Journalism between Science and Development – A Decolonised and Dewesternised Normative Framework

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This is a preprint version of the above-titled paper in Journalism Studies' special issue, *Science, Journalism and Development: Perspectives from the Global South*, 25 (5), published in April 2024. There are important discrepancies between this and the published version, which can be accessed free of charge at https://www.tandfonline.com/doi/full/10.1080/1461670X.2024.2342097.

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Abstract

This introductory paper will (a) review the intersection between science, journalism and development from a historical perspective, (b) propose normative directions for science journalism of the Global South, (c) contrast that normative framework with the rather weak state of science journalism across the South, (d) identify potential solutions to current problems, and (e) propose a research agenda for the future. Throughout, I will advance a framework of theoretical and practical principles to transform the science–journalism–development relationship in the Global South, which entails four normative dimensions: glocalisation, decolonisation, indigenisation and dewesternisation.

Introduction

This special issue was initiated out of concern for a pressing situation: the interplay between science, journalism and development in the Global South – which occupies such a central part of the modernisation, industrialisation and globalisation of our contemporary world – has been left almost uncharted by scholars for too long. Even research into the general functions, practices and impacts of science journalism of the Global South remains an extreme rarity (Massarani 2013; Nguyen and Tran 2019; Schäfer 2012), accounting for, for instance, almost none of the papers in *Public Understanding of Science* during 2000-2017, and appearing infrequently in leading journalism journals, with most being based on descriptive content analysis (Nguyen and Tran 2019).

For journalism scholarship, this state of research represents a missed opportunity on both theoretical and practical levels. Placing science journalism in the context of Global South development could stimulate new conceptual and theoretical frameworks to enrich our limited understanding of the multifaceted relationship between scientific and technological advances, the news media, and developmental causes and processes. Further, it would

provide invaluable and unique insights into the diverse but largely uncharted journalistic cultures in non-Northern societies, thus constituting an effective response to the repeated, but largely unfollowed, calls for de-westernising media and journalism studies in recent decades (Yin 2021; Wang 2014). More practically, such improved understanding could be transformed into operational tools to evaluate, foster and enhance science journalism for the sake of local and global sustainable development. Over the long term, it might help boost the capabilities of the South – and for that matter, the world – in reducing its traditionally heavy dependence on the North for both scientific expertise and science news output.

As an initial and modest attempt to address this situation, this introductory paper will (a) review the intersection between science, journalism and development from a historical perspective, (b) propose normative directions for science journalism of the Global South, (c) contrast that normative framework with the rather weak state of science journalism across the South, (d) identify potential solutions to current problems; and (e) propose a research agenda for the future. I will start from a discussion of the geo-political nature of the international development agenda and how it shapes the science-journalism-development relationship. Of focus will be the "deficit model" and its simplistically assumed role of science journalism as science popularisation, both of which arose out of the "development through modernisation" paradigm. Against the backdrop of the limitations of this now largely discredited model, I will propose a framework of theoretical and practical principles that might help steer science journalism practice and research in the Global South to the betterment of humankind. This framework entails four normative dimensions – glocalisation, decolonisation, indigenisation and dewesternisation – and invites scholars to a rich range of research opportunities that I will outline towards the end.

Science and technology in the geo-political history of development

The word "development" occurs everywhere in contemporary societies but remains rather complicated, elusive and contested (Naz 2002; Vokes 2018). In a broad sense, it could be understood as the process of generating positive social, economic and political changes to allow people, communities and countries to achieve human potential. Every society, rich or poor, needs to develop. In this introduction, however, development is discussed in relation to the so-called Global South, since the global development agenda is historically associated with the advancement of countries grouped underneath this label.

Development as a global project for the betterment of humankind began in Harry Truman's inaugural speech as the President of the United States on 20 January 1949. In the shadow of World War II, Truman promulgated development onto the centre of global politics and economics, conceptualising it as *the* new pathway to international peace and prosperity. It

sounded straightforward: in order to have a safer, more secure and less conflict-driven world, the human race ought to develop *together* towards more economic prosperity, higher living standards and a fairer share of benefits between nations. Despite its untested meanings, Truman's concept soon became the dominant paradigm for international interactions. In hindsight, development was a geo-political propaganda concept that did its job (Sachs 1992). It was necessitated by the new world order that emerged out of the post-war decline of European empires, the birth of new nations, the rise of the US as the new leader of the free world, and the enlarging "Red Scare". That new order needed to be legitimised distantly and distinctively from the old colonial practices, and the development concept served that purpose more than well. It justified why, in the name of peace and prosperity, a handful of capable, modern countries, led by the US, had the responsibility to help the rest of the world to "develop" out of their so-called incapable, "backwards" state. It replaced the old, now somewhat pejorative notion of civilisation that was used to legitimise colonisation. Instead of civilised and uncivilised societies, Truman effectively divided the world into the developed and the underdeveloped (roughly equivalent to the Global North and Global South concepts of today), providing a seemingly clear socio-economic and technological demarcation that came to define the world. As Sachs (1992) explains, "development was the conceptual vehicle which allowed the US to behave as the herald of national self-determination while at the same time founding a new type of worldwide domination - an anti-colonial imperialism."

Science and technology took a central position in Truman's agenda. His development concept was based on a modernisation paradigm that would not be possible without science. Similar to the "Idea of Progress" promoted by thinkers of the Age of Enlightment (Vokes 2018), modernists believe in an endless progress created by technological advances that are enabled by scientific research (Obijiofor 2015). In this paradigm, traditional knowledge, values and methods must be replaced by scientific knowledge and its technological outcomes, so that the poorer part of the world can eliminate traditional deficiencies, to go from simplicity to complexity and, thus, to be modern. In other words, underdeveloped societies need to be assisted to adopt and use technological innovation to change existing cultures, beliefs and behaviours, to ascend from traditional agricultural production to modern industrial practices, to enhance economic productivity and ultimately to close gaps with developed societies. The logical course of action, as Truman (1949) stressed, would be the transfer of "scientific and technical knowledge" from the developed to the underdeveloped, a conception that would shape the interplay between science and development (and, as will be seen, the perceived roles and functions of journalism in that interplay). Whatever is involved, modernisation has just one long-range goal – "to make the inhabitants of poorer nations in the South more like the wealthier peoples of the North" (McPhail 2009, p. 9). In retrospect, one might even wonder whether the development agenda would have come into history had the "scientific and technical transfer" not been conceptualised as a geo-political apparatus that presumes American superiority and

leadership. In fact, development was more an afterthought, only entering Truman's speech at the last minute, when an aide advised him to add a promise "to *extend the benefits of America's scientific and industrial progress* to all of the poorer nations of the world" (Vokes 2018, p. 34, my emphasis).

