NATIONAL SCIENCE FOUNDATION

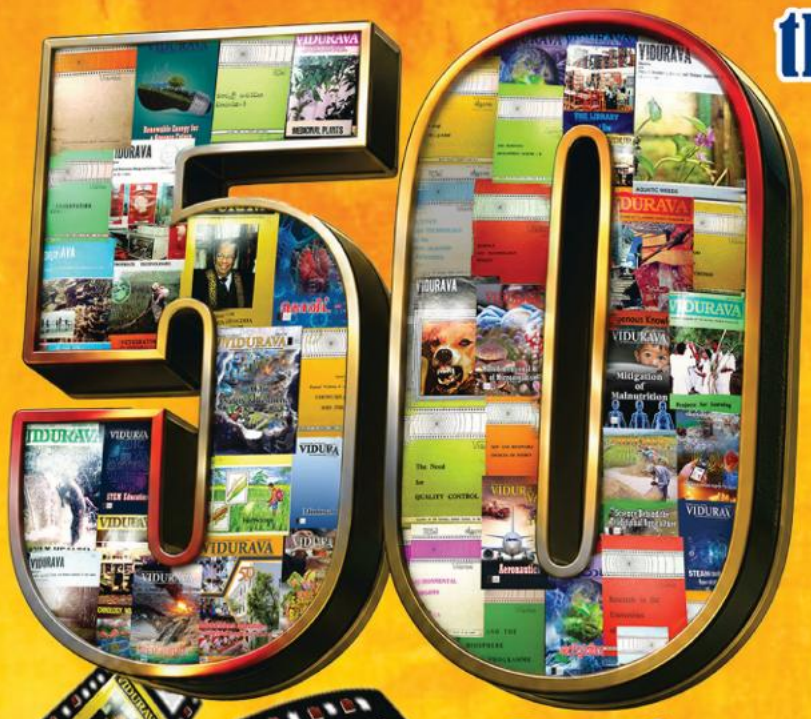
VOLUME 42 Number 02 2026

ISSN 1391-0299

VIDURAVA

THE SCIENCE MAGAZINE OF THE NATIONAL SCIENCE FOUNDATION, SRI LANKA

The Journey of Vidurava



50th Anniversary

1976 - 2026



VIDURAVA

Volume 42 No. 02

August 2026

Chairman
Dr Sudath Samaraweera

Director General
Prof. Shiromi Perera

Vidurava Editorial Committee
Mr Thusitha Malalasekera
Dr Seetha I. Wickremasinghe
Dr Gowry Moorthy

Editor (English)
Dr Seetha I. Wickremasinghe

Editorial Adviser
Dr P.R.M.P. Dilrukshi

Coordinator
Ms. Maduka Senaratne
Ms. Abhimani Ranatunge

Typesetting & Page Designing
Miss Sheikha Anver

Cover Page
Miss Sheikha Anver

Published by
National Science Foundation
47/5, Maitland Place
Colombo 07.

Source of Images: Internet / Authors

Tel: 011-2696771
Fax: 011-2694754
E-mail: vidurava@nsf.gov.lk

'VIDURAVA' Science Magazine is available at http://www.nsf.gov.lk

Contents

2 **Editorial**

3 **From laboratories to the landscape: the evolution of science communication in Sri Lanka**
Jayantha Wattavidanage

12 **Vidurava: 50 years of journey towards promoting a scientifically literate nation**
P.R.M.P. Dilrukshi

18 **How to use digital media to help science to reach everyone**
Ruchira Nalinga Wijesena

22 **Historical milestones of printing technology**
Prasanga Mabarana

27 **Ancient science and irrigation systems in Sri Lanka**
P.B. Dharmasena

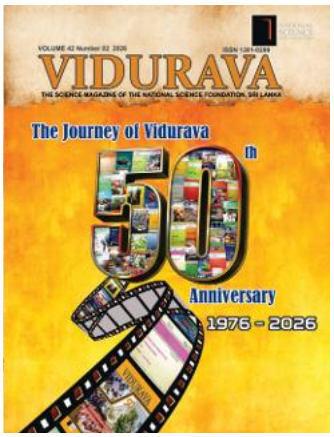
35 **Remembering Prof. Carlo Fonseka's crusade for science and humanity**
Jayantha Wattavidanage

40 **Tribute to M. Asoka T. de Silva**
Geethika Yapa

42 **Thusitha Malalasekera: a tribute to a legend in science communication**
Manuj C. Weerasinghe

44 **Vidurava Issues published during the past 50 years**

47 **Nobel Prize Winners 2026**
P.R.M.P. Dilrukshi



© National Science Foundation

ISSN 1391-0299

Views and opinions expressed in the articles of this publication are those of the authors and do not necessarily reflect the official views of the NSF.

Editorial

Bridging generations through science communication

Science is often described as the language of discovery, but it is also a language of connection. In today's fast-changing world, science communication has the unique power to bridge generations by creating meaningful conversations among children, parents, grandparents, teachers, and communities. When scientific knowledge is shared in a simple, engaging, and relatable manner, it becomes a tool not only for learning but also for strengthening relationships across age groups.

Every generation experiences science differently. Older generations have witnessed remarkable transformations, from the first television broadcasts and space exploration to the rise of the Internet and artificial intelligence. Younger generations, meanwhile, are growing up in a digital age where scientific advances shape everyday life. These differing experiences offer valuable opportunities for dialogue. Science communication encourages people of all ages to share their perspectives, learn from one another, and appreciate how knowledge evolves over time.

For school children, science becomes far more exciting when it extends beyond the classroom. Asking grandparents about traditional farming practices, weather forecasting, herbal remedies, or local biodiversity helps children to understand that scientific thinking is not limited to textbooks. Many traditional practices are rooted in careful observation accumulated over generations. Comparing this knowledge with modern scientific explanations nurtures curiosity, critical thinking, and respect for cultural heritage.

Communities benefit as well when science is communicated in accessible ways. Science fairs, public lectures, museum exhibitions, citizen science projects, astronomy nights, and environmental clean-up campaigns bringing together people of all ages. These activities demonstrate that science is not confined to laboratories but is woven into everyday life. Children gain confidence by asking questions, adults rediscover their curiosity, and seniors contribute wisdom born from experience. Such shared experiences foster social cohesion while promoting lifelong learning.

Schools have a particularly important role in building these connections. Teachers can encourage students to interview family members about changes they have observed in climate, agriculture, health, or technology over the decades. These conversations enrich classroom learning while strengthening family bonds. Scientists and communicators also share the responsibility of presenting complex ideas in language that is clear, accurate, and engaging for audiences of every age.

Ultimately, science communication is about more than explaining facts. It is about building trust, encouraging curiosity, and inspiring collaboration. It reminds us that learning is a lifelong journey shared across generations. When children, parents, and grandparents explore scientific ideas together, they create a culture of inquiry that benefits families and society alike.

By making science accessible to everyone, we do more than spread knowledge; we build understanding, preserve valuable experience, and inspire future innovation. In an era where misinformation spreads rapidly through social media, the ability to distinguish evidence from opinion is more important than ever. In bridging generations through science communication, we strengthen not only scientific literacy but also the human connections that help communities thrive in an ever-changing world.

Over the 50 years of its establishment, the science magazine Vidurava has fulfilled a commendable role in science communication. The articles appearing in this issue further elaborate its journey towards meeting its mandate. In conclusion, a note of appreciation with gratitude is well deserved by M. Asoka T. de Silva (former editor- English), and Thusitha Malalasekera (current editor- Sinhala) for their long years of service that ensured continuous publication of Vidurava.

Dr Seetha I. Wickremasinghe

From laboratories to the landscape: the evolution of science communication in Sri Lanka

Jayantha Wattavidanage



Imagine a team of dedicated scientists locked away in a high-tech university laboratory. After years of intense research, they finally discover a way to cure a tropical disease or engineer a new variety of rice that can grow during severe droughts. If these discoveries remain tucked away inside a dusty notebook or an expensive, password-protected database, they benefit no one. For scientific knowledge to have any real-world value, it must step out of the lab and walk into the lives of ordinary people.

This vital bridge is what we call "science communication". It is the art and heartbeat of taking complex, jargon-heavy discoveries and translating them into practical, exciting, and life-saving knowledge for everyone else.

For Sri Lanka, a developing nation that stepped into its Independence in 1948, science communication was never just an academic luxury, it was a battle for national progress. As the colonial era ended, our schools and research institutes were left with a major language barrier: advanced science was taught and discussed almost exclusively in English. This meant the modern advancements in medicine, engineering, and agriculture were locked behind a linguistic wall, accessible only to a small, urban elite.

The vast majority of Sri Lankans, who spoke Sinhala or Tamil, were completely cut off. True national development required a massive shift. Complex scientific theories had to be translated, reimagined, and reborn in the native languages of our island. This wasn't a simple task of swapping words in a dictionary; it required building entirely new technical vocabularies (පාරිභාෂික ශබ්දමාලා), simplifying heavy concepts without losing their truth, and creating stories that could spark the curiosity of rural farmers, office and factory workers, schoolteachers, and students alike.



Dr. E.W. Adikaram

The pioneers who spoke to the nation

Long before the Internet or modern textbooks existed, a few brilliant, bilingual thinkers realized that true mental liberation for Sri Lankans was impossible without a scientific mindset. They stepped out of their elite academic circles to write and speak directly to the public.

One of the earliest champions was Dr. E.W. Adikaram. A profound philosopher and educator, Dr. Adikaram wrote extensively in Sinhala to demystify everything from the movement of distant stars to the laws of physics. He wrote with an elegant, welcoming simplicity, intentionally avoiding

intimidating jargon. His goal wasn't just to teach facts, but to cultivate a scientific temper (විද්‍යාත්මක ආකල්පය)-a habit of questioning, observing, and thinking critically before accepting any claim as absolute truth.



Martin Wickramasinghe

At the same time, the literary giant Martin Wickramasinghe, though world-famous for his fiction and novels, was deeply captivated by biology and organic evolution. Through groundbreaking books like *Satwa Santhathiya* (The Continuity of Animal Life), he introduced local readers to Darwinian Theory. Wickramasinghe passionately argued that scientific literacy wouldn't destroy Sri Lankan culture; instead, it would enrich our heritage, allowing a traditional society to look at a modernizing world with logic and confidence. He also authored the books '*maanawa vidyawa saha sinhala sanskruthiya*' (Anthropology and Sinhala Culture) and '*gramiya vidya praweshaya*' (Rural Science Approach).

By the mid-to-late twentieth century, Prof. Carlo Fonseka became the fiery, fearless face of scientific rationalism. As a professor of medicine, he wielded massive scientific authority but chose to spend a great deal of his public life debunking dangerous myths, sorcery, and fake medical claims. Through live public experiments and sharp newspaper columns, he subjected claims of "miraculous healings" and "fire-walking" to rigid empirical testing. He proved to the nation that science communication isn't just about sharing neat trivia; it is an active, frontline defense of reason against superstition.



Prof. V. K. Samaranayake

When the digital era began to knock on our doors later in the century, it was Prof. V.K. Samaranayake who took up the mantle for technology. Recognizing that computers would soon reshape human history, Prof. Samaranayake worked tirelessly to popularize computer literacy. He wrote introductory articles, delivered public lectures, and advised the state on integrating IT into school curricular ensuring that computing moved out of hidden university centers and became a standard tool for school children in every district.

Expanding the frontlines: the academic, the doctor, and the ecologist

As the movement grew, other monumental figures stepped onto the stage, changing how physics, medicine, and traditional agriculture were communicated to the masses.



Prof. Osmond Jayaratne

Prof. Osmond Jayaratne: the people's Physicist

In the university lecture halls of Colombo and Peradeniya, Prof. Osmond Jayaratne was legendary as a brilliant professor of physics. But his true passion lay in taking physics out of elite, English-medium university enclaves and making it a living, breathing subject for the common man.

Prof. Jayaratne was a key architect in the monumental task of translating complex university-level physics concepts into Sinhala. He didn't just translate textbook sentences, he gave public lectures and wrote pieces that explained how the forces of nature affected



Prof. Nandadasa Kodagoda

everyday in Sri Lankan life. As a passionate social activist, he firmly believed that a developing country could only break free from poverty if its youth, regardless of their wealth or background, could master the laws of physics in their own mother tongue.

Prof. Nandadasa Kodagoda: the public communicator par excellence

In the realm of medicine and public health, Prof. Nandadasa Kodagoda was an absolute star. While he rose to the highest academic ranks, eventually becoming the Dean of Faculty of Medicine and Vice-Chancellor of the University of Colombo, the public knew him as a warm, familiar, and highly trusted guide.

Prof. Kodagoda was the ultimate public medical communicator. Long before medical blogs existed, he recognized that public health crises were caused by a lack of communication, not a lack of medicine. He wrote a famous series of accessible health articles and books in Sinhala, breaking down complex topics like cardiovascular health, forensic medicine, reproductive health, and the dangers of narcotics. He spoke on the radio with a signature comforting, clear, and dignified tone, and turning terrifying medical mysteries into simple, actionable lifestyle habits for rural families. He also advocated for a beautiful synergy, encouraging the public to value the empirical benefits of Western medicine while remaining open-minded to the holistic wisdom of traditional Ayurveda. Pandit William Alwis should also be remembered here for clearly communicating Ayurvedic medical knowledge to the Sinhala people.

Dr. Upali Senanayake: reclaiming traditional science

While other pioneers translated modern Western science, Dr. Upali Senanayake did something revolutionary: he looked at the traditional, time-tested practices of rural Sri Lanka and communicated them as a rigorous, valid system of science. In the 1960s and 70s, as Sri Lanka became increasingly dependent on imported food and artificial chemicals, Senanayake questioned the wisdom of ignoring our ancestral heritage.

The Space Race between the Soviet Union and the United States sparked a global interest in science communication. This curiosity reached its peak with the 1969 moon landing, and science writers like Edwin Ariyadasa, H. W. Jayawardena, Deeptha Leelarathna, and Anura C. Perera helped bring that excitement to Sri Lankans. Meanwhile, S. M. Banduseela made a remarkable contribution by translating several science fiction works of Arthur C. Clarke into Sinhala.

Similarly, gentlemen such as Benedict Dodampegame, Percy Jayamanna, Athula Manchanayake, and Rajendra Kulasinghe performed a vast service in science communication through newspapers. In bringing medical science in Sinhala, especially maternal and child health, to the people, the service rendered by Specialist Doctor Upali Marasinghe is also immense.

Building a launchpad: SLAAS, the NSF, and Vidurava

As these individual voices paved the way, our national institutions realized that science popularization needed a permanent, organized home. The Sri Lanka Association for the Advancement of Science (SLAAS), founded originally in 1944, took a massive leap by creating a Committee for Popularisation of Science (CPS). This specialized unit began taking science on the road, organizing traveling exhibitions that visited distant rural schools, hosting public lectures on regional health issues, and launching national school competitions to get young minds experimenting. SLAAS launched the Science Magazine *"Vidya Viyapthi"* (Sinhala) and *"Vingnamurusu"* (Tamil) specially targeting school children.

The Health Education Bureau (HEB) also played a vital role in sharing health and medical knowledge with healthcare staff and the general public, especially through its long-running magazine, *'Sapatha'*.

This mission became an official state priority when the government established the National Science Council (NSC), which later transformed into the National Science Foundation (NSF). The NSF was given a brilliant double mandate: fund high-level, cutting-edge research, and

Parameter	Historical profile of Vidurava magazine
Founding institution	National Science Council (NSC) / National Science Foundation (NSF)
Launch era	Mid-1970s
Languages	Trilingual (Separate Sinhala, Tamil, and English editions)
Primary target audience	GCE O/L and A/L students, science educators, undergraduates
Core mission	Translating complex research into accessible, curriculum-supporting content

simultaneously find creative ways to popularize science across the entire country.

To turn this vision into reality, the NSF launched its flagship science magazine, Vidurawa, in the mid-1970s. Published quarterly in separate Sinhala, Tamil, and English editions, Vidurawa was designed to be the ultimate, reliable bridge connecting top-tier scientists with GCE O/L and A/L students, teachers, and science enthusiasts across the island.

For a student prepping for their Ordinary Levels or Advanced Levels, Vidurava provided exactly what rigid textbooks often left out: real-world context and inspiration. Over the last fifty years, its pages have captured everything from the core beauty of Newtonian mechanics and organic chemistry structures to deep-dives into Sri Lanka's unique rainforest ecosystems, renewable energy engineering, and cutting-edge genetic breakthroughs.

What has always made Vidurava prestigious is its absolute refusal to compromise on the truth. Every single article is written or rigorously peer-reviewed by practicing university professors, doctors, or engineers. The editors work hand-in-hand with these experts to soften complex terminology without watering down the underlying scientific accuracy. Celebrating its Golden Jubilee, the magazine stands as a proud monument of institutional endurance-keeping the fire of verified, high-quality science education burning bright for half a century.

Long before smartphones and Internet screens became the center of our lives, mass communication in Sri Lanka relied on the warmth of the airwaves. Radio and television had a magical ability to travel deep into rural heartlands, breaking through geographic isolation and literacy barriers.

The Sri Lanka Broadcasting Corporation (SLBC), formerly Radio Ceylon, pioneered this auditory journey. Recognizing the educational potential of radio, they introduced a dedicated science programming. Families would gather around their living room radios in the evenings to listen to lively panel discussions explaining natural phenomena, creative audio science dramas for children, and interactive question-and-answer shows where school students could mail in their burning science questions via the postal service to be answered on-air by university experts.

