Science, history and mythology: Hindutva discovery of ancient India

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A special symposium on science and technology (S&T) in ancient India as gleaned through Sanskrit texts was organized as a side event at the 102nd Indian Science Congress held in Mumbai in January 2015. The symposium itself, with an obvious Hindutva agenda, and the claims made there, generated headlines both nationally and globally as the organizers may have hoped, but for very different reasons. Far from highlighting important contributions in ancient India, or uncovering hitherto unknown facts, the symposium presentations proffered fantastic claims showing a complete inability or disinclination to distinguish between science and history on the one hand and mythology and sophistry on the other.

According to numerous press reports that were not contradicted, and reports of press conferences addressed by paper presenters and symposium organizers (copies of papers were not made available), one presentation claimed that ancient India possessed advanced aviation technology as far back as 7000 BC, including huge 40-engined aircraft that could even undertake inter-planetary travel. In response to subsequent objections that this was simply impossible, the presenter said, "Modern science is not scientific." Another presentation claimed that futuristic surgical techniques are recorded in the Susruta samhita "not later than 1500 BC," and have also been mentioned in the Rig Veda "considered as first text of universe (sic), created not later than 6000 BC."

All this came after several other such claims were made by Hindutva proponents on previous occasions (see http://www.firstpost.com/politics/plastic-surgery-to-ivf-things-bjp-says-hum-indiawaale-had-before-the-world-did-1833759.html for a listing of many such hindutva claims). In his now notorious speech at a hospital function in Mumbai, Prime Minister Narendra Modi himself said ancient India knew advanced plastic surgery techniques as could be seen from the god Ganesha having an elephant's head attached to a human body, and also knowledge of in vitro fertilization since, in the Mahabharata, Kunti had given birth to Karna outside the womb.

A storm of criticism in the media and from scientists in India (mostly anonymous) and abroad to these and other claims, objected to unscientific statements, mixing of history and mythology, and assertions being made without proper evidence, the cornerstone of the scientific method and of the Indian Science Congress itself. Anyone who thought

the criticism would have embarrassed Hindutva proponents was quickly proved wrong.

And to show that these were not stray comments by "fringe elements," a string of unapologetic comments followed by Union Government Ministers and leading lights of various Sangh Parivar affiliates, directly or indirectly defending the views expressed at the symposium, or making additional assertions along the same lines, revealing a determined effort to reinforce what was evidently an ideological campaign.

Former Minister in the Vajpayee-led NDA government and present Governor of Uttar Pradesh, Mr.Ram Naik, in his valedictory address to the Congress, felt the need to stress that ancient India had made huge strides in sciences like medicine, astronomy, mathematics *and astrology* (emphasis added), and that he "pitied those who are ashamed of our history," which none of the critics had said they were. Former BJP President and now Home Minister and No.2 in the Cabinet Rajnath Singh said after the Congress that local pundits or astrologists should be consulted rather than NASA scientists for astronomical predictions on eclipses and such, making one wonder if the government would so advise ISRO for the next launch to the Moon or to Mars!

The above developments make clear that this was a resolute attempt by Hindutva proponents to put forward a specific point of view. It is argued here that taken together, these different claims and assertions amount to a cohesive set of formulations which, for want of a better term, may be termed the Hindutva narrative on science in ancient India. It is also perhaps a harbinger of a determined ideological campaign of considerable significance for contemporary intellectual and political discourse in India.

The present essay seeks to unpack this narrative and examine its implications.

Concerted Hindutva narrative Several distinct yet interconnected propositions are discernible in this narrative.

First is the claim to antiquity, the idea that Vedic (or Sanskritic) Hindu civilization and its later evolutionary manifestations, seen as congruent Indian civilization, is the oldest civilization in the world, that knowledge of science and technology here pre-dated and was far in advance of that in other civilizations, and that key breakthroughs in these fields were achieved here much before their appearance elsewhere. Second, as this antiquity itself shows, knowledge creation in ancient India was a purely indigenous process and other civilizations borrowed knowledge from India, often without acknowledgement, thus establishing the inherent superiority of Hindu civilization compared to all others. Third, that India would have retained this superiority had it not been for loot and suppression by alien cultures with other faiths, but can reclaim its greatness now by regaining and reasserting Hindu cultural supremacy.

Fourth, that modern historical and general intellectual understanding in India and elsewhere with regard to science and technology in ancient India is a distorted, pro-Western and secularized creation, which has underplayed and deliberately belittled Vedic Hindu civilization's contributions to science, and which has been propagated particularly in India by a westernized, mainly Leftist, elite who have internalized the colonial mindset. Hence, evidence advanced to contradict Hindutva claims on science in ancient India is intrinsically suspect and reflect precisely those anti-biases that the Hindutva narrative seeks to overcome. The latter two propositions are often presented as sub-texts, and their full-throated articulation in the form of a campaign is probably yet to come.

