Fuming, but academically bankrupt

C. K. Raju

Character assassination

This refers to the report about me in the GroundUp (28 Sep). It is basic journalistic ethics to have checked back with me for my side of the matter. Had that been done, the numerous lies and insinuations in the article could not have been stated. This shows that the report was intended to vilify me without giving me a chance to defend myself. This is character assassination, at its worst. That the aim was to vilify is confirmed by the facts (a) that the report uses numerous negative adjectives, all without explanation, and (b) totally lacks substance.

Decolonisation, especially of math and science, threatens the continuing white domination in South African universities, and has hence left many in UCT fuming.

This anger is nothing new. Recall that, last year, my article on decolonising math was published in the *Conversation,* it went viral and was then *censored* (not withdrawn). Science 2.0 changed the title to "Was Euclid a black woman"? . This is what the GroundUp report dishonestly describes as "Indian nationalism", clearly aiming to spread prejudice. The censored article angered some Whites just because no one was able to point to a single error in my article. This inability to contest my article was the real reason *Conversation* censored it. It was later reproduced in full in Journal of Black Studies.

The UCT panel which responded to me had a mathematician, a philosopher, and an educationist, all senior faculty members from UCT and Stellenbosch. It gave the panelists and audience another chance to academically engage with my views and to contest them publicly. That did not happen. The respondents hardly engaged and did not refute any of my central points. Many in the audience agreed with me. Hence, the panel discussion was widely seen as an academic victory for decolonisation.

The present attempt to vilify arises from that persistent failure to contest my views. This has aroused fears that decolonisation will destroy the last bastion of apartheid: in academics. The hope now is that name calling will tarnish me, and arouse prejudices, and thereby avoid implementation of the agenda of decolonised math and science. Like church propaganda, the report is addressed to the gullible who will accept it all as valid without asking questions. The discerning will immediately spot the academic bankruptcy: abuse, like censorship, avoids academic engagement.

The report, does a huge amount of name calling, but without supplying any evidence or even any indication. For example, the news report calls me a conspiracy theorist but gives no clue as to the conspiracy theory I am accused of. Maybe someone said it, but an objective reporter would have enquired into the details.

Let me enquire. During the UCT panel discussion, I mentioned that the top mathematician in the world, Sir Michael Atiyah, had tried to grab credit for one of my theories (*Time: Towards a Consistent Theory*, Kluwer ,1994), and connived to get published a prominent article giving him credit for it, while declaring the theory a "paradigm shift", and only later published an acknowledgment to my work. Is this the conspiracy theory (on functional differential equations and quantum mechanics) that the report

alludes to? Why then did the supposedly top mathematician in the world covet a "conspiracy theory", and tried to grab credit for it twice (once after he was personally informed)? Or perhaps this was the "crank" theory? The report does not explain, because it aims to spread prejudice.

The sole substantive point

There is just one substantive point in the report. It asserts that 7 minutes and 15 seconds into my UCT panel talk, I "dismissed [the] concept of the infinitesimally small" and asserts that "mathematicians deal with it on a daily basis". This is complete nonsense. First, I advocate "non-Archimedean" arithmetic which has infinitesimals. Second, infinitesimals are absent in the math which is currently taught: calculus is currently taught using the "Archimedean" arithmetic of (formal) real numbers. If the reporters still believe otherwise they should point to the definition of "infinitesimal" in a few current school and university math texts. Else they should publish an apology. Of course, knowledgeable people will still laugh.

What I actually said was (watch the video) that formal math is *anti*-empirical. To illustrate this, I asked how many people worked with (anti-empirical) *invisible* geometric points. If any one (including the reporter) thinks they have the magical ability to see invisible things, it is they who need to prove their purported magical powers, or be made fun of. In the whole hall only the formal mathematician on the UCT panel asserted he had such magical powers to work with invisible points (obviously not able to transmit it to others!). I then said that talk of invisible points is a deliberate con-trick, as in the story of the emperor's invisible new clothes, something clearly laughable. I stand by that. My simple point was that ALL the geometry people *actually* did in school, involved *visible* figures drawn on a piece of paper with a pencil. Anyone who denies this is deluded.

