.

  In the context of debates, a Pious Fraud could be a lie. More generally, it would be when an emotionally committed speaker makes an assertion that is shaded, distorted or even fabricated. For example, British Prime Minister Tony Blair was accused in 2003 of "sexing up" his evidence that Iraq had Weapons of Mass Destruction.

  Around the year 400, Saint Augustine wrote two books, De Mendacio[On Lying] and *Contra Medacium*[Against Lying], on this subject. He argued that the sin isn't in what you do (or don't) say, but in your intent to leave a false impression. He strongly opposed Pious Fraud. I believe that Martin Luther also wrote on the subject.

http://www.don-lindsay-archive.org/skeptic/arguments.html#scenario

Appendix II

"Government" Project Names and Terms

Able First of two atomic tests (U-235 "gun" weapons) at Bikini Island July 1, 1946, the series termed "Operation Crossroads". Second termed **Baker**

Adam & Eve Design a Mars base.

Almaz Russian manned orbiting spy station (Name means "diamond"). Used for a time. (1960's and 1970's) Actually included a 23mm gun. Russian counterpart to American **MOL** manned spy space station.

Alsos Code name of Manhattan Project effort to scour the Reich for information on German Atomic Bomb projects. Is the Greek word for "grove" a pun on General Groves name who headed the US Bomb Manhattan project.

Alpha HF and DF High Energy Chemical Lasers

Alpha Project Alpha, a hoax devised by "The Amazing Randi" using teen magicians to test parapsychology investigators

Alpha Team An Evolution of "Blue Teams" under "project **Pounce**".

Amethyst Project to kill people by severing astral "silver cord". Run by a **NSA** "black cell".

Apollo Manned trip to the Moon (NASA) using conventional rockets. (1963-1972)

Aquarius To compile a total history (14 volumes) of alien [UFO/IAC] interactions with us. Follow-up to **Grudge**. [est. by Eisenhower Adm.] Widely purported in press to be a project to make contact with Aliens.

Aquarius Remote viewing project by DIA and Naval Intelligence to coordinate remote view submarines and observe UFO hovering over them.

Aquatone Project to quickly produce and use U-2 Spyplane. Funded by CIA and headed by former Yale economics Prof. Richard Bissel. Also sometimes termed Project **Realist**. The name U-2 stood for "utility 2". CIA division in charge was named "The Development Project Staff".

ArchAngel Design project of a spyplane to replace the U-2. A-12 was the final version that became the CIA's A -12 **Oxcart.**

Argus Three high altitude atomic EMP tests: S. Atlantic. First test: Aug 8, 1958 (1 kiloton at 300 miles altitude) above 49.5ºS and 08.2ºW. Second on Aug 27, 1958 above 38ºS and 11.5ºW in S. Atlantic and Sept 6, 1958 above 48.5ºW and 09.7ºS (1 kiloton at 500 Km altitude) (may have been Aug 27, 30, and Sept 6) Post-Argus H-bomb test, **Starfish Prime**, was above Johnson Island July 9, 1962 (1.4 megaton at 400 Km.) All the tests (including Soviet ones) created two intense radiation belts around the Earth.

Artichoke CIA portion of **MK-Ultra** that obtained "guinea pigs" for behavior control and interrogation experiments from outted spies, moles, etc.

Atomic Blast : Base Newspaper of the 509th Bomb Group Roswell NM. In 1947.

Baker Second of two atomic tests (U-235 "gun" weapons) at Bikini Island July 25, 1946, The series termed "Operation Crossroads". First termed **Able.**

Baneberry Nevada underground Atomic bomb test, 1970 with massive leakage of radiation. Took place at Area 12.

Benham 1.15 megaton underground bomb test in Nevada Desert; 1968

Beta Development of effective weapons to counter Aliens. Also name of a report written by Abuquerque businessman and electronics specialist Paul Benneitz studying cattle mutilations and UFO activity and came to conclude the existence of UFO underground base at Dulce.

"Black" Name given to highly classified projects of power-elite or government where funding is completely hidden from the public records and the project is not accountable to anyone especially to the people. Funding is alleged to often be from extra-government sources such as drug distribution. Currently (2014) estimated at several trillion dollars a year.

Black Beauty Refrigerator sized broadcasting units producing emotional and physical effects including heart attack on living subjects (humans) often deployed using blaring speakers as "cover".

BlackBird Name given the CIA **Oxcart** A-12 spyplane when Air Force began ordering them. "Black" refers to both it's "black project" development in secret and it's black radar absorbing stealth paint.

Blossom V2 launches to study high altitude radiation effects on Living organisms (Holloman AFB)

Bluebird CIA black program to investigate behavior modification through drugs. Name was changed to **Operation Artichoke** in 1952.

Blue Book The "official" U.S. Air Force investigation of UFOs led by Captain Edward Ruppelt. (1952-1970) Dual effort to gather data from public and debunk UFO phenomena.

Blue Fly AF project to quickly transport crashed saucers and any other recovered materials investigated by **Moon Dust** or other programs including **Bluebook** back to the Foreign Technology Division [Wright-Patterson AFB]. (**Operation Blue Fly**)

Blue Sky Apparent project to cover up all traces and stop all leaks about Project **Rainbow**. Also included evaluation and programming of men involved in original project.

Blue Team AF team responsible for collection of crashed saucers and occupants.

Bluebird CIA Korean war "mind control" (Interrogation) project. Korean POWs subjets.

Buster Jangle "Operation Buster Jangle" To determine atomic bomb effects on troops and army gear. Set up a tent city "Camp Desert Rock". To determine the effects of atomic blasts on uniforms, 111 White Chester hogs were dressed in custom sewn uniforms complete with zippers, snaps and toggles.

Byeman Compartmentalized information security control systems to contain reconnaissance satellite information on military space programs. Also see **Talent-Keyhole**..

Camelot "Project Camelot" is (was?) a website by Bill Ryan and Kerry Cassidy featuring video interviews with UFO whistleblowers.

Cannikin 2nd Amchitka Alaska bomb test. 5 megaton, Nov 6, 1971.

Chaos Domestic Spy partnership between CIA and FBI. NSA provided assistance through **Shamrock**. 1967-1973. Amassed 10,000 files and indexed 300,000 individuals and 100 domestic groups.

"The Cargo" Security Council Name for crashed saucer debris. Also **"package"** and **"goods".** (Eisenhower Admin)

Casaba-Howitzer Pre-**SDI** directed energy projects at General Atomic(s) Company.

Castle Bravo First test of solid fuel, room temperature, "deliverable" H bomb at Bikini, February 28, 1954, 15 Megatons. (3x what was expected)

Center Lane See **Grill Flame**

Chapel Bell Unknown device deployed by Schmitt and Cernan on the moon during Apollo 17 mission to Taurus-Littrow. All information about it is still classified.