Mahinda Ranaweera: the voice of *'Sithijaya'*

Within this radio landscape, Mahinda Ranaweera emerged as a true pioneer of non-formal science education. An educationist par excellence and Director of Education at the Curriculum Development Centre during the 1970s, Ranaweera stood firmly alongside Dr. Adikaram in the passionate belief that school children should not be deprived of modern science just because they studied in national languages.

Ranaweera took to the airwaves and created the iconic weekly radio science programme, *Sithijaya* (Horizon). Broadcast throughout the 1970s, *Sithijaya* became an island-wide phenomenon. Ranaweera possessed a rare gift: he spoke with an incredible punch, panache, and flavor that turned complex chemical formulas and mathematical rules into captivating audio stories. For millions of rural school children who had no access to science libraries or English journals, tuning into Ranaweera's voice every week was their window to the modern world, inspiring a deep hunger for scientific exploration.

Then came the late 1970s and early 1980s, bringing a massive visual revolution with the birth of national television networks viz., the Sri Lanka Rupavahini Corporation (SLRC) and Independent Television Network (ITN). Suddenly, abstract textbook concepts were given color, motion, and life. Studio sets turned into vibrant laboratories where presenters conducted live physics and chemistry experiments right before the viewers' eyes.

A beautiful highlight of this era was the localization of world-class international science documentaries. Masterpieces like Carl Sagan's *Cosmos* and spectacular BBC Natural History productions narrated by Sir David Attenborough were translated, subtitled, or masterfully dubbed into Sinhala and Tamil. Rich, authoritative local voice-overs allowed generations of Sri Lankan children to dive into deep ocean trenches, explore the microscopic highways of the human cell, and soar across interstellar space from the comfort of their homes. This golden era of science broadcasting democratized high-quality visual education, inspiring an entire generation of young viewers to pursue ambitious careers in STEM fields.

The newsstand revolution: Vidusara and the tabloid boom

As the school curriculum expanded in the late 1980s and early 1990s, the print media experienced a major shift. While institutional quarterly magazines like Vidurawa set a high academic bar, there was an urgent public need for fast, affordable, weekly science updates that could speak directly to students sitting for competitive state exams.

Vidusara, is Sri Lanka's first dedicated weekly science tabloid newspaper. Spearheaded and brilliantly edited by Anura Siriwardane, *Vidusara* became a household name and an indispensable companion for every single GCE O/L and A/L student across the island.

Anura Siriwardane revolutionized how commercial science journalism functioned in Sri Lanka. Under his leadership, Vidusara broke away from rigid academic tones, adopting a dynamic, visual, and highly accessible newspaper layout. It offered a beautiful mix of current global science news, deep-dives into environmental crises, space exploration updates, and structured deconstructions of the local school syllabus.

Crucially, Siriwardane opened the doors of *Vidusara* to a vibrant, energetic wave of young science writers. He gave university undergraduates, young researchers, and tech-savvy school students a national platform to publish their own feature articles. These young writers brought a fresh, enthusiastic energy to the pages of the tabloid, writing with a colloquial, fast-paced style that made difficult physics equations and biological pathways feel like exciting puzzles rather than stressful exam chores. *Vidusara* proved that science print media could be commercially successful, highly educational, and deeply loved by the youth, all at once.

Meanwhile, the Associated Newspapers of Ceylon Limited (Lake House) published a weekly science newspaper called *Vidunana*, edited by Mr. Dhanasiri Bodhinayake.

Similarly, Sunday newspapers like *Silumina, Rivirasa,* and *Lankadeepa*, children's and youth papers like *Vijaya, Mihira*, *Nawayugaya* and *Yowun Janatha,* as well as women's publications like *Sirikatha, Tharunee*, and *Nawaliya*, made significant contributions to boosting public science literacy through their science articles.

Among magazines, *Vidya* stands out as a long-standing publication that helped build scientific knowledge among Sri Lankan school students. It was edited by a team that included Dr. Buddhadasa Bodhinayake and Prof. Tuley De Silva.

Keeping the flame alive in the Tamil medium

The story of science communication in Sri Lanka remains incomplete without honoring the monumental contributions made within the Tamil community. Tamil science communicators, academics, and journalists faced a distinct, multi-layered challenge: they had to create rich, accessible technical vocabularies while ensuring that the vibrant Tamil-speaking communities across the North, East, and plantation sectors remained fully connected to national and international scientific developments.

At the heart of northern academia, Prof. K. Kunaratnam, a towering figure and former Vice-Chancellor of the University of Jaffna, was an unyielding champion of Tamil-

medium science popularisation. While his personal research pushed the boundaries of physics and geophysics, he dedicated immense energy to public education. Prof. Kunaratnam wrote numerous articles and delivered compelling public lectures in Tamil, breaking down complex theories of physics, computing, and astronomy. He was deeply committed to making sure that Tamil-medium school laboratories and regional school science clubs had access to modern, mathematically accurate materials, laying the foundation for generations of Tamil-medium scientists and engineers.

Prof. S. Mageswaran: demystifying molecular wonders

In the field of chemical sciences, Prof. S. Mageswaran, the charismatic founding Professor of Organic Chemistry at the University of Jaffna, was an absolute force. Prof. Mageswaran possessed a rare, magnetic teaching style that could make the most complex organic chemistry structures come alive.

Beyond university lecture halls, he was incredibly passionate about the popularisation of science at the school level. He traveled extensively, conducting lively seminars and laboratory demonstrations for the GCE A/L students across Tamil-medium schools. He wrote beautifully structured educational articles that linked chemistry to daily life, explaining the science of food preservation, traditional agriculture, and environmental medicine, inspiring countless young minds to embrace the world of research.

Regional journals and the power of media

This academic leadership was strongly reinforced by dedicated journalists, broadcasters, and independent writers who utilized regional print media and the Sri Lanka Broadcasting Corporation's (SLBC) Tamil national and commercial services. The magazines like *Kalaiyarasi* and special weekly science pages in widely-read Tamil newspapers like *Chinthamani* and *Virakesari* became vital spaces for learning.

These platforms showcased the work of local inventors, answered student queries on complex biology and math questions, and provided translated updates on global space missions. Through their collective, dedicated efforts, these Tamil-medium pioneers ensured that the pursuit of rationality and empirical knowledge remained a truly inclusive, island-wide movement.

The digital double-edged sword

As we stepped into the twenty-first century, the explosion of high-speed Internet, smartphones, and social media platforms completely turned the old world of communication upside down. The traditional, top-down model, where a state institution, a professor, or a seasoned journalist acted as the sole gatekeeper of what the public got to see, vanished. It has been replaced by a decentralized, fast-moving digital ecosystem. Today, platforms like YouTube, Facebook, TikTok, and various podcast networks host a highly active community of independent Sri Lankan science communicators. Young scientists, tech-savvy undergraduates, and creators have bypassed old media channels to talk directly to the youth.

The channels dedicated to high-tech device teardowns, astronomical updates, veterinary insights, and ecological breakdowns bring in millions of views. By mixing crisp computer animations, clever memes, and casual, everyday language, these creators make science feel immediate, relevant, and wildly entertaining to a digital generation.

Yet, this incredible freedom is a double-edged sword. Because there are no editors or fact-checkers online, the digital world is also flooded with unprecedented levels of misinformation, dangerous pseudo-science, and wild conspiracy theories. In this endless digital feed, scientifically sound content must fight tooth and nail for user attention against sensationalist clickbait titles and unverified wellness trends.

The worse is that the social media algorithms are explicitly designed to boost whatever drives user engagement rather than factual truth. Shocking, controversial, or magical claims are instantly pushed to the top of our feeds, while quiet, nuanced scientific explanations are buried. The job of the modern science communicator has completely changed: it is no longer just about sharing new information but actively helping students and the public navigate a stormy sea of digital noise.

Media type	Peak era	Primary target audience	Core strengths	Major limitations
Print magazines (Vidurava)	1970s–1990s	Students, teachers, academics, and policymakers.	Uncompromising scientific accuracy; permanent educational reference value.	Slow production times; zero real-time interactivity; dependent on physical postage networks.
Weekly tabloids *(Vidusara)*	1980s–2000s	GCE O/L & A/L students, school science clubs.	Fast weekly pace; highly visually appealing; platform for young, enthusiastic voices.	Commercial printing cost dependency; limited physical archive lifespans.
Radio broadcasting (SLBC)	1950s–1980s	Broad rural and urban households.	Massive geographic coverage; completely independent of reading literacy levels.	Total absence of visual aids; fixed broadcasting times; one-way stream of information.
Television (Rupavahini, ITN)	1980s–2000s	Mass public, families, and school children.	Deep visual engagement; high emotional impact; excellent for complex documentaries.	Expensive production gear; heavy dependence on corporate advertisements; limited airtime.
Digital & social media	2010s–Present	Youth, tech-literate students, and mobile users.	Instant publication; high interactivity (likes, comments, shares); custom multimedia formats.	Extreme vulnerability to fake news; lack of professional review; algorithmic bias toward drama.

When science communication saves lives

The true power of this field becomes crystal clear during national emergencies and public health crises. In Sri Lanka, this reality is beautifully illustrated by our long battle against mosquito-borne illnesses like Dengue, and our efforts to understand Chronic Kidney Disease (CKDu) in farming communities.

When it came to halting Dengue outbreaks, pure laboratory and clinical research done at universities wasn't enough to save lives. Stopping the virus required a swift, permanent change in the daily habits of millions of citizens. Working closely with the Ministry of Health's Epidemiology Unit, science communicators stepped in to translate complex understandings of vector biology, mosquito breeding cycles, and viral transmission into plain, actionable daily tasks.

Television advertisements used bright, memorable 3D animations to show exactly how a single forgotten plastic cup or a fallen coconut shell in a garden could become a breeding ground for thousands of Aedes larvae. Radio shows brought on public health inspectors to highlight the specific hours of the day when these mosquitoes are most active.

Print media, weekly write ups in *Vidusara,* and special inserts in magazines like Vidurava took the time to explain the biological mechanics of platelet counts, systematically replacing blind public panic with empowering medical clarity. By transforming abstract data into shared civic action, science communication directly reshaped public habits and saved countless lives.

Modern torch bearers of reason

As the media landscape keeps expanding, a brilliant new group of communicators has stepped up to carry forward the work of our early pioneers, ensuring that accurate

science finds a home in newspaper columns, university clubs, and the Internet channels.



Prof. Chandana Jayaratne

Prof. Chandana Jayaratne is one of the key figures of modern science communication in Sri Lanka, masterfully using astronomy as a "gateway science" to inspire public interest in STEM. As a trusted academic voice, he frequently appears on national television, radio, and print media during major celestial events. His clear, articulate commentary dismantles deep-seated cultural superstitions and myths surrounding phenomena like eclipses, replacing fear with evidence-based rationalism.

Through extensive island-wide educational outreach, public lectures, and teacher-training programmes, he has modernized how physics and cosmology are taught at the grassroots level. Combining strict academic rigor with exceptional media fluency, Professor Jayaratne has nurtured a national culture of critical thinking, creating a vital societal shield against contemporary digital misinformation.

Prof. Gunasingham Mikunthan from the University of Jaffna has played an instrumental and highly decorated role in popularizing science and driving scientific communication in Sri Lanka, particularly across the Northern Province. His contributions span grassroots community journalism, educational programme leadership, and institutional leadership through regional science bodies: Prof. Mikunthan dedicated years to writing accessible science articles for local media, publishing close to 400 articles. His extensive contribution to the local daily newspaper "*Uthayan*" earned him the Silver Jubilee Award from the media community for long-standing public science writing.

His efforts to translate complex scientific fields such as agricultural biology, eco-friendly technologies, and food security into socially impactful knowledge earned him the prestigious National Award for Popularization of Science from the National Science Foundation (NSF) of Sri Lanka in 2010. He also holds accolades for his ability to communicate research visually and effectively through award-winning academic poster presentations.

In print and digital journalism, Nalaka Gunawardene has been a monumental force in science and development communication for decades. He has consistently advocated for a logical, evidence-based approach to public policy and national decisions. His essays and media commentaries dissect everything from climate change impacts and space exploration to Internet ethics. By helping lead regional groups like TVE Asia Pacific, he has masterfully used film and visual media to tell compelling stories about environmental adaptation, proving that professional journalism can maintain impeccable scientific standards while being deeply engaged.



Prof. Neelika Malavige

During the high-stakes, uncertain days of the COVID-19 pandemic, Prof. Neelika Malavige, a professor of immunology and molecular medicine, became a pillar of trust and clarity for the country. Rather than staying confined to her research facility, she chose to step directly before the cameras.

In calm, clear, and perfectly structured television interviews and press briefings, she broke down the complex mechanics of viral mutations, vaccine trial data, and immune responses. Her gift for replacing terrifying medical jargon with plain, reassuring logic helped stem the tide of nationwide anxiety and online rumors, illustrating the massive impact active researchers can have when they engage directly with the public media.

The road ahead: a strategy for tomorrow

If Sri Lanka is to cultivate a rational, progressive public sphere capable of navigating the high-tech complexities of the modern world, our science communication infrastructure must undergo a deliberate, strategic

transformation. We must move past scattered, individual actions toward structured, systemic reforms. First, our formal education system must move decisively past simple memory testing. The national science curricula for the GCE O/L and A/L streams should integrate media and information literacy directly into science frameworks. Students must be explicitly taught how to identify cognitive biases, double-check Internet sources, verify online claims against peer-reviewed journals, and dissect the clever rhetorical tricks used by promoters of pseudo-science.

Second, we must reverse the Internal culture within Sri Lankan universities that often looks down on public communication, treating it as a peripheral hobby compared to publishing in the obscure international journals. Our institutional frameworks should offer formal career incentives for scientists who talk to the world. Writing educational articles for magazines like Vidurawa, editing specialized tabloids, conducting public workshops, or collaborating with digital video creators should be factored directly into academic promotion criteria, research grant distributions, and national recognition awards.

Third, the National Science Foundation (NSF) and SLAAS can lead the way by establishing creative, collaborative networks that bring together scientists, investigative journalists, graphic designers, and video animators. Scientists understand the data but often lack the media skills to package it attractively for younger audiences. Pairing them with professional content creators would allow these networks to produce high-quality, verified digital assets, ranging from short-form videos to interactive infographics, uniquely optimized to out-compete pseudo-scientific myths on social media feeds.

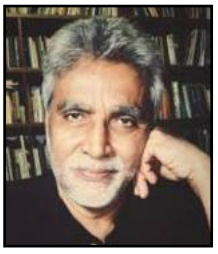
Finally, the extensive network of school science societies across Sri Lanka must be systematically revitalized. Using the trusted publications like Vidurava and Vidya Viyapthi as curriculum guides, these local clubs can transform into active hubs for community-based science. By organizing regional coding hackathons, student-led research projects, and astronomy night-sky camps, we can lift science out of abstract classroom chalkboards and turn it into an exciting, hands-on experience.

Keeping the golden thread unbroken

The fifty-year journey of science communication in Sri Lanka runs like an unbroken golden thread from the early vernacular books of Dr. E.W. Adikaram and Martin Wickramasinghe, through the historical print runs of Vidurawa and the accessible weekly pages of Vidusara, to the dynamic digital channels of the modern web. It proves that a country's progress is directly tied to its public scientific literacy.

Science communication is not an optional educational ornament; it is a vital public safety mechanism. It protects rational thinking, guides a sound national policy, and equips ordinary citizens with the intellectual tools to make informed choices about their health, careers, and environment.

As the GCE O/L and A/L students step forward to become the future leaders, researchers, and innovators of Sri Lanka, the responsibility of carrying this torch passes to them. Accordingly, the exceptional contributions of scholars such as Professor Nandadasa Kodagoda, Professor Carlo Fonseka, Dr. Buddhadasa Bodhinayake, and Mr. Edwin Ariyadasa, who made remarkable strides through both print and electronic media to bring scientific knowledge to the general public in Sinhala, deserve our highest appreciation. Likewise, by respecting the foundation laid down by earlier pioneers from the radio broadcasts of Mahinda Ranaweera and the print leadership of Anura Siriwardane, to the Tamil-medium scholarship of Prof. Kunaratnam and Prof. Mageswaran, and boldly creating accurate, high-impact multimedia content, we can ensure that this golden thread remains completely unbroken. Together, we can illuminate the path toward a rational, sustainable, and brilliant future for Sri Lanka.



Dr Jayantha Wattavidanage
Deputy Director General
(Academic Affairs)
UNESCO C2C
South Asian Centre for Teacher Development
Meepe, Sri Lanka



Vidurava: 50 years of journey towards promoting a scientifically literate nation

P. R. M. P. Dilrukshi



History of the National Science Foundation (NSF) Sri Lanka

The National Science Foundation (NSF) of Sri Lanka has a distinguished history of spanning more than five decades, reflecting the country's evolving commitment to science, technology, and innovation (Figure 1). The journey of the NSF began in 1968 with the establishment of the National Science Council (NSC) under Act No. 9 of 1968. The inaugural meeting was held on the 28th May 1968, chaired by Prof. Sir Nicholas Attygalle, the first Chairman of the NSC. The Council was mandated to coordinate scientific activities and formulate a national science and technology policy, laying the foundation for organized scientific development in Sri Lanka.

In September 1969, Dr C.R. Panabokke took over office as the first fulltime Chief Executive Officer of the Council.

