

A personal journey in science journalism in post-1970s India

Rex D'Rozario

When Rajesh Khindri suggested I write an article for this commemorative issue of *Sandharbh*, I had no hesitation in saying 'yes' but soon realised I knew little about the subject he wanted me to write about– the history of science journalism in India - despite my being a 'science' journalist (I'm an 'arts' graduate) for the better part of 35 years. An internet search got me a government-eye view of science journalism in post-independence India so I thought, why not just go in for an anecdotal recollection of my experiences in - exclusively English and Hindi - science journalism, which, perhaps, makes the history a little 'blinkered' and lopsided, considering the legacy of other regional languages and other players.

Anyway, here goes ... and I hope you, the reader, can stay interested and fill in the gaps, keeping in mind a qualifying clarification: I take a broad-based view of 'science journalism' in the sense that I include media other than print in the concept and means other than publications to popularise science and cultivate a scientific outlook among people.

I'd classify my sojourn in science journalism into three periods – streams actually, since they run concurrently - commercial print journalism, 'activist' journalism, and the electronic/digital phase - television and the internet. The thread connecting the three phases is the government presence, which funded major print and electronic media initiatives in keeping with the Nehruvian thrust of spreading scientific temper in Indian society.

Science journalism in the commercial print media

Let me begin with my gurus in science journalism, both deceased: Surendr Jha, editor of *Science Today*, and Pradip Paul, assistant editor. Jha was the guy who visualised the format of the magazine and sold the idea to the Times of India group as a young 35-year-old in the mid-1960s. He networked with scientists in laboratories across India to build up a stable of scientist-writers, many of whom couldn't write for a popular audience, their contributions reading more like quasi-research papers. Paul made their science readable and taught us how to do this. Together, they built *Science Today* into a beacon of popular science journalism – in English - in post-independence India.

There was also the government-published *Science Reporter* (and its Hindi edition *Vigyan Pragati*) but we didn't take those efforts seriously in those days, although the *Science Today* effect did rub off on them under a later editor who made them more readably informative.

The *Science Today* effect lasts to this day. I've come across people who grew up with the magazine, which spawned a love of science in them that influenced their higher study and career choices. That's why I rank *Science Today* as India's best science magazine before subsequent editors took it on a quasi-science trajectory. It popularised cutting edge science – computers, lasers, nano-technology, rocket science, quantum physics, crystallography, bio-technology – making the work of scientists in laboratories understandable to generations of students battling with curriculum-based science.

I remember Jha once telling me about a comment made by the editor of *New Scientist*, the resource-rich British publication that was, arguably, the most popular science journal globally of the time (not to be compared with *Nature*, a research-based magazine with a readership within the science community). The editor was truly amazed that such a versatile publication featuring frontier science could emerge from a resource-poor country like India.

Jha left **Science Today** to found and edit **Science Age**, the second important science magazine in post-independence India in my estimation. His departure underlined the fact that popular science journalism was a non-starter commercially because advertisers did not buy the idea - **Science Today** shut shop in 1992 even though its circulation was nearing 100,000. I worked with Jha for a little over a year in his new venture in the late 1980s. **Science Age** wasn't altogether commercial, the Nehru Science Centre in Worli, Mumbai underwriting its production expenses. Yet it was another losing battle Jha fought, the magazine surviving for a brief lifetime with little advertisement support, never achieving viability.

Science Age was a step ahead of **Science Today** in some respects. Jha brought his imagination into greater play when interpreting science by getting poet Adil Jussawala to join the editorial team and write about matters scientific. (That imagination –shared by Paul - was also reflected in the cover illustrations of both magazines - mind-blowing in their conceptualisation, use of artistic media, colour, without doubt, the finest examples of cover art in science journalism anywhere in the world.)

Another innovation was introducing the comic book format to narratescience stories. T. Padmanabhan, a theoretical physicist, penned '**The Story of Physics**' while Keith Francis did the illustrations. It was a classic series, with the touch of irreverence seen more strongly in the 'Idiot's Guide' and 'For Dummies' series, and minus the platitudinous, retrograde values of **Amar Chitra Katha** comics. (Incidentally, I later got Jha's permission to publish this comic strip in **Chakmak**, but couldn't find the talent with that kind of cheekiness to do the Hindi translation. Vigyan Prasar, an autonomous organisation under the Department of Science and Technology (DST), did eventually publish it in book form.)