It is argued in this essay that the claims and evidence advanced in support of each of these propositions violate accepted disciplinary principles and practices in both history and science. It is further argued that, while some of this could be attributed to naivety or ignorance of these disciplines and of earlier work done in them, the cohesive messaging and assertiveness of the Hindutva narrative suggest that Hindutva forces believe, and will sooner or later explicitly and concretely insist, that these propositions are true *regardless* of any evidence to the contrary, all such evidence being presumed to be a product of the very biases which are sought to be countered by the Hindu nationalist narrative.

Nature of evidence Let us first examine the nature of the evidence adduced as basis for these claims and assertions. The paper on aviation in ancient India presented at the Mumbai Congress by one Captain Anand J. Bordas, said to be a retired principal of a pilot training facility, may be taken as an illustrative case. Capt. Bordas' passion for proclaiming the superiority of ancient Hindu civilization clearly exceeded his knowledge of both aeronautics and historiography.

According to Capt Bordas, the claims about aircraft in the Vedic period were based on Sanskrit texts by the sage Bharadwaja, the putative progenitor of the *gotra* or clan by that name, "at least 7000 years ago." The text in question, "*Vymanika Prakaranam,"* turns out to be one familiar to Indian scholars. It was seriously studied for over a year in 1974 by a team of scientists, engineers and Sanskrit scholars including renowned aerospace engineer Prof.H.S.Mukunda of the Indian Institute of Science, Bengaluru. The IISc study found that the text in Sanskrit and its translation into English authored by one G.R.Josyer, published around 1920, was written in contemporary rather than Vedic-period Sanskrit. As stated by Josyer in the book, the Sanskrit verses themselves had been dictated by one Subbaraya Shastry, who was given to similar flashes of inspiration, who had claimed in turn that they had been "revealed" to him by Sage Bharadwaja. After scrutiny of the different descriptions and drawings in the book, the IISc team concluded that the text showed "complete lack of understanding of the dynamics of the flight of heavier-

than-air craft," defied all principles of aerodynamics, and "none of the planes [described or drawn] has properties or capabilities of being flown." (Report of this IISc study is available with its authors)

Captain Bordas basing his entire presentation on a single text stated to be a "revelation," whose provenance itself is suspect or at least indeterminate, and which was not assessed critically, is a fatal flaw. To be taken seriously, historiography demands not only textual references, that too from multiple authenticated sources, but also requires support from other kinds of evidence such as artifacts, archeological finds and so on. In as complex a subject as aviation, there should surely also be some evidence from the period in question of knowledge and practices in aerodynamics, materials, manufacturing techniques and so on.

The Hindutva champions, however, appear not to have any conception of, or to care much about, what constitutes acceptable evidence or how to assess evidentiary value. Hence the leap from the imaginative notion of god Ganesha having an elephant's head to the inference that this "proves" knowledge of advanced cosmetic surgery in ancient India, and the leap from the legend of Karna's immaculate conception or the birth of the Kauravas from parts of Kunti's discarded womb to the conclusion that ancient India "must have known" of in vitro fertilization or stem-cell research. Half and half making one-and-a-half which is said to be four!

Stories of immaculate conception abound in myths and legends across civilizations, and mythical half-man half-beasts too are very common in other ancient civilizations, for instance the Minotaur (head of a bull on body of a man), the Centaur (human face and neck, horse's body), the Chimera (with a lion's head and body, a goats head arising from the torso, and a snake for a tail). Did all these civilizations too have knowledge of cosmetic surgery? Was in vitro fertilization a universally known technique?

The issue of antiquity When challenged thus, the Hindutva narrative skirts the question by asserting that whatever other civilizations may have known, India knew it first, among other reasons (such as the outstanding brilliance and far-sightedness of the ancient Hindus) because ancient Vedic civilization is the oldest in the world. The claim to antiquity of the Hindu civilization is in turn based on a far earlier date being ascribed to Vedic-Sanskritic texts without substantiation, and sometimes to taking literally the periodization claimed within the great epics, myths or legends, even while refuting the dating arrived at by historians.

In the papers presented at the Congress, as well as in numerous other articles, books and Hindutva literature, the period 6,000-7,000 BC is frequently cited, in turn based on the Rig Veda or other text being ascribed to such a historical period. The dating of the Sushruta Samhita to "around 1500 BC" by the ayurvedic physician Dr.Sawant at the

symposium, while most authorities put it at around 500-600 BC, also has no reasoning other than mere assertion.