In 1981, the NSC was restructured into the Natural Resources, Energy and Science Authority (NARESA), broadening its scope to include natural resources and energy alongside science. This transformation reflected the growing importance of integrating scientific research with national development priorities.

1968 - National Science Council (NSC)	Established under Act No. 9 of 1968, the NSC was Sri Lanka's first national body for science policy and coordination. Chaired by Prof. Sir Nicholas Attygalle, it laid the foundation for organized scientific development.
1981 - Natural Resources, Energy and Science Authority (NARESA)	The NSC was restructured into NARESA, expanding its scope to include natural resources and energy. This reflected the growing importance of science in national development.
1994 - Science and Technology Development Act No. 11	Provided the legal framework for a modern institution to strengthen research and innovation.
1998 - National Science Foundation (NSF)	NARESA was transformed into NSF, tasked with initiating, facilitating, and supporting both basic and applied research. NSF also became the focal point for science popularization, education, and international collaboration.
Present Role	NSF operates through six (06) Divisions viz., Research Division; Technology Division; Science Popularization Division; Science and Technology Policy Research Division; International Affairs Division; Journal Publication Division; and the National Science Library and Resource Centre. It funds research, supports STEM education, popularize science, conduct policy research and connects Sri Lanka to global scientific networks and taking research to international level.

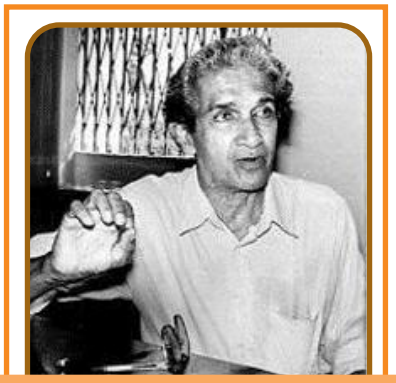
Figure 1: The historical development of the National Science Foundation (NSF)



As the first Chief Executive Officer of the National Science Foundation, Dr C. R. Panabokke provided visionary leadership in advancing science education and science popularization in Sri Lanka. An internationally renowned soil scientist, he was instrumental in promoting scientific knowledge beyond academia, fostering scientific literacy among students, teachers, and the wider public. His dedication helped nurture a culture of scientific thinking and inquiry that continues to inspire future generations.



The late Sir Nicolos Attygalle served as the 1st Chairman of the National Science Council from 1968 to 1970



The late Vidya Jyothi Prof. Osmund Wickrama Jayaratne was a prominent Sri Lankan physicist, left-wing politician, and academic. He served as the President of the Colombo Campus of the University of Sri Lanka and was the Chairman of the National Science Council (NSC) of Sri Lanka from 1972-1977. During his NSC tenure, the Vidurava Science Bulletin was initiated and he chaired the Editorial Board of the Bulletin

The dawn of the Vidurava era: taking science to the community

Since its establishment in 1976, the Vidurava Science Bulletin has served as a flagship publication of the National Science Foundation (NSF), dedicated to making science accessible to all (Figure 2). Over the past five decades, it has evolved from a modest printed bulletin into a nationally recognized science magazine, with its upgrade in 1997 marking a significant

The National Science Council (NSC) from its Act was mandated not only to fund and facilitate research but also to popularize science among the public and to promote science education in the country. Accordingly, the institution has been employing several strategies to popularize science using different instrumental approaches. The publication of Vidurava was one such initiative taken in 1976.

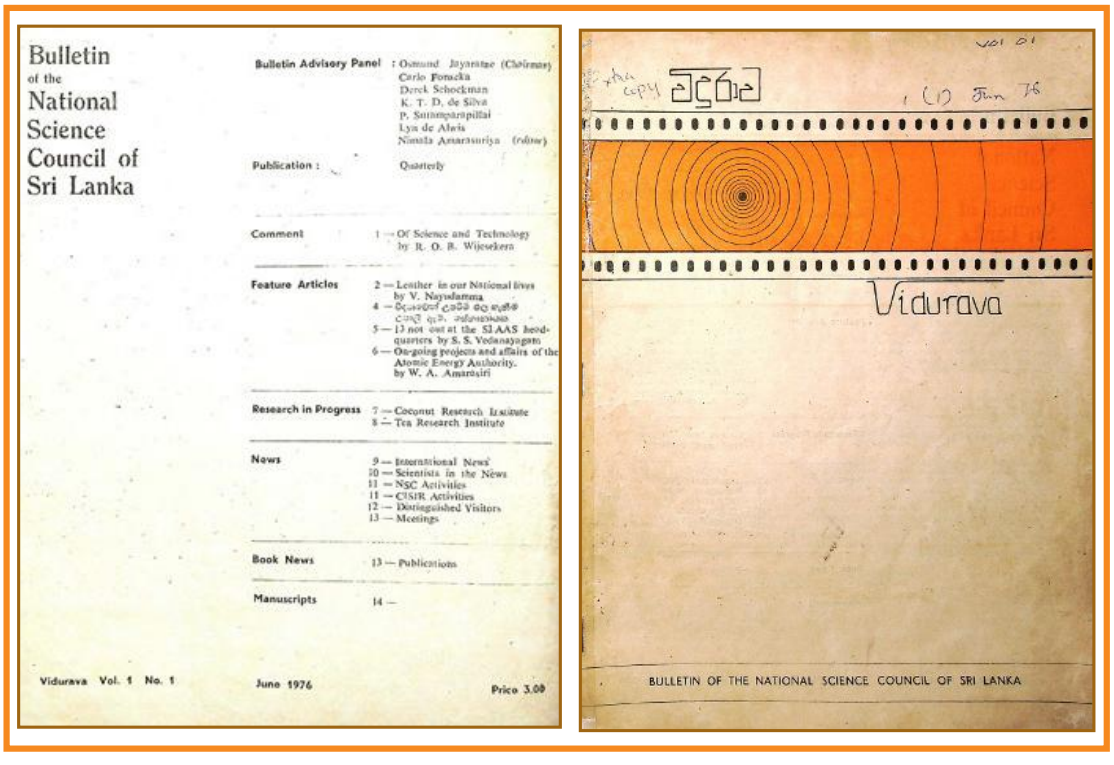


Figure 2: Content page of the 1st Vidurava Science Bulletin

milestone (Today, Vidurava stands as a leading platform for science communication in Sri Lanka, bridging generations through knowledge, curiosity, and innovation while fostering a broader public engagement with science and technology.

The inaugural issue of Vidurava, published in June 1976, marked the launch of Sri Lanka's national science bulletin. The publication was guided by an Advisory Panel chaired by Prof. Osmund Jayaratne, with other distinguished members including Prof. Carlo Fonseka, Derek Schockman, K. T. D. de Silva, P. Sittamparapillai, and Lyn de Alwis. Mrs. Nirmala Amarasuriya served as the Editor of the first issue.

Published on a quarterly basis, Vidurava brought together commentaries, feature articles, and updates on ongoing research, with the aim of linking scientific knowledge to everyday life and promoting public understanding in science. The opening article, authored by Prof. R. O. B. Wijesekera, presented his perspectives on science and technology and set the tone for the publication's mission. It was followed by a range of feature articles and a dedicated section on "Research in Progress," highlighting current scientific investigations and developments in Sri Lanka. An interesting feature of this inaugural issue was its first feature article, "Leather in Our National Lives," written by Prof. Y. Nayudamma, an eminent Indian scientist and renowned leather technologist who was awarded the Padma Shri in 1971 for his outstanding contributions to science and technology in India. The article reflected his lifelong commitment to connecting science with society and demonstrated how scientific knowledge could contribute to national development. Through his discussion of everyday applications, durability, economic importance, and cultural significance of leather, Prof. Nayudamma highlighted the vital role of science and technology in improving livelihoods and supporting industrial growth. The inclusion of such a distinguished international scientist in the very first issue added considerable prestige and value to the inaugural volume of Vidurava, reinforcing its vision of fostering scientific awareness through both local and international perspectives.

The inaugural issue of Vidurava was published in a bilingual format, featuring articles in both Sinhala and English, thereby broadening its reach and accessibility among Sri Lankan readers. Among its notable contributors was Dr. Upali M. Senanayake, one of Sri Lanka's leading scientists, researchers, and science writers, who played a significant role in the popularization of science in the country. His Sinhala-language article on "Maximizing the Benefits of Science" emphasized the importance of applying scientific knowledge for national development and improving the quality of life of the public.

The issue also provided updates on research activities undertaken by key national research institutions, including the Coconut Research Institute (CRI) and the Tea Research Institute (TRI), highlighting their contributions to Sri Lanka's agricultural and economic development. In addition, Vidurava carried a range of international science news, giving special attention to the 1975 Nobel Laureates, the developments in the UNESCO Man and the Biosphere (MAB) Programme, and the Soviet space probe missions to Venus, among other scientific advancements of global significance.

By combining local research achievements, science policy perspectives, educational articles, and international scientific developments, the inaugural issue of Vidurava demonstrated a strong commitment to science popularization, scientific literacy,



Dr. Yelavarthy Nayudamma (1922–1985) was a distinguished Indian scientist and leather technologist, widely respected both in India and abroad where leather is a major industry. He served as Director General of the Council of Scientific and Industrial Research (CSIR) and Vice-Chancellor of Jawaharlal Nehru University.

and informed public engagement with science and technology. This broad and inclusive approach laid a solid foundation for the magazine's enduring role as a bridge between the scientific community and society.

While the first issue was published in English and Sinhala, the second issue included an article in Tamil written by E. E. Jeyaraj of CISIR, in which he shared his thoughts on environmental pollution in Sri Lanka and its potential future repercussions. This issue also featured a Sinhala-language article based on a discussion between the Chairman of the NSC, Dr. Osmund Jayaratne, and Prof. Carlo Fonseka on the topic, "Science Policies in Developing Countries."

This multilingual approach continued until 2006, eventually evolving into separate editions published in Sinhala, Tamil, and English.

The writers, editors, translators, designers, and type-setters of Vidurava have made immense contributions to sustaining this science magazine and maintaining its quality over the past 50 years. The Editorial Committee in the early years, and later, the Working Committee on Science Education that succeeded the Working Committee on Science Popularization, provided significant guidance by advising the NSF Science Popularization Division on annual themes and nominating experts for contributing articles.

Table 01 - Editorial Board of the Vidurava

Year(s)	Editor(s) of five decades
1976–1992	Mrs. Nimala Amarasuriya
1993–1996	Mr AWJ Karunasinghe and Mr Amal Udawatta
1997–2000	Mr AWJ Karunasinghe, Mr Amal Udawatta, Mrs. Thakshila de Zoysa
2005–2006	Dr. Kumara Hiriburegama, Dr. S.R. Krishnaraja
2007–2012	Mr Thusitha Malalasekera, Mr Asoka de Silva, Dr. Shalini Ranganathan, Prof. S. Mohandas, Dr. Kadirawetipillae
2013–2014	Mr Thusitha Malalasekera, Mr Asoka de Silva, Dr. Kadirawetipillae
2015–2017	Mr Thusitha Malalasekera, Mr Asoka de Silva, Dr. R. Senthilnithy
2018–2024	Mr Thusitha Malalasekera, Mr Asoka de Silva, Dr Gowry Moorthy, Dr N. Karthikeyan
2025–2026	Mr Thusitha Malalasekera, Mr Asoka de Silva, Dr Gowry Moorthy, Dr Seetha I. Wickremasinghe

As editors, Mrs. Nimala Amarasuriya played a key role during the inception of Vidurava from 1976 to 1992, serving for 16 years as editor of the Bulletin and laying a strong foundation for science communication. Mr. Thusitha Malalasekera, the present editor of the Sinhala edition, and Mr. Asoka De Silva, former editor of the English edition, have been serving since 2007. Over nearly two decades, they have not only guided the magazine as editors but also contributed as authors and members of the editorial board prior to assuming editorial leadership. Their dedication has ensured the continuity, inclusivity, and relevance of Vidurava across generations.

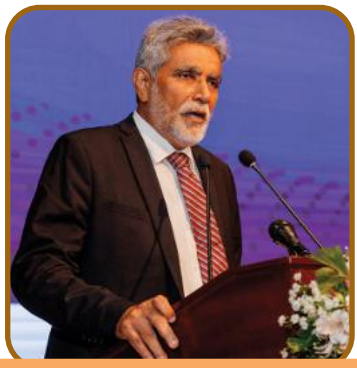
Vidurava - 50 Years of Science Popularization

Over the past five decades, Vidurava has evolved into Sri Lanka's flagship science magazine, reflecting the country's changing priorities in science and technology. Launched in 1976 as a bulletin published by the National Science Council, its early issues focused on practical themes such as agriculture, environment, health, and national development projects like the Mahaweli Scheme. These editions were widely used by teachers and rural communities, embedding science into everyday life.

From the late 1980s to 2000s, Vidurava expanded into multilingual editions (Sinhala, Tamil, & English), covering emerging topics such as computing, biotechnology, and environmental



Prof. M. T. M. Jiffry made an outstanding contribution to advancing science popularization in Sri Lanka, guiding the NSF Working Committee with vision and dedication. His leadership expanded NSF outreach activities and made Vidurava a strong platform for sharing science with diverse audiences. During his tenure as the chairman of the Working Committee he was able to secure several national and international awards for NSF science popularization programmes.



Dr. Jayantha Wattevidanage assumed the role of Chairman of the NSF Working Committee on Science Popularization following the passing of Prof. Jiffry and has continued to serve with dedication up to the present. Under his leadership, the Committee has expanded outreach initiatives, strengthened the Vidurava magazine as a flagship platform for science communication, and promoted inclusive engagement across schools and communities. His sustained commitment has ensured continuity in Sri Lanka's mission to build a scientifically literate society and advance the goals of science popularization nationwide.

Table 02 - Vidurava Milestone: a remarkable journey through five decades

1976 - 1985: Foundation

- Launch of Vidurava as a bulletin under the National Science Council.
- Early themes: Science and Technology, Food and Nutrition, Mahaweli Development.
- Widely used in schools and rural communities to embed science into daily life.

1986 - 2000: Expansion

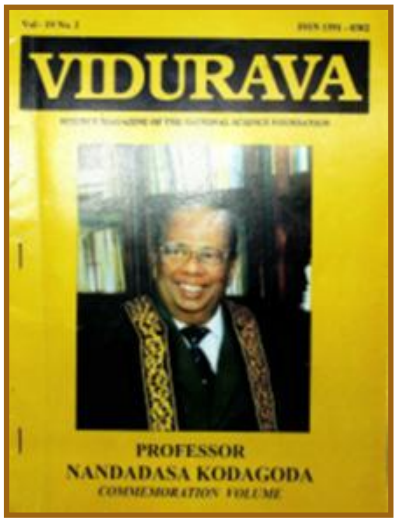
- Multilingual editions (Sinhala, Tamil, English).
- Landmark issues: AIDS Volume (1993); War and Peace Volume (1994).
- Stronger alignment with NSF's school science competitions and societies.
- Transition from bulletin to full science magazine in 1997.

2001 - 2015: Modernization

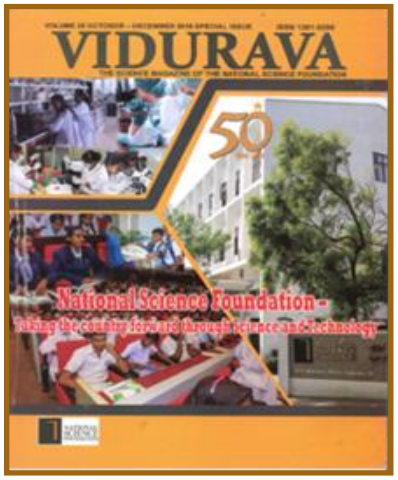
- Focus on global challenges: Climate Change, Biodiversity, & Sustainable Development.
- Integration with NSF's School Science Research Project Competition.
- Youth-focused content inspiring STEM careers.

2016 - 2026: Digital transformation

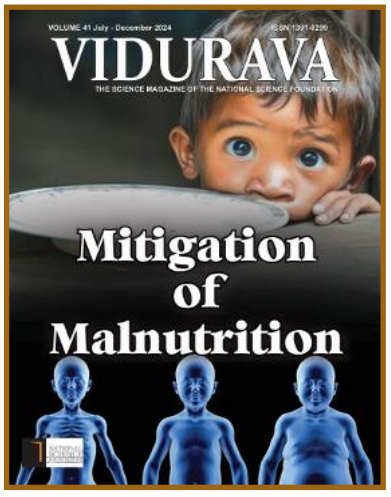
- Online editions and interactive features
- Themes: Artificial Intelligence; Nanotechnology; COVID-19, STEAM Education.



Vidurava Vol. 19 No. 2



Vidurava Vol. 35 special issue



Vidurava Vol. 41 special issue

challenges. The landmark issues included the AIDS volumes (1993), which provided vital public health awareness, and the War and Peace issue (1994), which situated science within the realities of conflict and reconciliation. During this period, the magazine also aligned closely with NSF's the school science competitions and the school science societies, nurturing young talent and raising science literacy.

Prof. Nandadasa Kodagoda who was one of the pioneers in science popularization in Sri Lanka, was the Chairman of the Committee on Science Education during 1990-1997 while serving as an active member. He chaired the Editorial Board of Vidurawa from 1993-1997. He passed away in 1997. As a token of appreciation for his contributions to science popularization in the country, a special issue of Vidurava Vol. 19 No. 2 was dedicated to him and was named 'Prof. Nandadasa Kodagoda Memorial Issue'. In 2018, another special issue of Vidurava was published (Vol. 35 special issue) to commemorate the NSF 50th anniversary on the theme "National Science Foundation: taking the country forward through science and Technology".

