Science 2.0 Schema

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This paper introduces a new structural protocol for the future progression and evolution of science. This new structure is to be far more progressive and philosophically modern yet strict in its application. This new scientific schema follows closely the general version control standards found in software development. The goal of this paper is to unite all scientists who disagree with the current paradigm under a new philosophical and procedural model in order to better scientific advancement.

1. Introduction

Current philosophies and protocols found in science require a review. Currently science follows a very old conservative approach that omits avenues of research that are considered "alternative" or "unacceptable", using reasoning which typically is not clearly defined, and are not given the same benefits as other research initiatives that define themselves under a traditionally more "acceptable" approach which on many aspects is subjective. On a larger scope, the current scientific philosophies and protocols are restrictive, not well organized or cohesive across the full spectrum of scientific policy, institutions, organizations, associations and amongst scientists themselves. There is a lot of rhetoric around the adherence and merit of the scientific method, but in truth even the scientific method is not actually followed by many who work in established science, as in the case with string theory which is theory going on 40 years untested with few to no predictions yet highly promoted by mainstream science. This raises the need to review and update the scientific method in order for theories, such as string theory, to be more acceptable within what it means to truly conduct scientific investigation.

A substantial problem with our current scientific establishment are that many innovative insights and potential discoveries are ignored due to the philosophies and protocols found in the current scientific approach as it applies works as a whole and mostly by subjective sociological pressures imposed on scientific research through the need for funding, reputation, association and/or policy. The unfortunate thing is that an entire theory and/or experimental data maybe ignored due to the authors' status or affiliations or where only part of the work is flawed. An author's status or affiliations should not be considered and much less overshadow any merit found in their works. The best parts of any work should not be abandoned and should be continually researched and investigated. Scientific works should evolve along these lines in order for them to progressively improve, but for this to happen all works must be readily available, and more importantly referential, to all scientists in order for the evolution of any work to continue independent of who initiated it. No work should be ignored for archiving and reference. This is what science should be: completely objective and impartial, removed from all subjective and sociological pressures.

The goal of this paper is to unite all scientists who agree that the current paradigm is flawed. This does not mean all scientists should agree with each other's works or competing works. It means that tolerance should be paramount. The stance under a new scientific paradigm is the acknowledgement that all theoretical works are flawed, and with that, all scientific assertions should be questioned perpetually and indefinitely. This only serves to progress science forward and avoids stagnation with any given theory. When we think we know it, think again in order to make it better. This is where current scientific culture has been failing. It is generally acknowledged that the current science establishment "frowns" upon challenges against long held assertions and it "frowns" upon intelligent people who have not made science their career, hold a PhD, or have "appropriate" associations, but yet have insightful works, experiments and data. This attitude is completely and absolutely unacceptable and it must be stopped. Scientific protocols must be restructured in order to become more modern. There are signs that mainstream and established science is starting to buckle from within through self analysis, but also through pressure from a very large and growing dissident scientific community who are frustrated with many aspects of the established scientific paradigm.

2. New Schema

2.1. Definition of a Scientist

A scientist is anyone, independent of education or association, who investigates and researches any aspect of our existence using data following the rules of logic. A scientist is someone who avoids conclusive verbatim replacing it with probabilistic verbatim. A scientist is an investigator, not a judge.

2.2. Ethics

A scientist must live by a code of ethics which must overshadow all scientific investigation. This code of ethics should also apply to engineers of science, those who build things based on the knowledge found through scientific research. The code of ethics is summed up as so:

"Do not harm others, animals and the environment."
"Do not harm the natural ecosystem and ecology of all animals."

The term "harm" can be misconstrued from the proceeding principle and could be enforced in tort to the actual principle being conveyed. Therefore the following enforcing principle must be added:

"Do not do to anything else that which you would not want done to you and your environment."

2.3. Education

In a new scientific vision, all education must be free to all, especially on the subjects of philosophy and science. This is an absolute essential. Everyone must have equal opportunity to advance themselves independent of their financial means, status, age or associations. All world governments must make it their fundamental imperative to provide free education at all levels. It can be extensively argued that a highly educated nation increases its strength and worth through scientific and technological advancements, and through advancements in other fields, via ingenuity. It can also be extensively argued that civility is an attribute that arises from higher education therefore the more educated the populous the more civil the populous by reducing and replacing emotional impulse with intellectual reasoning.