Chatter Navy behavior modification studies using drugs at University of Rochester begun in 1947. Later changed to Project **Castigate**

Corona First Spy satellite system put into orbit using an Army Redstone rocket modified to be multi-stage and thence called the Jupiter-C, all developed by the Wernher Von (baron) Braun "paperclip" team) Was secretly disguised as the civilian "scientific" satellite program "Discoverer".

Crossroads Three (?) atomic 21 kiloton tests: "Able" July 1, 1946, other test "Baker" July 25, 1946) of fission bombs in the lagoon at Bikini Island. "Able" was 520 feet above the water level and a fleet of ships and did little damage, while the second test, 90 feet below the water sank many of the ships. "Able" produced a Wilson condensation "ring". Tests termed "Operation Crossroads"

Crystal Knight Alleged "exchange" program with ETs where 12 humans were to travel to and live on their home planet (Serpo). They allegedly stayed for 13 years and returned home.

Crystal Mountain Complex Super secret CIA installation in Virginia. Function unknown

D-21 Ramjet surveillance drone designed to be launched from high speed SR-71 "blackbird" spyplane.

Discoverer Series of satellite launches supposedly a civilian program of scientific space experiments. But

Corona spy satellites were substituted secretly for experiment payloads to provide cover for the spy program. Corona was actually in charge of Discoverer launches and (film) recoveries. Discover program run not by NASA but by military "Black Corona Office". Was a model for many later programs.

Delta Branch of NRO [National Reconnaissance Organization] with special trained security teams for UFO work. Note that Delta was a code name for Area 51. Was also known as "watertown" a name never used.

Dove "Third generation" "miniature" atomic fusion bomb using deuterium and tritium for fuel and not needing fission bomb trigger. Project in late 50's. Russians with similar project. "double the yield with 100-fold reduction in weight" over conventional atomic bombs. No deadly radioactive fallout after the explosions.

Echelon Joint global interception system run by **NSA** and comprising all Intellegence agencies of the U.S., U K, Canada, Australia, and New Zealand. All phone calls, Internet traffic, satellite traffic etc. Estimated up to 3 billion communications a day and monitor of up to 90% of internet traffic. It is believed all communications are saved for later reference.

Echo Follow-up to **Morgenstern**. [cancelled]

Excalibur The X-ray laser device project (for earth defense against aliens) and also a name given to a deep underground destroying weapon (for use on alien earth bases). The two projects may be related or simply have the same name. X-ray laser gave 10^6 increase in radiation over bomb intensity or 10^{20} Joules/steradian.

Excalibur Plus Project to increase X-ray laser output by perhaps a billion times.

[Super] Excalibur Project to increase output of x-ray laser by up to a trillion times as well as have thousands of individually directable output beams.

Gabriel Possibly continuation of, or another possible name for **Joshua.**

Gambit Eisenhower ordered satellite system to complement **Corona** that covered wide swaths of earth at high resolution.

Garnet Project reviewing control of all documents and information on UFO subject.

Gemini Second manned U.S. Space program (NASA) with two man crews. (announced 1962).

GLEEM (1954?) Project to make contact with Aliens. Media stories call the project "aquarius". **Sigma** a part of this project.

Gondola Wish Ft. Meade project to try to reproduce psychic experiments being reported from behind Iron Curtain. Headed by Maj. Scotty Watt. Project was renamed **Grill Flame**, A random computer choice name, which came to refer to entire Psi programs at Meade as well as at SRI.

Grand Slam **U-2** flight clear across Soviet Union by Gary Powers. Shot down. Eisenhower Admin.

Grey Suit Autopsy of aliens

Grill Flame (under DIASTID in 1985) Names changed (to other computer generated) to **Center Lane,** then **Sun Streak**, and finally **Star Gate**. See **Gondola Wish**

"the Group" President's panel of 12 UFO advisors (Eisenhower Admin.)

Grudge (13) Project **Saucer** name following the change to Project **Sign** (1948-1952)

Highjump Large 1946 military "mapping" operation by Admiral Byrd to scour German Antarctic *Neuschwabenland for German bases. Mission cut short after 8 weeks instead of 8 months. Four escort aircraft said lost over German base.*

Hood First blast of **Project 57** 74 kilotons detonated from a balloon 100 feet over Area 9. The largest blast ever set off in the continental U.S. About 14 mi. SW of Groom lake.

Horizon Design a Moonbase. Established March 1959, Secret. Unclassified about 1962.

"The Incident" Security council name for Crashed Saucer (Eisenhower adm.)

Ivy King **IVY** test series at Eniwetok. King was super-efficient "Super Oralloy Bomb" (SOB). A fission bomb yielding 500 kilotons in **King Ivy** test, November 15, 1952.

Ivy Mike "M" for Megaton. First H-bomb test in South Pacific. November 1,1952. 10.4 megaton. [bomb weighed 65 tons!] Used an 82 ton tank of liquid deuterium (-250º K) triggered by TX-5 fission bomb. Removed entire island. Part of **IVY** test series.

JANAP – 146 Version (C): An Order that made UFO reporting (both in air and in water) a National Security issue with possible prosecution for its violation. (March 10, 1954) Ordered that earlier conflicting versions (A, 1950; B, 1951) be destroyed by being burned. Earlier texts are therefore not available.

Joe-1 First soviet fission atomic bomb test August 1949.

Joshua Sonic weapon derived from WWII German design for use against aliens

Key Hole Code name given the spy satellites of the Corona project operational from 1959-1972. Satellites used film canisters returned to earth and were designated KH-1, KH-2, …KH-4B ect. KH-11 was first TV system without film. Resolution = 3". Program also used Code names **1010**, **Crystal**, **TALENT** and **Kennan.** Some still in use. KH-11-1 launched in Jan 1979, KH-11-10 launched in 1990 and also known as **Misty.** Some 144 Corona-type satellites were said to have been launched. Other Keywords are **Silver, Ruff, Teapot, Umbra,** and **Zarf.**

Looking Glass Time travel project.

Los Alamos Now called Los Alamos National Laboratory (LANL) where atomic weapons and other devices designed. Formerly called Los Alamos Scientific Laboratory (LASL), Los Alamos Laboratory (LAL) and Project Y. 9000 employees, 150 contractors. 1/3 physicists, ¼ engineers, 1/6

chemists, rest mathematicians, biologists, geoscientists etc.

Lotus Joint project of humans (supposedly Dr. Dan Burisch) and a gray called "Chi'el'ah or J-Rod" to work on cell regeneration and creation of life using so-called "Ganesh" particle. Located at S-4 in Area 51.