In the 21st century, Vidurava embraced modernization and outreach, addressing global themes such as climate change, biodiversity, sustainable development, and later, digital transformation. The recent issues have explored cutting-edge topics including food safety, artificial intelligence, concept of minimalism STEM/STEAM education, and COVID-19, while continuing to highlight local knowledge and traditional practices.

The magazine's enduring value lies in its ability to raise science literacy, nurture young talent, and foster dialogue between scientists, educators, policymakers, and the public. By presenting science in multiple languages and formats, it has reached classrooms, homes, and communities across the island, ensuring that knowledge is not confined to laboratories but becomes part of everyday life.

Today, Vidurava stands as a bridge across generations; parents recall reading about soil fertility in the 1970s, while their children engage in reading robotics and AI in the 2020s. As Vidurava embraces digital transformation and looks to the future, its mission remains unchanged to serve as a trusted voice of science popularization in Sri Lanka. In doing so, it continues to strengthen the foundation for a society that values innovation, sustainability, and evidence-based progress fulfilling its role as a flagship magazine that bridges the nation through science and technology.



Dr P. R. M. P. Dilrukshi
Head
Science Communication and Outreach Division
National Science Foundation

How to use digital media helping science to reach everyone

Ruchira Nalinga Wijesena



Good science is vital for a healthy, forward-thinking society. It shapes our medical care, our technology, our environment, and our daily well-being. But helping people understand science takes more than just publishing journal papers, and books that lie in university libraries; it requires a real community effort that brings scientific facts to life through clear writing, engaging visuals, and everyday conversations on social media.

For centuries, the story of scientific discovery was quiet, slow, and isolated. A scientist usually worked away in a laboratory for months or years that ended up writing results in thick, complicated manuscripts filled with heavy technical jargon. These papers were then sent to special journals, where they sat behind closed doors for months while other experts reviewed them.

While this old way of doing things keeps scientific facts accurate, it builds a giant wall between researchers and the general public. Most academic journals cost a lot of money to read or are locked away in private university databases. This means the very people who could use these discoveries the most viz., teachers, school students, farmers, local business owners, and community leaders rarely get to read them.

When real scientific facts stay hidden, a risky gap opens up. In our modern world, people naturally look for quick answers to health concerns, environmental issues, and new technologies. If clear, trustworthy scientific explanations are not readily available, false rumors, superstitions, and misleading claims quickly take their place.

Today, the rise of "new media", such as social networks, video platforms, blogs, and messaging apps, has completely changed how information moves. The information no longer flows one way from a distant authority down to a silent audience. Instead, the Internet acts like a lively, open town square where anyone can learn, ask questions, and share ideas instantly.

For scientists, jumping into this digital world is not about "dumping down" hard facts or turning serious research into cheap jokes. It is about translating complex ideas into simple and relatable stories. Done right, the public science communication connects laboratory breakthroughs directly to everyday human life, helping people make better choices based on real evidence.

Finding the right online platform

The Internet is not just one single space; it's a neighborhood made of different platforms, each with its own vibe, audience, and rules. Choosing where to share a scientific story is just as important as deciding how to tell it.

To share knowledge easily without getting overwhelmed, the researchers need to pick the right platform for the job.

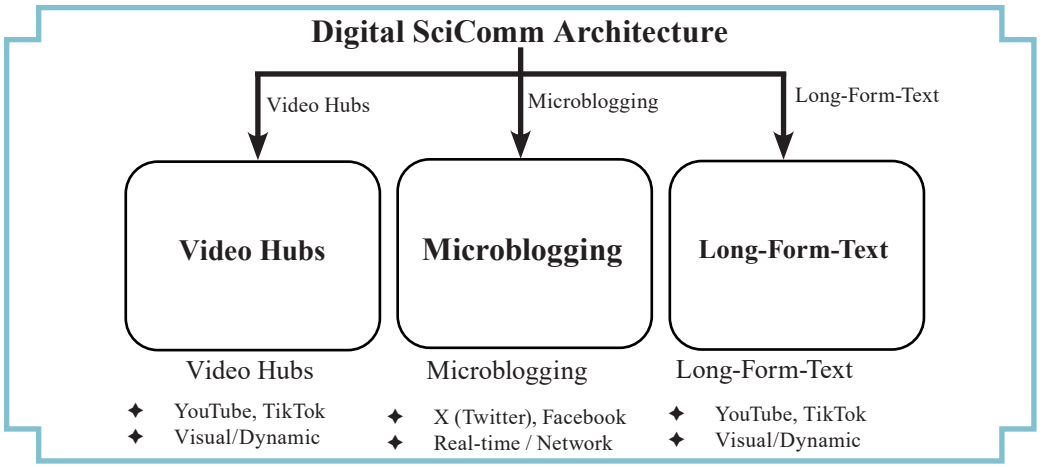


Figure 1 : Digital science media architecture

(An easy overview showing how researchers can match different media tools depending on whether they want to use video demos, quick news posts, or detailed articles)

Video Platforms: YouTube and TikTok

Video is one of the most exciting ways to share science because it lets people see real experiments in action. It takes viewers right inside the lab or out into the field.

- **YouTube:** Works like a massive, free video search library. A clear, high-quality video published today will stay searchable for years, helping students and curious viewers whenever they search for a topic. YouTube is perfect for deep dives like a 10-minute video explaining solar energy, a step-by-step chemistry demo, or a guided tour showing how water filters work.

- **Facebook Video & Reels:** Facebook is now a massive hub for video, combining quick, vertical Reels with longer community videos. It is unique because it reaches everyone from school children and university students to parents and grandparents. You can share quick 30-second science clips through Reels to reach new people, or stream longer live video Q&A sessions inside Facebook Groups to help local communities learn together.

- **TikTok:** Functions on short, energetic, looping videos that last between 15 and 60 seconds. Instead of relying on who follows you, TikTok recommends videos based on what viewers like watching. This makes it amazing for reaching school kids, university students, and the casual scrollers. But it means you have to grab the viewer's attention with a cool fact in the very first 3 seconds!

Text and community networks: Facebook, X (Twitter), and LinkedIn

Text and community spaces are fantastic for starting friendly conversations, building local groups, and connecting with professionals.

- **Facebook:** Reaches a huge audience of all ages. It gives scientists plenty of room to write detailed posts, share photo stories, and host live video chats. With Facebook Groups, researchers can build active online communities focused on local issues like home gardening, clean water, or school projects.

- **X (formerly Twitter):** Built for speed and short messages. It acts like a live newsroom where scientists can quickly share updates, cover live events at science conferences, and chat directly with journalists and leaders. Because posts are short, message clarity is key.

- **LinkedIn:** A network designed for professionals, business leaders, university directors, and policy makers. The style here is more formal. It is the go-to spot for sharing research awards, new patents, institutional news, and industry partnerships.

Platform	Primary modality	Core strengths	Key structural vulnerability	Recommended cadence
Blogging (WordPress)	Long-form written text	Complete editorial control; robust Search Engine Optimization (SEO); analytical depth.	Requires technical initiation; highly gradual audience acquisition.	2 - 4 posts per month
YouTube	High-definition video	Global search engine visibility; high long-term audience retention; monetization paths.	High equipment and editing time investment; steep production learning curve.	1 video per week / bi-weekly
X (Twitter)	Micro-text / graphics	Direct access to journalists and academics; real-time news velocity.	Accelerated content decay; high polarization risk; low nuance buffer.	1 - 2 interactions per day
LinkedIn	Professional updates	High professional credibility; targets industry stakeholders and funding bodies.	Restricted to formal/institutional framing; low utility for casual public outreach.	1 - 2 posts per week
Facebook	Multimedia / community	Multi-generational demographics; powerful cohort building via dedicated groups.	Significant decay in organic reach without financial promotion.	3 posts per week
TikTok	Ultra-short video	Explosive organic discovery algorithms; captures youth and student cohorts.	Extreme brevity restricts technical depth; requires constant trend tracking.	2 - 3 videos per week

Here is a simple breakdown of how different online platforms compare, showing what each is best for and how often to use them:

Writing for the online reader

Reading on a screen is totally different from reading a physical textbook or journal paper. The online readers do not sit down to read every word from the top to bottom; they scan pages quickly, check headers, and decide in seconds if something is worth their time.

In formal scientific papers, writing follows a slow, "backwards" path: authors spend pages explaining history and background, detailing every single lab step, showing long tables of numbers, and finally revealing their conclusion at the very end.

The public online writing flips this upside down into what journalists call the Inverted Pyramid.

Traditional scientific papers put the main conclusion at the very end, while public digital posts start with the big discovery first to hook the reader's interest.

Online, the big discovery and why it matters in real life must come first! Once a reader's curiosity is hooked by the main idea, you can

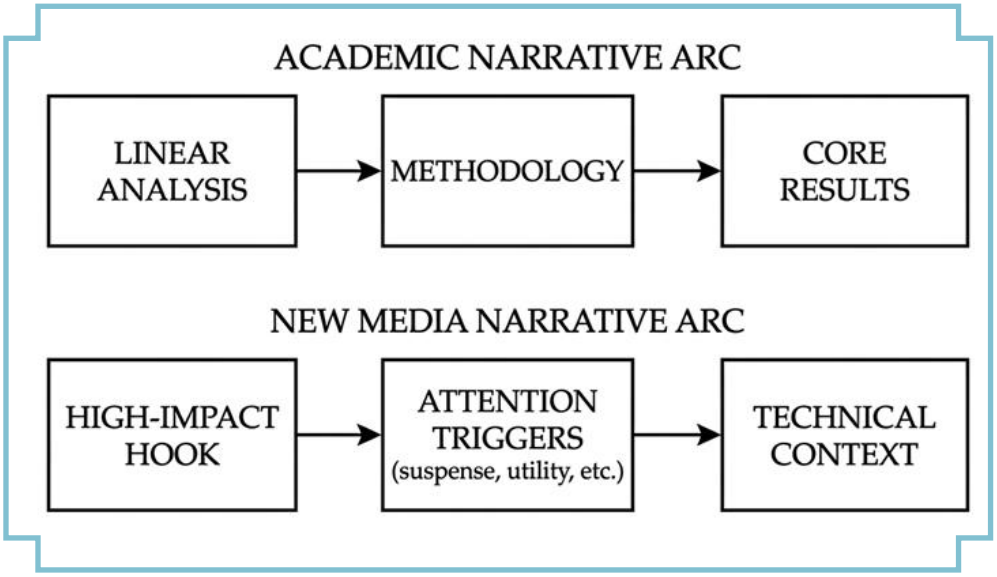


Figure 1 : Academic vs. Digital Narrative Structure.

easily guide them through the lab steps and scientific details in simple, friendly pieces.

Easy do's and don'ts for online science communication

To communicate clearly and build real trust with your readers, keep this friendly checklist in mind:

Quick do's and don'ts for science communicators

What to do:

- **Lead with real life:** Start by answering the reader's main question: "Why does this matter to my health, my home, or my daily life?"
- **Use helpful visuals:** Use simple charts, lab photos, or short video clips to make complex points easy.
- **Add video subtitles:** Always put clear captions on videos, as most people scroll social media with the sound turned off.
- **Chat in the comments:** Treat comment sections like a friendly classroom. Answering questions builds trust and keeps curiosity alive.

What to avoid:

- **Avoid huge walls of text:** Never post long, unbroken blocks of heavy text without subheadings.
- **Avoid click bait:** Don't exaggerate results or make wild claims the data cannot back up. Be honest about limitations while celebrating real progress.
- Don't post erratically: Stick to a simple, steady schedule so readers know when to expect your updates.
- **Never leave fake news unchecked:** Politely correct wrong or misleading comments using clear, factual data.

Science belongs to everyone

Science fulfills its true purpose when it serves the society. While technical research papers will always be important for experts, a researcher's real impact comes from sharing facts openly with the world.

Digital media platforms are not silly distractions from the serious work. They are the direct bridges connecting laboratory discoveries to schools, homes, and everyday decisions. By using simple language, clear visuals, and open discussions, we can sweep away the fake news, inspire young minds, and make science a welcoming part of daily life for everyone!

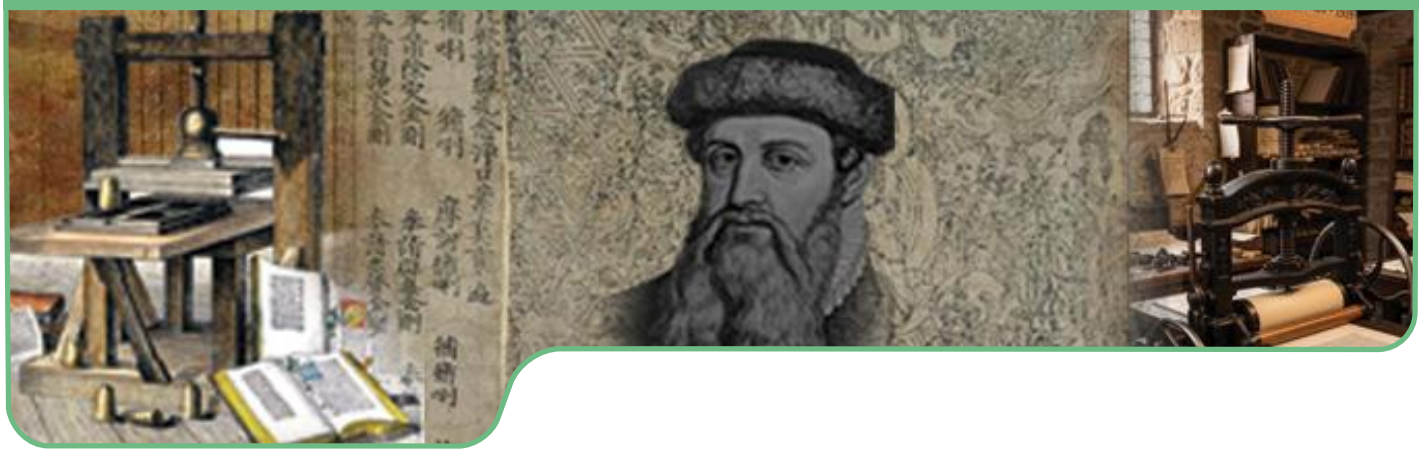


Dr Ruchira Nalinga Wijesena
Institute of Technology
University of Moratuwa, Sri Lanka



Historical milestones of printing technology

Prasanga Mabarana



Introduction and early human communication

In the study of the history of human communication, print media holds a uniquely significant place. Human society required a rapid and reliable mechanism to share the written documents and information across the globe. Driven by this vital need, the art of printing and print-based communication media came into existence. Further, it was through printing technology that humans succeeded in preserving new knowledge for future generations. This breakthrough enabled the progress of civilization, allowing human thoughts, discoveries, and experiences to be handed down as a lasting heritage.

According to archaeologists and anthropologists, before the invention of the alphabet, early humans communicated primarily through spoken language and primitive non-verbal methods. These included body gestures, painting on cave walls, lighting signal fires, and bending tree branches. As noted in the Encyclopædia Britannica, the symbolic signs used prior to the development of structured scripts are categorized as Pictographs, Ideographs, and Hieroglyphs (Figure 1).

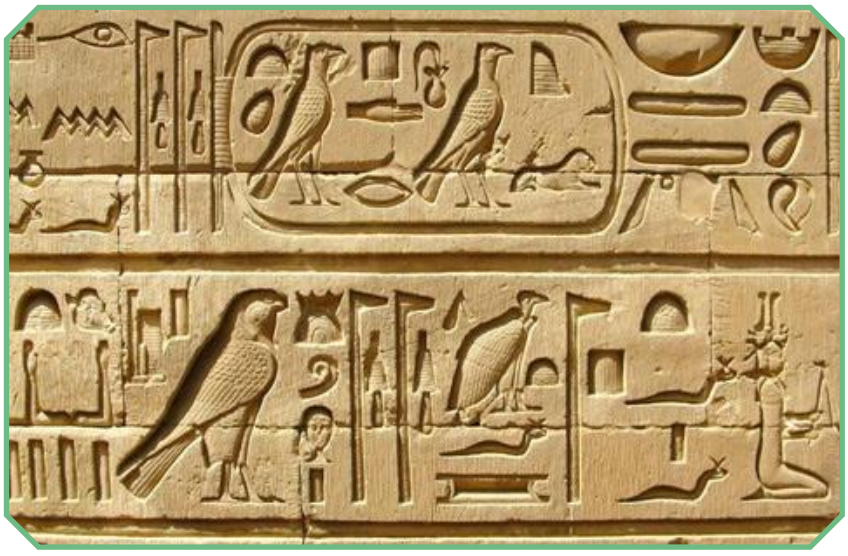


Figure 1: Egyptian Hieroglyphs preserved at the Temple of Kom Ombo in Egypt.

Evidence of this early visual expression can be seen in prehistoric cave paintings (Figure 2), such as those in Lascaux (France), Altamira (Spain), and the Koonalda Cave (South Australia). To create these vivid images, early humans used sharp stone flakes, colored clay, ashes, and the bird droppings mixed with organic fluids.

These ancient wall paintings depicted hunting scenes, animal figures, and mysterious symbols. In many ways, they served as the earliest form of visual printing and publishing. However, due to the inherent limitations of these primitive communication methods,



Figure 2: A prehistoric cave painting from Lascaux, France, depicting a bull and a horse.

the humans recognized the need to construct a formal system of writing, and an alphabet. This era of writing began in ancient Mesopotamia, where symbols carved into clay tablets became known as Cuneiform.