Science and technology, in other words, became a discursive regime to justify the new geo-political order. By nature, this legitimisation was nothing new: it was a fundamental justification discourse for European powers to colonise the world (Obijiofor 2015; Roy 2018), one in which the "civilised" empires, with their "superior" epistemic reasoning, theoretical paradigms and scientific methods, "sought to expand its socio-technological and scientific expertise to help 'barbaric societies' become civilised, or at least less uncivilised" (Nguyen & Tran 2024, forthcoming). Although civilisation was a dying discourse in the post-war context, the idea of the North-to-South transfer of science and technology was not. In fact, it gained more momentum: once framed and projected by the world's most powerful man as a key to measure for world peace and prosperity, it became an almost unquestioned part of socio-economic security, prosperity, growth and progress for the world, especially newly independent countries (Ynalvez and Shrum, 2015). Even the Soviet Union embraced the development concept and placed science and technology transfer as a strategic strategy in working with its Communist allies to compete with the West during the Cold War. In fact, science and technology became a showcase of strength that the USSR used – through, for example, the space race – to build its narrative of socialism as a successful development model, to challenge counter-narratives from the West, and to be appealing to allies and potential allies (Oreskes & Krige, 2014).

Modernisation and the problematic science popularisation role of journalism

That historical background highlights the critical need for countries of the Global South to build a strong system of science journalism – understood broadly as journalism about the processes, outcomes and impacts of science and science-based subject matters, such as health, technology and environment (Guenther 2019) – to bolster effective development. The very idea of science and technology (S&T) transfer – which later came to include transfer not just from the developed North to the developing South but also from the South's centres to its peripheries – implies the indispensable need for the news media, in addition to formal education, to function as a change agent for modernisation purposes (Obijiofor 2015; Rennie 2006; Vokes 2018). There are other channels, of course, such as non-news media (e.g. books, films, comedy, soap operas), museums and various forms of direct science and expert exchanges (e.g. science events/festivals, public lectures, technology demonstrations). But none of these would have the continuous content flow or the wide reach and influence of the news media, and all would be in the business of

promoting science rather than being a critical monitor and reporter of science as journalism is expected to be. That is yet to mention that science communication facilities in the Global South are, with a few exceptions, not well resourced to keep up with the fast pace of science (Nguyen & Tran 2019).

In that context, science journalism, both as an advocate of S&T benefits and a watchdog of S&T risks, can make an unrivalled difference to developmental causes, processes and outcomes in the Global South through helping its people and organisations to properly adopt new scientific achievements, such as artificial intelligence and genetic engineering, or to tackle global crises such as climate change or the Covid-19 pandemic. The question is how the media of the South could bring that power into play for the benefit of humanity. Here, I will dissect several relevant issues from the historical trajectory of science and development.

From the early days of "development through modernisation", S&T transfer was associated with the use of science information and knowledge to alter traditional "backwards" values, beliefs and practices in the South. Science journalism, expected to be a change agent for this cause, would assume the role of a science populariser to bring science's fine workings and vast benefits to the mind of citizens and decision-makers of developing nations. Journalism as science popularisation is not only about information and education but also advocacy: it needs to enthuse audiences through cheerleading S&T and/or its power in solving socio-economic problems. The Inter-American Science Journalism Programme, the first systematic attempt to professionalise science journalism in Latin America, for instance, "envisioned the use of the press as a means of promoting science, creating a favorable public opinion environment for investments in science, seen as one of the main engines of national development" (Massarani & Magalhaes, this issue).

This is itself not a product of the South: it started in Euro-American countries in the late 19th century and became established in 1930s and 1940s, when science journalism began to professionalise itself. In line with the "hyperdemic needle" and "magic bullet" communication models that dominated the thinking of those decades, it largely followed what later came to be known as the linear top-down "deficit model" of science communication (Nisbet & Scheufele 2009; Weigold 2001). It assumed that, as long as journalists use accessible layman language to deliver the "wonders" of science, people will learn and appreciate science and, once they have done it, they will transform their daily work and life practices on par with scientific principles and standards. This function would have been transferred to the South through training initiatives that formed part of the broader "scientific and technological transfer" and "media for development" initiatives, such as the above Latin American science journalism programme (Vokes 2018; Massarani & Magalhaes, this issue), as well as through the role of the Northern media as a major supplier of science news for Southern news outlets (Nguyen & Tran 2024).

Today, a rich body of science communication research has discredited the "deficit model". It has shown that news audiences – both North and South – are not "empty vessels" waiting to be filled with facts about science (Allan 2002; Schäfer & Metag 2021). There is no such thing as a permanently felt need for factual science knowledge among lay people that science journalists and science communicators (including scientists) would assume. Further, citizens are, in the words of Condit (1999: 178), "not the dupe of anyone – not the media, not scientists, not politicians": they are active users who bend science news content to their own socio-psychological needs. The superficality of "geewhiz" science journalism has been shown to offer knowledge that is of very little practical use to audiences (Nisbet & Scheufele 2009; Nguyen & McIlwaine 2011; Priest 2013). Audiences are not always willing to accept everything from scientists and experts (Allan 2002; Nowotny 2003; Slater et al 2019). They might, for instance, decide to attend or ignore a news story all together or to selectively use only a resonate part of it. They might choose not to take in unfavourable facts in accordance with their prior beliefs, ideologies, identities, health/wellbeing states, and so on. They might rely on shortcuts and heuristic cues, such as advice from someone they trust in their own social networks, rather than what scientists and journalists try to communicate. In some cases, they might even dismiss messages on the basis of personal values and past experience. All of this has manifested in the recent rise of science denialism and the associated science mis/disinformation that has done probably irreparable damages to societies in recent times (Tumber & Waisborg 2021; Nguyen & Catalan 2020).