Lusty **"Operation Lusty"** Said to be code name for Luftwaffe Secret Technology. While **Paperclip** gathered German Scientists after the war, **Lusty** was a parallel operation gathering German scientific papers and patents. Some 110,000 TONS of German Scientific papers were shipped to a central location in the US for over 3 months where they were then sorted and sent of various agencies. This included the entire Nazi German patent office including 225,000 volumes that included all secret patents.

Magic A project prior to WWII to break Japanese "purple" diplomatic codes. Project by U.S. Army Signals Intelligence Service (SIS) did break code and messages were restricted (prior and after Pearl Harbor) to those with "magic" level clearance.

Magnet Canadian project to collect UFO data. 1950-1952

Manhattan To build first U.S. atomic bomb.

Mercury Manned Conventional Rocket Space Flight project (1958-19610) Run by STG.

Milrow 1.2 Megaton Amchitka Alaska bomb test; Oct 2, 1969

Minaret Name of spin-off NSA project from **Chaos** in 1969**.** At start of project NSA already had 75 ,000 files on Americans.

Mirage CIA disinformation campaign to manufacture UFO incidents all over the world.

M-K-Ultra Mind control (Mind Kontrol) /psychotropic drug test program. This was an expansion of the previous CIA drug program **M-K-Delta** to also include hypnosis, bio-electrics, radio brain bombardment, brain surgery, electronic destruction of memory, occult and Para psychological research, radiation, microwaves and ultrasonics. Program included "paperclip specialists" (MK also Manchurian Kandidate) **MK-Naomi** develop (with SOD at Ft. Detrick) arsenal of toxic and biological substances for CIA use. **MK-Delta** was operational arm to study modification of behavior by covert means.

Mogul High altitude balloons for sensing atomic testing.

Monarch A sub-project of **MK-Ultra** for the purpose of mind operative conditioning for various purposes such as memory programming, killer programming, sensory enhancement and suicide programming.

Mongoose "Operation Mongoose" CIA program (8 attempts) to assassinate Castro.

MOL Manned Orbiting Laboratory. AF program of 1960s to launch a manned spy station and weapon to destroy enemy satellites. American counterpart to Russian **ALMAZ** station.

Montauk Not so much a project as the location in New York of a government lab used for work attempting to extend the data of Project **Rainbow**. Said to be working on "time machine" experiments. The air base on the surface is now abandoned, but government retained rights to all underground land when donating to NY state as park lands. Even surface "park" has enforcement to keep public out of certain areas. Nearby Brookhaven Lab said to be associated with these projects.

Moon dust "Quick reaction space vehicle" recovery team (For foreign countries) with "qualified field intelligence personnel" [spies] to recover or perform "field exploitation" of UFOs. The intelligence team has the capability to "gain rapid access regardless of location, to recover or perform field exploitation, to communicate and provide reports". To recover any space debris of foreign or unknown origin.

Morgenstern Third H-bomb test after Ruth and Ray. Also a dud. April 6, 1953.

NERVA **N**uclear **E**ngine (**E**nergy ?) for **R**ocket **V**ehicular **A**pplication. NASA Solid core nuclear Fission thermal Rocket development 1959-1973. Design and construction done at Los Alamos Scientific Laboratory (LASL) while testing was done at Area 25 called Jackass flats. There are indications that while project deemed very successful, on Jan 12, 1965 the Kiwi rocket device was allowed to overheat and meltdown as a test. Later in June 1965, the Phoebus device due to a faulty hydrogen tank gauge over heated and allegedly exploded leaving severe radiation at test site. Also see Project **Orion** and **Rover**.

Nick Project at WPAFB in 1943 designed to test and prototype Tesla's energy beam weapon using his notebooks taken by government after his death. Brigadier General L. C. Craigie was in charge. Continuation unknown.

Often CIA bizarre mind control experiments (1969) that added psychics and experts in Demonology to usual scientists. Project was to develop assassins who would kill on command.

Orange **Teak** and **Orange** were two thermonuclear (H) bombs of 3.8 megatons set off above Johnson Atol near Hawaii in 1958. **Teak** detonated at 76.8 km and **Orange** at 43 km or 27 miles, which is exactly in the Ozone layer. The attempt to end all life on the planet by those who by virtue of their intelligence to lead the world failed to kill us all, but created a 40 mile wide fireball and blinded anyone looking skyward within a 225 mile radius. This idiocy was organized, oversaw and covered up by James Killian Eisenhower's chief science advisor. **Teak** August 1, 1958 and **Orange** August 12, 1958.

Orion Plans to build a huge space craft (135 feet in diameter, 430 feet long, with crew of 40 people) powered by thousands of small atomic bombs shoving a large metal plate-shield. Plans were made to reach Saturn by 1970. Idea originated with Stanislaw Ulam, project headed by Tom Taylor. See book by son of Freeman Dyson, one of the prime movers of project. See Project **Nerva** and **Rover.** Project begun 1957 and closed 1965.

Oxcart Project out of **Suntan** to develop what a later air force version called the SR-71 "blackbird" spyplane. First plane built out of titanium. Mach 3.2; range 4,120 nautical miles, max altitude 85,069 feet sustained flight. Original CIA design project called **Archangel** with designs running from Archangel-1 to archangel-12. Hence CIA Lockheed spyplane contract from CIA designated A-12 Oxcart. Later Air Force ordered 3 variants, the YF-12A that had it's cameras replaced with two nuclear bombs, one with a drone on it's back and the third a two-seater designated the RS-71 which LBJ mis-spoke and called the SR-71 and the name was left that way. (RS stood for

Reconnaissance/Strike)

Ozma Large Radio Telescope at Green Bank West Virginia to listen for alien signals. Directed by Dr. Otto Struve assisted by Dr. Frank Drake. 1960. Heard signal from Tau Ceti.

Palladium Joint NSA-CIA project to get ELINT, COMINT, and SIGINT from Soviet ships, planes, submarines, radars and missile batteries (1960s.)

Pando EBE medical Information

Paperclip Project to gather up Nazi scientists and illegally bring them to the U.S. (Importation of "ardent Nazis" and war criminals forbidden by Truman) Project name came from fact that an ordinary paperclip was placed on the file of each Nazi scientist chosen for transport to United States. Under West German pressure in late 50's to close "paperclip" the project name was changed to the Defense Scientists Immigration Program (DEFSIP).

"Paperclip Specialists" WWII Nazi scientists brought to U.S. to continue working on similar extreme things. (See "paperclip")

Phoenix Three projects (1,2,3) partly done at Montauk said to be offshoots of **Rainbow** to investigate weather control, mind control and time travel. Phoenix said to have branched into many wide-ranging projects.

pincher Top secret policy (not project) of Joint Chiefs allowing nuclear first strike on rest of world (if necessary) rather than going to war only if attacked first. Took effect June 18, 1946. Publicly, first strikes were always attributed to USSR and any American first strike was ridiculed in media.

