

From the margins to the mainstream: deconstructing science communication as a white, Western paradigm

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Abstract

In this commentary we are concerned with what mainstream science communication has neglected through cultural narrowness and ambient racism: other practitioners, missing audiences, unvalued knowledge, unrecognised practices. We explore examples from First Nations Peoples in the lands now known as Australia, from Griots in West Africa and from People's Science Movements in India to help us reimagine science communication. To develop meaningfully inclusive approaches to science communication, we argue there is an urgent need for the 'mainstream' to recognise, value and learn from science communication practices that are all too often seen as at 'the margins' of this field.

Keywords

Public engagement with science and technology; Science communication: theory and models; Social inclusion

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Introduction

When we refer to 'best practice' in science communication, whose practices are we evoking, exactly?

Stories commonly told about science convey a selective picture of the scientific enterprise as a predominantly white, Western endeavour, thus marginalising and erasing the contributions of others [Neeley et al., 2020]. Science communication is no exception to this rule [Orthia, 2020]. Despite the breadth of activities now acknowledged as constituting public communication of science [Davies and Horst, 2016], the field of science communication has a long way to go to achieve its stated ambition of telling a story of "the evolution of science communication in all its guises" [Greco, 2002, p. 3]. Research shows that ethnically marginalised peoples living in Western countries experience the archetypal sites of science communication as Eurocentric and plagued by racist stereotypes [Dawson, 2019].

Stories of how people from diverse cultures have embodied publicly engaged expertise and popularised complex knowledge are strikingly absent in these spaces. Consequently, recent publications have advocated radical change within this 'mainstream' of science communication to counter the profound exclusion generated by these dominant practices and assumptions [Brown, Roche and Hurley, 2020; Canfield et al., 2020; Dawson, 2019; Márquez and Porras, 2020; Mignan, 2020; Neeley et al., 2020; Orthia, 2020; Rasekoala, 2020; Smith et al., 2020].

In this commentary we are concerned with what mainstream science communication has neglected through cultural narrowness and ambient racism [cf. Sharpe, 2016]: other practitioners, missing audiences, unvalued knowledge, unrecognised practices. We explore some instances of science communication that take place outside the mainstream as a way to think about inclusive change. In addition, recognising the many tasks mainstream science communication is ill-equipped to manage, and thus acknowledging the need for diverse communicators and approaches to work in parallel, is a step towards liberating science communication from a white, Western paradigm.

Here we highlight some examples of science communication produced within and by communities of First Peoples and communities in 'Global South' nations. Through the examples we hope to undermine models of inclusion that picture 'science communicators' on one side and racialised, or otherwise-othered, 'communities' on the other. Such models risk sidelining the wealth of science communication practices occurring outside the mainstream, and can falsely characterise minoritised communities as resource poor, as if having nothing to offer, when in fact such communities produce relevant resources and are not in science or behavioural 'deficit' [e.g. Finlay and Wenitong, 2020; Raman et al., 2018]. We argue that white, Western, European and Anglophone science communication can learn from these examples and many others like them, but also boost these and similar examples, contribute to their sustainability and forge respectful links to exchange expertise into the future.

**Aboriginal
Community
Controlled Health
Organisations
communicating
about COVID-19 in
'Australia'**

Aboriginal Community Controlled Health Organisations (ACCHOs) and their representative bodies are member-based primary health care services set up by and for First Nations Peoples in the lands now known as Australia. First Nations People are only 3.3% percent of the Australian population [ABS (Australian Bureau of Statistics), 2018], but this collective term includes over 250 Nations with distinct cultures and languages [AIATSIS (Australian Institute for Aboriginal and Torres Strait Islander Studies), 2018]. Reflecting this diversity, the ACCHO network includes over 140 services with more than 300 clinics, seven state representative organisations and a national representative organisation established to deliver culturally appropriate services based on local community needs [NACCHO (National Aboriginal Community Controlled Health Organisation), 2020a].

