

## Reminder:: Re: Critique of NCERT math texts

From: Prof. C. K. Raju (ckr@ckraju.net)

To: dineshncert@gmail.com

Cc: director@hbcse.tifr.res.in; singhhukam5@gmail.com

Date: Monday, 25 February, 2019, 9:31 am IST

Dear Prof. Dinesh Kumar,

Just a reminder that during the NCERT December conference, we agreed to a meeting sometime in January to discuss my critique of NCERT math texts, starting from the 9th standard math text, and its chp. 5 called "Euclid's geometry".

To reiterate, my objections are the following.

**(1) Euclid did not exist and there is no primary evidence for Euclid. Nor is there any source manuscript of the book Elements, in Greek or Byzantine Greek, bearing Euclid's name.** This is well known for centuries, and was acknowledged by the leading Western expert long ago. (See link in my earlier email below to David Fowler's comment from 2002.) Hence, I have been asking the NCERT to either provide evidence for Euclid (with a prize of Rs 2 lakh for it) or to delete the offending false claims about Euclid in the school text. This has been going on since 2007 when, at the bidding of the then NCERT Director, Prof. Krishna Kumar, Prof. Hukam Singh then head of the NCERT math department attended my PHISPC seminar in IIC, related to the release of my book *Cultural Foundations of Mathematics*. If you fail to provide evidence, or delete the offending piece, you are knowingly promoting a falsehood through a school text in a compulsory subject.

**(2) Further, the NCERT text also falsely states that Greeks did math in some special way related to reasoning.** This falsehood is used to motivate pure deductive proofs of formal math. However, there are no pure deductive proofs anywhere in Greek literature, or before the 20th c. CE. Specifically, all actual manuscripts of the Elements use empirical proofs, starting from the first proposition, and the 4th (SAS theorem) which is used in an essential way until the end (prop. 47 "Pythagorean theorem"). This too is well known for the last century, when Hilbert tried to provide a cure through his axiomatic synthetic geometry. In reality, the only special feature of Greek mathematics is that Plato linked mathematics to religious beliefs about the soul, and to virtue. **Students are never informed of this religious linkage** which is explained in my book *Euclid and Jesus*, and can be easily verified from primary sources. (Just Google "Plato Meno", go to the Internet Classics Archive maintained by MIT, and search for the second occurrence of "soul".)

**(3) The same chapter 5 of the NCERT 9th standard math text states yet another falsehood, that Indians and other non-Westerners did not use reasoning.** Actually, deductive inference is accepted by all schools of Indian philosophy except Lokayata (who reject it for good reason). For example, as Lalla explains Aryabhata deduced that the earth is round from the observation that far off trees cannot be seen. It is also false that Indians did not have proofs in mathematics, there were proofs of the "Pythagorean" theorem. (Pls see my 2000/2001 Hawai'i paper in *Philosophy East and West* linked below.)

**(4) The false claim that "only Greeks used reasoning" is double speak for the equally false claim that**

"only Greeks used reason while prohibiting the use of empirical facts as is done in formal mathematics today". Greeks did nothing of that sort. **Prior to formal mathematics of the 20th c., the only known systematic use of reasoning MINUS facts is found in church rational theology, set up after the Crusades.** For example, Aquinas reasoned about the number of angels that can fit on a pin, but there are no facts about angels, though one can make up any axioms about angels, as Aquinas did. Therefore, **the falsehoods about Greeks are told with a deliberate view to hide the church connection** and its vested interest in reasoning minus facts. (Facts would shatter every church dogma, hence the church glorified the prohibition of facts as "superior".)

(5) **It is well known that church institutions such as Cambridge university used "Euclid's" Elements as a key text, for centuries,** and taught blind imitation of the methods of that book (until the late 19th c., after which they demanded blind adherence only to the order of propositions in the Elements, on the foolish myth that the order had some special significance. (Will produce original sources on request, including papal bulls about Cambridge, and the relevant math syllabi. Once empirical proofs are admitted, the order of propositions has no special significance and the "Pythagorean" proposition can be proved, as in India, in a single step.)