That tongue-in-cheek humour found more play in both magazines in the inimitable cartoons of Mario Miranda and A. Morparia, then a newly qualified medical doctor with a funny bone.

There's another aspect that needs mention. A left-leaning political activist in his youth, Jha used the pages of both **Science Today** and **Science Age** to give space to activists to air their views on science and technology, be it alternative technologies such as bio-gas, the social and environmental impact of building large dams, or educational initiatives such as the Hoshangabad Science Teaching Programme (HSTP), at a time when such ventures were fringe activities in the public consciousness. This questioning of research thrusts in science was more evident in **Science Age** than **Science Today**, but the trend truly gathered pace in the 'activist' phase of science journalism.

KSSP, CSE and other Vigyan Parishads in the 'activist' PSM phase

This phase ran parallel with the 'commercial' phase. I remember Jha pursuing M. P. Parmeswaran, the nuclear scientist who was, arguably, the moving spirit behind the Kerala Sasthra Sahitya Parishath (KSSP), to write about the science-cum-cultural movement inspired by leftist ideology that had gained considerable ground in Kerala in the mid-1970s.

KSSP became a template for popular people's science movements (PSM) in South India, including the Tamil Nadu Science Forum (TNSF), Puducherry Science Forum (PSF) and Karnataka Rajya Vijnana Parishat (KRVP). One of its sterling contributions was the use of theatre and dance drama to spread scientific temper in society, an endeavour the organisation took to the level of an awe-inspiring art form, influencing creative minds in the field of performing arts across the country. It was this travelling jatha concept that enabled KSSP to cross the Vindhyas and fire the imagination of science activists in northern India, exciting them to innovate their own vigyan jathas and parishads - from Punjab to Orissa.

These northern and southern PSMs joined hands with older efforts in Maharashtra (Marathi Vidyan Parishad that has a history going back to the 1960s) and Delhi (the left-leaning Delhi Science Forum formed in the late 1970s) to form pan-India networks for spreading scientific temper, science popularisation, literacy and education, such as the All-India People's Science Network (AIPSN), Bharatiya Gyan Vigyan Samiti (BGVS) and the NCSTC-supported Bharatiya Jan Vigyan Jatha (BJVJ). The participation of mass movements such as the Narmada Bachao Andolan (NBA) in a National Alliance of People's Movements (NAPM) further sharpened the national debate on the science-society interface and its impact on the post-independence development models adopted by the country.

Even if these popular science forums do not always see eye-to-eye with one another, they remain a potent and rational countervailing force in a scenario where open-ended consumerism and globalising economic trends tend to reveal the ugly face of science and technology in processes leading to the increasing chemicalisation of life, global warming and conflict between nation states and markets that sustains – and grows - the global armaments industry.

KSSP publishes a children's science magazine called **Eureka** (in Malayalam) that is widely circulated in upper primary schools across Kerala. Edited by science professors based in Kozhikode, its objective is to popularise science among schoolchildren by publishing easy-to-understand articles dealing with science concepts and developments. It also carries do-it-yourself science experiments and other children's activities. In addition, the organisation publishes a science magazine for high school children called **Sastrakeralam** and one for general circulation called **Sastragathi**, apart from popular science books (over 700 titles).

These publications have served as a template for science magazines in other regional languages, spawning similar efforts such as the KRVP's **Bala Vijnana** (in Kannada) and TNSF's **Thulir** (in Tamil) for children and **Jantar Mantar** (in English) for adults.

Another more mainstream presence in the advocacy space is the Centre for Science and Environment (CSE) founded by the late Anil Agarwal, which has taken on the might of multinationals through its research-based campaigns focusing on development that is both sustainable and equitable. Its important contribution to science journalism is its magazine **Down to Earth**, edited by Sunita Narain, and its website.