That is, at the only point where the report attempts to engage with my views, it grossly misrepresents them, and further ignorantly confounds "invisible" with some ill-defined, personal notion of "infinitesimal" which it then wildly declares as "used on a daily basis" in current math. This is proof only of the fact that the reporter was taught math very badly (I am trying to change that), or advised by some utterly incompetent mathematician.

"Euclid" must fall

One Jeff Murugan from the UCT math department is then quoted. He is annoyed that I reject what is "internationally agreed". Now, it was internationally agreed for several centuries that the sort of math which is taught today began with "Euclid", who had a white skin. (In my UCT talk, I displayed a common image of a white-skinned Euclid declared the "father of geometry".) Actually, however, there is nil evidence for Euclid, or for his white skin. Hence I have offered a reward of ZAR 40,000 for any serious evidence about Euclid. This offer was repeated in my censored article. No one dared claim the reward since 2010. (Perhaps my demand for evidence is the "conspiracy theory" or "crank" idea to which the report alludes?)

Unable to offer evidence, Murugan supports this racist history by effectively asserting that such racist lies are sacrosanct, since "internationally agreed", and must be accepted for that reason, and without evidence. Anyone who questions or demands evidence is "fringe", and the demand for evidence must *hence* be rejected. Incidentally, did he decide "internationally agreed" by conducting an actual statistical survey of billions of Africans, Chinese, Indians, Arabs, and honestly asking if they are willing to accept such lies without evidence?

Decolonisation challenges such false and racist beliefs based on mere academic authority, and keeps demanding evidence. If evidence is not forthcoming, "Euclid" must fall. The fall of "Euclid", a key symbol of white supremacy, may be far more painful to some in the UCT community, than the fall of Rhodes. However, they must bear the pain, which is nothing compared to the pain inflicted on blacks during apartheid.

Decolonisation seeks to eliminate such lies from colonial education, which globally indoctrinates children with numerous falsehoods of racist history at an early age.

On the actual evidence, the anonymous "author of the Elements" was a black woman who was raped and killed in a church. This is the story which must be told. Apart from Whites, the church may be very uncomfortable with the telling of this story. But, in a university, those who disagree must academically engage with the claim. Instead, they use the stock church tactic of vilification to avoid engaging.

A better, easier math

Murugan further tries to frighten people by asserting that students will fall behind if they accept my way of teaching. This is a deliberate and vicious lie. My course on calculus makes math easy, hence it enables students to do *harder* problems, such as elliptic integrals. These are NOT covered in existing high-school or first-year calculus courses, as Murugan ought to know. This new ability enables my students to meaningfully do the first serious school science experiment, the simple pendulum, for they can better compare theory with experiment. The students who do my course would get better jobs, because they learn to do things well beyond anything done in current school or first-year calculus courses.

It is the formal mathematicians like Murugan who might lose their jobs if decolonisation is implemented and they don't retrain. Murugan did not reveal his other conflict of interests. He is a collaborator of G. F. R. Ellis, an influential UCT academic from apartheid days, whose work I attacked at the UCT panel, as further described below.

As for the alternative courses Murugan mentions, what process did he use to decide that any of them is better than mine? Do those courses teach students to do elliptic integrals? Where is the evidence? Did he even try out my techniques? That is UCT math department for you, no evidence needed for anything. The UCT math department is clearly part of the math problem facing blacks in the country, for it uses lies and mere authority to block serious alternatives from being tried out.

This only reinforces my point that "expert" authority should not be blindly trusted: it may deliberately misguide people, just to preserve or advance its narrow interests. Experts should be publicly accountable. However, "experts" at UCT ducked this accountability by cleverly not engaging in the public debate at UCT where lies such as those of Murugan would have been instantly exposed.

