

Where is the scientific temper in science?

Part 2: Unscientific method, myth, and church superstitions in science

C. K. Raju

The Indian Science Congress has come in for severe criticism for allowing a paper to be presented, which claimed that ancient Indians had aircraft, interplanetary travel etc. Now there are two issues here. The first is the content of the paper. Those claims were wrong, and many people have pointed that out, so there is nothing further to discuss there. The other question concerns the process: was the Indian Science Congress at fault by allowing the paper to be presented? I believe not. How exactly has the ensuing public discussion hurt anyone? If it were made a rule that no one should present any wrong things, then any scientific discussion would be impossible. Yesterday's science is wrong, as in Newtonian physics. Does that mean it should not have been discussed?

On the contrary the “standard” belief and practice about the “scientific method” today is this: if it is published in a reputed scientific journal, it is science, and it is good science if it is published in a “prestigious” journal, by authors with a “prestigious” affiliation. This is what is wrong.

The first thing wrong here is the involvement of “prestige” or reputation. Prestige has nothing whatsoever to do with science. Despite my differences with Popper,¹ I am willing to accept as a first approximation that science is about falsifiability or refutability. However, that theory is contrary to the standard *practice* which is to decide science by “prestige” or reputability, not refutability. Reputation is a result of complex social processes, which are certainly not infallible, for our society is hardly a utopia or even a near-utopia. On the contrary it manifestly has many rotten features, and even children understand that many rotten people exist in the higher social levels of contemporary society. The belief that social processes work fairly (or work fairly most of the time) to build reputation is a wrong and unscientific belief.

As every marketer knows “reputation” is built by spending money or efforts on advertisement: as coca-cola shows, sales have nothing to do with the value of the product, and may even be inversely correlated as in best-selling films or books. Academics too involves networking and selling a theory. Reputability judges that selling capability, not validity. As a way of judging good science from bad, the criterion of reputability leads to bad science even at the highest level of reputability. For example, Stephen Hawking has sold widely and is a very reputable scientist. But what exactly is refutable in his singularity theory? Ask anyone, and they will fall silent, for they only have blind faith which is not backed by any knowledge. Indeed, there is nothing refutable in singularity theory *hence* Hawking could not be given the Nobel prize.

The real fact is that what Hawking says is not science, but is supportive of church propaganda, as most

¹ Karl Popper, personal communication, 4 May 1990. For the differences about the criterion of refutability, see C. K. Raju, *Time: Towards a Consistent Theory*, Kluwer Academic, Dordrecht, 1994. For an alternative resolution of Popper's pond paradox, see C. K. Raju, “Time Travel and the Reality of Spontaneity”, *Found. Phys.*, **36**(7) 2006, pp. 1099-1113. (arXiv:0804.0830). For the incorrectness of Popper's claim to have resolved the problem of induction, via Kolmogorov probabilities, see C. K. Raju, “Probability in Ancient India”, chp. 37 in *Handbook of the Philosophy of Science*, vol 7. *Philosophy of Statistics*, ed, Dov M. Gabbay, Paul Thagard and John Woods. Elsevier, 2011, pp. 1175-1196. <http://www.ckraju.net/papers/Probability-in-Ancient-India.pdf>.

nakedly brought out by Tipler, who cited his publication on this topic in the prestigious journal *Nature* to buttress his claim that Hawking's singularity theory has established the truth of Judeo-Christian theology.² Because science has credibility among common folk, the church uses it to advance its beliefs. The church with its huge resources, and huge captive army of priests, invested in marketing Hawking. I have commented in great detail elsewhere³ about how Hawking's singularity theory is strikingly similar to church doctrine⁴ and won't again go into that here.

My immediate point here is that the case of Hawking illustrates the bad method today used to decide what is good science. This bad method of deciding good science is aggravated by the fact that most people (i.e., all people minus six) are ignorant of singularity theory and don't understand what is being said, because Hawking's singularity theory is couched in highly technical language, as are the related objections and theory of shocks in general relativity.⁵ This widespread ignorance, and superstitious trust in reputability, is naturally exploited to use science itself as a cynical way to peddle religious superstitions.

Second, let us examine how the method of publication works. (I won't go into the issue of the interests of publishing houses, and the con-trick by which government funded research is given to them free and they then restrict its use through copyright, and demand payment for it.) The evaluation is done by an editor who selects referees in a secretive way. This method euphemistically called "peer review" is a compulsory ritual and the performance of that ritual is used (e.g. by journalists) as a criterion to separate science from non-science. But why should review take place secretly *before* publication? Why not publicly *after* publication (or presentation), as happened with that Science Congress paper. It is the ritualistic belief, that science is all about *secretive* evaluation by referees, which is completely wrong. Anything secretive (like secretive experiments!) cannot be any part of science.