Over time, various ancient civilizations developed their own distinctive scripts to meet their growing communication needs:

- Egyptians: Hieroglyphic alphabet system.
- Mycenaeans: Syllabary script system.
- Romans: Latin alphabet system.

In Babylonia and the Middle East, the scribes wrote using brushes or styluses on papyrus scrolls, palm leaves, and animal hides (parchment), a practice that gradually spread throughout ancient Greece and Rome.
In the Western world, people documented information on wax tablets, stone slabs, and wooden boards. Meanwhile, in China, a sophisticated writing system emerged around 1300 BCE. This featured a specialized form of pictographs inscribed on animal bones, silk fabrics, and porcelain artifacts.

Around 1500 BCE, the Aryans introduced the Brahmi script to India. During the 3rd century BCE, under the reign of Emperor Ashoka, Brahmi inscriptions were carved onto stone slabs and pillars across the Indian subcontinent. Following the arrival of Arahant Mahinda (Mahinda-agamanaya), this script was introduced to Sri Lanka. Buddhism played a central role in spreading literacy across the island. Historical records confirm that ancient Sri Lankans used palmyra palm-leaf manuscripts (*Puskola Poth*), copper plates (*Thamba Path*), stone slabs (*Shila Phalaka*), and gold sheets (*Ran Path*) as writing media.

Although the Western and Eastern civilizations utilized animal bones, papyrus scrolls, palm leaves, clay tablets, stone slabs, copper plates, and silk fabrics for writing, these media were labor-intensive, fragile, and inefficient for mass distribution.

Innovations in China and the spread of printing across Asia

Chinese scholars made monumental contributions toward inventing a truly efficient printing technique. The most pivotal milestone was the invention of paper in ancient China. Crafted from mulberry bark, plant leaves, silk rags, hemp, and reed fibers, this revolutionary invention is credited to Cai Lun, an official of the Chinese imperial court. Initially, the Chinese carved symbols onto bamboo strips and jade stones, applied ink or pigment, and pressed them onto paper substitutes. Recognizing that this process was still time-consuming, they conducted continuous experiments to achieve faster production.

As a result of these efforts, by 1075 CE, Chinese innovators developed movable earthenware (clay) type, enabling the creation of multiple copies from reusable characters. Later, around 1200 CE, they transitioned to carving characters into durable wooden blocks.
By 1610 CE, this woodblock technology and papermaking knowledge reached Korea, and by 1625 CE, it spread to Japan. Subsequently, an inventor named Bi Sheng advanced the movable clay type system into movable wooden



Figure 3: Frontispiece of the Diamond Sutra (868 CE), the world's earliest dated printed complete book.

type. By 1234 CE, Korean artisans pioneered the creation of movable metal type.

Mahayana Buddhism played a transformative role in expanding printing technology across the Eastern world. Scholars widely assert that while Buddhism gifted the art of printing to the world, Christianity later refined the art of book compilation. Consequently, most early printed works were the sacred Buddhist sutras and religious texts. According to archaeological discoveries, a Korean Buddhist sutra manuscript produced using wooden blocks around 600 CE is recognized as one of the oldest surviving printed works, discovered at the ancient Seokguram / Pulguk-sa temple complex. Additionally, an ancient 28-page book of poetry printed during the Tang Dynasty (around 670 CE) was unearthed in China. Historical records also document that around 770 CE, Empress Shōtoku of Japan commissioned the printing of 1,000,000 Buddhist Dharani prayers, distributing them freely for religious merit.

In 868 CE, an individual named Wang Jie commissioned the printing of the Diamond Sutra to dedicate spiritual merit to his deceased parents. This Mahayana Buddhist text, intended for free distribution, stands as the world's third oldest surviving printed book (Figure 3). Produced using woodblock printing, the Diamond Sutra was discovered in 1900 CE by a traveling Taoist monk named Wang Yuanlu in the Mogao Caves at Dunhuang.

After the 9th century CE, the Chinese printing expanded to non-religious topics, including philosophy, politics, and culture that received a strong imperial patronage. Between 932 and 953 CE, the extensive Confucian classics were printed. Notably, between 971 and 983 CE, under the supervision of the Chinese Royal Academy of Science, a monumental Buddhist canon comprising 500 volumes and 130,000 pages was successfully printed.

A flourishing commercial book trade developed in China, with historical records documenting specialized bookstores selling printed works and an official imperial printing house operating in Peking (Beijing). A portion of a 'Diamond Sutra' printed in Japan in 1157 CE is preserved today at the British Museum. Furthermore, in 1337 CE, Korean researchers recorded the printing of the Buddhist text 'Jikji' (Baegun Hwashang Chorok Buljo Jikji Simche Yojeol) using the movable metal type at a royal printing hall in Cheongju province.

Diffusion to the Middle East and the European Renaissance

Until the 7th century CE, the secret of papermaking remained unknown to the Middle East, India, and Europe. During a conflict near Samarkand, Arab forces captured Chinese soldiers who disclosed the secrets of papermaking technology. Arabic scholars subsequently refined the process and introduced paper to India. Arab scholars translated classical Greek and Roman literature into Arabic, authoring advanced works in medicine, algebra, and geography. This intellectual flourishing was greatly propelled by introducing Chinese printing concepts to the Middle East, as evidenced by character-block printing discoveries in Turkestan dating to 1500 CE.

The explorers and merchants like Marco Polo introduced the papermaking and basic printing concepts to Europe around 1200 CE. Throughout medieval Europe up to 1500 CE, religious manuscripts in Christian monasteries were painstakingly copied by hand using quills on papyrus or parchment. However, during the 14th century, papermaking spread rapidly across Europe: reaching Italy in 1276, France in 1348, Germany in 1390, and England in 1470.



Figure 4: Johannes Gutenberg (c. 1398–1468), pioneer of the movable-type printing press.

With the onset of the Renaissance, European scholars revisited classical Greek and Roman texts. This intellectual revival inspired monumental works by thinkers such as Petrarch, Leonardo da Vinci, Raphael, Galileo Galilei, and Niccolò Machiavelli. In 1517, German theologian Martin Luther initiated the Protestant Reformation, challenging the traditional authority of the Catholic Church. Managing the profound political, cultural, and socio-economic shifts sweeping Europe between 1500 and 1600 required a far more efficient method of mass communication.

Various European inventors attempted to refine printing techniques. In 1423, Laurens Janszoon Coster of the Netherlands developed a system of movable block letters, and similar experiments were conducted by Panfilo Castaldi in Italy. However, the ultimate breakthrough came with Johannes Gutenberg (Fig.4).

The Gutenberg revolution and the modern era

Born around 1398 in Mainz, Germany, Johannes Gutenberg studied the shortcomings of existing printing techniques and conducted rigorous experiments to develop a mechanized system. In 1438, he formed a research partnership with Hans Riffe, Andreas Heilmann, and Andreas Dritzehn, though this

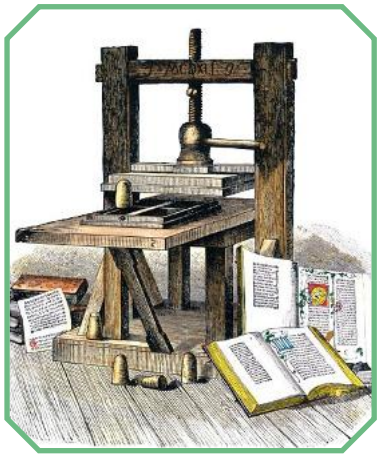


Figure 5: Model of the original mechanical printing press invented by Johannes Gutenberg.

partnership dissolved by 1443. Securing financial loans from a wealthy merchant named Johann Fust, Gutenberg continued his work. By 1450, he adapted and refined the mechanical wooden press traditionally used in wine and cheese making, constructing the world's first mechanical movable-type printing press (Figure 5 and Figure 6).



Figure 6: Johannes Gutenberg examining a fresh printed sheet alongside his financial partner, Johann Fust

In 1452, Gutenberg began printing his masterwork, the famous 42-Line Bible, using movable metal type. However, unable to repay his loans, Gutenberg lost his press and business to Johann Fust in a 1455 lawsuit. Nevertheless, with assistance from his former foreman Peter Schöffer, the completed 42-Line, 190-page Bible was officially released around 1456. Gutenberg passed away in 1468, but his revolution transformed human history. He developed oil-based printing inks and durable metal alloy type (lead, tin, and antimony) that produced exceptionally clear, sharp text.

Printing technology spread rapidly across Europe during the 15th and 16th centuries:

- 1464: German printers introduced printing to Italy.
- 1469: The first commercial printing press was established in Venice, publishing a Hebrew Bible by 1488. Between 1450 and 1500, Italy hosted 417 print shops, producing over 6,000 distinct titles.
- 1470–1475: Print shops opened in France (1470), the Netherlands (1471), Switzerland (1473), and Spain (1475).
- 1476: William Caxton set up England's first press, printing 'Recuyell of the Historyes of Troye'. In 1487, Caxton established the world's first commercial publishing firm in London.
- 1539: Juan Pablos established the first printing press in the Americas at Mexico City, publishing 'Breve y más compendiosa doctrina christiana'.

Gutenberg's technology expanded to India in 1550, Japan in 1590, China in 1644, and the Netherlands by 1620. In 1639, Stephen Daye introduced printing to the English colonies in North America at Cambridge, Massachusetts. Print media later played a key role in unifying American public opinion against unfair British administration and taxation. Notable publishing milestones include 'Philosophical Transactions of the Royal Society' (London, 1665), the world's oldest monthly scientific journal - and 'The Daily Courant' (London, 1702), the first daily English newspaper.

In 1563, Ivan Fyodorov established Russia's first printing press, publishing 'Apostol'. In 1751, English printer Bartholomew Green introduced printing to Canada, establishing a press in Halifax, Nova Scotia.

The industrial revolution and the digital era

The industrial revolution accelerated the printing innovations. In 1789, Nicholas Louis Robert in France invented a continuous paper-making machine. In 1800, Charles Stanhope (3rd Earl Stanhope) invented the cast-iron press, replacing wooden frames with iron to increase mechanical leverage. In 1814, Friedrich Koenig invented the steam-driven cylinder press, dramatically increasing printing speeds.

In 1880, Ottmar Mergenthaler invented the Linotype machine in the United States, allowing operators to set entire lines of type mechanically via a keyboard. In 1887, Tolbert Lanston introduced the Monotype machine, which cast individual metal letters. Photographic printing progressed when William Henry Fox Talbot introduced the photographic engraving in 1826, followed by Alphonse Louis Poitevin's invention of photolithography in 1855. In 1905, American printer Ira Washington Rubel introduced the offset printing.

Following World War II (post-1945), offset lithography expanded globally, and by 1950, phototypesetting machines replaced hot-metal typesetting. Between 1950 and 1980, methods like relief, flexographic, rotogravure, and screen printing opened new commercial dimensions. In 1980, electrophotographic typesetting emerged.

Since the 1880s and into the 21st century, the printing technology has been powered by digital electronics, computer systems, laser technology, and ink-jet systems. The arrival of personal computing transformed pre-press, design, and production workflows. Today, high-speed automated digital printing and 3D printing are integral to global industry, education, and daily life.

In conclusion, it is noted that from the early Chinese block printing and Gutenberg's press to the modern digital and 3D printing, the evolution of print technology over two millennia reflects humanity's continuous journey to preserve and share knowledge efficiently across generations.



Mr Prasanga Mabarana
Former Assistant Lecturer,
Department of Mass Communication and Creative Arts,
University of Colombo, Sri Lanka.



Ancient science and irrigation systems in Sri Lanka

P.B. Dharmasena



Origin of science in the world

Scientific thinking probably evolved parallel to the development of language over the past two million years as the human brain, growing in size and complexity, conferred a selective advantage to the hunter-gatherer ancestors of humans. During the New Stone Age (18,000 to 5000 BC), the invention of agriculture and animal husbandry marked the beginning of human civilization as well as the emergence and rapid development of mathematics and technology. However, it was the invention of writing about five thousand years ago that provided the means to store a permanent body of knowledge.

The written knowledge is an absolute prerequisite to the development of science. A culture with stored knowledge may have records of tangible causes and effects to explain nature, the essence of proto-science, whereas nonliterate societies tend to rely on supernatural explanations. However, the simple knowledge of cause and effect is not sufficient to transform supernaturalism into science. What is required is, to demonstrate that the controlled effects can be produced by manipulating their causes. Then the explanations move from the realm of religion to the realm of science. As more facts become scientifically known and the law of controlled causation covers more cases, the need to seek supernatural interpretations shrinks proportionately.

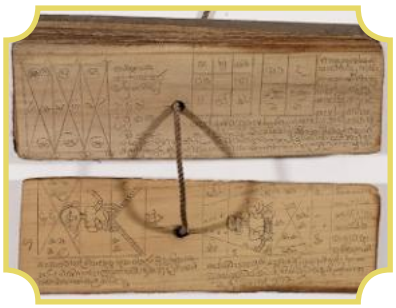
The transformation of primitive humans from Neolithic hunter-gatherers to urban dwellers occurred in three primary locales in the West *viz*., Mesopotamia, Egypt, and the Indus Valley. An important trait of this revolution was the creation of mathematics (arithmetic and geometry) and proto-astronomy as well as the complete absence of natural science. Geometry, as its name (literally "earth measure") indicates, originated with land measurements. Astronomy began with observations of the stars in order to determine the optimum time for planting and harvesting, but an obsession with predicting the future convoluted astronomy into astrology.

Arithmetic, geometry, and proto-astronomy evolved in the earliest cities because they were essential to the development of the urban revolution itself. Arithmetic was essential to keep the inventories and account books of the merchants and traders, under the guardianship of the priests who ruled the cities. Geometry was required by architects and engineers for the construction of the monumental structures that characterized these civilizations. Astronomical observation was indispensable to the development of an accurate calendar for agriculture, due to the reason that without sufficient food, the growing city-states would have collapsed. These sciences, which conformed to the prevailing belief system of officially sanctified superstition, provided the infrastructure necessary to support the urban revolution. City

residents willingly submitted to the priests who maintained power by their monopoly on astronomical and mathematical knowledge. Performing simple arithmetic was an act of religious ritual, and geometrical diagrams appeared as mysterious hieroglyphics decipherable only by the priests. As long as astronomy remained embedded in religion and was the sole domain of priests, it could never progress from the realm of embryonic protoscience to a natural science based on objective rational inquiry.

Numeral systems used in Sri Lanka

The base for ancient science can be traced from the archaeological evidence, remains of physical structures, and written records from ancient palm-leaf manuscripts. In Sri Lanka several numeral systems have been used for ancient science such as *Sinhala Illakkam* (Sinhala Number), *Lith Illakkam* (Lith Number), *Pansal Hodiya* (School Alphabet) etc. Buddhist monasteries and temples have been the custodians of numerous ancient manuscripts including literature on spirituality, rituals, history, culture, medicine, and folklore of Sri Lanka. These manuscripts were available in palm leaf bundles, where various numeral systems have been recorded corresponding to changing governance in the island. The numeral systems reflected the linguistic and sociocultural transformation of the region. The *Sinhala Illakkam* was said to be the oldest numeral system found in the palm leaf writings during 1754-1825 AD. It was specifically used for Pali and literary contents. The *Lith Illakkam* was next to *Sinhala Illakkam* and was used for astrological and native medicinal content in the palm-leaf manuscripts.



The most prominent numeral system was *Pansal Hodiya*, which was later replaced by the Indo-Arabic numeral system, which took place gradually since the 16th century.

Language development

In Sri Lanka, it is believed that the writing and numbering systems had developed concurrently during the Anuradhapura period. Ancient records, including the Pali chronicles like the *Mahavamsa* (Great Chronicle) and the *Dipavamsa* (History of the Island), suggest that both spoken and written languages were established as early as the 5th century BCE, following the arrival of Prince Vijaya from India. Historical evidence indicates that the Sinhalese people began using the plant leaves as writing material around this time. The evolution of these practices was significantly influenced by Venerable Mahinda Thero, who introduced the Brāhmi script to Sri Lanka and further promoted the literacy and the spread of Buddhist teachings. The first documented use of the palm leaf as a writing medium in Sri Lanka occurred in the 1st century BCE. Five hundred monks undertook the monumental task of inscribing the Tripitaka (Buddha's teachings) in Pali on Talipot palm (*Corypha umbraculifera*) leaves at Aloka Viharaya (*Aluvihare*), Matale. In such a voluminous literary task, it is necessary to have the numbering and indexing systems that would ensure sequence and connection among those palm leaf manuscripts.



Watershed-based governance

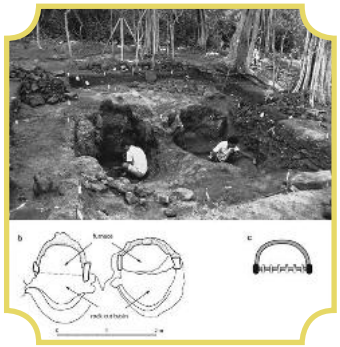
On top of all, it is curious that the ancient Sri Lankans divided the country into 10 administrative divisions namely Rakungiri, Upulwangiri, Kawasthalabha, Neelagiri, Kewesastha, Chalaka, Dhumaka Kaddeera, Mahagiri, Agni, and Indra. The Sanskrit word giri means the mountain. History of inhabiting these mountains dates back to pre and pro to historic times. When these 10 ancient administrative locations are placed on a watershed map of Sri Lanka, all these points are found on the uppermost rocks of river basins in the country.