There are many other such groups, including the Centre for Environment Education (CEE) in Ahmedabad, advocating a more rational understanding of science and its contribution to human development.

The Eklavya contribution to Hindi science journalism

Eklavya and the Madhya Pradesh Vigyan Sabha (MPVS) helped the KSSP stage the Bhopal finale of its five jathas funded by the NCSTC that traversed the country in 37 days - on the third anniversary (1987) of the world's largest industrial disaster. Set up in 1982, Eklavya's focus is to change the way science is taught in schools, but an equally important agenda is spreading scientific temper in society and raising questions about the uses of science in development - beginning with the Bhopal gas disaster and the building of huge dams across the Narmada.

Its first programme was the innovative Hoshangabad Science Teaching Programme (HSTP), which was implemented in over a thousand middle schools across Madhya Pradesh before the government shut it down in 2002. The organisation simultaneously built up a publications unit and conducts science awareness campaigns that travel from village to village in its operational areas.

Eklavya's first science magazine in Hindi for middle school children was launched in 1985. I was its editor and my model, naturally, was **Science Today**, but we tried moving a step ahead to kick-start a process in children of thinking scientifically, something the HSTP taught us. We simplified science writing, eschewing Sanskritised terminology, coining child-friendly equivalents, and searching for content that allowed children to think, do things themselves and search for rational answers. When writing about scientific discoveries, inventions and events we tried to locate them within the social and economic context of the time to show how it is these forces that shape the course that science follows - an approach taken to the next level in **Srote** and **Sandharbh**.

We tried to bring imagination and open-endedness to science, moving away from the position that science is eternal truth, though we did emphasise that it provides the best answers in the current state of knowledge. At least that was our intention in writing or choosing material for publication, though I'm uncertain how far we succeeded. But this much I know. **Chakmak** inspired the setting up of **Chakmak** clubs and activity centres by many PSM groups in which its material was widely used to get children interested in 'doing' science. Teachers, too, used the material in schools. I've come across children, since grown up, who tell me how much **Chakmak** influenced them during their school days.

The magazine opened our eyes to a world of children's literature, including scientific, already existing in Hindi and other regional languages. We traced a publishing house in Allahabad which brought out a superb magazine for children for over two decades before closing down in the 1960s. We also got in touch with Gunakar Muley, another prolific writer of popular science books and articles in Hindi who permitted us to reproduce his writings in **Chakmak**. We couldn't pay him but his interest lay in getting people to read what he'd written - which I hold as the mark of a truly good writer.

Another takeaway from **Science Today** and **Science Age** was cover art - Jaya Vivek, our layout specialist, identified artists with imagination, including tribal artists, who could bring something new to the magazine's cover illustrations.

Chakmak subsequently saw several editors until Sushil Shukla and Shashi Sablok gave it a makeover, emphasising the literary over science. That marked its transition from being (in my estimation) the best children's science magazine in Hindi to the best children's literary magazine, a more than worthy successor to **Parag**. However, like **Science Age**, **Chakmak** also finds it difficult to cover its production costs without advertising revenue. But it's managed to survive, although in leaner form (lower print run), thanks to Eklavya's tenacity and occasional grants from funding agencies.

Eklavya's next effort in science journalism was **Srote**, a weekly science feature service for Hindi newspapers that is basically an NCSTC project. I was its first editor but none of us knew how to run a feature service. So we decided to structure it in two sections - one for children and one for newspaper readers. The children's material was similar to what we prepared for **Chakmak**, the other section containing in-depth articles on scientific topics, the idea being that the newspaper sub-editor would use the simplified material to prepare shorter features. We had a high powered team of contributing writers in our HSTP resource group but we also took on board an Indian-British scientist couple from the UK - Subir and Amanda Sarkar.

The weekly newsletter had the articles printed on one side of its pages in the column-wise format of newspapers in case the sub-editor decided to use it in its entirety so it would be easy to prepare the film for offset printing. But we were far off the mark when it came to reading the mindset of sub-editors in Hindi language newspapers. Few, if any, had adequate scientific understanding and writing

skills to use the background material to prepare shorter features. It wasn't just skill but inclination as well. They just wanted readymade cut-and-paste stuff for the weekly features page. That's why the shorter children's features fared better, several being used as-they-were for the children's pages. So we decided to carry more contemporary, newsy, two-three page features. That more than doubled the uptake of articles among the over 250 newspapers in the Hindi belt we sent **Srote** to. We also collated the weekly features in a monthly magazine format that we circulated to colleges.