Other myths of maths

We have to be particularly careful because formal math is surrounded by myths and superstitions. Thus, for example, formal math is supposedly modeled on the book *Elements* (which "Euclid" purportedly

wrote). The unique feature of the book is asserted to be its use of deductive proofs. However, it is a complete falsehood that the book *Elements* contains pure deductive proofs of *any* of its propositions,

Further, it is a mere *superstition* that deductive proofs of formal math are infallible or less fallible than empirical proofs: an invalid deductive proof may be mistaken for a valid one. Or the starting postulates may be wrong: because in anti-empirical formal math there is no way to verify them. It is also false that the 2-valued ("Aristotelian") logic on which formal mathematical proofs are based is universal, either culturally or empirically. But these two key false beliefs underpin formal math. My related arguments against them have been published in various international journals since 2001. No one could refute them. Hence, I advocate that math must change, and that what we need is practical and normal math which accepts *both* empirical proof and inference, like science.

The opponents of decolonisation in UCT should have joined the panel or the audience and contested my views. I was willing and expecting to come to the math department and speak at length and be exposed if possible. (See the abstract of my talk.) It was they who ran away from engagement. Why? Because they were afraid to be exposed, for they KNOW they have no serious arguments against what I am saying. This censorship, like the resort to lies and vilification, is an indirect admission of their failure.

How did these myths and superstitions of formal math arise? A brief, simplified explanation is as follows. The math currently taught (in school and early university courses) was largely imported by the West for its practical use starting from the 10th c. (e.g. arithmetic for commerce, trigonometry for navigation, etc.). Because Western universities were totally owned by the church, over the centuries, the imported math was wrapped in a variety of myths and superstitions. Those superstitions are today speciously justified on the strength of the practical value of the original math. The whole package (practical value plus myths and superstitions) was re-exported and globalised by colonial education. The wrapper of Western metaphysics is what makes math difficult. Removing it enhances the practical value of math today. It makes math very easy and enables students to do harder problems.

A deep con-trick: pushing church dogmas as science

However, there is a strong vested interest in preserving and propagating those myths and superstitions, because of a deep con-trick: formal math enables church dogmas to be slipped into "reputable" science. (Deductive proofs can be used to prove any pre-desired conclusion, from suitable postulates, validated on the strength of mere authority in anti-empirical formal math.)

Thus, the news report cites G. F. R. Ellis of UCT. Now, my book *Eleven Pictures of Time* (Sage, 2003) criticises the book by Stephen Hawking and G. F. R. Ellis (*The Large scale structure of spacetime*), the bottom line of which asserts "…the actual point of creation, the singularity, is outside the scope of the presently known laws of physics". That this conclusion is rank creationism, aligned to church dogma, is made amply clear by Stephen Hawking in his *Brief History of Time* (pp. 183-84) "At the big bang and other singularities, all the laws would have broken down, so God would still have had complete freedom to choose what happened and how the universe began."

It is impossible to test these creationist conclusions by experiment. Hence, the resort to community beliefs as the index of truth. Even after four decades, all that Ellis does is to talk about "social acceptance" (or rePutability), not experiment (or refutability). This use of rePutability (a social

criterion) is unique to Western "science" (globalised by colonialism).
In contrast, in India, for example, since the days of the Buddha, even religious ideas were put to experimental test. The West has diluted that rigorous experimental method, first by exempting religious belief or "metaphysics" from experiments, then math, and now partly also science. That is why Western science, admits community beliefs, and permits a churchified science. Hence, I emphasized at the UCT panel that experimental tests (refutability), not social acceptance (reputability) is what makes real science. By that standard, the work of Hawking and Ellis must be rejected as non-science. Reputability may arise for political reasons: simply because the conclusions support the interests of a powerful group (in this case the church) which then glorifies those involved.

Formal math, divorced from the empirical, is done under the thumb of Western authority. Its postulates are all authoritatively laid down only by "reputed" Western mathematicians. Grounding postulates and proof on the empirical, as in the normal math I advocate, would not affect *any* application of math to (real) science or engineering. But it would destroy colonial authority; that is exactly the aim of decolonisation.