Historically speaking, that technique of secretive evaluation was developed by the church as a technique for critic control, and preservation of "authorised knowledge".⁶ People believe science is the new "authorised knowledge". Hence there was an uproar in the case of the Science Congress just *because* of people's expectation that anything presented publicly at a scientific forum ought to be "authorised knowledge", in the manner of the church, and that a decision on what constitutes "authorised knowledge" should hence be taken *secretively*, and *before* that knowledge is allowed to be made public. That church system is clearly just a system of censorship. Why is censorship so essential to science? "Authorised knowledge" is the sort of knowledge which people can believe with their eyes tightly shut, and people today equate science with authorised knowledge. However, anything one believes with eyes tightly shut is NOT science. Rather any trust in authority is anti-science.

2 "theology is a branch of physics,...the central claims of Judeo-Christian theology are in fact true,... these claims are straightforward deductions of the laws of physics...the area of global general relativity...created...by the great British physicists Roger Penrose and Stephen Hawking." Opening paragraph of F. J. Tipler, *The Physics of Immortality. Modern Cosmology, God and the Resurrection of the Dead*. Macmillan, London, 1995, p. ix. In my two-day debate with Roger Penrose he pretended he was not responsible for what Tipler said or for the interpretation of singularity theory.

3 C. K. Raju, *The Eleven Pictures of Time*, Sage, 2003.

4 For the propaganda that "Hawking does not believe in God", and for the relation of Hawking's latest position to Aquinas, see "The Christian propaganda in Hawking's work", *Daily News and Analysis*, 16 June 2011, p. 9. <http://www.dnaindia.com/lifestyle/review-the-christian-propaganda-in-stephen-hawking-s-work-1495047>. Print version archived at <http://ckraju.net/blog/?p=50>.

5 C. K. Raju, "Distributional matter tensors in relativity", C. K. Raju, "Distributional matter tensors in relativity". In: *Proceedings of the Fifth Marcel Grossman meeting on general relativity*, D. Blair and M. J. Buckingham (ed), R. Ruffini (series ed.), World Scientific, Singapore, 1989, pp. 421–23. arxiv: 0804.1998. For a quick summary of the the broader relevance, see <http://ckraju.net/papers/Calculus-story-abstract.html>.

6 Call for participation, 38th Special session of Indian Social Science Congress. <http://ckraju.net/issa/call-for-participation-issa-special-session.html>.

Now we know that the system of secretive pre-review worked badly in the case of the authorised knowledge of the church, which contained much nonsense of the sort which could not survive public debate. That system of secretive pre-review helped preserved that nonsense as authorised knowledge, and served only to suppress critics, who we today know were right. And the church system of secretive review was invented just to avoid public debate and “save” all the nonsense passed off as authorised knowledge. It crept into academic processes because the Western university was completely controlled by the church for eight centuries, since its inception in the late 11th c. until the 19th c. Hence, colonialism, which brought in Western education, globalised Western academic processes, which processes we have uncritically accepted just on the strength of some stories and myths.

What a terrible irony that we still imitatively use that church system of critic control for quality control in science! Not only common people, but institutions (universities, state) evaluate the performance scientists by their participation in those rituals (as quantified by number of published papers, impact parameter, citation indices etc.), all of which may at best measure social approval, not scientific validity. Just because we assign a number to measure prestige (university ranking, impact parameter) or popularity (citation index) that does not make the assessment “objective” or scientific. It does however, put scientists under tremendous pressure to conform, because they are being asked to seek social approval at every stage. Social conformity is NOT the characteristic of good science.

To summarise, a system of secretive evaluation developed by the church for *critic* control is passed off today as the official system of *quality* control in science. Where is the scientific evidence that these processes result in quality control? Obviously there is no empirical evidence, for the crux of the matter is that whole process is secretive. So, we evaluate good science and bad science by using rituals whose validity has never been scientifically demonstrated. Indeed, commonsense too tells us those rituals do not correctly validate knowledge. That secretive system involves *uncritical* trust in the editors of scientific journals, it involves *uncritical* trust in the competence of the referees he selects. Uncritical trust cannot be any part of any true science.