2.4. Scientific Method

The philosophy behind the scientific method should be revised. In a new progressive scientific philosophy, there is no concept of "theory" but instead they are "investigative works", because ultimately all of science is an investigation trying to uncover the truth about everything in regards to the actuality of our existence. All works together must be considered by all scientists as a collective investigation of science. In a new philosophy, skepticism must be replaced with a philosophy of impartial probability. Reasoning should be ruled by impartiality, objectivity, the rules of logic and math, obvious measurable observations and ingenuity in regards to testing, multiple perspectives and interpretation of data. Reasoning should be void of all emotion and sociological pressures such as money, reputation, association and policy. True skepticism should take a stance of unknown until proven, not a stance of denial until proven. If something is unknown or unprovable yet the skeptic denies it, then he does so outside of science in the realm of belief and this must be fully understood. It is also prudent to understand that nothing can ever be satisfactorily proven and nor should it be. All evidence is ultimately subjective based on the boundary conditions placed on the definition of acceptable evidence. A skeptics role is not to deny but to challenge. Skeptics must also avoid absolutism and conclusiveness because those are the behaviours skeptics must always challenge otherwise, once again, it falls into the realm of belief and religion. This goes for all scientific assertions. Science must be probabilistic and not conclusive or absolute. There is no rule that skeptics must not be open-minded. If anything, a true skeptic must be perpetually open-minded in order to challenge all assertions without resorting to absolutism. For example, statements such as, "that is false because there is no evidence," should be replaced with, "that is possibility but there is a lack of evidence to support this." To challenge any perspective, understanding all alternate perspectives and interpretations are essential. Scientists and skeptics alike must avoid secular ignorance as feverishly as religious ignorance. Simply, people should not believe everything they hear, but they shouldn't also ignore all of it either. A healthy balance is needed and application of probability is the best alternative. For example, there is to be no absolute denial of a logically deduced hypothesis without first investigating it with absolute thoroughness from every conceivable and, more importantly, inconceivable perspective, and even then the result is to be a probability between 0-100%. It is not recommended to use 100% probability in any result in order to acknowledge that we will never know everything conclusively, and in token it is also recommended that the use of 0% should also be equally avoided also to acknowledge that no assertion can be completely proven false given all the probabilities a probable infinite Universe may give rise to even if the assertion sounds absurd or highly improbable. Human knowledge can never be assumed to be complete or conclusive on any subject.

2.5. New Objectivity Rule

All scientists must remain absolutely objective and impartial with all scientific works, including their own. All thought must be removed of:

- emotion
- belief
- sociological pressures
  - finance
  - funding
  - policy
  - reputation
  - association

Given this, no human is completely free of external pressures altering one's objectivity, but it must be absolutely attempted whenever scientific thought is required, otherwise scientific research will be polluted with subjective bias.

In regards to personal belief, any belief held by a scientist should be approached scientifically following the rules in this paper. The belief should be logically derived and given a hypothesis for which a logical framework can be constructed in order to be tested experimentally however and whenever it is possible to do so. Those works that cannot be tested experimentally at our currently level of knowledge, understanding and technology have lesser value to those works that can be tested, but they are not to be ignored. With this in mind, no belief need be ignored or abandoned but instead researched and evolved. This can include spiritual and theological beliefs. Ingenuity is what makes the difference in deriving a logical hypothesis and a mathematical framework with predictions that can be verified. It has always been through ingenuity that science has progressed.

2.6. New No Falsification Rule

It must be assumed that all existing and previous scientific works are flawed in order to be completely objective with any particular work. Also, no competing work, including interpretations, can be used as proof against another alternative work, instead logic, math and data must prevail in assessing alternative or competing works with a level of correctness assigned between 0 and 100% (described in section 2.8). The rules of logic and math must be adhered to unless new proofs (through challenging works) update or invalidate those logic and mathematical rules.

2.7. New Review Rule

Consequently, all scientific works must have (not necessarily in the same order):

1. initial data – existing data
2. a logically derived hypothesis based in existing data
3. derive a predictive framework
4. measured or calculated verifiable data

5. testable predictions from framework

Steps 1 through 4 should be continually repeated to better the testable predictions in step 5.

Given these steps, all scientists who review any particular work, including their own, whether it is complete or in progress, must logically review it by first critiquing it (in order to find fault) and then defending (in order to find positive aspects to expand or evolve). Both the critique and defense must be based in logic (primarily the formal logic system). This ensures balance within scientific thinking. No scientist can take only a critiquing stance in order to find or express fault in any particular work, but they must also take a defending stance. By this method, it ensures a greater understanding of any particular work and results in an assessment or review that has a higher probability of being thorough. It adds to the future betterment of any particular work and overall progress of science.