For example, decolonising Western science would destroy the churchified science of Hawking and Ellis which proceeds from their authoritatively laid down "chronology condition". That condition simply reasserts Augustine's fiat, and the church's politically-motivated curse, against "cyclic" time, prevalent in early Christianity and Plato, and earlier Egyptian beliefs. The arguments Hawking and Ellis offer in favour of this postulate are just a rehash of Augustine's theological arguments, and post-Nicene theology, in modern idiom, as explained in detail in my book *Eleven Pictures of Time*.

As further explained by me in another conversation with UCT students, even the belief in "laws of nature" is an unscientific belief grounded on a key Crusading dogma from Aquinas (that God rules the world with "*laws* of nature"). So, even the claim by Hawking and Ellis about "laws of physics" is mere church dogma. Ellis won the million-dollar Templeton award, for science and religion, for helping to pass off such key politically-motivated church dogmas as "reputable" though not refutable "science".

At the UCT presentation, due to shortage of time, I merely pointed to the closely related elaboration of the work of Hawking and Ellis by F. J. Tipler, in his *Physics of Immortality,* that "Judeo Christian theology is part of physics" and that "the central claims of Judeo-Christian theology are in fact true, that these claims are straightforward deductions of the laws of physics as we now understand them," particularly of "global general relativity created...by...Roger Penrose and Stephen Hawking. This is an example of "reputable" Western pseudo science in action (Tipler published on this in *Nature*). It seems fairly obvious to me why Ellis or collaborators like Murugan did not join the panel, or engage with me in the math department!

Decolonisation would do away with such nonsense science, used to support church dogmas.
Vilification through lies is the only "argument" the opponents of decolonisation have.

Finally, the singularities of Hawking and Ellis are just an artefact of bad (formal) math: if instead we do calculus as decolonised normal math with non-Archimedean arithmetic, that helps handle these "singularities" quite easily, though no one in the UCT math department seems knowledgeable enough to understand how non-standard analysis applied to Schwartz distributions of formal math can be easily replaced by non-Archimedean arithmetic in normal math.

Students must choose

To reiterate, eliminating the myths and superstitions of formal math makes math easy and hence enables students to solve harder practical problems, even in school geometry. It leads to greater conceptual clarity: thus Egyptian geometry used a cord, which enables measurement of curved lines, not possible with the compass box. This is beneficial to the students even though it diminishes colonial authority. Black students still suffering under that authority need to be liberated. They should not wait for approval. Students must claim the right to choose between the practical value of normal math against the myths and superstitions of formal math, unreasonably enforced by the formal math community. They must claim the right to institute parallel decolonised courses, and decide for themselves which courses are better.

A final point. The report repeatedly calls me an Indian nationalist. This is false. I do NOT advocate indigenous knowledge on the mere ground of indigeneity. I advocate decolonisation, which differs from indegenisation. I have repeatedly emphasized (e.g. during published public debates on decolonisation in Malaysia) that decolonisation asserts *critical* rejection of colonial/Western knowledge. The criterion for acceptance is the superiority of the new approach over colonial knowledge, and not the indigenous origins. It is just another falsehood that everything colonial is superior.

For example, I advocate the teaching of Egyptian cord geometry not merely on account of its Egyptian or African roots, but on grounds of its *superiority* to the geometry currently taught in school (a confused hotch-potch of Hilbert's formal synthetic geometry and empirical, metric compass-box geometry.) I advocate it because it results in conceptual clarity about notions such as point, arc, angle etc. This damages colonial claims of superiority, but benefits students.

As for the abuses by various others: I am reminded of the Buddha, who too was abused by an opponent. He asked, “if a guest comes to your house, and does not eat what you offer, whose food is it?” “Mine” the opponent replied. “So, if I don't accept your abuses, to whom do they belong?”

I would like to take this occasion to thank the Deputy Vice Chancellor Loretta Feris and the Curriculum Change Working Group for showing the courage to organize this panel discussion in the midst of such a muck of prejudice. What is has achieved is to expose the academic bankruptcy of the fuming opponents of decolonisation: they have used up the entire arsenal of academic and non-academic swear words, without advancing a single serious academic argument! This shows it was a greater victory for decolonisation than one first thought.