That is not to say the science popularisation function of journalism, and its associated "cheer-leading" approach, is out of date. Such coverage has its own merits because it is easy for audiences to consume and for the media to produce – i.e. it has the ability to attract attention and raise awareness among audiences, as well as to ensure some economic sustainability for science journalism (Angler 2017; Bhattacharya 2011; Kasteren 2014). In a world facing so many developmental and existential challenges, it is important for science journalism to continue to raise awareness and advocate for S&T advances that can build genuine hopes for the future. In the last analysis, there is no contradiction in being both enthusiastic about and critical of science. Chambers and Sumner (2012), reviewing the 2012 UK Conference of Science Journalists, questioned why it is necessary to create a binary opposition between explaining and illuminating scientific discoveries and exposing and challenging the potential wrongdoings of science. As they argue, "journalism as a whole must surely achieve both, just as science should expose flaws in existing theories while also explaining new data to peers, students, and the public."

The issue, then, is for science journalists – of both North and South – to practise science popularisation *not* at the expense of critical reporting on science processes, outcomes, people and institutions. Silvio Waisborg (this issue) offers a comprehensive list of functions for critical science journalism in the aftermath of the Covid-19 pandemic:

> It needs to help publics understand how science works. It needs to connect science with everyday reasoning about multiple global problems as well as public interest and policy priorities. It needs to be critical of science by interrogating its institutions, workings and contributions. It needs to highlight applied science that helps understand challenges in societies burdened with urgent challenges. It needs to combat both disinformation by exposing lies and to warn about misinformation by pointing out mistakes.

Here, instead of delving into specific functions or standards, I would continue to revisit to the historical trajectory of development to outline four normative principles/directions that critical science journalism of the Global South could take.

Science journalism for development: normative directions

The very starting point for my proposed principles is one at the macro-societal level: science journalism for development should at all times avoid the techno-determinist premise of modernity. Modernists assume that the underdeveloped would eagerly receive and absorb from the developed all the "marvellous" transformative technological innovation that the former simply do not possess. Although the "development through modernisation" paradigm has been called into question since the 1960s, its techno-determinism legacy remains a shaping force of contemporary societies. As Lugo-Ocando and Nguyen (2017, p. 112) argue, the combination of the seemingly neutral connotation of technology and its deep root in modernity has led to the normalisation of the conception that technology, and the science behind it, is the driving force of human development and "an inevitable tool to foster progress". This is still enmeshed in the more diverse, probably more humanistic context of today. As they put it, "the debate on technology and development has followed a particular argumentative path in which the scientific and technological is increasingly articulated as autonomous normative claims … and for development to occur, those at the margin of the world need to be incorporated into the realm of the scientific and technological" (ibid).

Yet, as is now clear, S&T does not move across borders in a value-free manner. Before it can do any good for a community, it needs to be appropriated to be compatible with local needs, norms, cultures and practices. Juma and Clark (2002, p. 3) conclude that it is a "mistaken belief that the mere transfer of technology defined in a narrow sense would enable developing countries to leap across centuries and repeat the industrial revolution". Although technology benefits developing countries in many respects, it has also "exacerbated existing infrastructural, structural, economic, social, political and cultural obstacles" that constrain their people from harnessing it in productive ways (Obijiofor 2015,

p. 13). There have been numerous cases in which scientific and technological advances from the North fail to make a difference – and even cause damages – to local economy, culture and society in the South, due its insensitivity to local norms and/or incompatibility with local needs (Naz 2006; Nguyen & Tran 2024; Ynalvez and Shrum 2015; Vokes 2018). This has not included the risk of developing countries becoming a dump ground of outdated technology from developed ones. Needless to say, journalism has an important part to play in equipping Southern societies with the essential knowledge, skills and, most importantly, mindset to selectively adopt and implement S&T from the North. As Waisborg (this issue) argues:

> "Modernist" science journalism, inclined to sing the praises of technological innovations and salute "developmentalist" projects of capital, public works and lavish science centres, is inadequate, if not deeply problematic. A journalism enraptured by "silver bullet" approaches to global problems, and perennially interested in the "next big tech" solution to intractable problems grounded in capitalistic dynamics, is misguided. It perpetuates hackneyed, deceptive narratives about science and progress, and disregards structural conditions, local priorities, accountability and historical context.

With that, I would outline four normative principles/directions for science journalism in the South to bring its best capabilities into development causes and processes.

Glocalisation. First, science journalism for development must take *glocalisation* as an overarching principle. As noted, S&T is global but its use and appropriation is local. The job is not to cheerlead everything from the (North-dominated) global world of S&T but to select, report, analyse and contextualise it in relation to local needs, histories, cultures, structures and practices. It is about properly choosing, sourcing, framing science topics and issues in ways that help citizens and policy makers to understand and engage with both the benefits and risks that they might bring to the present and future welfare of societies. This, as we (Nguyen & Tran 2024, forthcoming) have argued, should include two distinctive, although overlapping, practices – namely, localising the global (linking science findings, standards, strategies and policies from other countries to local considerations) and globalising the local (linking local science to relevant research interests, discoveries and issues elsewhere).

This is all the more needed in our fast-paced globalised world. For one thing, the unprecedented pace of science brings complicated sets of socio-cultural and ethical risks and benefits that societies, especially those in less resourceful countries, are not well prepared to fully comprehend, effectively adopt and/or properly reject. For another, as the world uses S&T to tackle an increasing number of global challenges, there is often a divergence between what the North wants to pursue and what the South needs. Climate change, for instance, cannot be addressed without a full participation of people and

communities in the South, but the recipe for climate change all too often mirrors Northern approaches, causing much tension between the practical imperative to develop and the moral duty to ensure sustainability. As one Vietnamese journalist, discussing international environment groups' pressures on the Global South to transition to green energy, rhetorically asked us: "Would we be able go back to using kerosene lamps in place of electric light in the next five or ten years to wait for solar power?" (quoted in Nguyen & Tran 2024, forthcoming).

