



COMMUNICATING SCIENCE ACROSS CULTURES, COMMENTARIES FROM SESSIONS
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Country-specific factors that compel South African scientists to engage with public audiences

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Abstract

A study in South Africa shed light on a set of factors, specific to this country, that compel South African scientists towards public engagement. It highlights the importance of history, politics, culture and socio-economic conditions in influencing scientists' willingness to engage with lay audiences. These factors have largely been overlooked in studies of scientists' public communication behaviours.

Keywords

Public engagement with science and technology; Science communication in the developing world

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Introduction

Science communication scholars increasingly recognise the importance of understanding the factors that motivate or constrain scientists in terms of their participation in science engagement [e.g. Davies, 2008; Rödder, 2012; Searle, 2013; Peters, 2014; Dudo and Besley, 2016]. Factors such as field of research, career stage, age and gender have been explored comprehensively [e.g. The Royal Society, 2006; Dunwoody, Brossard and Dudo, 2009; Bauer and Jensen, 2011; Bentley and Kyvik, 2011; Crettaz von Roten, 2011; Ecklund, James and Lincoln, 2012; Dudo, 2013; Peters, 2013; Johnson, Ecklund and Lincoln, 2014; TNS-BMRB, 2015; Chikoore et al., 2016]. Studies have focused on scientists' interactions with journalists [e.g. Peters, 2013] and the impact of new media [e.g. Peters et al., 2014], or documented how scientists' interactions with the public are influenced by the institutions where they work [e.g. Jacobson, Butterill and Goering, 2004; Grand et al., 2015; Marcinkowski et al., 2014] or their attitudes towards communication and the public [e.g. Besley and Nisbet, 2013; Grand et al., 2015]. Most studies were done in the developed world, with relatively few studies focusing on scientists in Latin America [Kreimer, Levin and Jensen, 2011; Massarani and Peters, 2016] or Africa [Gething, 2003; Ndlovu, Joubert and Boshoff, 2016].

Scientists' public engagement behaviour in different cultural settings

Relationships between science and its publics are influenced by politics, culture and socio-economic conditions [e.g. Manzini, 2003; Trench et al., 2014]. Therefore, it is recognised that public science engagement must be sensitive to the contexts of its audiences [Manzini, 2003; Fish et al., 2017].

The cultural nuances of science engagement are particularly significant in countries characterised by a colonial history, cultural diversity, socio-economic inequality and the geographical isolation of rural populations [Massarani and De Castro Moreira, 2016]. South Africa faces all these challenges, along with poverty and a high burden of disease [Manzini, 2003; Joubert, 2007; Du Plessis, 2008; Du Plessis, 2017], as well as a crisis in its science education system [Fish et al., 2017]. Science engagement is further complicated by pseudoscience, myths and superstitions that are deeply ingrained in local cultures [Manzini, 2003; Williams and Whiting, 2016]. Thus, there are country-specific drivers that compel local scientists to engage with public audiences, with implications for institutions and policymakers who wish to encourage interactions between scientists and publics in South Africa.

Surveying South African scientists

Modelled on a landmark study of visible scientists in the U.S. [Goodell, 1977], we identified 211 publicly visible scientists in South Africa [Joubert and Guenther, 2017] and conducted semi-structured interviews with 30 of them between January and March 2017 in order to collect evidence about the factors that shape their public engagement behaviour [Joubert, 2018]. This research was approved by the Research Ethics Committee: Human Research (Humanities) at Stellenbosch University. The descriptive sample of their responses, provided with consent below, illustrates how factors that are specific to South Africa influence scientists' public engagement behaviours. They are grouped into themes of (1) history and politics; (2) misinformation, disease and poverty; (3) population group and language; and (4) the natural environment.

3.1 History and politics

For visible scientists in South Africa, their participation in public science engagement frequently has political roots. These scientists became familiar with the mass media and public controversy during turbulent times¹ in the history of the country. Later, the political transition in South Africa, from colonialism and apartheid to a new democracy in 1994, inspires scientists to communicate their work in a new, open society.

My activism started out during apartheid. We protested against things like whites-only hospitals. (Professor Glenda Gray, President: Medical Research Council).

I have been an activist all my life, out on the streets during the final years of apartheid. Since then, I've always combined my research with activism. (Professor Amanda Gouws, Stellenbosch University).