Iron technology in ancient Sri Lanka

In 1847, the British rulers observed that iron ore occurred in large deposits and veins in Sri Lanka. Recently an additional iron ore deposit has been discovered in Buttala in the Monaragala District, closer to the litho-tectonic boundary between Highland Complex (HC) and Vijayan Complex (VC).

British rulers mentioned that the quality is singularly fine, and it is easily smelted and very pure when reduced as to resemble silver. Converted to steel, it cuts like diamond. Samples that were sent to London had 68.7% and 79.5% of ferric oxide, which were equivalent to 48% and 55% of metallic iron.

The iron industry in Sri Lanka dates back from about the 2nd century BC. This is, particularly, an early period for iron production of this scale and quality. The iron smelting 'factories' found at Sigiriya indicated the industrial level production for use beyond the Sigiriya-Dambulla region. From the remains of the techno-cultural activities within the settlements unearthed from the excavations



at the Ibbankatuwa cist burial site, which belonged to the settlers of the ancient megalithic tradition, a clear picture emerges of their iron using agro-economic culture and well-organized social system. Sri Lanka had the hematite, limonite, and magnetite needed for good iron. Furnaces of this period avoided magnetite, as it was difficult to process. But Sigiriya furnaces had used magnetite. These charcoal-fired furnaces were constructed so that the temperature could be controlled. Some furnaces had four or more bellows and eight nozzles for sending in the air. The bellows were made of two large inverted terracotta pots covered with animal skin.

Crucible cast steel had been manufactured in Sri Lanka several centuries before it was produced in the West. Near Samanalawewa, researchers discovered, for the first time in the world, unique wind powered iron smelting furnaces capable of producing high quality steel for large-scale production. Its process of smelting and converting steel was faster than any other recorded for ancient furnaces. The furnaces were able to produce high carbon steel even in amateur hands.

Ancient clay industry

Sri Lanka had extensive clay deposits, occurring in the flood plains of the major rivers, old river channels, *owitas*, tank beds, and in the deep weathered zones of the crystalline rocks. These deposits were utilized in ancient times. The characteristics of different clay varieties were known, and the clays were used selectively for different purposes. The nozzles in the iron furnaces at Sigiriya were made of clay that could withstand a higher temperature than the clay used for the furnace walls. Clay was used as the binding mortar in stupas such as *Jetawana, Abhayagiri*, and *Ruwanveliseya*. Clay bricks are the most common construction material used in historical buildings and structures in Sri Lanka. Various sizes of clay bricks were employed in the buildings constructed in different kingdoms of Sri Lanka. Thin slurry of clay was used to keep the bricks pasted in position and the stupa was totally covered with a thick lime plaster protecting the clay body from natural elements.

Clay was used in sluices and sometimes around culverts as well. Well-tempered clay 'puddle' (*kiri mati*) of excellent quality was placed around masonry that was subject to water pressure. Clay was sometimes used as the main ingredient for plaster, carefully mixed with many other materials such as sand, sulphur, lime, gums, glues, resins, and fibre. Mirror wall of Sigiriya, is a fine example of good quality clay plaster. Kudiramalai had a well dated to 11th century AD, lined with perfectly circular cylinders made of baked clay placed one above the other in a stratified fashion. Sigiriya had retaining walls of brick built on rock. The prominence of the Sigiriya kingdom as a zenith of technological advancements in ancient Sri Lanka stimulates a meticulous inquiry into the coating technology employed by

its artisans. The preceding scholars have initiated inquiries into the constituent materials of Sigiriya paintings, thereby inciting scholarly discourse on the applied coating techniques.

Ancient brick industry

The bricks manufactured by the ancient Sinhalese have come in for particular praise. The crushing strength of the ancient bricks is more than that of the present-day machine-made bricks. The bricks used for the *Maduru oya* sluice, dated sixth century AD, have been exceptionally strong. They could take a load of as high as 2077 pounds per square inch or 385 kilograms per square centimetre. It was not the usual type of clay, and the bricks were probably fired at exceptionally high temperatures. Such sophisticated kilns were not common in this period. The bricks used for the *Jetavana* stupa consisted of 60% of silty sand and 40% of clay. They had been fired very well and could withstand very high heat. The bonding material for the bricks was superb. Not even the point of a penknife could be inserted between two bricks. There is no mortar joint, so that the brick shape remained as it was. The mortar even today is in perfect condition. This skill has now been lost.

Lime was used as a hardener for mortars and plaster. Shells, corals and dolomite limestone have been used for burning lime. In the Polonnaruwa period, they had used three methods for hardening slaked lime *viz*., a) exposing into atmosphere (calcium carbonate), b) mixing with burnt brick powder (silicate of carbon), and c) mixing with milk (calcium carbonate). The lime concrete used in the anicuts was analyzed by the British in 1898. The cement was of superior quality. It had 7.1 % silicate of lime, while a sample of the 3rd century Roman mortar yielded only 2.5%. The high content of silica in the mortar indicated that the ancients knew that the addition of silica to lime gave it the ability to withstand the action of water.



Stone technology

Stone was an important building material. In the past, the stones had to be quarried, dressed, transported, and set. They were cut out by means of wedges and there-after chiseled. The well packed, dressed rubble retaining walls built in the 5th century still hold the earth embankments at Sigiriya. *Lowamahapaya* had 1600 stone columns that supported a multistorey timber building. These ancient buildings (or structures) were constructed without the modern machinery available today, and yet are perfect in dimension, and structurally sound. Ancient builders of Sri Lanka have taken great care in the selection of the sites, geometries, architecture, structural stability, materials, setting out, construction supervision and management, and sustainability during the design and construction of ancient structures. The British commented that the technique of shaping large granite pillars introduced into Britain in the 19th century had been known in Ceylon long before that.

A stone bridge found near *Kala Oya* in 1826 was built of stones 8 to 14 feet in length, laid in rectangular lines, some jointed to one another, each course receding from the one underneath, giving additional strength, to the bridge. *Eth Pokuna* was constructed out of large blocks of stone (Figure 1). This giant pond is actually man-made and is almost 160 meters in size. Dating back to the 5th century, this pool has a canal system that draws water from a nearby tank (*Perimiyan Kulama*) and fills it up. The best part of it is that the canal system still works. During the rainy season, the tank still gets filled by the water from the same tank.



Figure 1: *Eth Pokuna* in Anuradhapura

The *Kalawewa* spill was formed of hammered granite. The anicut across the Mahaweli River at Kalinga used the massive, square

hewn blocks of stone, weighing two or three tons. The outer wall of the *Ridibandi ela* dam on the *Daduru oya* constructed by King Parakramabahu 1 was built with stone blocks, which are so intricately fitted that the joints are only-a quarter of an inch wide, while its inner core was formed of undressed rubble laid in -lime concrete. The sluices were invariably of square cut stones. At the *Sorabora wewa*, they used soft rock to create the two sluices.

Construction of large reservoirs required the handling of huge stone blocks weighing up to ten tons. At *Urusita wewa*, off Ridiyadgama, the blocks of dressed stone were so large that no modem implements could lift them. For the embankment at Padaviya, about 600,000 cubic yards of earth had been brought to the construction site. The movement of colossal quantities of earth, over appreciable distances would have called for the development of sufficient earth moving machinery, probably drawn by elephants.

Our soil is one of the hardest in the world. Our granite, particularly gneiss, is also hard and difficult. Even our timber is hard. As a result, iron and steel tools were developed in Sri Lanka, a thousand years ahead of the West. The drip ledges and inscriptions on caves confirm that the ancient engineers had tools of superior steel. By the 3rd century BC, the Sinhalese were using the fixed drill and lathe as well. The ancient technologies were labour intensive.

Origin of water civilization

Ancient sailors had the tradition of travelling during the North-East monsoon by crossing the island for exchanging goods. They entered into the island from the natural habour known as '*Alli Rani*' in Arippu area and travelled to Anuradhapura trade nucleus. They hired carts and bought foods from Arippu. Many small tanks were built for irrigating rice cultivation around the habour. The tank bed and the paddy lands were synchronized according to water availability and it can be postulate that '*thawulu govithena*' (tank bed cultivation) might have been evolved in this area. However, due to shortage of water, they had to move for a large upstream storage for supplying water to the downstream small tanks. This reveals that the construction of *Yodha wewa* (Giant Tank) dates back to 600 BC. This is believed to be the ancient *Manamatta* tank mentioned in *Mahawamsa*. It was said that the tribe 'Naga' first built up the *Yodha wewa* to feed sailors coming to the country from *Alli Rani* habour. Since the reservoir catchment area (42 km^2) was not adequate to fill the reservoir, King Dhathusena (459-477AD) constructed a dam (*Tekkam Amuna*) across *Malwathu oya* or *Aruvi Aru* to divert water to the Giant Tank. Subsequently, King Parakramabahu I (1153-1186 AD) rehabilitated this reservoir to improve the storage. Even at present, the farmers practice the *thawulu govithena* using 162 tanks although it is not legally permitted.

Water management master plan

The ancient water management master plan had been operational at all levels (from country level to field level) as given below.

i. Country level - river basin-based governance (as discussed above).
ii. Inter-river basin level - examples: *Dambulu Oya - Malwathu Oya* diversion canal (860 AD); *Malwathu Oya - Kanadara Oya* diversion canal (860 AD); *Yoda Ela - Nachchduwa* feeder canal (540 AD).
iii. Inter-reservoir level – examples: *Kalawewa - Thisawewa Yodha Ela* (470 AD); *Nachchaduwa - Nuwarawewa* feeder canal (290 AD); *Balaluwewa - Siyambalangamuwa* feeder canal (290 AD); *Basawakkulama - Maha Vilachchiya* feeder canal (470 AD).
iv. Sub-watershed or tank cascade level
The sub-watersheds were utilized without harming the environment and constructed structures (tanks, lakes, anicuts etc.) to absorb rainstorms. They reused water of tank above, to store water in the tanks below, while utilizing water for paddy cultivation in between. The arrangement of these tanks is in some areas led to form tank cascade systems.
v. Village level
The land use in a village was wisely utilized for hamlet, paddy fields, forest, and chena

farming while keeping various micro-land uses for ecological and conservation purposes.

vi. Field level
This is an integrated approach with rainfall, tank water and groundwater. During the water scarce year, they adopted *bethma, kekulama, thawulu govithena, ellanga* cultivation etc., to mitigate the impact of drought.

Giant canals

The water management in ancient Sri Lanka was of multi-purpose and multifunctional activity, which was not meant only for food production through irrigation and water management. They managed the water resources for other human needs such as settlement, drinking water, bathing, recreation, and other domestic needs etc. Rainwater harvesting systems were planned and constructed to meet the requirements of cities and agriculture. Most importantly, our ancestors sincerely ensured the existence of the environment (flora, fauna, and environs). Historical evidence shows that early water management planners had thought of planning cities such as Anuradhapura, Polonnaruwa, Sigiriya etc., based on water availability. They developed parks and landscapes with water springs and ponds for human attraction. Water related natural disasters such as flood, drought, windstorms, epidemics etc., had been minimized through proper management of water and environment.

The ancient engineers knew the topography, patterns, and soil properties of the island. There would also have been a system of measuring heights and distances. The *Jaya ganga* was planned because the ancient engineers knew what the levels at Kalawewa and Anuradhapura were, and that it was feasible to think of diverting water from the *Kala Oya* to Anuradhapura. The *Minipe Ela* turned the waters of the Mahaweli at a bend in the river, where the water entered a narrow channel. Brohier, himself a surveyor, stated that the ancient engineers were highly skilled at surveying. They were able to accurately work out heights and distances and were able to determine even small differences in elevation. They also knew levelling. One method may have been to use two clay pots separated by a rod. The level surfaces were ascertained by filling this with water. Inscriptions indicate that there was some sort of surveying organization.

Brohier strongly believed that the ancient irrigation engineers had worked according to design. He said "They planned beforehand. It is unlikely that work was started before determining heights and distances. Judging from the account of the construction of *Lowamahapaya*, in *Mahavamsa*, the plan drawing was practiced by the 2nd century BC."

Among the canals identified in the Sri Lankan irrigation industry, Anuradhapura's ancient "*Yoda Ela*" (from *Kalawewa* to *Thisawewa*) is considered a special irrigation design. All canals, except Minipe, Kalinga, and Elahera, are crucial as they are designed to distribute water in a managed routine. For instance, concerning the starting point of the Minipe Canal, Brohier highlighted that "a narrow canal was formed by an island on the edge of the bank at a bend in the Mahaweli River". A large body of water was drawn from the river into the canal, and at the other end of the stream are two stones. The water of the canal falls back from these two stones, so the water is somewhat trapped there; these two stones are connected by a dam. The *Yodha Ela* originates from a sluice located at a high altitude in the *Kalawewa* and traverses the upper valley of the *Kala Oya*, crucial for settling the inter-region. Therefore, it is evident that the *Yodha Ela* is not merely a means of water transport designed to meet the water needs of the capital but also an irrigation industry designed to provide water to the settlements in the inter-region.

The *Yodha Ela* is a long canal of about 54 km miles runs from the *Kalawewa* tank to the *Tisawewa* tank in the Anuradhapura city. Historians believe that the canal has been made to provide necessary water for the Anuradhapura city. However, many researches have shown that the purpose might be irrigation water supply for a vast irrigable area where no other water sources were available. According to the contemporary irrigation works and spatial distribution, the *Yodha Ela* has been constructed in the 3rd century during the period of Anuradapura kingdom (Figure 2).

The canal started at the point of sluice where water from the tank was released. At the beginning, the *Kalawewa* was a small tank, but with time, they realized a considerable amount of water in *Kala Oya* could be impounded. Thus, it is evident at several times in the history *Kalawewa* has been expanded under the patronage of King Dhathusena (459-477). In modern times in 1977, the first phase of Mahaweli Development Program implemented in this area, and instead of the *Yodha Ela*, a new canal (*Jaya Ganga*) was constructed starting at a new sluice from the *Kalawewa*. The old *Yodha Ela* has been damaged at some places and at some sites the *Jaya Ganga* connects to the *Yodha Ela*. However historical, archaeological and field investigations show that there had been a marvelous water management system based on the *Yodha Ela*.



Figure 2: Old sluice of the *Kalawewa*

Ancient rainwater harvesting

Since the scarcity of water in good quality has been an issue for human beings from the time immemorial, and the ancestors did every attempt to use water for almost all purposes, the rainwater harvesting must have been given a priority at every scale.

Pidurangala is a massive rock formation located a few kilometers north of Sigiriya in Sri Lanka. It has an interesting history closely related to that of the Sigiriya Rock Fortress. Both Sigiriya, and Pidurangala rocks were formed by volcanic activity. Whilst Pidurangala appears larger than Sigiriya, its upper surface is steeply sloped and is of solid rock. The rocky outcrops that surround the Pidurangala rock gives an indication of how

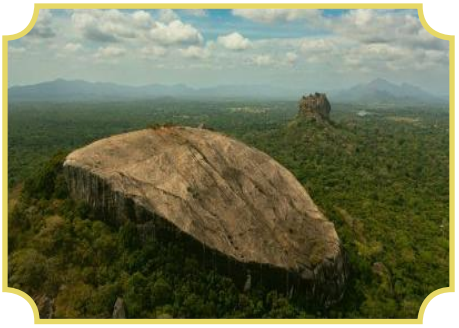


Figure 3: Surface configuration of the Pidurangala rock

they altered the rock to become the surface like rainwater collecting flow path concentrating to a point at the lowest (Figure 3).
It is obvious that due to the presence of hard water around Sigiriya, they must have needed clean drinking water. Once the kingdom was established they would have thought of having two ways to fulfill the water requirement. One was the rainwater harvesting ponds constructed on the top of Sigiriya rock. The other option was to convey water from Pidurangala (324 m amsl) to the octagonal pond (212 m amsl). The

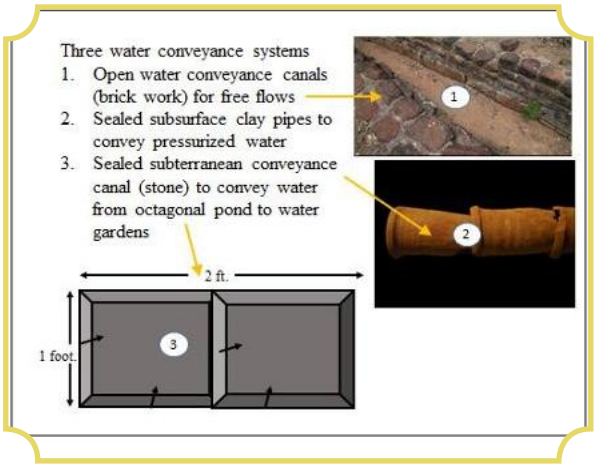


Figure 4: Three water conveyance systems (Pidurangala – Sigiriya)

elevation difference is 112 m. The evidence indicates that they have used three different conveying methods selecting according to the appropriateness (Figure 4).

Precision of irrigation marvels

The calculations made by the ancient irrigation engineers were found to match the modern calculations. The *Kalawewa* spillway meets the modern criteria for a spillway in all respects. The sluice barrel at Kantale increased from the upstream end to the down stream end by a factor of seven. This agreed exactly with modern criteria. The modern sluices and anicuts ended up exactly where the ancient sluices and anicuts were. This happened at the *Urusita wewa* sluice near Ridiyagama, in the 1960s and *Maduru oya* in the 1970s. The *Urusita* and *Maduru* sluices were dated to the 5th and the 6th centuries, respectively. The modern anicuts and modern headworks use the same ancient canals.