Decolonisation. Second, glocalisation invites science journalism of the South to pro-actively adopt a strong de-colonisation stance. As noted, the "development through modernisation" approach subsumes all poor populations under the "underdeveloped" umbrella – as if they have no social, cultural and historical specificity. For too long, as Roy (2018) argues, the acceptance of the science as universalised knowledge has reinforced the old colonial order of intellectually superior North and inferior South. This mindset, unfortunately, is still prevalent among segments of the North. In December 2021, as the omicron variant of the coronavirus threatened to cause yet another "tsunami" of infection and overwhelm healthcare systems, South African researchers found from their rigorous research that omicron was much milder than feared. This was soon to become evident, but the initial responses the researchers got was a rather cold shower of sceptical questions from developed countries. Shabir Madhi, a leading South African vaccine expert told Andrew Harding (2022) of the BBC: "It seems like high-income countries are much more able to absorb bad news that comes from countries like South Africa. When we're providing good news, all of a sudden there's a whole lot of scepticism. I would call that racism." Similarly, in the summer of 2023, when India became the first country successfully landing on the south pole of the moon, certain news outlets and celebrity journalists in the UK took a pinch of salt in the fact that a UK's foreign aid beneficiary has a space programme. Across their news outlets were screaming headlines such as "Who do we give billions in adi to a country with a space programme?" (*The Herald*, 24 August) or "Welldone India for Moon landing, now maybe the we can finally stop sending billions in aid" (*The Express*, 23 August), or "India has landed on the moon and is full of billionaires; why do we send the nation aid?" (*The Sun*, 26 August).

The disdain is blatantly obvious: if you are poor, you cannot – or are not allowed to – produce good science. That ought to change. The change would come through scientists' research work *and* science journalists' efforts to bring that work out of the academic tower and into the public agora. By highlighting and projecting local expertise and local experts' voices into both national consciousness and global public opinion, science journalists can help to gradually reduce and/or remove the perceived or self-perceived scientific inferiority of the South and its long-term consequences. The ultimate aim, however, is to encourage and facilitate a more diverse, more inclusive and therefore more rigorous global science culture that is not – or at least less – dominated by the socio-economic and political

interests and the epistemological paradigms of the North. It is certainly a huge challenge for journalists to use their own public platform to help bring the best of North and South together for development causes and processes, but it is a challenge that any science journalist must feel privileged to take for the betterment of humanity.

Indigenisation. Third, decolonisation would demand journalism to stop representing S&T at the expense of indigenous knowledge – i.e. knowledge that is embedded in cultural practices and traditions and has been accumulated and passed on, mostly orally, over generations. The "development through modernisation" discourse has always dismissed or relegated such knowledge to an inferior status, and the epistemological power attached to science has "helped media and other narratives to justifiably reject any romanticism towards the past" (Lugo-Ocando & Nguyen 2017, p. 99). But traditional knowledge and expertise has proven to be a source of precious and valuable solutions to many social and environmental problems (Houde 2007). Such knowledge might not come from empirical testing of formal theory on nature, but it is based on lived experience and holistic worldviews that have protected and enhanced human welfare as well as sustained the human-nature relationship over hundreds or thousands of years. In fact, many grand science achievements – e.g. the pioneer smallpox vaccination work by Edward Jenner in the late 18th century or the life-saving discovery of artemisinin (quinghaosu) to treat malaria in the 1960s and 1970s by Tu Youyou, the first Chinese Nobel laureate in Medicine – owe their original ideas and techniques to indigenous knowledge.

For science journalism, at the very least, the local specificity and the holistic context-driven nature of indigenous knowledge make it a vast resource of wisdom that can inform and enhance public discourse around local adoption of global S&T, especially in areas of common humanity challenges, such as climate change and biodiversity loss. Some Northern journalists have realised this themselves. Canadian journalist Jennifer Verma (2022) concluded from her experience of reporting sea ice shrinking in the far north of Canada that without "working closely with indigenous sources and drawing on both indigenous knowledge and Western science, … journalists miss out on reporting on the real toll of climate change and understanding ways communities are tackling it." The challenge for journalists is recognise and integrate indigenous knowledge of the world while still exercising a healthy level of scrutiny and maintaining a balance between authentic and non-authentic knowledge. Without overcoming this challenge, they would not be able to focus on the substance of the knowledge and its values to science and to avoid the easy trap of sensationalised representation of the knowledge as esoteric and/or mystical. This is crucial because knowledge passed through informal social structures is prone to exaggeration, distortion and exploitation by religious and superstitious beliefs that still dominate large parts of the South. It demands a judicious use of the right indigenous expertise, a considered provision of voices to its experts and holders, and a respectful treatment of indigenous ways of knowing, including the avoidance of imposing Euro-American science

terminologies and concepts on the knowledge at stake. The ultimate aim, in any case, is to foster and nurture genuine and insightful dialogues between those holding formally proven scientific knowledge and those holding time-tested cultural knowledge.

De-westernisation. Finally, all the above calls for the de-westernisation, or de-northernisation to be terminologically consistent, of science journalism practices. The directions outlined above for Southern science journalism – such as advocacy, respect for unscientifically proven knowledge – might raise eyebrows among many Northern practitioners. But as an emerging wave of journalism scholarship has made it clear, it is rather unfortunate that journalism of the typically authoritarian developing world has long been judged, rather patronisingly, ahistorically and decontextually, on the normative journalistic standards of the typically liberal developed world (see the recent collection by Mutsvairo, Bebawi and Borges-Rey, 2024). Empirical evidence has emerged to show that, for good reasons, journalists of the South prioritise "development journalism" roles – social intervention, national development and public education – over the detached and adversarial function of Northern journalism (Kalyango et al 2017). In the Vietnamese context, for instance, science journalists hold a strong perception of their normative mission as a change agent, through three main functions: science popularisation, science gate-keeping and, to a lesser extent, science watchdog (Tran & Nguyen 2023). These do not divert too much from the role perception of science journalists in the North: the difference is that our Vietnamese participants attached them to the ultimate goal of national development, rather than public information and enlightenment as often seen in the North.