(6) **The claim that deduction is infallible (or less fallible) than induction is contrary to the merest commonsense,** as explained in my (now published) article [Decolonising mathematics](#), [AlterNation](#) 25(2), 2018, pp. 12-43b, and also in my recent [presentation](#) at IIT(BHU), during the [Institute Lecture and workshop](#).

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(7) **Formal mathematics is faith-based mathematics:** for the axioms cannot be tested empirically or are empirically false (E.g. the axiom that there is a unique straight line through two points is empirically false, for empirically points are visible dots, through which multiple lines pass.) **This faith-based formal math adds nothing to the practical value of mathematics which all comes from normal mathematics.** E.g. the practical value of  $1+1=2$  existed from long before its formal proof, and the formal proof did not enhance that practical value in any way. Formal math (and NCERT texts) teach that calculus must be done with real numbers but, in reality, even a single feormal real number such as the exact square root of 2 cannot be written down, so all practical value is managed without real numbers. So, if we teach mathematics for its practical value we should revert to normal mathematics (and the teaching of calculus as it developed in India).

(8) **It is pedagogically impossible to teach the formal mathematics of even  $1+1=2$  in real numbers in school.** Formal mathematics is all top down. To teach formal real numbers we need to teach set theory, and I will be happy to demonstrate publicly that the lead author of the school text, J. V. Narlikar has no understanding of formal set theory. Of course, he will not expose himself to such a challenge. As a result, **every** engineering student is confused about **every** math concept as in my pre-test (see pp. 43a-43b of the above paper on [decolonising mathematics](#)). Hence, they are all "Bantuized", and all they learn is to be obedient to Western authority, which was the aim of colonial/church education.

(9) And that is all that NCERT does: succumb to Western authority neglecting the practical interests of our own students and country. That is why it continues to teach false church myths like Euclid and the related false church dogmas on the grounds "it is accepted in the West", and therefore, everyone else should accept it blindly, and without asking for evidence or applying commonsense.

Please fix a date for the meeting asap.

Sincerely,

C. K. Raju

On Thursday, 10 January, 2019, 7:11:37 am IST, Prof. C. K. Raju <ckr@ckraju.net> wrote:

Sorry, misspelt the email address. Forwarding fyi.

----- Forwarded Message -----

**From:** Prof. C. K. Raju <ckr@ckraju.net>

**To:** Dinesh Kumar desm <dinsehncert@gmail.com>

**Cc:** K. Subramaniam <director@hbcse.tifr.res.in>; Hukam Singh <singhhukam5@gmail.com>

**Sent:** Thursday, 10 January 2019 7:03 AM

**Subject:** Critique of NCERT math texts

Dear Prof. Dinesh Kumar,

You will recall our meeting at the NCERT conference last month. You had agreed to hold discussions on my critique of the NCERT math texts.

Let me begin with the simplest aspect of my critique: the challenge prize of Rs 2 lakh that I have offered for serious evidence about the "Euclid" mentioned in "Introduction to Euclid's geometry" the chapter 5 of the NCERT class IX text. (The prize was reiterated publicly before the Malaysian Deputy Education Minister in 2011: see the video "Goodbye Euclid", [part 1](#), [part 2](#), [part 3](#) (or just Google for images).)

It is a **scandal** that for the last decade the prize has been standing and no one in NCERT is able to provide the evidence. That means the NCERT is just teaching blind imitation. for it is unable to

publicly justify what it says in its texts except through the mistaken attitude "trust the West", though the colonial experience clearly shows the West is not trustworthy.

That is, a mere reference to Western secondary sources, or further stories (from tertiary Wikipedia or elsewhere) are not evidence for the "Euclid" myth: evidence must involve a reference to *primary sources* from Euclid's time, which are well known not to exist. (See [this admission from 2002 by the late David Fowler](#), the leading Western expert in the history of Greek mathematics.)



### Goodbye Euclid Part 3

Part 3 of a talk given at Universiti Sains Malaysia, on 22 July 2011, chaired by the then Malaysian Deputy Educa...

The next part of the critique is that **this false myth of Euclid hides the church connection**, for the fact is that the book "Euclid's" *Elements* was used as a text for Christian priests for centuries, by the church which burned all heretical books (including Indian Bibles), and therefore the book (as falsely reinterpreted by the church) *had* to be theologically correct. This is further explained in my book *Euclid and Jesus: how and why the church changed mathematics and Christianity across two religious wars* (see link below).