Even before COVID-19 was declared a pandemic by the World Health Organisation in March 2020, ACCHOs were communicating with their members and other First Nations people about how COVID is transmitted and prevented. This early action was one facet of ACCHOs' responses. They worked with their member services and governments to reduce the impact of COVID on First Nations people, many of who face increased risk due to higher rates of non-communicable disease and low

socio-economic status [Yashadhana et al., 2020]. Yet despite this increased risk, the incidence of COVID among First Nations people has remained below parity (< 1% at time of writing, vs. 3.3% of population) [COVID-19 National Incident Room Surveillance Team, 2020]. One of the likely reasons is the early intervention efforts of the ACCHOs and the useful resources they continue to develop [Finlay and Wenitong, 2020]. Some of the resources included print and online prevention and symptom recognition social marketing campaigns, pandemic tool kits, factsheets and Facebook live updates [Finlay and Wenitong, 2020]. Their effectiveness can be attributed to the trust First Nations people have in ACCHOs, their use of local language, relatable imagery and relevant motivators, and their communication through appropriate channels such as Indigenous and mainstream media [NACCHO (National Aboriginal Community Controlled Health Organisation), n.d.], ACCHO and representative body websites [NACCHO (National Aboriginal Community Controlled Health Organisation), 2020b], and social media such as Twitter, Facebook and YouTube [Finlay and Wenitong, 2020]. Representative organisations developed resources to support ACCHO members' response to the pandemic [e.g. AHMRC (Aboriginal Health and Medical Research Council), 2020; IUIH (Institute for Urban Indigenous Health Network), 2020], and ACCHOs created resources to communicate to communities on how to keep their families safe. Local ACCHOs utilised several communication channels including social media, First Nations media and print resources to ensure communities and families were well informed on prevention, testing and state/national COVID measures. For example, Dr. Mark Wenitong from Apunipima in far North Queensland regularly updated the community through the Apunipima Cape York Health Council Facebook page (<https://www.facebook.com/Apunipima/>). Similarly, national organisations NACCHO (National Aboriginal Community Controlled Health Organisation) [2020b] and Gayaa Dhuwi (Proud Spirit) Australia [2020] — the Aboriginal and Torres Strait Islander social and emotional wellbeing, mental health and suicide prevention leadership body — produced social media tiles, infographics, and posters. Messages included social distancing, wearing masks, when to get tested and state and regional COVID restrictions. Many of the messages were aimed at the collective — family and community — rather than just the individual, thereby acknowledging the collective culture of First Nations Peoples.

ACCHOs' ability to speak to their audience stems from a deep understanding based on their role as an insider; as defined by Merton [1972, p. 21], 'insiders are members of specified groups and collectives of occupants of specific status'. ACCHOs offer culturally appropriate services because they are run by and for local people. This trust has assisted in the promotion of local, state and national COVID resources created by the ACCHO sector [Finlay and Wenitong, 2020].

The success of these COVID communication practices demonstrates the skill, knowledge and expertise of the ACCHO sector and of First Nations people. These strengths are often ignored, overlooked and downplayed by the mainstream, largely because of the dominance of deficit discourse used to portray First Nations people; itself a legacy of colonisation [Brown, 2019; Fforde et al., 2013; Fogarty et al., 2018]. Despite a generalised suspicion of deficit models, mainstream science communicators are unfortunately not immune from such discourses, but must begin to challenge them.

Griots and African musicians communicating about Ebola in West Africa

The Ebola virus outbreak which affected several countries in the West African region between 2014 and 2016 posed a profound shock to peoples' traditional socio-cultural norms and ways of life, leading to a heightened mistrust of medical professionals and provoking an anti-Western backlash in many communities. In this scenario, science communicators and public health practitioners were challenged to operate through non-Western and decolonised lenses. They tapped into the folklore and Indigenous communication practices of the region's communities, specifically their rich heritage of traditional modes of community engagement.

This heritage has been sustained through the regional network of Griots since the thirteenth century, in local and Indigenous languages. The Griots are West African troubadours, storytellers, historians, poets, praise singers and musicians, all rolled into one. During the Ebola crisis science communicators partnered with Griots and popular musicians to utilise music to communicate key scientific and public health messages to communities. Music plays a key role in the daily lives of West African communities, and proved an efficacious platform through which science communication and public engagement could engender the trust and buy-in of local communities. This then engendered the requisite behaviour change from citizens, positively impacting on containment of the outbreak [Deffor, 2019].