That would not stop Southern science journalists from upholding high standards or from producing excellent and impactful work. Looking back at history, one can find telling evidence that science journalism practices of the South could be more progressive and more capable than those of the North in some areas. Glass (1994) studied the establishment, in 1876, of *Al-Muqtataf* movement that led to more than a hundred texts that went beyond mere translation to simplify and Arabise science to local lay audiences. What she observed was noteworthy: *Al-Muqtataf* offered not only a richer portfolio of popular science but also provided much more innovative dialogues with readers “than their Western colleagues” (p. 329). My point here is not which is “better” than the other. Neither do I think Northern science journalism has little to offer and to inspire its Southern counterpart. My point is that it is time to abandon the traditional default position that Southern journalism would have to learn and adopt Northern journalism norms to be better. Science journalists from both sides would need to learn from each other’s distinctive experience and expertise, in order to work collaboratively towards global development goals. Beyond North-South exchanges, journalists within the South should seek to share their science reporting endeavours and work with each other to address current imbalances, especially the South’s well documented over-reliance on the North for science news output and the myriad of its long- and short-term consequences on the former’s development. In this globalised world, the

collective expertise from such North-South and South-South partnerships would be essential for journalism to bring its best into helping solve the many social challenges that humanity either faces from controversial S&T developments (e.g. AI, genetic editing, GMOs) and/or needs S&T to tackle (e.g. climate change, food security, sustainable energy).

A contrasted reality, and an action agenda for improvement

With that normative idealisation in perspective, the current state of science journalism in the Global South would become a deep cause for concerns. Although limited, evidence has emerged to highlight a wide range of problems and challenges that science journalism faces in developing countries. Our recent systematic review of the existing body of research (Nguyen & Tran 2019) points to a low, or at best half-hearted, commitment to science as a news category in developing countries. Accordingly, although there is a clear recognition of the instrumental role of S&T in development, newsroom executives and editors do not find the financial justification to invest in science news production, due to a perception that it is too hard, dull and boring to attract enough audiences. Science news is all too often treated as a nice-to-have than a must-have. Not many news outlets have dedicated science sections, pages or shows. Those that do are likely to be filled with the kind of "news you can use" (such as health/lifestyle or consumer technology) or stories that are translated from foreign sources, especially Northern media and science institutions. Of the small volume of stories about local science developments, most take the form of short straight episodic news, with very little depth or analysis. Meanwhile, according to the review, those who report on science face many challenges from within and without. are rarely assigned to cover just science topics or given specialist training, work in poor conditions and with low renumerations and have to try harder than others to convince editors of their topics. Externally, they receive little cooperation from local scientists and often face a range of attempts to hamper their work, including the influence of unhealthy news economics, well-resourced PR tactics to use and abuse journalism, and tight political grip on science-related or science-based development policymaking. Many issues from that systematic review were manifest in a recent global survey of science journalists (Massarani et al 2022).

In modest ways, the contributions to this special issue enrich the evidence of that poor state of science journalism in the Global South. From Pakistan, Rabia Qusien and David Robins (2024) found from in-depth interviews that, despite it being listed among the ten countries most affected by climate change, Pakistani environmental journalism faces a rich range of constraints – including, *inter alia*, a lack of prestige in newsrooms, poor resources, difficult access to data and science sources, and the "chilling effect" of commercial motives, especially the intervention of advertisers into content. All this combines to lead to the marginalisation of environmental news and the dominance of desk-bound, superficial and event-driven news output. In fact, most of these issues are not peculiar to Pakistan but, as

Kamboh et al (this issue) review, to South Asia as a whole. They surface again in Noha Mellor's overview of Arab science journalism which, despite its long history dated back to the 19th century, faces perennial problems and acute challenges at individual, institutional and societal levels, leading to an over-reliance on the cheap and easy option of translating science news from foreign media. Editorial ignorance of local science means few job opportunities for science reporting, which in turn discourage journalists from entering this news beat. Her account also reminds us that science journalism might not be as safe as it appears, given its so close connection to many socio-economically, politically and ethically sensitive development issues such as pollution or food security (one journalist she mentioned was physically assaulted for daring to report on factories dumping toxic waste into the Nile).

These problems came to the forefront during the complicated, uncertain and constantly evolving Covid-19 pandemic, especially amidst the noisy, chaotic rise of news forms of mis/disinformation and anti-science movements. They manifest well in Corlia Meyer and François van Schalkwyk of content analysis of Covid coverage by three major South African news outlets over a 22-month period. Starting on the premise that "any threat to accurate, objective and informative reports is also a threat to health, wellbeing and development", they found the opposite to such normative standards: pandemic news was affectively framed in terms of its societal impacts, with sporadic content that capitalised on single spectacular events to grab audience attention. They attribute it to the exacerbation of many long-existed problems of science journalism, but conclude that it was due inherently to the primary motive to serve market demands rather than to consistently inform publics about a serious health threat and its rapidly evolving scientific understanding of the virus, its prevention and treatment measures. Such editorial treatment "[diminishes] the role of the media as a trusted source of health information during the Covid-19 pandemic".

As I organised this special issue, however, I invited authors to pay attention, where possible, to solutions rather than just problems. An initial list of concrete remedies has resulted. In the Arab context, Mellor proposes the development of science journalism programmes in universities, the strengthening of pan-Arab networks of science journalists as well as between them and Northern colleagues, and, in the context of the media's post-Covid ailing business, the diversification of funding for "non-profit sustainable platforms" that can place a stronger focus on local and regional science and science-related topics.