Where there is trust, there is inevitably betrayal of trust, and manipulation. That is especially true when BIG money is involved as it is today in science. (For example, the purported discovery of the “God particle” involved an expenditure of USD 5 billion or more.) Will anyone allow a property dispute to be decided on trust in secret? Then why should a scientific dispute be so decided? Does validating science involve less commonsense than the settlement of property disputes?

It seems so. The usual justification offered for secrecy ahistorically ignores the origins of the process, and simply claims that secrecy enables the critic to be frank. A moment's reflection shows that this assumes that the critic would be afraid of being frank in public, since frank criticism may cause some harm to the critic. What harm? Unlike the days of the Inquisition, it is unlikely that the critic would be tortured or murdered. At most the critiqued scientist may give an equally negative opinion of the critic, which may affect the critic's job or promotion. So, that harm is all about money. So, the very reason offered for secrecy of review admits and assumes that the scientific opinions of scientists may be influenced by the fear of monetary loss. But if scientists can tone down their critique for fear of losing money, why can't they protect their lifework by a *dishonest* negative review of a critical work, or some other kind of secretive backdoor manipulation? (Exactly the stated cause of the critic's fear.) How is that the same motive (fear of losing money) operates in the case of critical reviews of one sort, and does not operate in the case of critical reviews of another sort? This shows the kind of utter thoughtlessness built into the bad methods of validating science. How can such thoughtless methods of validation result in valid knowledge? Besides why should one, just as thoughtlessly, ignore the

continuity of that scientific method of assessment with the church method of assessment?

Indeed, it is very easy to observe that scientists are constantly running around for money (because after Thatcher, the idea was to make them totally subservient to state and capital by forcing them to keep applying for grants). I can speak from personal experience from even before Thatcher. Then I had money to disburse, and scientists from various prestigious institutes in the country came running, and offered to strike deals in return for the money. By means of a top level OIC decision, all Islamic countries now define science as something that has been approved by the West, i.e., published in journals controlled by the West.⁷ Therefore, the resulting science is not true science, but just preserves the beliefs which influential scientists want to pass off as authorised knowledge.

Anything which involves trust, whether in “reputed” persons or those in authority, is decidedly NOT science in my opinion. One has to be sceptical even for the first step in science. That skepticism must include scepticism about editors and referees of scientific journals, and also bureaucrats who understand little or nothing of science. Apparently we have learnt nothing from the petrol from water episode where lots of journalists believed the statement by the DST Secretary that there was substance to the claim.

Science is about public debate, not authoritative pronouncements or equally authoritative suppression. Science is forever fallible. As I have defined it, “science means never having to say you are sure”. Therefore, there is nothing wrong in wrong claims made at the Indian Science Congress, provided the subsequent public debate is not suppressed. But there is something terribly wrong in the suppression of a public debate on what many critics of “authorised knowledge” passed off as science have to say. That suppression of criticism perpetuates all sorts of myths in science. Take for example the myth of Einstein who is big icon of science, but was actually just a con man.⁸) I have exposed Einstein's mistake in understanding relativity, and argued that the teaching of relativity in our universities, should be changed. That claim was published in a “prestigious” forum.⁹ Special relativity is an elementary subject, taught at the first year undergraduate level. But our scientists who teach it are so unsure of their knowledge, that in the last twenty years no one has publicly debated my claim: neither acceptance nor rejection, just paralysis.

That paralysis is like the Ajit joke about liquid oxygen! Without authoritative Western approval (the real “scientific” test of truth) they cannot accept the critique; without adequate knowledge they cannot reject it! In the meanwhile, a top Western mathematician (Michael Atiyah) repeatedly tried to grab credit for the resulting new theory, and the editor of a very widely read Western journal (*Notices of the American Mathematical Society*) blatantly defended that unethical claim by using his editorial authority to just insert a belated acknowledgment.¹⁰ Specifically, the editor misused editorial authority to suppress my side of the story, about violation of the AMS ethics (that ignorance of prior published work is unethical) *and* a mistake in the article published in his journal. (The term “Atiyah's hypothesis” used mischievously to promote the association of Atiyah with my theory involved a mistake, namely that no hypothesis was needed.) The American Mathematical Society refused to intervene, presumably on some high-sounding principle of “editorial independence”! That shows that the mathematics community today operates in a way little different from the medieval church community and its system

7 “Benchmarking science: a critique of the ISI (Thomson-Reuters) index”, USM-Prince Songkla Univ. conference in Hat Yai, Oct, 2011, in Proc. <http://ckraju.net/papers/Benchmarking-science-paper.pdf>.