Plato Diplomatic side of project **Sigma**

Plumbbob **"**Operation Plumbbob" series of 29 tests at Nevada test site detonating atomic bombs (24) for effects test as well as two non-nuclear safety tests and one to insure that bombs dropped by accident would not detonate even if some of the conventional explosives went off. A classic "dirty bomb". **Project 57** was first part of Plumbbob in Area 13 inside Area 57 and was one of six "safety tests" meaning dirty bomb tests.

Pounce Crashed vehicle recovery "Alpha" teams (For U.S.)

Preserve Destiny Project to communicate with some ETs using "Intuitive Communications" (ESP) with humans identified as having ESP abilities (often noted at young age).

"Princeton Consultants" Oppenheimer and Einstein

Project 57 Deadly Plutonium open-air "dirty bomb" test at Area 13 (inside Area 51) to simulate crash of nuclear missile or aircraft without nuclear detonation. Test took place: 6:27 AM, April 24, 1957. Showed inhaled plutonium very deadly, but otherwise not so much. Half-life Pu-239 (used in bombs and 57 test) 24,100 years. First shot in Nevada nuclear test site series **Plumbbob.** Area 13 was finally decontaminated in 1981.

Project 63 Program in 1950's to recruit former Nazi scientists for American Defense contractors.

QJWIN Codeneame of a European recruiter of assassins, especially for **ZR/Rifle.**

Rainbow WWII Tesla/Dr. John Von Neumann time/teleportation project to render Battleship invisible to mines (also known as the Philadelphia Experiment) It may be that "radar invisibility" story was a disinformation cover story. Experiments extended at Montauk after the war. Also Kron, T.T. Brown and Einstein may have been involved. The alleged time/teleportation/invisibility effects may have been unexpected rather than sought after.

Ray Second Uranium Hydride test two weeks after Ruth [also failed]

"Red book" A very thick and detailed government history of all UFO investigations, knowledge and actions since Truman era (1947) to present with updates every 5 years. Contains only official government information. Cover is actually orange-brown and not "red".

Redlight Project to collect and fly operational Alien craft; house live captured EBEs, reverse engineer and understand weapons and technology, and duplicate it using Earth materials. This huge project had a large multi-storied underground facility called "Area 51" built for it under Nellis AFB on the AEC "reservation".

"Red Team" Team to collect abandoned *operational* alien craft. Also included collection of crashed B2!

Rover NASA and AEC nuclear fission thermal rocket development 1959-1973 (1955-1972?) . Used Nuclear reactor to heat and expel hydrogen. Project run by Space Nuclear Propulsion Office. Project that three phases: Kiwi (1955-1964), Phoebus (1964-1969) and Pewee (1969-cancellation at end of 1972). Pewee and Phoebus became part of the **Nerva** program. See projects **Orion** and **Nerva**

Ruff Refers to satellite intelligence with regard to imagery intelligence.

Ruth Uranium Hydride H-bomb test. (failed) March 31, 1953.

Scannate "Scanning by Coordinate" SRI CIA funded remote Viewing project (1973-19??)

Saucer Original off-the-cuff name to crashed alien aerodyne recovery project (1947)

Sea Spray "Officially laundered" money funded secret operation involving unmarked black helicopters and Delta forces for covert operations in various secret projects.

Seesaw Project to perfect Tesla particle beam weapon for SDI defense. First tests of Tesla ideas under General L.C. Craigie in Project **Nick** at WPAFB.

Serpo A joint exchange project of Secret Government and Zetas (Grays) 1965-1978 where 12 people were exchanged with humans to go live on Zeta and 12 Grays as "guests" here. Said to be depicted in the Spielberg movie: "Close encounters of the Third Kind". May have been a public disinformation project. Final report said to comprise 3000 pages.

Shadow Subsonic Hovering Armament Directing and Observation Window (Saucer drone)

Shamrock Huge project of SSA (1940s) to tap all foreign and domestic cable traffic. Was done in cooperation with ITT, RCA and Western Union.

Sherwood Project to create controlled nuclear fusion reactor. 1955 – to present?

Sigma Est. 1954 as originally part of Project **Gleem** to communicate with E.T.s (successful in 1959) became separate project in 1976 continued at AFB in NM.

Sign Change of "Project **Saucer**" name to make it less obvious and more obscure (1948)

Skyhook High altitude balloon reconnaissance prior to satellites

Snowbird Conventional saucer-shaped aircraft used as media examples to "snow" public; also claimed in media perhaps to test alien craft (project in Nevada) (begun in 1972?)

Starfish Prime H-bomb test 248 miles up from point 19 miles from Johnston Island in Pacific. July 8 (9?), 1962. 1.4 megaton. Test done in violation of international treaties and against advice of world scientists. Created massive EMP effects in Hawaii 800 miles away that damaged 30 strings of street lights and other electrical equipment. Damaged satellites. Broke up ionosphere disrupting short wave radio. Created a new artificial radiation belt at 2,484 miles 100 times stronger than natural ones with a half-life of about 20 years. Added to **Argus** and Soviet high altitude tests creating radiation belt.

Star Gate One of many names of Remote Viewing projects involving Ingo Swann at Stanford Research Institute (SRI) and Ft. Meade. See **Grill Flame**

Stork To capture crashed EBEs

Stork Statistical study of UFO bluebook sightings by Battelle Memorial Institute. Begun 1951; Final report issued as "Blue Book Special Report # 14 1955. Memo by metallurgist Dr. Howard Clinton Cross of Stork to AF suggested creating hoaxes that would be monitored scientifically to learn something about UFO phenomena.

Sun Streak See **Grill Flame**

Suntan Huge liquid hydrogen powered super-plane project. Spent 2 billion dollars before canceled. Was supposed to replace the U-2 reconnaissance plane. Later became "blackbird" project termed **Oxcart**.

Talent-Keyhole Compartmentalized information security control systems to contain reconnaissance satellite information on military space programs. Also see **Byeman.**

Teak See project **Orange.**

Teapot Nevada atomic test series of 12 bombs with one dropped from airplane being series just prior to **plumb bob**.