The following details this addition to the scientific method in several steps that must be followed explicitly with no step left undone otherwise the review is incomplete and cannot be considered a review:

1. Review the work thoroughly
   a. Remain absolutely objective and impartial
   b. Ignore currently competing works
   c. Assess correctness level
2. Critique work
   a. List all errors of work in detail
   b. List all logically weak aspects of work in detail
3. Defend work
   a. List all correct, insightful and logically positive aspects of work in detail
   b. Detail all possible improvements to work for future versions

There is no room in this new scientific protocol for critiquing any work without defending it also. This is meant to ensure the full understanding of the work by seeing its positive and negative aspects and documenting them under a transparent protocol for all to see. The identity of any reviewing scientist must be made completely available. The measure of the quality of any particular work is through probable empirical, mathematical or logical correctness (following the rules of logic, math and experimentation/engineering as expressed in section 2.8) with a standard acceptable margin of error (around ~2%). If any two competing works have reasonably similar levels of probable correctness, no one theory must overshadow the other. Both works must be presented at large to the public and in school textbooks. Also, if two or more works have a high level of correctness then it is suggested that they be merged into a separate work encompassing only the best aspects of each previous work.

There can be various types of works from empirical to mathematical to logical. Mathematical and logical works are to give insight into probable actuality. Logic must precede mathematical investigative works, and mathematical works must precede empirical works. Logical works must deductively derive a probable hypothesis. No matter the type of work, no work must lose sight of contextual physical actuality; it must be expressed as simply as possible in order for the public majority to understand and relate to.

Here are the types, or stages, of works:

1. Logical work based on knowledge and data resulting in a probable hypothesis
2. Mathematical work based on logical work resulting with mathematical observations and insight (go back to logical work and reassess)
3. Empirical experimental work resulting with data independent of interpretation (go back to logical work and reassess)

2.8. Calculating Correctness Value

This new scientific structure does not state that logical or mathematical works are incorrect because they cannot be verified experimentally. If anything it means that experimental works cannot verify logical or mathematical insights due to our current level of perception, understanding and technology. Experimental works are not a means to falsify logical or mathematical works that have a high level of correctness; it only implies more experimentation is needed to continually add or remove value from the logical or mathematical works. If a whole work, following all steps of logic, math, and experimentation, has a high level of correctness, then this whole work is of higher value than a work that has high correctness levels only in logic and math. The following ranking system must be employed only as basis:

1. Logical Work – assign correctness level (0-100%) based on the rules of logic (ex. formal logic)
2. Mathematical Work – assign correctness level (0-100%) based on the rules of math
3. Experimental Work – assign correctness level (0-100%) based on the quality of data

Once all values are assigned to each step listed above, add them together and divide by 3. This will give a value out of 100% for the whole collective work.

2.9. Popular Value

Further but separate value can be added to the any work by employing an open and transparent ranking system that all scientists in the world have access to which would employ strict documentation of the reviewer's critique and defence of the work before ranking it.

2.10. Versioning

A reasonable and well established alternative for a new scientific schema can be found in software development. Science must follow a version control system similar to that found in software development. There are many version control systems that can be followed, but for simplicity only two will be listed.

2.11. Versioning Convention 1

The first is a numerically incremental sequence separated by version numbers for major, minor, revision and release or maintenance (example major#.minor#.revision#.release#). A "major" change represents a significant change to the work. A "minor" change represents a minor change such as an addition or deletion to the work that adds to or changes the meaning of part of the context within the work. A minor change does not represent a spelling or grammatical correction. A "revision" change represents a correction to something that is in error such as spelling, grammar, formulations or data as long as it does not add to

or change the contextual meaning of the work "major" or "minor" way. A "release" change represents a release to a third party or system (sharing of the work) after a very minor correction to spelling or grammar but not formulations or data. As an example version 1.3.2.6 states that major version is 1, minor is 3, revision is 2 and release is 6.

2.12. Versioning Convention 2

Since scientific work isn't as quick to release or change as software, a secondary versioning convention is suggested. This versioning system takes into account date and time though it isn't as meaning full as the first convention plus any version increment is to be taken as a possible "major" change. The benefit is that it's simpler. It takes into account the release date of any work to a third party or database system. The versioning follows a sequence of numbers representing year, month, day, hour, minute and even second if necessary (example yyyy.MM.dd hh.mm.ss). Typically in this convention it is rarely necessary to use hour, minute or second. Year, month and day is usually sufficient (example yyyy.MM.dd).

2.13. Versioning Log

A record of all changes to the work must be maintained in detail of what was changed, added or deleted from version to version. It is good practice to note in a log book or database all changes applied to the work as its being done and the reasons why. This log of changes to the work should be included in the work upon any release.