From South Asia, Shafiq Kamboh, Muhammad Ittefaq and Adnan Rehmat call for the establishment of a multi-stakeholder Coalition for Science Journalism that brings together science advocacy organisations, professional media associations and media organisations. Each of these stakeholders, with its own focus and working mechanism, are traditionally indifferent to strengthening science journalism for development causes. But, as the authors argue, they all have high stakes in that and should together form a horizontal community of

practice that "[taps] into their individual vertical pillars of expertise for a common purpose". That common purpose, namely the effective involvement of publics in science-development debates, can be achieved through shared passion and values and collective knowledge and skills between these stakeholders. This "institutional interface" is especially needed for efforts to increase local science news content and to enhance journalists' science reporting capabilities. It would not be an easy journey but, as they conclude, "if we agree that science journalism must be placed at the heart of developmental causes and endeavours, the long-term benefits of such a conducive and mutually reinforcing partnership for society, for science, and for journalism would far outweigh any investment".

In fact, history has witnessed the strength of such coalition in helping science journalism to professionalise, as shown in Luisa Massarani and Danilo Magalhaes' account on the creation of the Ibero-American Association of Science Journalism (IAPC) and the subsequent national associations in Latin America, throughout the 1960s and 1970s. Development agencies that aimed at modernising the region, such as the Organization of American States (OAS), UNESCO and the US Department of State, were instrumental to the establishment of science journalism associations. The aforementioned Inter-American Science Journalism Programme was started by the OAS Department of Scientific Affairs and the Inter American Press Association (IAPA) in 1962 "to promote the creation of permanent science sections in newspapers, the creation of national awards, the organization of courses in science journalism at journalism schools, the distribution of scientific materials for the Ibero-American press, among other ideas". These two, together with some others (e.g. the Argentinian Council of Scientific and Technical Research, the Institute of Hispanic Culture) went on to be the key organisers of five subsequent science journalism events/meetings across the region that led to the birth of the AIPC in 1969. That is not to discount the central role and the professional agency of journalists in this development: Massarani and Magalhaes stressed the enthusiastic efforts of and strong professional bonds between some central figures in science journalism of the time, especially the Spanish Calvo Hermando, the Venezuelan Arístides Bastidas, the Argentine Jacobo Brailovsky, Bolivian Carlo Romero and Brazilian Marco Antonio Filippi. It was thanks substantially to the work of these actors at those meetings that the "theoretical content, ideological justification and a collective project purpose with solid political goals for what these actors had been doing until then independently". Hermando, whose personal archive was used as the primary data for this historical account, tirelessly used his influence and charisma to "play a leading and driving role in the creation of national associations by Latin American countries and in giving unity to all the actors around the region".

Another measure that has emerged, especially in regard to the integration of grassroots voices and indigenous expertise into science-based development debates, is cooperation between science journalists and NGOs, which have risen to the status of "news agencies" around the world. Diogo de Oliveira and Bruce Lewenstein provide an exploratory but

insightful study into how four local and transnational NGOs in Latin America combine science, science journalism and science communication in order to bring public attention to violence against environmental activists in the region. Analysing published reports by the NGOs and interviews with their representatives, the authors found that they resort to both science communication tools – such as science storytelling and science explanation – and emotionally appealing narrative tools to engage publics with "the alarming amount of violence" in the region's socio-environmental conflicts. They either employ journalistic story-telling tools and techniques to directly deliver grassroots perspectives (including indigenous knowledge) to broader publics and policymakers, or work closely with journalists to amplify those voices through the news media. In either way, they employ a "symbiotic" synergy of science authority and media narratives to achieve their main goals – namely "denouncing a critical situation of people being displaced, threatened and even killed, and raising awareness of possible partners and sponsors". Seen from a journalist's vantage point, with the necessary precaution, the NGOs' key strategies – "choosing different emphasis frames, highlighting the vulnerability of environmental activists, showing the competing benefits, and providing information for learning" – offer substantial editorial benefits for fruitful collaboration. This is in the context of the formidable challenges that journalists often face as they attempt to bring science into local consciousness of environmental issues.

Finally, some current obstacles could be overcome through a creative and innovative use of technologies for news communication of science to targeted audiences. Sisanda Nkoala, using medium richness theory, finds some promising opportunities and strategies in the ways three science news outlets in South Africa use Twitter's technological affordances to engage local audiences with global science. These include (a) harnessing the platform's three-way communication, especially real-time questions and comments, to engage with audiences in real time as well as to connect them with local scientists and (b) leveraging its multimodal, multimedia affordances to make complex science digestible and relevant to local audiences. Notable here is the use of multilingualism – combining English and Zulu, South Africa's most spoken language – to make global science content accessible and compatible with various local publics. This inclusivity is particularly significant in the context of the colonially rooted dominance of the English language in science and the fact that language is at the centre of a prolonged battlefield for socio-cultural and political control in South Africa (Biyela 2019). The use of interactive communication "represents a departure from the conventional top-down approach to science communication". While the author did not present any audience analysis, the benefit of combining this interaction with multiple cues and multilingualism is likely to be greater than the sum of its parts: it could enhance public engagement and participation in democratic science debates and enable ordinary citizens not only to understand science also to set the scientific agenda for development issues. Twitter is just one example: the literature has pointed to a rich range of new digital tools for science journalistst to enhance news storytelling and audience engagement and/or

to overcome traditional weaknesses, such as podcasting, AI-enabled curation, immersive VR/AR environments.

What seems clear from the above is that it would be unrealistic to expect journalists alone to solve all the challenges, as these are deep-rooted in structural elements beyond their control. Effective collaboration between different stakeholders in the science-media-development nexus is needed to seek and implement holistic, practical solutions (Tran & Nguyen 2023). That would, as seen, require coordinated efforts on local and global scales between, among others, media organisations and their owners, scientists and science institutions, the formal education system, politicians and governmental agencies (especially development agencies), professional journalism and science bodies, and civil society organisations. However, in any case, from setting professional standards to creatively using technologies or determining the boundaries for NGO collaboration, it is the journalist who holds the key to successes or failures. This is where journalism scholarship is needed.