Timberwind Military nuclear thermal rocket program (early 90s)

Twinkle	Project to investigate green fireballs over nuclear sites. Begun Feb 21, 1950.
Umbra	Refers to satellite intelligence with regard to communications intelligence.
UFO	Probable press release name for **Bluebook** and its expected covert extensions.
Upshot Knothole	Series of Atomic Bomb tests in Nevada near Groom Lake.
Winterhaven	Electrogravitics proof of principle project pitched by Townsend Brown to military. Officially not continued after a report of ONR indicated low efficiency of the effect.
Y	Overall project in two parts to reverse engineer and understand crashed aerodyne technology (Phase I) and then construct duplicate devices using earth level materials and capabilities (Phase II). Redlight under this project.
Yellow Lodge	Development of chemical and biological (genetic) WMD using sovereign Indian lands where treaties forbidding such developments don't apply. Suspected development of race-specific diseases for use against Asians. Also manufactured firearms, Fuel-air explosives, and night vision gear for foreign countries on reservations.
"Yellow Book"	A book (with a yellow cover) written by Zeta aliens in their own language detailing a history of their races and it's interactions with Earth for 25,000 years or more. It was supposedly translated into English by EBE-2 (Term for "first contact" alien who brought the book).
ZR/RIFLE	A political action program (assassinations) of the CIA termed "Murder Inc." by Lyndon Johnson. To eliminate problematic foreign leaders such as Lumumba. For example "operation MONGOOSE" was a plot to kill Castro and as many of his top aids as possible.
? Terizon	?? Corso project?? "Horizon" moon base project possibly?
?	Second "dry" H-bomb test. 11 megaton.
?	Nuclear Powered Airplane.

Some Relevant Government Acronyms

AAC	Army Air Corps Corps (prior to Air Force separation in 1948)
AAF	Army Air Field (Army Air Corps)
ABAR	Advanced Battery Acquisition Radar (Similar to HIPAR)
AC	Army Counterintelligence
ACIO	Advanced Contact Intelligence Organization
ACSI	Assistant Chief of Staff, Intelligence
ADC	Air Defense Command
AEC	Atomic Energy Commission (Now Department of Energy)
AFB	Air Force Base
AFIC	Air Force Intelligence Command
AFIO	Air Force Intelligence Office
AFCIN	Air Force [Central ?] Intelligence ; (Defined SOP for UFO debris collection; Ran Moon Dust, Bluefly, and other projects)
AFOSI	Air Force Office of Special Investigation (see also OSI, AOSI) UFO cover-up operations.
AFOSI/PJ	PJ indicates “special projects” under AFOSI
AFOSS	Air Force Office of Space systems
AFR	Air Force Regulation: eg. “200-2 (Sept 14, 1959) or AFR 80-17 (Sept 19, 1966)"
AFRL	Air Force Research Laboratory
AFSAB	Air Force Scientific Advisory Board (Vannevar Bush)
AFSAC	Air Force Special Activities Center (Special ops unit said to be home to “Men In Black”)
AFSAG	Air Force Scientific Advisory Group
AFSC	Air Force Systems Command (Formerly ARDC)
AFSWC	Air Force Special Weapons Center (Weaponizing Atomic bombs so they can be carried by bombers etc.)
AFSWP	Armed Forces Special Weapons Project (atomic bomb weaponizing - Sandia)
AFTAC	Air Force Technical Applications Center (Patrick AFB, Fl) recruits/hand selects technical academics to work in field sensor and detectors of various phenomena around the world.
AFOTEC	Air Force Operatioin Test and Evaluation Center (Kirtland AFB)
AGARD	Advisory Group for Aeronautical Research and Development
AGF	Artificial Gravity Field
AGL	Above Ground Level
AI	Army Intelligence
AIG	Air Intelligence Group
AIR	Air Intelligence Report
AISS	Air Intelligence Service Squadron; AISS 4602;then AISS 1006; then 1957 AISS 1006; 1960 USAF FIELD ACTIVITY GROUP 1127; FAG 7602; Air Intelligence Group 696; 1989 AIG 512
AITRD	Alien Information-Technology Research and Development (UFO research group?)
AJOC	Alternative Joint Communications Center (Air Force)
ALF	Alien Life Form
AMC	Army Materiel Command (USAMC preferred acronym) Air Materiel Command (Wright Field) (Wright Patterson AFB)

	(Sometimes "Material")
ANG	Air National Guard
ANMCC	Alternate National Military Command Center (5 mi N of Camp David; also called Ravenrock or Site R)
AOSI	Air Force Office of Special Investigations (See also AFOSI)
APRO	Aerial Phenomena Research Organization (Civilian UFO group)
ARDC	Air Research and Development Command (Now AFSC)
ARD	Army R & D Division; Army Foreign Technology Desk under this Division'
ARI	Army Research Institute.
ARS	Aerial reconnaissance and Security
ARTC	Air Routing and Traffic Control Center (Radio Center at Airports)
ARV	Alien Replicated Vehicle (Government aerodyne built from crashed UFO technology)
ASA	Army Security Agency
ASC	Air Staff Command or perhaps (Council)
ASD	Applied Science Division (of CIA)
ATI	Air Technical Intelligence; Division overseeing Foreign Technology Division (back-engineer devices)
ATC	Air Traffic Control
ATIC	Air Technical intelligence Center (HQ at Wright Field) (Interviews of witnesses) Now called Advance Technical Intelligence Center for Human Capital Development. Still WPAFB connected but educational.
ATSC	Air Technical Services Command (Now Air force systems command AEDC?)
AWACS	Airborne Warning and Control System
AXO	Aircraft access Only (secret base with only access from air)
BAMBI	Ballistic Missile Boost Intercept. (Space-based rockets to crash into missiles) (Completed by Kennedy)
BEM	Bug Eyed Monster
BI	Background Investigation (for Clearance)
BIOS	British Intelligence Objectives Subcommittee: A reporting system on WWII German High Technology. Became CIOS.
BW	Biological Warfare
C/R	Crash Retrieval
CAFT	Consolidated Advance Field Teams OSRD experts to evaluate German scientists and pick those for interrogation.
CARGO	"Cargo"; "Package"; "Goods"; Names for Collected Debris from "the incident" (crashed Saucer) in Eisenhower NSC (Eisenhower National Security Council usage)
CE-1	Close Encounters of the (1st-5th) kind
CFR	Council on Foreign Relations (American branch of British Royal Institute for International Affairs –RIIA)
CIA	Central Intelligence Agency (Formerly CIG)
CIAIR	Central Intelligence Agency Information Report
CIC	Counter Intelligence Corps (Army)
CIG	Central Intelligence Group (direct forerunner to CIA, Rear Admiral Sidney Souers appointed first DCI by Truman.
CIOS	Combined Intelligence Objectives Subcommittee: U.S. – UK administered group to assess German High Technology; Successor to BIOS

