

Science journalism*

‘If the reader is to grasp what the writer means, the writer must understand what the reader needs.’

– Gopen and Swan (1990)¹
The Science of Scientific Writing

The art of communicating truth behind the crude science for information of the public through print and online media platforms is called science journalism. It is an important tool to inform the public on the results of research. However, it comes with a responsibility to meet the expectations of both public and scientific community. Science journalism connects science to communication business model in media industry, and its expansion has increased the career options for people in science. Though a few institutions and research centres have integrated science journalism in their academic programmes, it is not sufficient to fill the huge gap of trained manpower in this area in India.

The number of women in scientific research and occupying faculty positions is less than 20% of the total manpower available in India, in spite of the reasonably high percentage of women with postgraduation in STEM (science, technology, engineering and mathematics). The number of women engaged in science journalism is also less. Is it really because of lack of training? A recently held workshop focused on helping women scientists build a career in science journalism. The facilitators of the workshop were Rebekah Smith McGloin and Heather Sears from Coventry University, United Kingdom. The workshop aimed to empower women in STEM to gain grounds in science journalism through awareness and skill development. It was planned with content to impart effective writing skills and enhance professionalism required in this field. The selected 50 participants were from diverse branches

of science, and engaged either in scientific research or outreach in different parts of the country.

Day one of the four-day workshop was scheduled for orientation and the remaining three days for core professional training in science journalism. The orientation session was a boosting platform with a sophisticated line-up of speakers who gave an essence of science journalism. The opening session was conducted by Janaka Pushpanathan (Director, South India-British Council); Harinath Chakrapani (Science Media Centre, Indian Institute of Science Education and Research (IISER), Pune) and Smita Jain (India-Bioscience, Bengaluru). The keynote speaker D. Balasubramanian (L. V. Prasad Eye Institute, Hyderabad) shared his idea and experience of ‘Making friends with science’, emphasizing the writing style in science journalism. Shannon Olsson (National Centre for Biological Sciences (NCBS), Bengaluru) shared her journey in science outreach with an impressive statement that, ‘Every aspect of life is motivated by science’ and also demonstrated numerous ways of giving back to society. Jyoti Narula Ranjan (Syntalk; <https://soundcloud.com/syntalk>) enthusiastically deliberated upon the unique concept of interdisciplinary ‘Synthesis Talk’ being shared with public through a soundcloud. Writer and Filmmaker Jahnvi Phalkey explained the conception of ‘Science Gallery’ (<https://bengaluru.sciencegallery.com/>) in India, which would give an opportunity to young STEM practitioners to make science easy to understand for people especially adolescents and youth. Subhra Priyadarshini (*Nature India*) listed the steps involved in making a good science story. Aashima Dogra motivated the participants through her efforts of increasing visibility of Indian women scientists leveraging on science journalism through the project ‘The Life of Science’ (<https://thelifeofscience.com/>). H. S. Sudhira (Gubbi Labs; <https://gubbilabs.in/>), highlighted efforts for bridging scientific knowledge and the community.

Since scientific language is hard to understand, good science journalism is essential to present a clear understanding

and relevance of any research to the society. The three core days of the workshop focused on this aspect and emphasized science journalism as critical reporting with a concrete objective. A science journalist can sense the background for news and uses the elements which can breathe life in the story. The process to improve the writing starts with cognizance of writing style. One can be a structured writer or a free writer, and each has its own pros and cons. Scientists trained exclusively in writing research papers often get stuck with structuring a general article even before starting to write it. A free writer is self-motivated and keeps on writing, but may miss the central idea. To overcome these situations and improvise the writing, the facilitators suggested a flexible form of structured writing using ‘mind maps’. This enhances creativity, improves focus in writing and generates new ideas. It helps develop new connections within text and picturize different ways of presenting the data. It also prevents fall in the perfect-sentence-vortex (tedious, slow writing and rewriting to improve the text) and helps to streamline the time and energy in improving the article instead of being lost in the search of perfect sentences. Experts suggest splitting the writing and editing process to avoid lack of flow, context and continuity. Editing should be done after writing the article to check the language features like spelling and grammar, structure, content as well as style of writing. However, the best option is to find a person to edit the text, someone who can be critical and constructive to the writing.