What is there for journalism scholarship?

In the context of what has been discussed, journalism scholars are called upon to strengthen efforts to contribute empirical findings and/or theoretical perspectives on the current state and potential trajectories of the multifaceted relationship between science, journalism and development in the Global South. From a broad social constructivist perspective, any contribution addressing a normative or pragmatic element of that relationship and its socio-structural and professional shapers would be crucial in its own right. I would conclude this essay, however, with a few angles that are, in my views, particularly useful:

First, in normative and/or epistemological terms, there is a range of questions around how science journalists in the Global South define themselves, consciously or subconsciously, as a professional force for development. How do they – as interpretive communities (Zelizer 1993) – integrate developmental causes into the negotiation, formulation and implementation of their professional identities, principles and practices? What makes such interpretations of science journalism distinctive from the traditional concept of development journalism (Kalyango et al 2017)? In relation to that, which models of science journalism – e.g. science literacy, contextualisation, lay-expertise and public participation (Secko, Amend and Friday 2013; Amend, Carpurro and Secko 2014) – do science journalists of the South value and choose? How do such choices shape their daily practices and their long-term role in developmental processes, including efforts to glocalise, decolonise, indigenise and dewesternise science and/or science journalism? More fundamentally, are existing models sufficient to explain the diversity of science journalism across so many nations and cultures that represent a seemingly endless range of local peculiarities? Even provocative questions – e.g. whether the Northern concept of objectivity is a facilitator or an impediment to Southern science journalism or whether the latter should develop its own

concept of objectivity in accordance with its advocacy-oriented development mindset – should be asked and examined rigorously with no pre-conception in mind.

Second, with that come many questions around the professional practices and routines of science journalists of the Global South. How do they – as communities of practice (Meltzer and Martik 2017) – select, source, handle and represent S&T events and issues, especially those associated with socio-ethical controversies? What methods and techniques do science journalists in developing societies use to engage local audiences with global science issues in culturally sensitive manners, especially in interpreting and integrating grassroots voices and indigenous knowledge in science and science-driven development/policy debates? We still have almost zero knowledge, for example, on the many epistemological and professional challenges to science journalists if they are to respond to the above-discussed imperative for decolonisation and indigenisation. Not less importantly, we need more nuanced understanding of the individual, organisational and structural factors that shape science newsmaking processes in the South. Using the familiar Hierarchy of Influences model, for instance, one might ask how the socio-political organisation, power relations and professional norms of the South facilitate or impede the practice of specialist science journalism, and/or how its practitioners deal with internal and external challenges.

Third, in asking the above, scholars are invited to conduct much more research from the perspectives of science journalism's key stakeholders – such as editors and news executives, scientists, science policy-makers, science and journalism funders, the third sector and lay audiences. To what extent, for example, do scientists of the South appreciate the role of science journalism and how can they work effectively with journalists towards a scientifically driven development? How would indigenous knowledge holders want to work journalists to bring their own experience and expertise into science reporting, and what do they want journalists to do to protect their property rights over such knoweldge? Or, from audience side, to what extent – and how – is science journalism consumed, followed, questioned, accepted or rejected in the everyday life of the South? How does the rise of global science and health mis/disinformation infiltrate developing countries and in what ways does it affect audience perceptions of science and science journalism itself? And how does all this news and information reception pattern in turn influence science journalism practices? Or from a funding point of views, who beyond news organisations should pay for science journalism, and what are the ramifications of each funding type for its development mindset, practices and ethics?

Finally, for dewesternisation (or denothernisation) to be embedded in science journalism practices, comparative and global perspectives are needed. In what ways, for instance, are the problems of Southern science journalism distinguished from what we have seen in the Global North? What are the ways to combine the best of both worlds for the betterment of human societies? What are the potential avenues for North-South and South-South

cooperation in science journalism for the sake of sustainable development? What roles do different key actors – science institutions, global governance bodies, national governments, development agencies and perhaps scientifically and technologically driven multinational corporations – should and can play in making such collaboration work? And how can such roles be performed?

The above is by no means exhaustive. Even so, they tell us that positioning journalism between science and development leaves scholars with a rich range of intriguing opportunities to bring into the future and, through that, to change the world.

Acknowledgements

I would like to thank Professor Stuart Allan, Professor Folker Hanusch and Dr Luisa Massarani for their very helpful and constructive comments on an earlier draft of this work.

References

Allan, S., 2002. *Media, Risk and Science*. Buckingham: Open University Press.

Amend, E., Capurro, G., & Secko, D. M., 2014. "Grasping scientific news: The use of science journalism models to clarify the impacts of alternative forms of production." *Journalism Practice, 8*(6), 789-808. doi:10.1080/17512786.2013.868146

Angler, M., 2017. *Science Journalism: An Introduction*. London: Routledge.

Biyela, S., 2019. Decolonising science writing in South Africa. The Open Notebook, 12 February. Online: https://www.theopennotebook.com/2019/02/12/decolonizing-science-writing-in-south-africa/.

Chamber, C. & Sumner, P., 2012. Science journalism through the looking glass. https://www.theguardian.com/science/blog/2012/jul/11/how-improve-science-journalism.

Condit, M., 1999. How the public understands genetics: non-deterministic and non-discriminatory interpretations of the 'blueprint' metaphor, *Public Understanding of Science* 8 (3), pp. 169-180.

Fernholz, T., 2016. The World Bank is eliminating the term "developing country" from its data vocabulary. Online: https://qz.com/685626/the-world-bank-is-eliminating-the-term-developing-country-from-its-data-vocabulary

Glass, D., 1994. Popularizing sciences through Arabic journals in the late 19th century: how al-Muqtataf transformed Western patterns. In Joachim Heidrich (ed)., *Changing Identities: The Transformation of Asian and African Societies Under Colonialism*, Berlin: Centre for Modern Oriental Studies, Verlag Das Arabische Buch, pp. 323-364.