Most academic historians date the Rig Veda to roughly 1,200-2,000 BCE, which Hindutva proponents simply abhor, with Prof.Romila Thapar being their *bête noir* in this regard. Hindutva arguments in favour of dates several thousand years earlier, are mostly founded on suppositions and assertions, circular arguments such as dating Rama's or Krishna's time periods based astrological references in relevant epic literature, deducing a very early date from these, often taking literally a yuga-based age, and thus "showing" that the Rig Veda "could not possibly have been later" than this date and hence "must be" several thousand years before that! (Just google "Rig Veda date Romila Thapar" and see the Hindutva websites and blogs tumble out, full of assertions and vituperation against her and anybody else with a differing viewpoint!) It is way beyond the scope of this essay to delve into the dating question more thoroughly. Suffice it to say that the real issue is not the date itself but what methods are used to arrive at one, what evidence is used and whether this stands up to scrutiny according to accepted historiography.

Let us turn our attention to the motivation for insisting on maximum antiquity for Vedic-Sanskritic Hinduism, particularly as gleaned through Sanskrit texts, and especially as regards science and technology and knowledge creation in general. Three major promptings may be identified and are briefly discussed here.

Firstly, there is the familiar Hindutva project to galvanize "Hindu pride," overcome past "humiliations" in the form of conquests or subjugation by outsiders of different faiths, and re-build confidence for the future, by projecting Vedic Hinduism as the most ancient, advanced and knowledgeable of all civilizations. But this Hindutva endeavour itself is not a new one, and harks back more than a century and a half to the early stages of the national movement in India against colonialism. These early efforts by intellectuals in India, and by several abroad, aimed to uncover and translate into European languages ancient Indian, mostly Sanskrit, texts in philosophy, metaphysics and the sciences so as to showcase the greatness of Indian civilization. Rediscovering ancient Indian knowledge and capabilities had an important role in the struggle against colonialism. (Franz Fanon's brilliant essay 'On National Culture' in The Wretched of the Earth eloquently discusses this, and its pitfalls.)

However, as so often happens in the midst of such revivalist fervour in India, there was also much myth-making, pseudo-history and "unearthing" of a mythical golden past with a common thread of placing all these events in an improbably ancient past. So pervasive and noticeable was this phenomenon that sociologists even coined a term for it: "ancientization"!

Secondly, in the Hindutva version, this traditionalism is not just about nostalgia and projecting a past with great achievements, but also about promoting uncritical acceptance of the Hindutva version of Indian

history. In the Hindutva narrative, most historians come with euro-centric baggage if they are Western or are "*Macaulay putra*," sons of Macaulay. You don't need evidence because we say it was so. Remember the debate on the historicity of the Ram Temple in Ayodhya? It is our faith that Rama was born at this very spot, therefore it MUST be so. Are the Hindutva forces heading in the same direction regarding science in ancient India? Is scientific evidence considered irrelevant in the face of belief, just as historical evidence is?

Vedic-Sanskritic Exclusivity Thirdly, a little noticed aspect of the emphasis on Sanskrit texts. The obvious motivation here is that Sanskrit texts from ancient India would almost exclusively focus on Vedic or early Hinduism, not allowing any scope for distractions about what Indian thinkers learned from Greeks, Romans, Arabs, Persians and from Central Asia or China in the late ancient or medieval periods. The Hindutva narrative has no place for composite culture or even for cultural exchanges. And it speaks of Indian contributions to what was even in ancient times a global knowledge creation process, with all cultures learning from each other, as if others had stolen Indian knowledge as Dr.Harsh Vardhan alleged with regard to Algebra. Al Khwarizmi himself, who brought algebra to world attention and who is therefore often mistakenly credited with the innovation, generously acknowledged the Indian primacy. Similarly, the Arabic translation around 800 AD of the Sushruta Samhita is named *Kitab-i-susrud*.

The exclusive attention paid to Sanskrit texts also completely ignores writings in Pali and Prakrit in ancient India, thus excluding epistemological and methodological streams from Jaina and Buddhist traditions. Reputed mathematics scholars and historians (see for instance S.G.Dani {Prof at TIFR, Mumbai}, "Ancient Indian mathematics: a conspectus," available at http://www.ias.ac.in/resonance/Volumes/17/03/0236-0246.pdf and "Mathematics in India: 500 BCE-1800 CE" by Kim Plokfer, Princeton University Press, 2009; a highly instructive extract is available at http://press.princeton.edu/titles/8835.html) have argued that this would mean leaving out of consideration important knowledge and mathematical traditions since Jaina and Buddhist scholarship had several concerns that were significantly different from those of the Vedic Brahmins, such as a lack of interest in if not antipathy towards ritual performances which were major promptings for so much of Vedic mathematics. Whether deliberate or stemming from ignorance, this certainly echoes the insularity and arrogance of the eurocentrism that Hindutva forces love to decry. Of course, Hindutva proponents are fully capable of turning around and arguing that Buddhism and Jainism are after all part of the larger Hindu family, that all indigenous faiths are but Hinduism in different forms, never mind the bitter doctrinaire disputes

and sometimes bloody rivalry between supporters of these different religions.