CIRVIS	Communication Instructions for Reporting Vital Intelligence Sightings (JANAP No. 146)
COG	Continuity Of Government (50 top secret underground control centers plus more labs, workshops and shelters)
COMINT	Communications Intelligence (Tapping of all forms of communications. NSA is a major agency) (see also HUMINT, SIGINT, and DOMINT)
CoS	Chief of Staff
CSETI	Center for Search for Extraterrestrial Intelligence
CSI	Committee for Skeptical Investigation: Shortened name change of CSICOP in 2006 to be more “media friendly”.
CSICOP	Committee for the Scientific Investigation of Claims Of the Paranormal, a foundation founded in 1976 by “secular Humanist” Paul Kurtz for “debunking”.
CSS	Central Security Agency
CUFOS	Center for UFO Studies (J. Allen Hynek center for UFO studies)
D.D.	Daylight Disk (Hynek classification system)
DARPA	Defense Advanced Research Projects Agency
DASA	German Aerospace Agency
DCI	Director of Central Intelligence
DCIA	Director of Central Intelligence Agency (equivalent to DCI)
DCSC	Defense Construction Supply Center
DDI	Deputy Director of Intelligence
DEFSIP	Defense Scientists Immigration Program (New name given to Paperclip in late 50’s)
DEW	Distant Early Warning
DHS	Department of Homeland Security
DIA	Defense Intelligence Agency (U.S. Dept. of Defense)
DIASTID	DIA Scientific and Technical Intelligence Directorate. 1985, Dr. jack Verona, (remote viewing)
DIO	District Intelligence Officer
DISC	Defense Industrial Security Command (Located AT DCSC Columbus Ohio, Von Braun in charge!)
DED	Directed Energy Directorate. Kirtland AFB.
DET 22	Detachment 22 essentially body guards for anyone in a technical capacity (eg.scientists)
DoD	Department of Defense
DOMINT	Domestic Intelligence (Sureveilance of citizens within United States) (see also COMINT, ELINT, SIGINT, and HUMINT)
DOP	Directorate of Plans (now National Clandestine Service) Oversees PSYOPS operations.
DPS	Development Project Staff : CIA division in charge of U-2 operation.
DRB	Defense Research Board (Canada’s version of OSRD headed by Dr. Omond Solandt in 1950)
DSP	Defense Support Program/ Deep Space Platform (formerly MIDAS Satellites) Vis, IR, X-ray, Microwave
DS&T	Directorate of Science and Technology (CIA) Bud Wheelon the first head in 1962 (“Mayor” of Area 51)
DSS	Department of Special Studies headed by Dr. Eric Henry Wang (prof. At U of Cincinnati 1943-1952; and was closely associated with Victor Schauberger of Nazi flying disk programs) part of Structures Division of Wright Air Development Center. Worked closely with ONR and Langley Air Laboratory on UFOs.
DUMB	Deep Underground Military Bases

EBE	Extraterrestrial Biological Entity (said to be nickname given to first captured E.T.)
EBL	Electronic Brain Link (Inducing signals (such as auditory effects) directly into the brain)
ECG	Executive Coordination Group
ECM	Electronic Counter Measures (create false radar returns or make real returns vanish)
EG&G	Edgerton, Germhausen, and Grier; R&D, manufacturing, services, contractor for government high-tech projects
ELINT	Electronic Intelligence (See COMINT, SIGINT, HUMINT, DOMINT, ETC.) Subset of SIGINT.
EME	Extraterrestrial Materialized entities [EBE's of mental ability to materialize etc.]
EMI	Electro Magnetic Interference
EMP	Electro Magnetic Pulse (as from atomic bomb to destroy electronics)
ET	Extra Terrestrial (being)
ETH	Extra Terrestrial Hypothesis (That UFOs are ET ships)
ETI	Extra Terrestrial Intelligence (Same as ET or EBE)
ETV	Extra Terrestrial Vehicle (Used by Insiders, UFO is public cover term invented after they knew they were Identified)
FADE	"Faded Giant"; Air Force Code words denoting UFO tampering with nuclear weapons
FAG	Field Activity Group (UFO data collection/investigations)
FBI	Federal Bureau of Investigation
FIAT	New WWII U.S. agency with technical experts to interrogate captured German scientists.
FININT	Financial Intelligence
FISINT	Foreign Instrumentation Signals. (subset of ELINT)
FOIA	Freedom of Information Act; 5 U.S.C. Sect. 552
FOUO	For Official Use Only: (unclassified but don't tell anybody)
FTD	Foreign Technology Division (of AFSC) (where UFO parts were developed into Earth technology)
FUFOR	Fund for UFO Research (PO Box 277, Mt. Ranier, MD, 20712
G2	Army Intelligence (Military Intelligence: S2 refers to battalion or group staff; G2 to general staff; AC/AS-2 refers to head of Army Air Forces Intelligence on staff of chief of staff)
GAF	German Air Force (West German)
GALCIT	Guggenheim Aeronautical Laboratory, California Institute of Technology; (JPL original name)
GBMD	Global Ballistic Missile Defense
GEOINT	Geospatial Intelligence
GOC	Ground Observer Corps
GRC	?
GSW	Ground Saucer Watch (Civilian research group; Phoenix AZ)
GUS	Government of the United States
HAFB	Holloman Air Force Base
HEL	High Energy Laser (megawatt power range)
HIPAR	High Power Acquisition Radar (Monitor targets outside engagement range)

HPAC	Human Piloted Alien Craft
HUMINT	Human Intelligence (spies) Example 50,000 NSA agents (see also COMINT, SIGINT, and DOMINT)
IAB	?
IAC	Intelligence Advisory Committee
IAC	Information Analysis Center
IAC	Identified Alien Craft
IAS	Institute for Advanced Study (Princeton...Where Einstein worked)
ICUFON	Intercontinental UFO Research and Analytic Network (Civilian group)
IFF	Identification Friend or Foe
IMINT	Imagery Intelligence
INR	Bureau of Intelligence and Research (Department of State)
INSCOM	Army Intelligence and Security Command, Formed 1977 (Ft. Meade MD)
IOD	International Organizations Division (of the Directorate of Plans)
IPU	Interplanetary Phenomena Unit (Part of GRC) (of Scientific and Technical Branch of Army Counterintelligence operating out of Camp Hale Colorado) (See also OLIU)
ISA	Office of International Security Affairs (Department of Defense)
ISC	Information Systems Command (Army Ft. Huachuca, AZ)
IUR	International UFO reporter (Newsletter by CUFOS, now discontinued)
JANAP	Joint Army, Navy, Air Force, Publication
JANAP-146	An order making reporting of UFOs seen in air or in water a National Security Issue.
JATO	“Jet Assisted Take Off”, Booster rockets (not jets) attached to large planes to assist take-off.
JC	Joint Chiefs
JCS	Joint Chiefs of Staff
JCSM	Joint Chiefs of Staff Memorandum
JCNWD	Joint Committee on New Weapons and Equipment (of Joint Chiefs of Staff) (Vannvar Bush)
JDSRF	Joint Defense Space Research Facility (such as at “Pine Gap” U.S. base near Alice Springs Australia used for satellite links and NSA-style monitoring also said to have large underground base like that of Dulce)
JIC	Joint Intelligence Committee (intelligence arm of Joint Chiefs) (Majesty?)
JIOA	Joint Intelligence Objectives Agency (Managed Project Paperclip)
JMP	Justice for Military Personnel (1988) group wanting immunity for UFO government cover-up actions.
JPL	Jet Propulsion Laboratory (did rockets, but no “jets”); Formerly called GALCIT.
JRDB	[JR&DB] Joint Research and Development Board, (Dr. Vannevar Bush) (postwar precursor to OSR&D)
KAFB	Kirtland Air Force Base (Sandia national laboratory, largest installation of Air Materiel Command) (near Albuquerque, NM)
KGB	Komitet Gosudarstvennoy Bezopasnosti, the Committee for State Security, the former Soviet intelligence agency. (See MBD)
KH	Key Hole (spy satellite) such as KH-11; resolution 6",realtime images and IR & Radar"
LAL	Los Alamos Laboratory (previous name for LANL…also formerly called Project Y)