What damage does this false history cause? It misleads a mass of students in a major way. The same Class IX text book explicitly states the false belief that Greeks did some special type of "superior" geometry, using "reason", which students should imitate. While there is nil evidence that any of the Greeks did anything special in geometry (apart from linking it like Egyptians to religious beliefs about the soul), this statement in the class IX text involves a double speak about reason. The "reason" mentioned in that stock piece of church/racist propaganda (repeated in the NCERT text) refers to a special type of metaphysical reasoning (formal reasoning = reason minus facts). This type of reasoning was first used in the post-Crusade church theology of reason, and differs from normal reasoning (= reason plus facts, as used in science, and in all systems of Indian philosophy). The church/West has an advantage in spreading this superstition: it enables absolutely any nonsense proposition to be "proved" mathematically by adopting suitable postulates. Contrary to the Western superstition, spread by the church, and restated in your class IX text, that this reasoning is "superior", formal reasoning (pure deductive reasoning minus facts) is actually an inferior way of reasoning.

This critique of formal reasoning is summarised, for example, in the article on "[Decolonising mathematics](#)", to appear in [the journal AlterNation](#), from the University of Kwazulu Natal, and based on a keynote address I gave at the 11th Higher Education Conference, in Durban last year. An early version of this critique was presented as [a keynote at a major conference in 2000](#) at the Univ. of Hawai'i, and is taken up in more detail in my book *Cultural Foundations of Mathematics* (see link below).

In short, our school texts are spreading church superstitions through a compulsory subject like mathematics, by uncritically imitating the West, and failing to apply commonsense.

Teaching this imitative attitude was the crux of colonial education, as explained in [this article based on a keynote at a conference in Beirut](#) in November, last year. That imitation is usually motivated (as in the above Class IX text) by the false statement "the West is superior, the non-West is inferior, therefore imitate the West". This false statement was and is a central aspect of church propaganda, and used for various nefarious purposes since Macaulay brought church education to India as colonial education.

My submission (made before the Union Minister of State for HRD, in an acceptance speech for an honor [he conferred on me](#)) is that in the last 71 years we have never once critically thought over the way colonial education changed our teaching of mathematics. Therefore, we should at least do it now. Else we are guilty of using mathematics, a compulsory subject, to spread church superstitions to a mass of young students.

As Dr Subramaniam said, and I agree, we do math for its practical value. But note that this church metaphysics (of infinity/eternity) has nil practical value, so eliminating it will not affect the practical value of mathematics in any way. E.g. rejecting Russell's 378 page proof  $1+1=2$  does not affect the practical value of arithmetic in a grocer's shop. To send a rocket to the moon, ISRO or NASA uses numerical calculations done on a computer which cannot use formal "real" numbers which NCERT texts falsely claim are essential for calculus. (E.g. see the computer program in the Hawai'i paper.)

On that theme, I will be giving [an "Institute lecture" and conducting a day-long workshop at IIT \(BHU\)](#) on 18th and 19th Jan. To reiterate, I will be publicly repeating my detailed critique of the above NCERT texts. The above blog also contains further links to the detailed abstract, extended abstract etc. of my talk.

C. K. Raju's Blog » Blog Archive » Institute lecture and workshop at IIT (BHU)

Note also that suitable alternatives (which enhance practical value) are available, and that I have developed and tested [an alternative course](#) and text for class IX on Rajju Ganit, with the help of the Hemendra Kothari Foundation, as also [a course on "Calculus without limits"](#), over the last decade. For more details, please refer to the article on "[Decolonising mathematics](#)", cited above, or the [Beirut article](#), also cited above.

Look forward to hearing from you on some concrete plans for a private discussion, as agreed.

Sincerely,

C. K. Raju

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Honorary Professor, Indian Institute of Education  
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### **Book previews**

[Time: Towards a Consistent Theory](#)

The Eleven Pictures of Time

Cultural Foundations of Mathematics

[Euclid and Jesus](#)

[Is Science Western in Origin?](#)