The modern-engineers have agreed with ancient solutions. The *Kirindi*

oya dam was built at an oblique angle of nearly 45 degrees, instead of going across by the shortest possible route. It has now been found that this action greatly increased the discharging power and the ability to take shocks.

Some of the British engineers marveled at the ancient irrigation scheme. They made detailed drawings of the sluices saying that they could still be used. But the official attitude was not complimentary. The British took the position that the ancient engineering achievements were based on intuitive or practical thinking.

A distinction has been made between the scientific knowledge of the ancient world and the 'mature science' of the 16th century Europe. This is a false distinction. Science and technology began when man decided to control his environment. Each civilization thereafter developed some sort of science. There was mathematics in Mesopotamia, irrigated agriculture in Egypt, and medical systems in India and China. The Pythagorean Theorem was known before Pythagoras was born. Scientific ideas were transmitted from community to community, until they were picked up by the Islamic civilization of the 7th century AD and transferred to Europe from there. The knowledge relating to tropical conditions would have been dropped along the way and those relevant to Mediterranean and temperate conditions would have been retained. Europe was not the first to develop a scientific perspective. In fact, it was the last.

Ancient Sri Lanka's scientific achievements are labelled 'ethnoscience'. There is nothing 'ethno' about it. It is science in the modern sense of the world. The ancient engineers had a theoretical knowledge of the phenomena they were dealing with.

Ancient science was neither accidental nor intuitive, but was the result of experimentation. They tested out their ideas, and developed methods and standards. It had been observed that between the 3rd and the 7th century AD, the ancient engineers were experimenting with the design of the sluices with regard to the size of the cisterns, the gradient and the tapering of the outlet conduits. There has been experimentation with the use of obtuse angled elbows when releasing water. The reservoirs of Pavatkulam, Periyankulam, and Maduru oya illustrated such attempts to making changes. The indigenous sailing crafts were developed through the use and experimentation.

Ancient Sri Lanka's industries such as glass smelting, and bead manufacture also involved science and technology. It is now suggested that carnelian found at archaeological sites was manufactured locally and not imported from Gujerat as believed earlier. Sewwandi (chalcedony) is readily available in Ratnapura, Nivitigala, Kahawatte, Pelmadulla and can be easily converted to carnelian through heat.



Dr P.B. Dharmasena
Independent Consultant/
Agriculture and Water Management



Remembering Prof. Carlo Fonseka's crusade for science and humanity

Jayantha Wattavidanage



A third-person account of Sri Lanka's greatest science communicator

In the annals of Sri Lankan intellectual history, certain figures transcend their disciplinary boundaries to become national treasures. Prof. Carlo Fonseka, who passed away in September 2019 at the age of eighty-six, was precisely such a figure. To his students, he was a magician of the lecture theatre. To the general public, he was the voice that decoded the mysteries of the world. To the nation, he was a man of conscience, a fearless critic of injustice, and intellectual dishonesty. But above all, to those who understood his life's mission, Prof. Fonseka was Sri Lanka's most accomplished science communicator, a man who dedicated decades to imbibing scientific culture into the very fabric of Sri Lankan society.

The science communication deficit and Prof. Carlo's response

In developing nations like Sri Lankans, the gap between scientific knowledge and public understanding remains dangerously wide. Pseudoscience, magical thinking, and anti-intellectualism thrive where scientific literacy is weak. Quack remedies flourish. Vaccine hesitancy spreads. Astrology and superstition influence major life decisions. Public policy suffers when citizens cannot distinguish evidence from assertion.

It was into this breach that Prof. Carlo Fonseka stepped with remarkable energy and purpose. Long before the advent of social media influencers or TED Talks, he understood that science communication was not a peripheral activity for academics but a central responsibility. He recognized that a professor of physiology who confined his teaching to the lecture hall was failing half his duty. The other half or the public half required taking science to the marketplace, the living room, and the village square.

His unique genius lay in articulating the most difficult physiological concepts in a manner any layman could understand. While many academics hide behind complexity to assert authority, Fonseka stripped away the mystery to reveal the miracle. He famously drew examples from everyday Sri Lankan life, the heat of a curry, the fatigue after a day's work, the beating of a village drum to explain the intricate electrical and chemical processes of the human body. He understood that science was not a separate school subject but a way of thinking critically about the world.



Broadcasting science: the radio and television revolution

Prof. Fonseka recognized the immense democratic power of the radio waves. In a country where literacy rates, while respectable, did not guarantee access to scientific literature, radio and television

offered direct access to millions of households. He became a pioneer in utilizing national radio and television to take science to the masses.

Through his legendary broadcasts, his distinct, reassuring voice entered thousands of Sri Lankan homes. He spoke Sinhala not as a translator translating English science but as a thinker who thought scientifically in Sinhala. This was no small achievement. The vocabulary of modern science was developed in European languages, and many academics struggle to render technical concepts in vernacular tongues without either distorting meaning or sounding awkward. Fonseka made it seem effortless. He found Sinhala words and analogies that carried the precise meaning while remaining accessible.

On television, he was a visual storyteller, breaking down medical anxieties and anatomical complexities with unparalleled ease. Whether he was debunking dangerous pseudoscience on prime-time TV or explaining the physiological basis of emotions over the radio, Prof. Fonseka treated the public as an intelligent partner in conversation, not a passive audience. He never talked down to his listeners. He assumed curiosity and rewarded it with clarity.

This approach to science communication was decades ahead of its time. Only now are the Western universities establishing formal programmes in public engagement with science. Only now are the funding agencies requiring researchers to demonstrate public outreach. Fonseka lived these principles long before they became fashionable.

Institutional commitment: transforming SLAAS and NSF

A science communicator working alone, however eloquent, has limited reach. Prof. Fonseka understood that embedding scientific culture in society required institutional infrastructure. His impact on the nation's scientific infrastructure was cemented through his active leadership and involvement in apex bodies like the Sri Lanka Association for the Advancement of Science (SLAAS) and the National Science Foundation (NSF).

At SLAAS and NSF, Carlo did not view science as an ivory-tower luxury but as a national utility. He weaponized these platforms to bridge the gap between policy, research, and the common man. Through these organizations, he conceptualized and drove massive public science popularization campaigns. He spearheaded workshops for teachers, recognizing that improving science education required not just curriculum reform but the retraining of educators themselves. He created fora where scientists were challenged to speak in the vernacular, holding their feet to the fire when they retreated into jargon.

He continuously pushed the State to invest in research that solved local, ground-level problems. Too much research in developing countries, he argued, was imitative and conducted not to answer pressing local questions but to secure publication in foreign journals. Fonseka demanded relevance. He transformed these formal institutions into vibrant hubs of public intellectualism where scientists, policymakers, journalists, and citizens could debate the role of science in national development.

The Ragama experiment: educating doctors as science communicators

Prof. Fonseka's role as an academic leader was also defined by his tenure as the Founder Dean of the Faculty of Medicine at the University of Kelaniya (Ragama). Taking over the newly nationalized North Colombo Medical College in 1991, he faced the Herculean task of building an institution from the ground up. He was not just an administrator; he was an architect of futures.

His leadership style was revolutionary. He famously declared that only the "best people" should be recruited. He fostered an environment where excellence was the only standard. But his vision for medical education extended far beyond conventional pedagogy. Understanding that medical education could crush the spirit with its relentless demands on memory and its constant exposure to suffering, he injected art into anatomy. He organized entertainment sessions featuring legends like Pandit W. D. Amaradeva, believing that a doctor needed a soul educated in beauty as



Figure 1: The Faculty of Medicine at the University of Kelaniya programme

much as a mind trained in science. This was not mere aesthetic indulgence. Fonseka understood that effective doctors must be effective communicators. A doctor who cannot explain a diagnosis to a frightened patient in simple, clear language has failed as surely as a doctor who makes the wrong diagnosis. The Ragama medical curriculum under Fonseka emphasized communication skills not as an afterthought but as a core competency.

His legacy is institutionalized in the traditions he set, such as the Carlo Fonseka Challenge Trophy for Physiology quizzes and the memorial debates held in his name, which continue to sharpen the critical thinking of future doctors. He wrote the anthem for the Ragama Medical Faculty, challenging students to be "doctors with a human touch." That anthem is not just a song; it is his mission statement, sung by every batch that walks through those hallowed portals.

Reason over ritual: science communication as cultural critique

In the later stages of his life, Prof. Fonseka's intellectual journey took a profound philosophical turn. While he grew to deeply appreciate and accept Buddhist philosophy, particularly its emphasis on experiential truth, cause and effect, and mindfulness, he remained fiercely opposed to the supernatural dogmas that clung to it.

He drew a sharp line between the sublime philosophy of the Buddha and the commercialized, ritualistic corruption of religion. He spoke out aggressively against the exploitation of the populace through the commercial use of deities, astrology, and fear-inducing rituals. To Carlo, true alignment with Buddhist philosophy meant utilizing the scientific spirit of inquiry (*Ehipassiko*) to reject myths. He continuously challenged fire-walkers, miracle-healers, and superstitious charlatans, demonstrating that the laws of physiology and physics could never be bypassed by divine intervention.

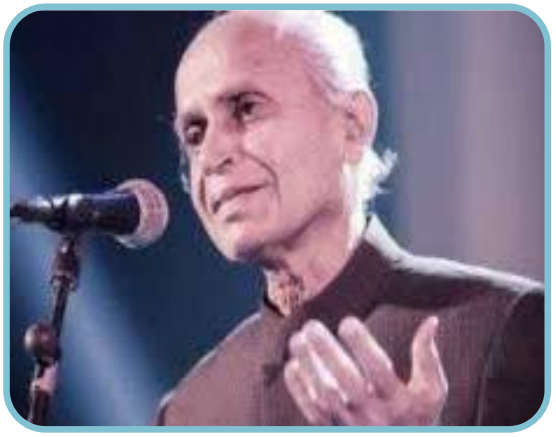
This aspect of his work placed science communication squarely in the domain of social justice. He understood that superstition and pseudoscience disproportionately harm the poor and the vulnerable, which lack the resources to distinguish legitimate treatment from exploitation. When a wealthy person falls for quackery, they lose money. When a poor person falls for quackery, they may lose their life savings, their health, or their life. Fonseka's debunking of miracle cures and astrological predictions was thus not intellectual snobbery but a form of consumer protection for the most vulnerable.

The political dimension: science communication and social justice

His political commitment was inseparable from his science communication mission. He understood that scientific literacy without social justice was incomplete. A population that understands germ theory but cannot access clean water remains vulnerable. A populace that comprehends nutrition but cannot afford adequate food remains malnourished. Fonseka's socialism was not an add-on to his science but an extension of it, recognition that the benefits of scientific progress must be distributed equitably.

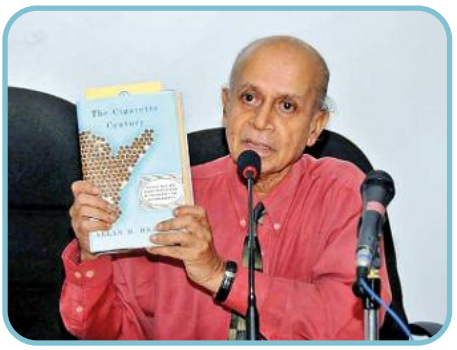
Even in death, he made his most powerful political and scientific

statement. In an act of ultimate selflessness and defiance of vanity, he donated his mortal remains to the Anatomy Department of the Ragama Medical Faculty. It was the final lecture of a lifelong teacher: a lesson in utility, humility, and the scientific ethos that the body is merely a vessel for learning. For a science communicator, no message could be more powerful. He practiced what he preached to the very end.



The whole human: science and the humanities in dialogue

For all his public ferocity, the private Carlo Fonseka was a figure of deep warmth and eccentric charm. He was a composer and lyricist who produced albums like *Carlochita Gee* and *Raththaran Duwe*, proving that the left brain and right brain could coexist beautifully. He devoted his life to a tripartite mission: the upliftment of medical education, demystifying society through science communication, and enriching arts and culture as a master lyric writer. This integration of science and art was central to his philosophy of science communication. He understood that people are not moved by data alone. Stories, metaphors, music, and poetry reach parts of the human mind that equations cannot touch. His own example, a rigorous physiologist who wrote song lyrics, demonstrated that scientific and artistic sensibilities are not opposed but complementary. The best science communicator, he showed, is not the one with the most citations but the one who can make the complex beautiful and the beautiful intelligible.



Those who had the privilege of associating with him closely, as colleagues through SLAAS, as friends, and as mentors, experienced his profound human qualities on many occasions. His humility was absolute, his generosity quiet, and his capacity to listen to a dissenting view was a masterclass in grace. Former students and colleagues alike recall him not with the fear usually reserved for deans and titans, but with deep, abiding love. He was a mentor who remembered names, who checked on students who had lost parents, and who gave away books from his personal library with handwritten notes of encouragement.

Lessons for contemporary science communication

What can today's science communicators learn from Prof. Carlo Fonseka? Several principles stand out.

First, science communication must be vernacular. It is not enough to translate English science into local languages. One must think scientifically in the local language, developing analogies and explanations that arise from local experience.

Second, science communication



Figure 2: Delivering the keynote address at the NSF Science Research Projects Competition Awards Ceremony in 2012, inspiring young researchers, teachers and the next generation of science enthusiasts.

must be institutional. Individual efforts, however brilliant, cannot sustain a scientific culture. Fonseka's work through SLAAS, NSF, and the Ragama Medical Faculty created structures that outlast him.





Third, science communication must be combative. Pseudoscience and superstition are not harmless eccentricities. They cause real harm, and challenging them requires courage and persistence.

Fourth, science communication must be artistic. The most effective communicators understand that beauty, narrative, and emotion are not distractions from scientific truth but vehicles for it.

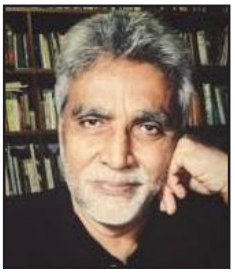
Fifth, science communication must be political. Scientific literacy without social justice leaves structural injustices intact. The science communicator must also be an advocate for equitable access to the benefits of science.

Conclusion: the eternal pulse

Sri Lanka has lost a titan, but the physiological and intellectual system he helped nurture is still strong. The "Carlo Fonseka Oration" delivered annually by distinguished scientists ensures that his name remains synonymous with intellectual rigor. His students, now leading physicians, teach his methods. His writings remain blueprints for rational thought. Prof. Carlo Fonseka was the rarest of beings: a man who could quote Shakespeare, explain the Krebs cycle, deliver a valuable speech, a political meeting, and then donate his body so that others might learn. In a world increasingly divided between the sciences and the humanities, he was the missing link. He proved that you could be a man of science and a lover of art, a stern critic and a gentle healer.



For those who continue the work of science communication in Sri Lanka and beyond, Prof. Fonseka remains not merely an inspiration but a standard. The question each science communicator must ask is not whether they agree with his every position but whether they match his commitment, his clarity, his courage, and his compassion. He is gone, but as he himself once quoted about his own mentor: "*He still lives with us. He is not dead*" for to live in the hearts of those who truly love, and revere is "*not to die.*"

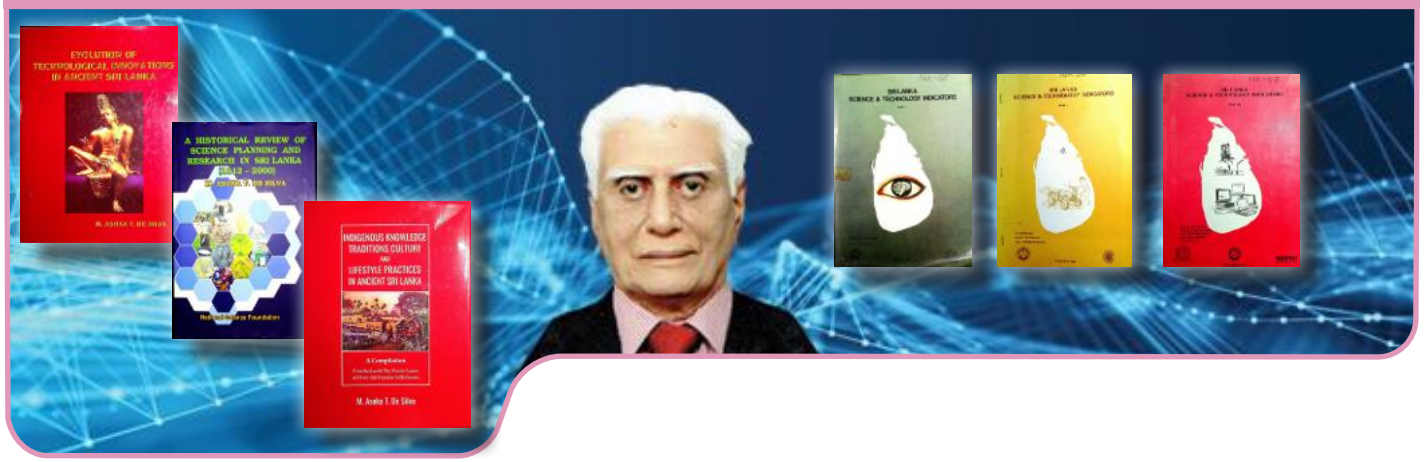


Dr Jayantha Wattavidanage
Deputy Director General
(Academic Affairs)
UNESCO C2C
South Asian Centre for Teacher Developent
Meepe, Sri Lanka



Tribute to M. Asoka T. de Silva

Geethika Yapa



Mr. M. Asoka T. de Silva's life and career stand as a testament to dedication, vision, and service to science in Sri Lanka. His professional journey began in 1955 at the Coconut Research Institute (CRI), Lunuwila, where he served as a Research Scientist in the Plant Nutrition Division. After successfully securing a postgraduate research scholarship, he pursued and obtained a Master's degree from the University of London, in Bristol, England. During his tenure at the CRI, driven by an unwavering commitment to advancing knowledge, he authored and published 27 research papers.