These Afrocentric science communication practices originating from 'outside the mainstream' provide a challenging standpoint from which to interrogate enduring power asymmetries of 'non-Western' and 'Western' science communication practices, approaches and values. They also illustrate the transformative empowerment of language, culture and Indigenous knowledge, exposing mainstream science communication's complicity in perpetuating the inherently false premises of science's presumed universality, objectivity and positivism. One of Africa's foremost intellectual advocates of language rights, Ngũgĩ wa Thiong'o [1993], asserts that languages are framed by, sustained through, and flourish in the political and economic frameworks that maintain the structures of power, privilege and cultural hegemony — or alternatively can oppose oppressive hegemonies. Thus, West African region Griots and musicians, in communicating the science of the Ebola outbreak to their communities in their own local languages, demonstrated the idiographic resonance of their scientific knowledge. Griots exemplified the emancipative power and relevance of communicating the science of Ebola in their own language, as it sits within their communities alongside their cultural legacies and inheritance of Indigenous knowledge through the ages.

The challenge then, for inclusive and transformative science communication in the Global South, is to radically embed within institutionalised frameworks these culturally assertive approaches and practices that further build on the values of their communities. In the African scenario in particular, science communicators need to undertake these paradigm-shifting interventions routinely, rather than waiting until there is a crisis, to drive Afrocentric innovations forward and thus liberate science communication on the continent from Eurocentric dominance.

Advocates of the 'social construction of knowledge' paradigm argue that we should challenge the presumed objectivity of dominant knowledge themes, as these are socially and artificially constructed in a given space and time to maintain the power of certain hegemonic groups. We must critique dominant knowledge

from the perspectives of disempowered and marginalised groups, such as the feminist critique of male-dominated scientific knowledge [Torkington, 1996]. In order for science communication to truly transform, it must remove its Eurocentric blinkers, not least by recognising the epistemic assault inherent in how Western scientific knowledge has been constructed and sustained by the wholesale extraction and export of scientific knowledge and innovation assets from much of the Global South, over many centuries [Hountondji, 1997].

**People's Science
Movements
communicating
science for social
revolution in India**

The story of science communication in Independent India (1947–) and beyond is a complex one, borne from a need to overthrow the cruelties of a caste-based social order as well as the legacy of colonisation and imperialism. This example illustrates the creative ways in which some cultural movements outside the West hybridised aspects of a scientific world-view with the needs and priorities of their social setting.

Modern science had significant appeal for some reformist and radical wings of the freedom movement embarking on building the post-colonial nation. Commonly attributed to Jawaharlal Nehru, the notion of 'scientific temper' as a civic duty came to be embedded in the Indian Constitution in the 1970s [Chakraborty, Raman and Thirumal, 2020]. Cultivating scientific temper was more than a focus on teaching or learning science. Rather, it was understood as a cultural project with citizens developing the ability to question time-honoured dogmas and be guided by a spirit of inquiry.

This way of pitting science against dogma had particular resonance for a generation of secular-humanist freedom-fighters who were attuned to how systems of knowledge and of caste were intertwined in India, and who resisted the conservative solution to 'the caste question' advocated by Gandhi [Nanda, 2010]. Nanda [2010] argues that those with direct experience of being born 'below the pollution line' [Aloysius, 1997 quoted in Nanda, 2010] — most famously, but not only, the Dalit intellectual and architect of the Constitution, B.R. Ambedkar — infused what they saw as the best aspects of modern science with cultural traditions and a need for meaning. Through this fusion, they went beyond the narrow confines of scientism [Nanda, 2010]. In other words, the aim of this secular-humanist movement in the birth of the nation was more than about promoting scientific literacy or disseminating scientific facts. According to Nanda, in a hierarchical culture where truth was supposed to be prescribed from above by religious dogma, the movement was oriented towards seeking common ground between scientific and everyday ways of knowing.

The relationship between science and culture has since taken a dark turn with the rise of Hindu nationalism in India where we are witnessing twisted appeals to science in order to justify oppressive right-wing beliefs and actions. For these reasons, Nanda has been heavily critical of contemporary efforts to re-assess modern science through feminist and postcolonial lenses. Irrespective of her views in this regard, there may be important lessons to be drawn from these histories for grappling with complexity at the interface of scientific claims and cultural identities in Western science communication [e.g., Scheufele et al., 2020].

Further insights into ways of bridging science and culture can be gained from People's Science Movements (PSMs) which originated in the 1960s and have evolved into new forms of activism in response to the urgent challenges of industrial development [Pattnaik and Sahoo, 2014]. The most famous of these is the Kerala Sasthra Sahitya Parishad (KSSP, translated Kerala Forum for Science Literature: <https://kssp.in/about-us/>). KSSP emerged in 1962 from the initiative of science writers who aimed to take science *per se* to the masses. In the early days of these movements, disseminating scientific information was seen as an end in itself [Raza, 2018]. However, becoming convinced that science and technology were being deployed in oppressive ways that only benefited the elites, KSSP articulated a vision of 'Science for Social Revolution' in 1972.