LANA	Los Alamos National Laboratory (current name) Is LANA a typo for LANL?
LASL	Los Alamos Scientific Laboratory. (a previous name for LANL)
LIMDIS	Limited Dissemination. (classified documents)
LOPAR	Low Power Acquisition Radar (Short range radar monitors engagement range)
LTP	Lunar Transient Phenomena
LUSTY	Luftwaffe Secret Technology; U.S. Army Air Corps official Report on scouring Germany for information on advanced weapons. Reportedly got “tens of thousands of tons” of documents returned to U.S. Including large batch of German patents.
MAD	Magnetic Aerial Detection (Airborn UFO detection equipment) (Modified by Heiland for Oil Exploration)
MAGIC	Beyond Top secret classification required for viewing decoded pre WWII Japanese diplomatic transmissions.
MAJCOM-1	A person in Majestic Command group (Probably chairman)
MAJI	Majority Agency for Joint Intelligence
MAJIC	Military Assessment of the Joint Intelligence Committee. (Einstein and Oppenheimer contributors)
MASINT	Measurement and Signature Intelligence
MBD	Ministry of State Security (USSR) precursor to KGB
MERINT	(MER) Intelligence: UFO reports ; (Compare to HUMINT; spies, ELINT; Electronic intelligence, DOMINT; Domestic intelligence)
MHD	Magneto Hydro-Dynamic (plasma flow physics/devices)
MI-5	British Intelligence (homeland)
MI-6	British Intelligence (other countries)
MIB	Men In Black (Beings said to intimidate contactees into silence)
MILAB	Abductions of Military Personnel
MIT	Massachusetts Institute of Technology
MJTF	Military Joint Tactical Force (Delta = Black Berets) (Delta a longtime code word for area 51)
MOD	Medical Officer of the Day
MSC	Majestic (majority?) Security Committee (command?)
MSC	Manned Spacecraft Center (Nasa) (1961-)
MSCID	Majestic (majority?) Security Committee (command?) Internal Directive
MSS	Multi-Spectral Scanning (Spy satellite images at multiple wavelengths
MTR	Missile Tracking Radar :Tracks missile in flight
MUFON	Mutual UFO Network (Civilian UFO group)
N.L.	Nocturnal Light (Hynek system of classification)
NAC	NASA Advisory Council
NACA	National Advisory Committee for Aeronautics (now NASA)
NAFB	Nellis Air Force Base (Area 51 underground below the runways) NW of Las Vegas, Nevada.
NAS	National Academy of Sciences
NASA	National Aeronautics and Space Administration (Formerly NACA)
NASIC	National Air and Space Intelligence Center
NATO	North Atlantic Treaty Organization

NCOIC	Non-commissioned officer in charge
NCS	National Clandestine Service (formerly Directorate of Plans) Oversees CIA PSYOPS, covert operations and propaganda work.
NDRC	National Defense Research Committee, formed 1941 by Vannevar Bush (prior to OSRD)
NEPA	Nuclear Energy for Propulsion of Aircraft. (Vannevar Bush)
NICAP	National Investigating Committee on Aerial Phenomena (Civilian UFO group)
NIPC	National Intelligence Photographic Center (U2, Pictures of UFOs)
NKVD	Soviet Military Spies?
NLO	Russian Acronym for UFO
NMCC	National Military Command Center (Relates to NORAD)
NMCC	National Military Command Center
NNSA	National Nuclear Security Administration
NOFORN	No Foreign Distribution (documents may not be viewed by Foreign nationals)
NORAD	North American Air Defense Command
NPIC	National Photographic Interpretation Center
NRC	National Research Council
NREC	National Reconnaissance Executive Committee (NRO reports to; chaired by DCI)
NRO	National Reconnaissance Office (In charge of Spy Satellites) (Ft Carson)
NRO	National Reconnaissance Organization In charge of Delta teams providing security for alien-tasked projects.
NRP	National Reconnaissance Program (satellite and aerial overflights by CIA, Air Force and Navy)
NSA	National Security Agency
NSAM	National Security Action Memorandum
NSC	National Security Council (White House)
NSSDC	National Space Science Data Center. (NASA mission photos)
NVA	East German National People's Army
OAP	Office of Alien Property
OASD	Office of Assistant Secretary of Defense
OCB	Operations Coordinating Board. Renamed from PSB in 1953 to control all media and their stories and psychological operations.
OCI	Office of Coordinator of Information (precursor to OSS)
OCR&D	Office of the Chief of Research & Development
OIC	Officer in Charge, not necessarily a commanding officer
OLIU	Outer Limits Investigative Unit (Fun name often given to IPU of Army Counterintelligence)
ONI	Office of Naval Intelligence (heads Military Surveillance operations)
ONR	Office of Naval Research
OPC	Office of Policy Coordination (CIA division running all paramilitary and “black” ops.)
OPNAC	(?) Live EBE Specialist Team
ORD	Office of Research and Development
OROCA	“OROCA panel” Space group going back to 1930s said “higher” than MJ-12 (Acronym words not known)
OSD	Office of Secretary of Defense
OSI	Office of Scientific Intelligence (CIA)