2.14. Namespacing

Namespacing of any work is vital especially if it challenges or opposes any established work. This naming convention encompassing any particular work would typically be the name of the project, college, university, company or research institute (example *Namespace*: Work Name [,] Version). As an example of such an approach is as follows:

- *University of Acmitity*: Mechanics 1.1
- *Research Institute of Waldzine*: Mechanics 2.3
- *Perimeter Project*: Mechanics 3.4

The goal is to formally support competitiveness in science between namespaces on an equal structural and presentation platform.

2.15. Etymology

Categorization of any particular scientific field must be generally accepted by a democratic consensus amongst all scientists. It also must be allowed to change regularly, because as we progress, independent categories might in actuality be merged, dropped or new categories might be needed. It is possible that scientific specialization could, through scientific evolution, be minimized.

2.16. Versioning Hierarchy

Namespacing categorization and versioning of works must be hierarchical and only through the correctness value of works considered plus the democratic consensus amongst all scientist would the parent (tree) category version increase. Of course by consensus the versions of the hierarchical parental structure will increase going up the tree based on work at the lowest level. Consensus amongst all scientists (equality). The hierarchy and versioning must be absolutely transparent and public. For example:

- Science 2.0
  - Physics 1.2
    - Quantum Physics 2.3
      - Kinematics 3.0
        - Relativity 2.0
          - Individual namespace works like GPRA Project: Realitivistic Relativity 2.0

2.17. Derivative Namespaces & Referencing

It is important to support namespacing that are derivative collages of other namespaces. A formal mechanism must be followed to reference these others namespaced works. As more individuals become involved in science, the intermixing of ideas will become prevalent and reference keeping will become a significant problem. Under this new scientific schema, no scientific work should be prosecutable by law due to ill referencing, but if it is determined, through a communication and challenge, that someone had an idea prior to a particular work, that it was time stamped, documented or archived by a third party, then the author of such work should give documented credit to the prior author as an entity that had the same idea or work. They do not have to acknowledge that such an idea in the current work was derived from this prior author's work because it could possibly be that it wasn't. It is typically very difficult to determine if the current author referenced or even knew of the work from the prior author. The author of the current work can state that he solely derived the work alone under his namespace. If there is evidence that an author did know of the prior author's similar work than the current author must acknowledge this, but very clear evidence must be presented that exact knowledge of this prior work was conveyed to the current author and that this author acknowledged assimilating and, more importantly, understood the prior author's work. Conclusive determination of anything is very difficult. The key here is that in a new and open scientific environment (schema), legal challenges must be absolutely minimized and become completely obsolete, and that cooperation and ethical behavior must be championed by all scientists in order to advance science.

As an initial rule to avoid conflicts, all works with namespace, title and version number must acquire an ISBN number, copyright and then be submitted to a third party (a database or legal entity), such as the national archives of the author's perspective nation, for record keeping and legal evidence that the content of this work was registered on such date.

2.18. Archiving Databases

A database supporting version control should be setup, per namespace and centrally amongst all namespaces, to officially document all namespace research. It should also document theoretical paradoxes and unexplainable phenomenon for the world to review, understand and acknowledge. Absolute transparency and impartiality are essential keys to this new scientific schema.

There are several rules for archiving databases in this new scientific schema. Archiving databases of scientific work:

1. must be completely impartial on any work submitted - the purpose of the archive is to archive and not judge and filter works from the archive
2. must have no solicitation endorsement protocol requiring the soliciting of a third party to approve the archiving of a work
3. must provide a version control system as part of the archive – open source version control systems currently exist for the software industry that could easily be ported to suit this purpose such as CVS or Apache Subversion
4. must assign a globally unique identifier to each work independent of the work's registered ISBN number
5. must have the ability to categorize the archived work under multiple categories
6. must be internet accessible
7. must provide online user registration only for those who submit works with verifiable user information – user full name (no use of aliases), address and contact information (email addresses and phone numbers)
8. must be search-able under multiple criteria
9. must provide the ability access and download works directly though a URL link or though a search in HTML, PDF and open document formats
10. must provide internet RSS feeds based on multiple search criteria – author, title, abstract, body, dates, versions, rank
11. must provide ability to rank any work viewed or reviewed by registered users with a detailed logical reason for ranking with a detailed critique and defense
12. must be moderated for abuse and offensive commentary – offenders must be suspended on a three strike rule with means to appeal
13. The entire archive must be accessible through web services API (HTTP, GET, POST, SOAP, XML) which must provide the full range of online functionality offered by the archive.
14. must be completely backed up occasionally and sent to a national legal entity, such as the respective nations library or archives, for record keeping along with all supporting software that allows the archive database to operate fully.