In 1977, Mr. Silva joined the National Science Council (NSC) as Assistant Secretary General. His responsibilities spanned the Council's entire mandate, which included initiating and sponsoring research, advising the Minister on science and technology policy, and fostering collaborations with scientists and organizations both locally and internationally. Through visionary leadership and exceptional administrative ability, he elevated these functions, ensuring that science was not only advanced but strategically harnessed to support national development.

When the NSC was reconstituted as the Natural Resources, Energy and Science Authority (NARESA) in 1982, Mr. Silva was appointed as Director of Scientific Affairs and later as Deputy Director General. He also served as Secretary of the Standing Committee on Science Policy Research, where his contributions significantly shaped the country's science policy framework. Later, at the National Science Foundation (NSF), his expertise was further recognized through his membership in the Science Policy Research Committee and the Committee on Traditional Knowledge, reflecting his enduring influence across diverse domains of science governance.

During his illustrious career, Mr Silva also served as an international Consultant to the CSC, UNCTAD, UN-ESCAP, UNESCO, UNDP, and several other agencies, which took him to more than 35 countries in South Asia, South Pacific Islands and West Africa.

One of his landmark contributions to research coordination was the analysis of more than 200 completed research projects under NARESA's Research Grants Scheme, published in 1986. This pioneering study offered fresh perspectives on accountability and the returns generated from research, and provided valuable insights into the effectiveness of public funding.

Between 1982 and 1990, Mr. Silva led a programme funded by the Swedish Agency for Research Cooperation with Developing Countries (SAREC). This initiative addressed critical barriers to scientific advancement in Sri Lanka. Among its many successes was the establishment of the International Contacts Fund, which enabled Sri Lankan scientists to present their work at international fora. By fulfilling a long-felt need, the programme enhanced Sri Lanka's

scientific visibility and fostered global collaborations. Its success was such that the NSF continued the programme with national funding after the SAREC MoU was completed. Mr. Silva's influence extended far beyond administration. He played a central role in science policy studies at the NSC, NARESA, and NSF.

In 1978, the country's first Cabinet-approved National Science and Technology Policy (NSTP) Statement was prepared by the Science Policy Research Committee of the NSC in collaboration with the Ceylon Association for the Advancement of Science (now SLAAS). This landmark document laid the foundation for a systematic approach to integrating science and technology into national development. In 1991, a Presidential Task Force was mandated to look into all aspects of S & T and specially, the implementation of the 7 – point S & T Policy statement developed by the NSC. Subsequently, the National Science and Technology Commission (NASTEC), formulated a comprehensive NSTP, which was approved by the Cabinet of Ministers in 2009. Mr Silva's sustained involvement in shaping Sri Lanka's science and technology agenda over three decades is a rare distinction, reflecting both his expertise and his enduring commitment to advancing national development through science-based policymaking.

Even after his formal retirement in 1994, Mr. Silva's expertise remained in constant demand. His pleasant personality, generosity in sharing his wealth of knowledge, and enthusiasm for work made him a trusted mentor and advisor. The staff of the NSF frequently sought his guidance, and he devoted his time generously to mentoring and supervising staff at all levels, including postgraduate researchers. His counsel was equally valued by the Council for Agricultural Research Policy (CARP) and the Sri Lanka Country Office of the International Union for Conservation of Nature (IUCN), exemplifying his lifelong dedication to advancing science.

Spanning an extraordinary 63 years, Mr. Silva's professional career cannot be fully captured in words. He authored more than 100 scientific papers, technical publications, popular science articles, and book chapters, as well as four books. He was also renowned for his exceptional command of the English language and meticulous editorial skills. His official association with Vidurava as English Editor began in 2008 and continued until 2025, when declining health compelled him to step down. During his 18-year tenure, he ensured that the magazine's English content was clear, precise, and accessible, thereby enhancing its value as a scientific resource for students, teachers, and the wider scientific community. Beyond editing, he also contributed his own writings to Vidurava, including a notable essay to the 2018 special issue commemorating the NSF's 50th anniversary.

In 2022, the NSF conferred a Special Lifetime Award on Mr. Silva in recognition of his outstanding contribution to the popularization of science over several decades.

In conclusion, Mr. M. Asoka T. de Silva's legacy is one of unwavering dedication, intellectual excellence, and selfless service and is reflected in the institutions he strengthened, the national policies he helped shape, and the countless scientists and professionals he inspired. His life's work has left an indelible mark on Sri Lanka's scientific landscape and will continue to inspire those who believe in the potential of science to advance knowledge, strengthen institutions and improve society.



Dr Geethika Yapa
Former Head of Research Division
National Science Foundation



Thusitha Malalasekera: A tribute to a legend in science communication

Manuj C. Weerasinghe



Scientific innovation, discovery, and the growth of knowledge within the scientific community have limited value unless they are communicated clearly to the public for everyday use. Even in an era of modern communication, language remains a barrier to the wider public's access to knowledge. This is why the contribution of science communicators working in local languages is so important.

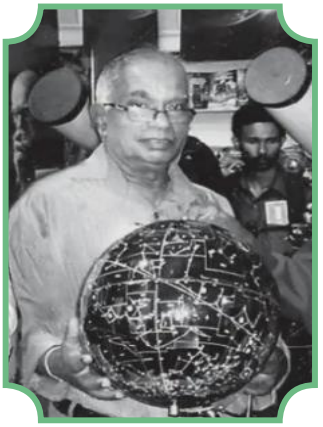
Within this context, Thusitha Malalasekera earned a distinguished place in the history of science communication in Sri Lanka, particularly in health and related disciplines through Sinhala media over more than six decades. Born in Panadura and educated at Sri Sumangala College, Panadura, he began his journey in journalism during his school days.

Tusitha, who stepped into the media in the 1960s by writing short stories and poems, published his novel titled *Lahiru Negena Lovak* in 1971. In the 1970s, his writing in newspapers and journals, especially on health-related topics marked the beginning of his mission to bring scientific knowledge to the wider public. At that time, science writers were scarce, newspaper space for science was limited, and the country had only one radio station, making opportunities for public education through the media relatively few. His sustained contribution to science communication over a long period is, therefore, especially significant.

As Publicity Officer at the Health Education Bureau of the Ministry of Health, Mr. Malalasekera stood at the frontline of public communication. Yet his legacy extends far beyond his official responsibilities: he embraced science communication as a form of social responsibility.

During the 1980s and 1990s, when radio and television began featuring health topics more often, Mr. Malalasekera became a familiar voice and presence to thousands of listeners and viewers across the country. He covered a wide range of health-related subjects and brought together medical experts and other health professionals in discussions designed to inform and engage the public.

His aim was to improve ordinary citizens' awareness of health issues through a scientific approach. He authored several books and edited many journals, including Vidurawa, published by the National Science Foundation, and Sapatha, published by the Health Education Bureau. For decades, these publications carried his meticulous editorial touch and became important platforms for science communication.



Mr. Malalasekera's distinctive style of writing and presenting in electronic media made complex concepts and scientific facts easier for readers and listeners to understand. This ability to simplify without diminishing the substance of knowledge made his contribution to science communication especially notable.

Mr Tusitha Malalasekara also played a leading role in editing *Gnanakoshaya* and *Wishwakoshaya* published in the Silumina newspaper.

Mr. Malalasekera received many accolades, including two National Literary Prizes, National Science Foundation Award, Sarvodaya Award, and several others. He contributed immensely to science popularization and served for an extended period as a member of the National Advisory Committee for Science Popularization of the National Science Foundation. He also served on the Editorial Committee for the revision of the fifth edition of the Malalasekera English-Sinhala Dictionary, demonstrating his linguistic skill and editorial expertise.

Tusitha began his professional career as a pharmacist. After completing a diploma in journalism at the University of Colombo, he entered the field of health education. Later, he studied communications in Thailand with the support of the UNDP. The International University of Alternative Medicine awarded him the honorary Master of Philosophy degree in Health Education.

Mr. Malalasekera became a mentor to many newcomers in the field of health journalism. During his tenure at the Health Education Bureau, he played an important role in strengthening the link between health professionals and the media. His contribution extended as a media adviser and translator to several United Nations agencies, including WHO, UNFPA and UNICEF.

It is with immense gratitude that I compile this tribute to Mr. Thusitha Malalasekera, a forerunner in science communication for the unprivileged masses in Sri Lanka in local language.



Prof. Manuj C. Weerasinghe
Chair Professor of Community Medicine and Family Medicine
Wayamba University of Sri Lanka



Vidurava Issues published during the past 50 years

Theme	Year	Volume	Issue
Science and Technology	1976	1	1
Science and Technology in the Non Aligned Countries	1976	1	2
Environmental Problems in Sri Lanka	1976	1	3
Food and Nutrition	1977	2	1
The Need for Quality Control	1977	2	2
Science and Technology Policy	1977	2	3
Alternative Strategies for Development	1977	2	1
The Mahaweli Development Scheme - I	1978	3	1
The Mahaweli Development Scheme - II	1978	3	3
"Research In the Plantation Sector of Sri Lanka"	1980	5	1
Research In the Universities of Sri Lanka	1981	5	2
Chemistry, Industry and the Citizen	1982	6	1
Man, And the Biosphere (MAB) Programme	1982	6	2
Computer And Information Management	1983	7	1
Biological Control	1984	8	1
Mangroves	1986	9	1
Adulteration of Food	1987	10	1
Pesticides the good, the bad and the ugly	1988	11	1
Environmental Pollution in Sri Lanka	1990	12	1
Plant Nutrition and Fertilizer	1990	12	2
Forestry	1990	12	3 & 4
Appropriate Technologies	1991	13	1
Wealth from the Sea	1991	13	2
Disease from Animal to Man	1991	13	3
Plant Protection	1991	13	4
Genetic Conservation	1992	14	1
Aquatic Weeds	1992	14	2
Food and Well being	1992	14	3
AIDS	1993	15	1
Computers	1993	15	2
Landslide, Meteorology, Elephants	1993	15	3
Family Health	1994	16	1 & 2
Technology, War and Peace	1994	16	3 & 4
Medicinal Plants of Sri Lanka	1995	17	1
The Library Then and Now	1996	18	1
Integrated Pest Management	1996	18	2

Theme	Year	Volume	Issue
Indigenous Knowledge	1997	19	1
Professor Nandadasa Koda Goda Commemoration	1997	19	2
Ancient Iron Smelting and Metallurgy in Sri Lanka.	1997	19	3
Solar Power	1997	19	4
Project for Learning	2000	20	1
Mosquito Borne Diseases	2000	20	2
Science Communication	2002	21	1
Changing Weather Patterns	2005	22	1
Pesticides the Good, the Bad and the Ugly	2005	22	2
Natural Disasters	2005	22	3
A revolution in Technology Nano Technology	2006	23	1
Let's face Energy Crisis	2006	23	2 & 3
Non Communicable Diseases	2007	24	1
Food Technology	2007	24	2
Climate Change	2008	25	1
Aging Population in Sri Lanka	2008	25	2
Science and National Security	2009	26	1
Science Communication for National Development	2009	26	2
Science Journalism	2010	27	1
Ocean Resources for National Development	2010	27	2
Climate Change Mitigation and Adaptation	2010	27	2
Chemistry for Everyday Life	2011	28	1
Genetic Present & Future	2011	28	2
Innovation for Sustainable Development	2011	28	3
Road Transport- Meeting the Challenge	2012	29	1
Forensic Medicine	2012	29	2
Water Security	2012	29	3
Mineral Resources in Sri Lanka	2013	30	1
Let us Adopt a Healthy Lifestyle.	2013	30	2
Recent Discoveries of Archaeology	2014	31	1
Mathematics in Day to Day	2014	31	2
Space Technology for Benefits of Human being	2014	31	3
Indigenous Knowledge	2015	32	1
New Frontiers in Scientific Research	2015	32	2
Light & Light Based Technology	2015	32	3
Internet of Things	2016	33	1
Cosmetic Perfumes and Detergent	2016	33	2
Science for Healthy Living	2016	33	3

Theme	Year	Volume	Issue
Science in Sport	2017	34	1
Science Behind Mind	2017	34	2
Dengu	2017	34	3
Solid Solution to Solid Waste	2018	35	1
Science for Sustainable Living	2018	35	2
Taking the Country Forward through Science and Technology	2018	35	3
Built Environment	2019	36	1
Aeronautics	2019	36	2
Sustainable Usage of Earth Resources	2019	36	3
Artificial Interlligence	2019	36	4
STEM	2020	37	1
BioSafety	2020	37	2
Renewable Energy for Greener Future	2020	37	3
Covid - 19	2020	37	4
Silent Pollution	2021	38	1
Non Conventional Environment Hazard	2021	38	2
Living Microbes:An Underutilized National Wealth	2021	38	3
Multidimentional Role of Micro Organism	2021	38	4
Science Behind the Traditional Agriculture	2022	39	1
Safer Food Better Health	2022	39	2
STEAM Education for Better Future	2023	40	1
Minimalism	2023	40	2
Mitigation of Malnutirtion	2024	41	1
AI for Safety & Resilience	2026	42	1
The Journey of Vidurava 50th Anniversary	2026	42	2

Note: Volumes of Vidurava were not published in 1979, 1985, 1989, 1998, 1999, 2001, 2003, 2004, and 2025. Therefore, despite marking its 50th year in 2026, the magazine is published as Volume 42

Nobel Prize Winners 2026



The Nobel Prizes represent the highest international recognition for contributions that advance human knowledge, peace, literature, and society. In 2026, ten distinguished laureates were honored for groundbreaking achievements ranging from neuroscience and particle physics to literature, human rights, chemistry, and economics.

Nobel Prize in Physiology or Medicine 2026



Karl Deisseroth, Peter Hegemann and Georg Nagel

The Nobel Prize in Physiology or Medicine was awarded jointly to Karl Deisseroth, Peter Hegemann, and Georg Nagel for discoveries that led to the development of **optogenetics**, a revolutionary technique that uses light to control the activity of nerve cells. This technology has transformed neuroscience by enabling scientists to identify and manipulate specific brain circuits with remarkable precision.

Significance

Optogenetics has opened new pathways for understanding memory, emotions, behavior, and neurological disorders such as Parkinson's disease and depression. Today, it is widely used in neuroscience laboratories around the world.

Nobel Prize in Physics 2026



Francis Halzen

Belgian American physicist Francis Halzen received the Nobel Prize in Physics for his decisive contributions to the **Ice Cube Neutrino Observatory**, located at the South Pole. His pioneering vision enabled scientists to detect high-energy neutrinos originating from distant cosmic events.

Significance

Neutrinos are among the most elusive particles in the universe. Through IceCube, scientists can study extreme astrophysical phenomena such as black holes and cosmic accelerators, creating an entirely new branch of astronomy.

Nobel Prize in Chemistry 2026



Henri B. Kagan and Kensō Soai

The Chemistry Prize recognized Henri B. Kagan and Kensō Soai for

discoveries relating to **asymmetric organic synthesis**, particularly non-linear effects and autocatalysis. Their work helped solve one of chemistry's longstanding mysteries concerning molecular handedness, also known as chirality.

Significance
Their discoveries have profound implications for pharmaceuticals and biological sciences, helping explain why life favors specific molecular forms.

Nobel Prize in Literature 2026



Anne Carson

Canadian poet, essayist, translator, and classical scholar Anne Carson was awarded the Nobel Prize in Literature for her "bold and inventive oeuvre" that creates new literary forms through dialogue with classical traditions.

Significance
Carson's works blend poetry, prose, scholarship, and translation. Influential books such as Autobiography of Red and The Glass Essay have redefined contemporary literature and inspired readers worldwide.

Nobel Peace Prize 2026



Navi Pillay

South African jurist and human rights advocate Navi Pillay received the Nobel Peace Prize for her efforts to promote peace and strengthen international law. She has served as a judge in several international courts and as United Nations High Commissioner for Human Rights.

Significance
Pillay's career has been dedicated to justice, accountability, and the protection of human rights. Her work helped establish landmark legal precedents concerning genocide, crimes against humanity, and sexual violence in conflict.



Sveriges Riksbank Prize in Economic Sciences 2026



Robert E. Hall and Michael Woodford

The Nobel Memorial Prize in Economic Sciences was awarded jointly to Robert E. Hall and Michael Woodford for developing macroeconomic models that improved understanding of stabilization policies during economic fluctuations.

Significance
Their work demonstrated how governments and central banks can use fiscal and monetary policies more effectively to reduce economic instability and manage recessions.
Information Source: *https://www.nobelprize.org/all-nobel-prizes-2026*



Dr P. R. M. P. Dilrukshi
Head
Science Communication and Outreach Division
National Science Foundation



National Science Foundation
47/5, Maitland Place
Colombo 07

www.nsf.gov.lk