8 “Einstein from icon to con man”, <http://ckraju.net/misc/Einstein.html>.

9 C. K. Raju, *Time: Towards a Consistent Theory*, Kluwer Academic, Dordrecht, 1994.

10 *Notices of the AMS*, April 2007. http://ckraju.net/atiyah/Belated_mention_NoticesApril2007.pdf. More details at <http://ckraju.net/atiyah/atiyahcase.html>.

of “authorised knowledge”. Our science is built on that mathematics.

To reiterate, science is not about *whom* one trusts, whether an editor or a priest, but about trusting only open and verifiable processes. The process of secretive refereeing by which we decide what is good science and bad is neither open nor a verifiable process. We have no empirical data on which to claim that the process works. The church processes, used on the pretext of “quality control” in science, do the critic control they were designed to do: *they preserve “authorised” but bad knowledge* like the special relativity which is taught in junior college or at the undergraduate level.

Indeed, I have repeatedly pointed out how even the first lesson in science (about Newton's “laws”) instills a belief in “eternal laws of nature” which is a crusading superstition, not any science.¹¹ It is not enough that science refers to *some* experience, for that would only make it a cocktail of science and theology. That people will rely only on *some* experience is exactly the church strategy in setting up its facade of schools and hospitals, and hiding its role in genocide and slavery. Many such wrong theories and con tricks are inevitably compatible with *some* experience.

Real science must be consistent with *all* experience. But there is still much in present-day science which is contrary to experience: for example the belief that the equations of physics decide the future *contrary* to our everyday experience that *we* decide a tiny bit of the future. Mention it and people will jump to the church theological term “free will”. Why is church theology so crucial to resolve a contradiction between science and everyday experience? We should set aside all church theology (or the “philosophy” based on it) and amend science, as I have done to agree with experience. However, “authoritative science” preserves itself irrespective of whether it agrees with experience, for the real “scientific method” is that science must agree with the opinions of influential people!

The other aspect of this unscientific method, used to decide what is good science, is the high reliance on myth and related superstitions among common scientists. A simple example is the myth that science and religion are at war, based on the story of Galileo. The contrary fact is that it was the church which brought Western science to India through colonial education. The fact refutes the myth. The church brought in science because people accept the *authority* of science, and through it the authority of the West. So, teaching science helped to build good slaves for the empire. The secretive system of refereeing is one way by which that authority of the West can continue to be asserted through science.

However, a typical way to avoid refutation of a myth (any myth) is to pile on other myths. For example, at the same Indian Science Congress Harsh Vardhan claimed that Indians knew about the Pythagorean theorem from before Pythagoras. That claim needs correction, however, that claim was contested just by appealing to the myth of Pythagoras, as e.g. Prabir Purkayastha did.¹² Specifically, there is no evidence for the existence of Pythagoras, there is no evidence that he proved the theorem named after him, or any other theorem, and no one has the foggiest idea what that purported proof was, or on what principles it was based.¹³ This is an illustration of how even Marxists fall prey to church superstitions.

11 C. K. Raju, “Islam and Science”, Keynote address at *International Conference on Islam and Multiculturalism*, Univ. of Malaya. In *Islam and Multiculturalism: Islam, Modern Science, and Technology*, ed. Asia-Europe Institute, University of Malaya, and Organization for Islamic Area Studies, Waseda University, Japan, 2013, pp. 1-14. <http://ckraju.net/papers/Islam-and-Science-kl-paper.pdf>.

12 Prabir Purkayastha, *Ganashakti*, <http://ganashakti.com/english/comments/details/156>.

13 C. K. Raju, “The Pythagorean controversy”, *Frontier Weekly*, **43** (34) 2015, <http://www.frontierweekly.com/articles/vol-47/47-34/47-34-The%20Pythagorean%20Controversy.html>.

This happens because there is poor understanding of the church technique of defending one myth by another, and that by a third, and so on until the human mind gets confused and gives up. In the spirit of defending one lie by telling a thousand more, the West has piled on layers of bunkum myths on top of each other, like so many layers of pigeon dung. Thus that bunkum claim that Pythagoras had a proof is supported by a further bunkum claim about “Euclid” and his axiomatic proofs. Euclid too is a myth: there no evidence that Euclid existed, there is no evidence that he or someone near his time wrote the book *Elements* attributed to him, there is no evidence that the book was written with the intention of axiomatic proof. There is, however, plenty of counter-evidence that the book *Elements* was authored by someone else, with a completely different religious aim.¹⁴ This emerges even from a reading of the book, the first proof of which is an empirical proof, as is its proof of the 47th proposition (“Pythagorean theorem”). Nevertheless, those myths are integral to the teaching of mathematics today as concerning axiomatic proof. Recall that formal mathematics developed from the efforts of Russell and Hilbert to “save the myth” of Euclid.¹⁵ Present-day science depends upon that mathematics.