The right mix was eventually worked out by Sushil Joshi, the next editor. A doctorate in chemistry from IIT Mumbai, I list him among the finest journalists in the country today popularising science in Hindi. **Srote** currently has a pick-up rate of xxx articles from every weekly issue, which is commendable, given the low interest in science among newspaper readers. NCSTC also needs to be commended for its commitment to funding the venture despite **Srote** still being unable to cover its production costs from its subscription revenue.

Eklavya's next science communication publication **Sandharbh** was visualized as a popular yet scholarly journal for teachers with a wider focus on education, publishing field experiments covering the range of subjects from language to science undertaken in India and abroad by individuals and groups, as well as anecdotes about teaching experiences that provide insights into learner behaviour, hardcore academic material on all school subjects and interesting stories about teachers, scientists, discoveries and so on – even fiction. You have a copy in your hand so judge for yourself.

Like other Eklavya publications, **Sandharbh**, is a loss-making venture subsidised by the organisation itself. But it has spawned clones in Marathi and Gujarati published by local PSM groups in Pune and Gujarat, with interest being shown elsewhere as well. I consider these a measure of its success in a world where commercial considerations set the rules.

Apart from its magazines, Eklavya's publication wing **Pitara** publishes books to popularise science and carry the science-in-development debate forward as part of a wider agenda of educational publications meant especially for children. These books account for a substantial proportion of the more than xxx titles **Pitara** has published to date, contributing significantly to science journalism.

I must also mention a short-lived NCSTC science journalism project we executed – **Kyon aur Kaise**, a weekly wall newspaper in English and Hindi editions for high school and college students, which, I feel, is a format with great potential to arouse interest in science among students.

An incomplete pantheon of science writers in India

There's one more aspect of science journalism that requires mention. Much of the material available is in English and needs to be translated into Hindi or other regional languages. It's a tedious job fraught with danger. I should know. We had an article on DNA structure for **Srote** in which the word 'base' was mis-translated as 'aadhaar' in Hindi by our editorial team, the correct word being 'kshaar'. It must have been a blind spot that made us miss the mistake despite our punctilious proof reading. We were the laughing stock of the HSTP science community for days thereafter.

Nevertheless, I wish to make the point that there are many good 'original' science writers in the country – and I don't mean the journeymen. I've already mentioned two of them in Hindi – Gunakar Muley and Sushil Joshi, and T. Padmanabhan in English. I also remember other leading scientists like N. Mukunda, the late G. N. Ramachandran, J. V. Narlikar, Pushpa M. Bhargava, Madhav Gadgil and Yashpal, the last three falling into a unique category of 'activist' scientists. You couldn't add a comma to what they wrote.

There's one more stand-out name - D. Balasubramaniam, who I consider to be the Isaac Asimov of Indian science journalism, so versatile he can write on any scientific subject under the sun. Then there's the prolific Kishore Pawar, whose natural science features have been collated in book form by **Pitara**. And, of course, the husband-wife team – the late Vinod Raina and Anita Rampal, the former serving the longest tenure as Chakmak's editor.

In mainstream journalism, I remember K. S. Jayaraman, the first science editor of the Press Trust of India (PTI), and R. Ramachandran of the Hindu group. All these names are from my time. Among the current lot, I think Hari Pulakkat of the Economic Times is particularly good. I'm sure you readers can add more names or, perhaps, we could scour the membership list of the Indian Science Writers Association (ISWA).