3. New Philosophy

Philosophically, it should be promoted that it is acceptable to challenge any scientific assertion or paradigm. This should be the fundamental basic norm in a new scientific environment (schema). Any status quo or persisting dogma must be challenged continuously. It must be considered ok to question anyone no matter of their status, reputation or associations. If challenges are raised against any widely accepted, highly promoted or established theory, there should be no professional or personal persecution against the challengers. The challengers must be protected by law. As in business, you can't beat the competition by following their rules, but order must be maintained by a standard open protocol accessible to all as the one presented in this paper. This means that acceptance over any particular scientific assertion or interpretation of data should not have to be approved by entities of an opposing dogma or work. Acceptance of any particular assertion should be based on logic, mathematical and deductive reasoning, and the democratic consensus amongst all scientists not just a selected few. Given the huge advances in communication technology, such as the internet, communicating consensus amongst all scientists is much more possible today than it has ever been in history. No monopoly of science must be allowed to persist if evidence, even in the least, is presented against it. This includes empirical and mathematical observations. Given the need for consensus, it is also important to understand that consensus amongst all scientists is also flawed due to the inherent need and, more importantly, the means to market any particular assertion which could overshadow the merit of any opposing work. Therefore it is required in this new science protocol that an equal presentation platform and democratic ranking/voting protocol must be established for everyone independent of their financial status, reputation, association or policy.

3.1. Goals

The ultimate goals for this new scientific schema are to:

1. make it the norm to continually and perpetually challenge all scientific assertions
2. promote competitiveness in all areas of science on an equal platform, where the only competitive advantage is the quality of work in regards to its correctness and in regards to measurable and calculated predictions
3. to have an equal presentation platform for all independent of financial means, reputation, association or policy
4. to replace the current scientific paradigm and mainstream culture
5. become mainstream
6. continually and perpetually challenge itself

And to implement:

1. a more progressive and modern philosophy on scientific research – the scientific method is to replace skepticism and conclusiveness with probability and become more investigative - scientists must be investigators, not judges
2. complete objectivity – emotion, policy and funding motives must be completely removed in selecting the correct path for science
3. absolute and objective tolerance of other scientists and their work
4. equality – an equal platform to present all works, challenges and evidence without any fear of reprisal
5. version control - perhaps the most important and inherently states that all works are subject to change
6. hierarchical versioning structure of science
7. scientists to use no conclusive verbatim – usage of probabilistic verbatim, calculated or logically derived

3.2. Equality

Not everyone's skills are equal, but that should not negate their contribution to the collective pool of knowledge and thought. There must be a categorization of contributions by namespaces (authors), or have the authors categorize themselves, into predefined levels/categories independent of their actual type of scientific subject:

1. logically based research
2. mathematically based research
3. experimentally based research

A logically based argument can have significant ramifications on mathematically or experimentally based research and, of course, vice-versa.

3.3. Attitude

Scientists inherently represent the best of human intellect and possibly evolution. Given this, no scientist may exhibit arrogant, rude and selfish characteristics. Such behaviours do not benefit the whole of humanity and its advancement which is what science philosophically represents. There is no argument for justification of such behaviour. Some may justify this behaviour due to annoyance at those who do not think as quickly or are as knowledgeable as they are. Annoyance is an emotional and subjective reaction perhaps filled with many assumptions and all assumptions must be avoided by objectivity. Higher intellects have a higher capacity to handle and understand more than most and do not need to be arrogant. A higher intellect has the ability to detect an underdeveloped intellect and readjust their behavior and attitude in order to communicate more effectively without being abrasive. Arrogance is a primal behavior to demonstrate superiority over another or others due to insecurities of becoming inferior. It can also be an indicator of an underdeveloped intelligence attempting to present itself as a higher intellect. The point is that this behavior it highly subjective in nature and indicates that true scientific objectivity is perhaps difficult by persons with these characteristics, therefore their opinions are to questioned and assessed very closely. Arrogance is counterproductive in a new future scientific vision because it does not contribute to the collective benefit of scientific research and humanity. A scientist's second and perhaps most important role is that of teacher to those less knowledgeable. Also, as teacher, they must also be willing to discussion alternate perspectives or challenges posed by their students or audience and able to realize any merit in such perspectives or challenges. A teacher must be able not only to teach but be also able to learn.

3.4. Open minded

Scientists must at all times remain opened minded. Their stance on any subject is that of investigator and not judge.

Acknowledgements

Special thanks must be given to Greg Volk for responding to my correspondence about a future scientific vision. Roger Munday, Brett Scott, NPA Members, offered suggestions to areas of this document. All suggestions were assessed and where it benefited the core vision of this document a version of those suggestions were applied.

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