Thus, it is purely on the strength of that church/racist/colonial myth (that the West had some superior way to do mathematics) it is contended that the only “rigorous” (i.e., “superior”) way to do calculus is to imitate what the West does. Western superstitions, like Western dress or Western religious beliefs, have been turned into a global norm by demanding that imitation. Such demands for imitation are characteristic of church propaganda which aims for conversion by inducing others to imitate what the church recommends. For this purpose we need to ask why we teach mathematics. If it is for practical purposes, then we must take into account that mathematics existed and served practical purposes from long before the advent of formal math. It still does that. Therefore, it is NOT necessary to imitate the West in formal mathematics any more than it is necessary to imitate it in the matter of religious belief. That is where the myths are piled on to “save the story”.

For example, it is contended that Newton discovered calculus. This is a blatant historical falsehood, for the calculus developed in India from a thousand years before Newton.¹⁶ Indeed, like the other Indian mathematics (arithmetic, trigonometry, probability) which the West imported from India, Europeans in general (e.g. Clavius, Kepler, Galileo, Descartes, Cavalieri) and Newton in particular did not even understand the calculus. Where is Newton's theory of fluxions today? It was confused, and therefore it was discarded, and that itself is proof of Newton's misunderstanding.

But there is a much deeper issue. Newton, a devout Christian, believed that mathematics was the language in which God wrote the eternal laws of nature. Hence he subscribed to the belief that mathematics incorporates eternal truth, and is hence perfect. He thought that this perfection in calculus could be achieved only through metaphysics (“God's knowledge”). Therefore, he turned time metaphysical. This was contrary to what his predecessor and teacher Isaac Barrow tried to do.¹⁷ That wrong step (making time metaphysical) led to the failure of Newtonian physics.¹⁸ Specifically, Newtonian physics was back-calculated from empirical data on planetary motion, so it naturally fitted that data. But the moment we go beyond planetary motion, to the galaxy, Newtonian physics fails.

It is interesting to see how that failure is handled in present-day science. Exactly as in the policy of defending one myth by creating another, this is done in science by accumulating hypotheses.

14 C. K. Raju, *Euclid and Jesus*, Multiversity, Penang, 2012.

15 C. K. Raju, *Cultural Foundations of Mathematics*, Pearson Longman, 2007, chp. 1

16 *Cultural Foundations of Mathematics*, cited above, chp. 3.

17 “Time: what is it that it can be measured?” *Science & Education*, **15**(6) (2006) pp. 537–551. Draft available from http://ckraju.net/papers/ckr_pendu_1_paper.pdf.

18 *Time: Towards a Consistent Thoery*, cited above.

Newtonian physics cannot explain the rotation curves of spiral galaxies. (General relativity cannot be used for this, since a galaxy involves over a billion stars, and one needs to do a billion-body problem, which remains unresolved in general relativity, which cannot solve even the two body problem.) Because Newtonian physics does not fit the empirical data from the galaxy, hence an alternative hypothesis is invented that of dark matter.

Now, invisible dark matter might well exist. However, merely assuming its existence is not adequate to explain galactic rotation curves. One must further assume that this dark matter is distributed in a most peculiar way: in the form of a halo surrounding the galaxy, and peaking in density where the luminous matter (consisting of visible stars) thins out to nothing. Since dark matter has the same gravitational properties as visible matter (indeed its existence is inferred on that assumption) it is hard to understand why it should be distributed so differently. That can only be understood as a hypothesis used to save the Newtonian theory from refutation.¹⁹

Numerous attempt to detect dark matter over the last century have all failed. Nevertheless, this has generated a vast industry, which employs numerous high-energy physicists in need of a job, who speculate on the nature of particles which constitute dark matter. (Recall that when the BIG money spent on projects like those to discover the “God particle” run out, the numerous physicists employed there no longer have a job.) While a weak contender to dark matter is permitted in the form of modified Newtonian dynamics, all other attempts to explain this are banned. This ban on critics of dark matter is implemented exactly in the manner of the church, just by denouncing critics (as “cranks”, not heretics). That is it is the criterion of reputability which prevails over refutability even in this current science.