OSI	Office of Strategic Intelligence (CIA?)
OSI	Office of Special Investigations (Air Force) (see AFOSI)
OSINT	Open Source Intelligence
OSR&D	Office of Scientific Research & Development (Headed by Dr. Vannevar Bush 1942-1948; radar, sonar, Manhattan project, etc.)
OSRD	(Same as OSR&D) (Also includes radio proximity fuse)
OSS	Office of Strategic Services (forerunner of CIA)
OSS	Office of Special Studies (Within AMC Installations Division WPAFB)
OTO	Ordo Templi Orientalis; Occult lodge and church founded by Aleister Crowley.
OTS	U.S. Office of Technical Services set up to insure German Technology was spun rapidly into American Industry.
OVNI	Objeto Volador No Identificado (Spanish: Unidentified Flying Object)
OVNI	Objet Volant Non-Identifié (French: Unidentified Flying Object)
OVNI	Oggetto Volante Non Identificato (Italian: Unidentified Flying Object)
OVNI	Objecto Voador Não Identificado (Portuguese: Unidentified Flying Object)
PACGO	Presidential Advisory Committee on Governmental Organization (During Eisenhower; Nelson Rockefeller Chm)
PDD	Presidential (?) Directive?
PEMP	Pulsed Electro Magnetic Propulsion
PIO	Public Information Officer [or office] (Military)
PJ	indicates a “special project” under AFOSI
PNG	Persona Non Grata
PSB	Psychological Strategy Board Created by Truman in 1951. Was to plan and oversee all psychological operations (CIA) home and overseas to promote “the American Way”. First report is still classified. Became Operations Coordinating Board in 1953. Allegedly “curbed” in 1973 with the “outing” of 400 agents working in the media. The number is usually considered quite low.
Psy-Op	Psychological Operations
Q	Essentially a "top secret" clearance in Department of Energy (atomic information)
R&D	Research and Development
RAAF	Roswell Army Air Field; Home 509th atomic bomb group (later renamed Walker Air Force Base)
RDB	[R&DB] Research and Development Board (Dr. Vannevar Bush) (post WWII, 1947, from JR&DB)
RE&E	Reynolds Electronics and Engineering (subsidiary of EG&G)
recco	reconnaissance
RFZ	Restricted Flying Zone
RIFT	Reactor In-Flight Test (flying test for Rover nuclear rocket design
RIIA	Royal Institute for International Affairs (British elite group an outgrowth of the “round table” group)
RNM	Remote Neural Monitoring. (Receiving or transmitting directly to subject’s brain or nerves)
RPV	Remote Piloted Vehicles
RTD	Rawin Target Device: Weather balloon plus radio reflector claimed to be Roswell Debris for a time.
R.V.	Radar-Visual (Seen both Radar and Eye: Hynek classification system)

S2	Air Force Intelligence
S-4	Special level Clearance (like C-4 and P-4) "S" stands for scientific
SAAD	San Antonio Air Depot
SAAMA	San Antonio Air Materiel Area
SAB	Scientific Advisory Board
SAC	Strategic Air Command
SAM	Surface to Air Missile
SAM	Special Air Mission
SAT	Sabotage Alert Team
SCVE	Space Craft Vicinity Equipment
SCWS	Space Craft Weapon System
SDC	Space Defense Command (Army)
SDECE	French Intelligence.
SDI	Strategic Defense initiative (original name said to mean “space defense initiative”)
SDIO	Strategic Defense Initiative Office (Biggest command of Space research)
SED	Space Environment Division (Army?)
SETI	Search for Extra Terrestrial Intelligence (Radio listening project)
SID	Security Information Defense
SIG	Senior Interagency Group = MAJI
SIGINT	Signals Intelligence (Electromagnetic and other signals (not communications) emanating from computers, people, received to track various activities) (see also ELINT, COMINT, HUMINT, and DOMINT)
SIMCO	Special Intramilitary Cooperation Office (replaced MAJIC designation
SIOP	Single Integrated Operational Plan [overall strategic targeting attack plan to be used against the USSR]
SIS	Security Information System ?
SIS	U. S. Army Signals Intelligence Service (ran project Magic)
SNIE	Special National Intelligence Estimate
SNPO	Space Nuclear Propulsion Office (Managed nuclear rocket program ROVER)
SOBEPS	Belgian Society for the study of Space Phenomena [private group]
S/O	Operations Center (Department of State)
SOD	Special Operations Division Army Biological Research Center Ft.Detrick Md. Assassination tools etc.
SOP	Special Operations Procedure (See Special Operations Manual SOM-01)
SOR	Starfire Optical Range (Kirtland AFB) High resolution “rubber mirror” telescope for tracking satellites and other things.
SRI	Stanford Research Institute
SSP	Special Studies Project (UFOs)
SS&P	?Strategic Survey and Planning? ?Special Studies and Projects?
SSA	Signals Security Agency (Forerunner of NSA, Tap world cable traffic in 1940s) (Army Cryptography)
STB	Scientific and Technical Branch (of Army Counterintelligence) out of which operated the IPU.
STG	Space Task Group (NASA) (1958-1961) To run project Mercury.
STOL	Short TakeOff and Landing

TAC	Tactical Air Command
TAV	Trans Atmospheric Vehicle
TBM	Tunnel Boring Machine
TCC/RC	Traffic Control Center/ Reporting Center
TDY	Temporary Duty assignment (pulled from normal military assignments for special jobs)
TECHINT	Technical Intelligence.
TIIC	Technical Industrial Intelligence Committee: Est. 1944 by U.S. Joint Chiefs of Staff to strip post-war Germany of information on all high tech advances.
TIOP	Technical Information Operations Panel (replaces MAJIC designation
TLP	Transient Lunar Phenomena
TMP	Transient Martian Phenomena
TRR	Target Ranging Radar (Range in presence of ECM [Electronic Counter Meausures])
TC/SCI	Top Secret/ Special Compartmented Intelligence (Above Top Secret restrictions)
TSS	Technical Services Staff (CIA) A Ph.D. think tank group. (MK-Ultra etc.)
TTR	Target Tracking Radar
UAV	Unidentified Aerial Vehicle [USAF, CIA, NRO man-made UFOs since 1950s] ?
UFO	Unidentified Flying Object [term used for Alien (ET) Craft]
UFO/IAC	Unidentified Flying Object/Identified Alien Craft
ULAT	Unidentified Lenticular Aerodyne Technology
ULATT	Unidentified Lenticular Aerodyne Technology Transfer
ULM	Ultra Light Machines
USAF	United States Air Force (Previously Army Air Corps became separate service in 1948)
USAIDS	United States Army Information and Data Systems
USAMC	Air Materiel Command: See AMC.
USAMRIID	U.S. Army Medical Research Institute for Infectious Diseases (At Ft. Detrick)
USIB	United States Intelligence Board
USO	Unidentified Submerged Object
USSC	U. S. Space Command (Air Force, Army, Navy units run secret military programs) (Cheyenne Mountain Colorado [underground])
UUO	Unidentified Underwater Object
VTOL	Vertical Take Off and Landing
WADC	Wright Air Development Center (Dayton, OH)
WNINTEL	Warning Notice: Intelligence Sources and Methods
WSEG	Weapons Systems Evaluations Group (Pentagon)
WSPG	White Sands Proving Ground (Now White Sands Missile Range)
ZPE	Zero Point Energy

Director of Aeronautical Research	NACA (now NASA)
Director of Plans & Policies	USAF
Director of Security and Intelligence	AEC
Director(ate) of Intelligence	USAF
Paperclip Specialists	Nazi Scientists to America after WWII
Presidents Special Panel (MJ-12)	President's panel of 12 experts recommend to Majestic 12 Project (Called "the group” in Eisenhower White House)