Science in ancient India not unknown One of the key organizers of the special symposium at the Science Congress, Dr.Gauri Mahulikar of the Sanskrit Department, Mumbai University, which also vetted all the papers presented, stated that "so far, Sanskrit is essentially considered a language of religion and philosophy, but the fact is that it also talks about science including physics, chemistry, geography, geometry etc. There is a lot of scientific information available in these texts and historical documents that we want to explore." (Times of India, 3 Jan 2015).

This strand of the Hindutva narrative that contributions of ancient India to science were totally suppressed or unknown until Hindutva proponents “discovered” them is bizarre. Like Columbus “discovering” America with numerous indigenous peoples already inhabiting it! One may just forgive Hindutva activists who perhaps learned everything on this subject only from *shakhas* or in books written by one of their own mentors. But surely those engaged in supposedly scholarly work, and eminent leaders, Ministers no less, should be more aware of, and at least not deny, the extensive work done by scholars in India and abroad on science in ancient India.

This work, especially from the second half of the 20th century onwards, has been based on carefully evaluated evidence of different kinds from multiple sources, including texts in Sanskrit and other classical Indian languages, both in original and in translations in Arabic, Latin or other languages. The assiduous research reflected in the exhaustive work by D.D.Kosambi, D.P.Chattopadhyaya, J.D.Bernal, Joseph Needham (incidentally all Marxist scholars) and numerous others are too well known to need repetition.

The first thing expected from serious scholars is a study of extant literature on the subject, and to begin where others have left off. To claim originality where none exists is the worst kind of academic and intellectual dishonesty. Is this the kind of thinking or scholarship that Hindutva leaders want to encourage? Or an example they wish to set for the country, especially the youth?

If the Hindutva goal were simply to highlight achievements in ancient India, there is no shortage of real, pioneering knowledge creation, such as the orbital motion of the planets relative to the sun, the inclination of the earth’s axis, the place value system, early estimations of the value of π, the decimal system including the zero, algebra and different aspects of trigonometry and early forms of calculus, advances in medicine, metallurgy and so on. When all these exist and can be proudly proclaimed, regardless of childish me-first games which beyond a point do not further the understanding of either history or science, what is the need for Hindutva votaries to search for and assert fictitious or imaginary claims? Such fantastic claims only serve to devalue real achievements by

reflecting scepticism from the former to the latter. Far from adding to the glory of Indian civilization, Hindutva advocates are embarrassing the nation and doing a huge disservice to its great contributions to science in ancient times and to the work Indian scientists are doing today.

A couple of important aspects may be touched upon in conclusion.

The very act of organizing the symposium at the 102nd Indian Science Congress portends bad days ahead for science in India. It shows that, contrary to the forward-looking development-oriented outlook that they proclaim, Hindutva forces do not mind causing immense damage to knowledge creation and to major scientific institutions in pursuit of their real ideological agenda. Truly worrying too is the silence of the Congress organizers, of scientists present there, and of premier scientific bodies, on this abuse of the Science Congress and the misuse of governmental power to impose this regressive agenda. People in India, especially the poor in rural and forest areas, have in the past few decades become resentful of various developmental programmes or projects that have adverse impacts on their lives, such as large dams, nuclear power plants, GM crops and foods, pesticides and other hazardous chemicals. People have also become deeply suspicious of what they regard as "*sarkari* (official) scientists" who are fielded by government to defend such projects and claim they pose no dangers, even when evidence and the opinion of other experts strongly indicate the opposite. This is leading to mounting distrust of science itself. The symposium at the Science Congress, the litany of unscientific comments by Ministers and other Hindutva leaders, and the mute response of establishment scientists towards these developments only add to the growing perception that scientists owe less allegiance to unbiased evidence-based findings and work than to tailoring their opinions according to the wishes of their political masters and kow-towing to them.

The key point at issue about science in ancient India is not whether the Hindutva proponents are right or not about this or that claim. Such questions are not difficult to study and to answer, provided one follows well-known scientific procedures for conducting research, testing a hypothesis or floating one, and arriving at conclusions. Science and history are serious subjects, calling for rigour, openness, scrutiny by peers, and finally acceptance, rejection or modification of hypotheses. Mythologies are not the same as history, and can never have the same ontological status as science. In fact, one should not expect them to. Anthropologists have long argued that mythologies have a different social function, and their significance is not to be assessed by their historical "truth" value.

Finally, the battle underway is not just science versus mythology, false claims against historical fact, but a battle for academic and intellectual rigour, for the method of science and of historiography, and ultimately for a scientific attitude and critical questioning, as against blind

acceptance of authority whoever that may be or howsoever exalted. That last is the authoritarian road, which leads to a very bleak future, however glorious our past.