TV has TRP problems but the internet shows the future lies in the digital space

And finally, the last section of this rather long travelogue on science journalism – television and the internet. The NCSTC figures prominently in the television discourse as well, funding pioneering series such as Chandita Mukherjee's **Bharat ki Chaap** (1989), a journey into the history of science and technology in India that Yashpal calls "a story of people's thinking and doing, of the growth of ideas and artefacts", and Shyam Benegal's **Bharat Ek Khoj** (1988), a historical drama based on Jawaharlal Nehru's Discovery of India that explores the country's 5,000-year history. I include the latter in my list of TV science journalism because of the rational manner in which it looked at Indian history, which is the hallmark of scientific thinking. The two serials may not have been as successful as **Mahabharat** (1988-90) in capturing viewer eyeballs but certainly gave this mythological reconstruction of the past a run for its money.

There was also **Turning Point**, the longest running science news serial (1991-95), originally conceived by the late Manmohan Chaudhuri of the DST's teaching aids department but subsequently directed by Arun Kaul and Neelabh Kaul. It was a racy, well executed programme that held viewer attention and how I wish there were more such shows, especially in the decade when the Balaji soap operas were grabbing mass viewership, regurgitating retrograde social values. I particularly remember the contributions of Surajit Sarkar, whose activist mindset led him to later creatively interweave different media, including live presentations, into multi-media 'events' that recreated the history of the participating audience – a truly unusual example of Paulo Freire's 'conscientisation' concept.

Other examples of TV and radio science journalism include the boringly informative **Krishi Darshan** and I believe Vigyan Prasar currently airs several TV and radio programmes, which I cannot comment on because I have not viewed/heard them as yet. However, the overall experience has been that science cannot generate the kind of TRPs soap operas and mythologies do.

But there is hope yet, aroused by those with an anarchist streak who care a fig for rules and conventions - like Arvind Gupta, who has downloaded over 20,000 priceless classics in science and education on his website www.arvindguptatoys.com and gives a damn about the legal copyright implications of doing so, saying he's 'copyleft' by inclination. Anyone can access these books and his storehouse of DIY (do-it-yourself) toys fashioned from 'trash' that illustrate complex scientific concepts. And many do, the site getting 35,000 daily hits.

The turning point in the career of this IIT-trained engineer working in Tata Electric and Locomotive Company (Telco) came when he took a year off to work with the HSTP team in Hoshangabad – and never went back to the corporate world. He devised his first scientific toy-cum-learning aid with cycle valve tubes and matchsticks collected from a weekly village market, using them to construct two- and three-dimensional geometric shapes and structures to explain concepts from building

trusses to molecular structure. His website laid a firm foundation for popularising his efforts but I think it is the DIY toy videos produced by his team at the Muktagan Vigyan Shodhika (MVS) and uploaded on YouTube that have taken his efforts to the next level.

The MVS is a kind of children's science park set up in the Inter University Centre for Centre for Astronomy and Astrophysics (IUCAA) in Pune with the help of a grant from the late Marathi writer Pu. La. Deshpande and subsequently supported with grants from the Tata charitable trusts. Arvind relates an anecdote about a visit of a delegation from XLabs Gottingen, West Germany to the MVS during which the leader of the team, Eva Maher, was so fascinated by a pencil that levitates and spins with the help of half-a-dozen circular magnets bought for a few rupees that her 'two-minute' trip turned into a two-hour sojourn. In contrast, her experimental laboratory invites experiments and models costing thousands of dollars to help bridge the gap between university and high school.

Arvind has shown how the internet, especially YouTube, can be mobilised in popularising science and getting children to think scientifically and do science joyfully – what he calls 'hands-on' science - with the help of the simple toys he collects wherever he goes, or devises himself or with his team. And he's very practical about getting things done, not caring about the colour of the cat as long as it catches mice. So he's attracted corporate types, academic types, activists of all orientations – anyone willing to lend a helping hand – to translate his videos free into regional and international languages. He feels many of the vibrant activist groups and movements of the closing decades of the 20th century – of which he was himself a product - are now becoming moribund, inertia stratifying their thinking in a rapidly evolving world.

Google says the MVS videos are, collectively, the second most visited globally on YouTube. That's science journalism for a mass audience, pointing the direction in which its future lies - in the digital space. It's where anyone interested in spreading scientific temper in society should increasingly turn their attention in today's world, of course, while continuing to pursue their current efforts for the digitally deprived.