The training session was a combination of individual and group activities. The participants summarized the ‘top-tips for an effective writing in science journalism’. The first tip was to have a clear central theme in the article beginning with an impressive line relatable to the general readers. Use of simple and understandable language avoiding jargons helps readers to assimilate the information. It should differentiate causation and correlation mentioned in the research, highlighting relevance to the present scenario. A science writer should

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include geographical location, data collection and sample size to increase relevance of the study. Also, never overlook limitations mentioned in the source article to increase clarity in the research work. The facilitators underlined the authenticity and use of factual data as the soul of responsible science journalism. To make the writing more appealing along with sufficient scientific credibility inclusion of expert views, comments, suggestions, and quotes was suggested. The article should be structured keeping the context and coming to point quickly before the reader loses interest. Use of contextual illustrations elevates curiosity and interest in the readers. Effective writing also requires avoidance of distractions, which improves concentration and maintains focus on writing. Regularity in writing minimizes complexity and improves clarity of expression.

The facilitators shared some of the proven methods that have increased the potentials and creativity of many artists and writers. Following ‘morning pages’ (from the book *The Artist’s Way* by Julia Cameron), one can fix a schedule dedicated to writing in one’s daily routine, which increases concentration and focus. Using Pomodoro technique increases productivity during writing by time management. It requires dividing the writing time into small intervals, usually 25 minutes with short breaks. They suggested to organize groups like ‘Shut Up & Write’ practised in many parts of the world. It is a simple gathering of interested people

indulged in personal commitment to writing in a supportive atmosphere on any topic.

Science journalism largely relies on professionals with a science background, as a better understanding of the subject reduces the risk of diluting the core of the research concept. However, anyone interested in understanding science, and with the art of storytelling and good command over language can fit the position. But as professional science journalists, the facilitators stressed to break out of the cocoon (subject-specific) with interest and ability to write on any branch of science. In their words, appreciating perspectives from multidisciplinary fields and presenting the research to a wider audience is an art which can be developed with experience, reviews and feedbacks. As science journalists they suggested to openly accept critical feedbacks to hone one’s writing skills.

In the modern internet, world science journalists have options to write for print and online media, and these options increase with writing and oratory skills. As highlighted during the training sessions, a good science journalist essentially creates a big picture with the story and efficient flow in writing is a critical to keep readers glued till the end. Researchers must ensure that crux of the work should be maintained within limited words. The story should progress cohesively in a synchronized manner to keep the readers engaged in the article.

The workshop also helped explore career options available for women with an interest and understanding of science. It provided baseline information for career building and guidance to skill up as a science journalist. The entire session was devoted to the researchers for understanding their moral obligation to develop science temper in the society. The secret for becoming a science journalist is hidden in the personal commitment made to oneself to take charge of one’s own career. The workshop imparted an appetite for career in science journalism by empowering the participants with values, networking and collaboration. The facilitators gave a mantra for a successful career in science journalism – SMART (S, specific, M, measurable, A, agreed, R, realistic, T, time-based) action approach to make specific time-constrained, self-motivating goals.

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1. Gopen, G. D. and Swan, J. A., *Am. Sci.*, 1990, **78**(6), 550–558; <http://www.jstor.org/stable/29774235A> science journalist can sense the background for news and uses the elements which can breathe life in the story.
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Recent earthquakes in Arunachal Himalaya

Of late, there has been a rise in the number of earthquakes in the North East Region (NER) of India. Very recently, a mild tremor shook the East Kameng district of Arunachal Himalaya, when a shallow-depth (16.8 km) earthquake of M_W 5.5 with epicentre 27.707°N and 92.890°E struck at UTC 09 h 22 m 15 s (14 h 52 m 14 s ITC) on 19 July 2019 (refs 1, 2). Importantly, within half an hour two aftershocks were recorded, one in the same epicentral zone of the M_W 5.5 earthquake and another at the southern site of East Kameng district² (Table 1). A M_W 4.9 earthquake was recorded at

on 20 July 2019) with epicentre 27.736°N and 92.810°E and depth of 10 km. The highest impact of these earthquakes was felt in the epicentral zone of East Kameng district and in the adjoining regions of Arunachal Pradesh, Guwahati and other parts of Assam and Dimapur, Nagaland. The NER is one of the highly seismically active regions^{3,4} and falls in the zone V in the seismic zoning map of India (BIS 2004)⁵. In this context, these felt events are significant because of their epicentral region being located in the NER itself. Figure 1 shows the epicentral plot of the earthquakes and focal mechanism of two earthquakes

(from USGS) with prominent tectonic elements of NE India.

NE India is a signatory of complex geotectonics and is characterized by varying features. For instance, there is foreplay of active north–south convergence along the Himalayan arc with east–west subduction folding. Simultaneously, there exists thrusting under the Burmese microplate along the Indo-Burmese arc^{6,7}. Meanwhile, another feature is the Eastern Himalaya comprising Sikkim Himalaya, Bhutan Himalaya, Arunachal Himalaya and the Eastern Himalayan Syntaxis. From north to south the Main Central Thrust (MCT) and