The vast majority of editors don't even bother to send out papers against dark matter for review, and it is just a routine administrative decision (by some clerks) of prohibiting dissent. If the editor does send it out, and there is a difference of opinion between author and reviewer, that difference is not entertained, and it is the view of the reviewer which prevails: that is, in practice, it is “superior” review, not peer review! That was the original intent of the process, to assert authority, not arrive at the truth. Naturally, if scientists follow these bad church processes, they will similarly end up with a bad system of authorised knowledge, which works well only for purposes of bossing over non-Western scientists.

The only way to end this academic imperialism²⁰ is to first expose the bunkum historical myths used to set up colonialism. Because those bunkum church/racist/colonial myths about science facilitated the huge exploitation by the West, our cardinal principle should be the exact opposite to that of Wikipedia. That is we should DISTRUST the West until anything it says is established through an independent investigation of facts, as distinct from myths whether about Pythagoras, or Euclid or Copernicus, or Newton, or Einstein. We should fault the Indian Science Congress for what it did NOT do all these years: subject those bunkum myths to a scientific investigation, or even organize a meeting around those exposures.

Second, we need to decolonise education²¹ on which some attempts are ongoing. Science anyway is

19 “Retarded gravitation theory” in: Waldyr Rodrigues Jr, Richard Kerner, Gentil O. Pires, and Carlos Pinheiro (ed.), *Sixth International School on Field Theory and Gravitation*, American Institute of Physics, New York, 2012, pp. 260-276. http://ckraju.net/papers/retarded_gravitation_theory-rio.pdf.

20 C. K. Raju, *Ending Academic Imperialism: a beginning*, Citizens International, Penang, 2011.

<http://multiworldindia.org/wp-content/uploads/2010/05/ckr-Tehran-talk-on-academic-imperialism.pdf>.

21 A recent summary of my contributions is in “Decolonisation of Education: Further steps.” Paper presented at the

not science until we have re-investigated and established it is our knowledge. If it is our knowledge we should be able to critique anyone from any part of the world, and to decide our own curricula without being imitative of the West. At the moment there is absolutely nothing in our science syllabus which is non-imitative. Because our scientists are in such a subservient position vis-a-vis the West, they are in no position to speak the truth or assert themselves in any manner.

However, a third reform is absolutely essential, and that concerns the focus of this paper. We must change our methods of validating knowledge in science. The alternative proposed is that we should revert to the traditional Indian process of public disputation, and empirical experiments,²² instead of the bad and unscientific Western process of secretive “superior” review, used by the West to boss over us.

However, this exposes another aspect of colonial education, and a key difference between the scriptural and oral tradition. Many scientists seem frightened of open debate, for an open debate easily exposes ignorance. It is easy to claim to be knowledgeable in a written work, by being imitative or signing on as the author of hundreds of papers, simply by getting one's name included on the paper because of one's political position. But in an oral presentation, if questions are asked about those papers, and those questions are not time limited, those fake authors will not be able to answer the questions, and will have no escape. Their ignorance would be exposed. Hence, they are frightened.

But, people *must* come to the table for public discussions regarding issues of public concern. This is something that the government can do, coercively if necessary. This (“public discussion”) was also demand for an important matter about scientific temper taken up at the last meeting of ISSA, in Aligarh, namely the petition to teach religiously neutral mathematics.²³ That petition emphasized we cannot rely on the secretive opinion of “experts” with vested interests. That earlier matter of not relying on the secretive opinions of supposed experts has to be taken up in the more general context of validating all scientific knowledge.

Multiversity 7 meeting Nottingham University Malaysia Campus, Kuala Lumpur. <http://ckraju.net/papers/KL-abstract-and-draft.pdf>. Also a recent article on “Decolonisation of math and science” in Ghadar Jari Hai 8(3) pp. 5-12. http://www.ghadar.in/gjh_html/?q=system/files/GJH_Vol%208%20Issue%203_English.pdf.

22 Contrary to yet another Western myth, the experimental method did NOT originate in the West. The first record I know of empirical investigations being used to determine a dispute is Payasi's experiments about the soul. See, C. K. Raju, *The Eleven Pictures of Time*, cited earlier, chp. 1.

23 “Teach religiously neutral mathematics”, plenary talk at the National Symposium ON Foundations of Science in India, Aligarh Muslim University, Dec 2013. <http://ckraju.net/papers/Teach-religiously-neutral-math.pdf>. Also, the full petition at <http://ckraju.net/blog/?p=94>.