

## Decolonizing mathematics and science

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In a 2012 talk in Wardha, I spoke about “Swaraj in thought”,<sup>1</sup> explaining “swaraj” as a translation of “decolonization”, in which I was then already deeply engaged. As the first footnote in that paper pointed out, the title was a minor correction to Gandhi’s *Hind Swaraj*, and K. C. Bhattacharya’s ‘Svaraj in “ideas”’, correcting the Platonically loaded term “ideas”, a correction especially needed in the context of mathematics. Specifically, concerning decolonization of mathematics and science, much is summarised in this abstract<sup>2</sup> (and extended abstract<sup>3</sup>) to have been presented over two hours at a 2018 conference in Palestine Technical University, which could not be done since Israel censored it by refusing a visa.<sup>4</sup>

A subsequent keynote/paper<sup>5</sup> explained that formal mathematical proof (pure deductive proof excluding the empirical) is *more* fallible than and inferior to normal mathematical proof (which accepts *both* empirical proof and reasoning). It also summarised the alternative math courses (calculus without limits, rajju ganita) since 2009. I had earlier again explained how the church metaphysics of infinity<sup>6</sup> in math can be used to push religious prejudices into science, as was done by Stephen Hawking,<sup>7</sup> and the winner of last year’s Nobel Prize in physics, Roger Penrose.<sup>8</sup> My subsequent work at IIAS led to a revision of my retarded gravitation theory,<sup>9</sup> and a reassertion of my theory of curved (relativistic) shock and blast waves. Further, in my last seminar at the IIAS<sup>10</sup> I reiterated that colonial education was church education, and pointed out that the notion of proof in

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1 <http://ckraju.net/papers/Swaraj-in-thought.pdf>.

2 <http://ckraju.net/papers/Palestine-short-abstract.pdf>.

3 <http://ckraju.net/papers/palestine-extended-summary.pdf>.

4 “Israel denies visa for talk on decolonisation exposing Einstein”, <http://ckraju.net/blog/?p=157>.

5 C. K. Raju, ‘Decolonising Mathematics’, *AlterNation* 25, no. 2 (2018): 12–43b, <https://doi.org/10.29086/2519-5476/2018/v25n2a2>. Keynote 11th HEC, Durban 2017. Also, How Colonial Education Changed Our Math Teaching | C.K. Raju, 2020, <https://www.youtube.com/watch?v=Rm6d-bUmmGg>.

6 C. K. Raju, ‘Eternity and Infinity: The Western Misunderstanding of Indian Mathematics and Its Consequences for Science Today’, *American Philosophical Association Newsletter on Asian and Asian American Philosophers and Philosophies* 14, no. 2 (2015): 27-33. <http://ckraju.net/papers/Eternity-and-infinity-Pages-from-APA.pdf>.

7 C. K. Raju, *The Eleven Pictures of Time: The Physics, Philosophy and Politics of Time Beliefs* (Sage, 2003); C. K. Raju, ‘The Christian Propaganda in Stephen Hawking’s Work’, *DNA India*, 16 January 2011, sec. Lifestyle, <https://www.dnaindia.com/lifestyle/review-the-christian-propaganda-in-stephen-hawking-s-work-1495047>.

8 C. K. Raju, ‘A Singular Nobel?’, *Mainstream* 59, no. 7 (30 January 2021),

<http://www.mainstreamweekly.net/article10406.html>. Also, <http://ckraju.net/papers/Penrose-mod.html>.

9 C. K. Raju, ‘Retarded Gravitation Theory’, in *Sixth International School on Field Theory and Gravitation*, ed. Rodrigues, Waldyr Jr et al. (New York: American Institute of Physics, 2012), 260–76; C. K. Raju, ‘Functional Differential Equations. 4: Retarded Gravitation’, *Physics Education (India)* 31, no. 2 (June 2015), [http://www.physedu.in/uploads/publication/19/309/1-Functional-differential-equations-4-Retarded-gravitation-\(2\).pdf](http://www.physedu.in/uploads/publication/19/309/1-Functional-differential-equations-4-Retarded-gravitation-(2).pdf).

10 *Ganita vs Formal Math: An Obituary of Formal Math*, 2021, <https://www.youtube.com/watch?v=0UrMypVN6c0>. See, also, the detailed synopsis of the book posted at <http://ckraju.net/papers/IIAS-3rd-seminar-book-preface-and-synoptic-contents.pdf>.

formal mathematics (brought by colonial education), is identical to the notion of proof in Christian rational theology of Aquinas and the schoolmen, a fact that few know, since we grossly neglected to study the foreign aggressor, and the method of colonisation.

In a subsequent keynote “Euclid must fall”, at Tübingen/Pretoria I pointed out the connection of the church myth of Euclid to the origins of racism.<sup>11</sup> In a subsequent 2-day workshop in Bengaluru, I explained at length why traditional Indian rajju ganita is preferable to Euclidean geometry.<sup>12</sup>

Since, however, all this is too complex to cover in half an hour, I will instead speak on some assorted topics, for as much as time permits. A lot of detail is included to enable interested people to prepare in advance.

(1) **Notion of proof in Indian math.** The NCERT class IX math text (Appendix 1, p. 287) states that there is “no clear evidence” that Indians (or any others, except Greeks) had any notion of proof. This is false. Indians did have a notion of proof (Nyaya sutra,<sup>13</sup> Buddhism,<sup>14</sup> Lokayata<sup>15</sup>) and this notion of proof was used in Indian mathematics.<sup>16</sup> However, ALL Indian notions of proof differ from the notion of proof in formal mathematics, which (as few understand) is divorced from the empirical,<sup>17</sup> and rejects the one notion (प्रत्यक्ष) common to all the varied Indian notions of proof.

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(2) **Proof and truth, (3) Myth of Euclid, (4) Method of validating knowledge (5) “It works” superstition, (6) Laws of nature.**

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[C. K. Raju, 1 page bio](#)

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11 “Euclid” must fall. <http://ckraju.net/blog/?p=194>, 13 May 2021, for links to presentation and video.

12 “Euclidean” geometry vs rajju ganita. <http://ckraju.net/blog/?p=200>, 5-6 June 2021, for links to presentations and videos (total 5:40 hours). Also, *Sulba Sutra Geometry: Can We Teach It in Schools Today?* | C.K. Raju, 2020, [https://www.youtube.com/watch?v=rLI\\_UU6dfnE](https://www.youtube.com/watch?v=rLI_UU6dfnE).

13 Nyaya sutra 2, <http://ckraju.net/papers/presentations/images/Nyaya-Sutra-Gotama-2-proof.pdf>.

14 “Buddhism and science”, conversation with the Dalai Lama, <https://www.youtube.com/watch?v=SkS1HM6g0O4>.

15 Haribhadra Suri, षट्दर्शन समुच्चय, 5th ed. (Bharatiya Jnanapeeth, 2000), 452–53.. (Bharatiya Jnanapeeth, 2000).

16 <http://ckraju.net/papers/presentations/images/Proof-table.html>.

17 C. K. Raju, ‘Computers, Mathematics Education, and the Alternative Epistemology of the Calculus in the YuktiBhâsâ’”, *Philosophy East and West* 51, no. 3 (2001): 325–62. <http://ckraju.net/papers/Hawaii.pdf>, first line of abstract.