Guenther, L., 2019. Science journalism. Oxford Research Encyclopaedia of Communication. https://doi.org/10.1093/acrefore/9780190228613.013.901

Harding, A., 2022. Was South African ignored over mild Omicron evidence? BBC News, 20 January. Online: https://www.bbc.co.uk/news/world-africa-60039138.

Juma, C. & Clark, N, 2002. Technological catch-up: Opportunities and challenges for developing countries. Online: https://www.researchgate.net/profile/Norman-Clark-3/publication/253890286_Technological_Catch-Up_Opportunities_and_Challenges_for_Developing_Countries/links/546e07be0cf29806ec2e6e2e/Technological-Catch-Up-Opportunities-and-Challenges-for-Developing-Countries.pdf.

Kalyango, Y., Hanusch, F. Ramaprasad, J., Skjerdal, T., Hasim, M. S., Muchtar, N., Ullah, M. S., Manda, L. Z., & Kamara, S. B., 2017. Journalists' development journalism role perceptions. *Journalism Studies*, *18*(5), pp. 576-594.

Kasteren, J., 2014. Is there a future for science journalism? Online: https://www.joostvankasteren.nl/is-there-a-future-for-science-journalism/.

Lugo-Ocando, J. & Nguyen, A., 2017. *Developing News: Global Journalism and the Coverage of Development in the "Third World"*. London: Routledge.

Massarani, L., 2013. Developing world and science communication research. *Journal of Science Communication*, 12 (1).

Massarani, L., Entradas, M., Neves, L. & Bauer, M., 2021. Global Science Journalism Report 2021. Online: https://www.scidev.net/wp-content/uploads/Global-Science-Journalism-Report-2021.pdf.

McPhail, T. (ed.), 2009. *Development Communication: Reframing the Role of the Media*. Maiden: Wiley.

Mellado, C., Hellmueller, L & Donsbach, W. (Eds), 2017. *Journalistic Role Performance: Concepts, Models and Measures*. NY: Routledge.

Meltzer, K. & Martik, E. 2017. Journalists as communities of practice: Advancing a theoretical framework for understanding journalism. *Journal of Communication Enquiry*, 41 (3).

Naz, F., 2006. Artuno Escobar and the development discourse: An overview. *Asian Affairs*, 28 (3), 64–84.

Nguyen, A. & Tran, M., 2019. Science journalism for development in the Global South: A systematic literature review of issues and challenges. *Public Understanding of Science*, 28(8), pp. 973–990.

Nguyen, A. & Tran, M., 2024. Developing countries' over-reliance on foreign science news sources: causes, consequences and solutions. In: Felicity Mellor (ed.) *Insights on Science Journalism*. London: Routledge.

Nguyen, A. & Catalan, D., 2020. Digital Mis/disinformation and public engagement with health and science controversies: Fresh perspectives from Covid-19. *Media and Communication*, 8(2).

Nguyen, A. & McIlwaine, S., 2011. Who want a voice in science issues – and why? A European survey and its implications for science journalism. *Journalism Practice*, 5 (2), pp. 1-17.

Nisbett, M and Scheufele, D, 2009. What's next for science communication? Promising directions and lingering distractions. *American Journal of Botany*, 96 (10), pp. 1767-1779.

Nowotny, H., 2003. Democratising expertise and socially robust knowledge. *Science and Public Policy* 30 (3), pp. 151-156.

Obijiofor, L., 2015. *New Technologies in Developing Societies: From Theory to Practice.* Springer.

Oreskes, N. & Krige, J. (eds), 2014. *Science and Technology in the Global Cold War*. MIT Press.

Priest, S. (2013). Critical science literacy: what citizens and journalists need to know to make sense of science. *Bulletin of Science, Technology and Society*. 33 (5).

Schäfer, M. & Metag, J. (2021). Audiences of science communication: between pluralisation, fragmentation and polarisation. In Bucchi, M and Trench, B. (eds), *The Routledge Handbook of Public Communication of Science.* Third edition.

Schäfer, M. S., 2012. Taking stock: a meta-analysis of studies on the media's coverage of science. *Public Understanding of Science*, 26 (1).

Secko, D. M., Amend, E., & Friday, T., 2013. Four models of science journalism: A synthesis and practical assessment. *Journalism Practice*, *7*(1), pp. 62-80.

Slater, M. H., Huxster, J. K., and Bresticker, J. E., 2019. Understanding and trusting science. *Journal of General Philosophy of Science.* 50, pp. 247–261. doi: 10.1007/s10838-019-09447-9.

Tran, M. & Nguyen, A. (2023). Besieged from all sides: Professional challenges to science journalism in a developing country and their global implications. *Journal of Science Communication*, 22(04), A04. https://doi.org/10.22323/2.22040204.

Truman, H., 1949. *Inaugural Address* [online]. Inaugural Address. Online: https://www.trumanlibrary.gov/library/public-papers/19/inaugural-address.

Tumber, H. & Waisborg, S. (eds), 2021. *The Routledge Companion to Media Disinformation and Populism*. London: Routledge.

Verma, J., 2023. To fully report on climate change, journalists need to integrate indigenous knowledge into their coverage. Online: https://reutersinstitute.politics.ox.ac.uk/news/report-fully-climate-change-journalists-need-integrate-indigenous-knowledge-their-coverage.

Vokes, R., 2018. *Media and Development*. London: Routledge.

Wang, G. (ed) 2014. *Dewesterninging Communication Research*. London: Routledge.

Weigold, M., 2001. Communicating science: a review of the literature. *Science Communication.* 23(2), pp 164-193.

Yin, D. Y., 2021. Encounters with Western media theory: Asian perspectives. *Media, Culture and Society*, 43 (1), pp. 150-157.

Ynalvez, M. & Srum, W., 2015. Science and Development. *International Encyclopedia of Social and Behavioural Sciences*. https://doi.org/10.1016/B978-0-08-097086-8.85020-5.

Zelizer, B. 1993. Journalists as interpretive communities. *Critical Studies in Media Communication*, *10*(3), pp. 219-237.