Since then, science popularisation by KSSP and many similar regional forums has been oriented towards specific social goals of equity and environmental sustainability, a stance that the Bhopal tragedy of 1984 only reinforced. For example, KSSP ran programmes targeting maternal health, HIV-AIDS and reproductive services, while elsewhere, PSMs forged links with campaigns against large-scale development projects promoted by the state and global corporations [Varma, 2001]. Pattnaik and Sahoo [2014] show that PSMs have come a long way from their early linear visions of science communication to represent a richly diverse spectrum of two-way methods of learning from communities, activities drawn from cultural art forms (e.g., puppetry, theatre, literature) as well as more traditional educational approaches, all informed by a strong socio-political awareness.

Conclusions

There is a clear and urgent need to develop more equitable, meaningfully inclusive practices within the science communication 'mainstream'. Science communicators may feel marginalised within science but perhaps do not fully recognise the power mainstream science communication has. Despite what might seem like a disparate field of actors, it is a global hegemony in which unexamined knowledge practices are normalised and perpetuated by networks of privileged individuals and well-funded institutions, supported by dominant white, Western cultures. Such power relations must be questioned.

Our examples demonstrate that the world is alive and vibrant with creative practices for communicating about knowledge, ideas and values of relevance to science; practices which deserve recognition. Mainstream science communication is not the only science communication tradition, nor even the oldest, by a long shot [Rasekoala and Orthia, 2020]. Mainstream science communicators must recognise this, and understand that communicators at the 'margins' have unique expertise and successful practices, in some cases building on ancient communication traditions.

Marginalised and minoritised communicators also have broader expertise to offer the mainstream, to serve a wider public interest not just local needs [Raman et al., 2018]. For example, the West African Griot tradition helped shape the struggle against slavery in the United States. The famous 19th-century Underground Railway was made possible by an intricate knowledge-system of storytelling embedded in fabric, i.e., quilts [Tobin and Dobard, 1999]. Diversity will always

enhance innovation, particularly for dominant culture pursuits, such as 'mainstream' science communication, that may be unable to see their shortcomings clearly.

Mignan [2020] noted it is time for science communicators to reconfigure our understanding of audiences from 'us and them' to 'we'. Our examples show that outside the mainstream, this configuration is routine, because communicators are working within their own communities. Mainstream science communicators can learn from this, but with a caveat. If the sectors and communities they wish to communicate with are not represented within their organisations — if no genuine sense of 'we' has been established — they must know when to step back because it is not their space. Learning from diverse sectors of communication practice is critical, but our examples show it cannot be appropriative or an empty repetition of practices without the full context and shared values that go with them. Mainstream science communicators must rather collaborate, work in parallel, boost, and defer to others' greater expertise.

Our examples are drawn from particular nations and communities, but there are broader lessons to be learned here about the cultural specificity of communication practices. We must ask: whose normal do the norms of mainstream science communication represent? Are they drawn from white, Anglophone, middle-class Westerners' ideas about polite conversation? For many people even within the Anglophone West, conventions of everyday talk with friends, family and community depart significantly from such norms. Mainstream science communication would do well to actively invite discussion about communication diversity in general, and the extent to which its current norms exclude and alienate. Actively seeking radical diversity within our ranks is critical for working against exclusionary practices and for changing science communication culture.

Broader engagement with diverse models of science communication is long overdue. We have sought to showcase examples that insist there are ways to do science communication beyond mainstream expectations, and there are, of course, many more examples we lacked space to discuss. In particular, we emphasise how crucial reflective practice is here. As our examples illustrate, values and knowledge shift across time, place and context. There is no ultimate or perfect inclusive science communication practice or 'one size fits all' approach. Rather, we are on a journey of iterative, endless cycles of reflection and practice to co-develop inclusive, relevant, equitable and useful science communication, together.

Liberating science communication also goes beyond our discipline and profession. The respect and positive relationships we can establish between the current mainstream and diverse minoritised groups can be an example for all dominant-culture audiences of how we may live together in an equitable society, and shift what is 'mainstream'. This has ramifications beyond the realm of science. It isn't, and never was, just about us.

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