During the volatile 1980s, I was called as an expert witness to help the courts understand the psychological circumstances that caused people to commit necklacing.

¹The racially segregated apartheid regime in South Africa lasted from 1948 to 1994. During this time, black citizens were mostly excluded from scientific and economic activities.

murders.² That was my first experience of communicating trauma in public. But, in South Africa, we also witnessed the possibility of forgiveness. I must write about this for the people of South Africa and the world. (Professor Pumla Gobodo-Madikizela, Stellenbosch University).

Given South Africa's history, it is particularly meaningful for people to trace their roots and explore where they belong in the tree of life, making population genetics a popular topic in our society. (Professor Himla Soodyall, University of the Witwatersrand).

In the democratic South Africa, scientists value the freedom to share their research with society, especially those who work on topics where public communication was constrained under the previous regime. Scientists are also keen to promote the image of the 'new' South Africa.

I hope to instil a sense of pride in our South African palaeontological heritage, especially after the cover-up that occurred in the apartheid era. (Professor Francis Thackeray, University of the Witwatersrand).

I want to tell the world that Africa is not only about famine and war. We can do science! (Professor Tebello Nyokong, Rhodes University).

I promote medical science so that women in Africa can aspire to be scientists, and to change the way women in Africa are viewed. (Professor Glenda Gray, President: Medical Research Council).

In the current political climate in South Africa, some scientists perceive new communication barriers, specifically in terms of providing input into policymaking processes. Given the high levels of corruption in public institutions that are frequently reported in local media, scientists are concerned about how this may erode the tax payers' support for science. As a result, they are keen to demonstrate the value and outcomes of public funding spent on research.

Because of our history, our leaders come from political backgrounds and instinctively look for political solutions. They do not turn to science for solutions. It is up to us, as scientists, to develop trust relationships with politicians. We have to show that science is not a threat, but a resource to be used. (Professor Bob Scholes, University of the Witwatersrand).

Our political elites are the product of a flawed education system and some of them did not receive a good education. Now, people who barely did science at school manage government departments dependent on scientific expertise. (Professor Anthony Turton, University of the Free State).

We hear all the time about how our tax money is squandered. So, it is important that — in the case of research — the tax payer sees value for money. (Professor Glenda Gray, President: Medical Research Council).

3.2 *Misinformation, disease and poverty*

The HIV³ / Aids⁴ denialism debate that peaked in South Africa around the year 2000 was a turning point for many scientists in terms of a realisation that they had

²Killing someone by putting a petrol-filled tyre around a victim's neck and setting the tyre alight.

³HIV = human immunodeficiency virus.

⁴Aids = acquired immunodeficiency syndrome.

to stand up for scientific evidence in the public arena. Since then, many perceive an ongoing duty to stem the flow of misinformation about diseases such as HIV/Aids and prevent bogus healers from scamming vulnerable people into trusting fake treatments. Also, as a result of the high prevalence of disease and the hardships suffered by millions of poor South Africans, some scientists feel morally obliged to reach out to marginalised communities and to help create a more equitable society.

If someone says HIV does not cause Aids and you have a hospital full of dying babies, how can you not speak out? (Professor Glenda Gray, President: Medical Research Council).

When Thabo Mbeki⁵ announced his denialist position, I could not stay quiet. The same is true today, when some of my patients come in with a concoction called 'uBhejane' which is really just coloured water sold as HIV medication. We must fight back with the help of the media. (Professor Salim Abdool-Karim, University of KwaZulu-Natal).

TB⁶ in South Africa is a public tragedy that you cannot imagine and many patients live in abject poverty. I refuse to go down in history as a researcher who did not speak out about the issue. (Professor Bavesh Kana, University of the Witwatersrand).

We have a very unequal society. It is only ethical and moral for scientists to give back to society. (Professor Mary Scholes, University of the Witwatersrand).

3.3 Population group and language

Working and living in a culturally diverse society, South African scientists are cognisant of the importance of achieving meaningful connections and cultural resonance when they engage with public audiences. Scientists feel strongly about the need for black scientists to become role models that will attract young people to careers in science, and they realise the importance of science communicators that are able to speak the home language of the audience.

Science is not necessarily given the face of a black woman. People think of science as something that is done by old, white men. Role modelling of black women in science is vital, because we are rarely seen or heard. (Professor Nox Makunga, Stellenbosch University).

It is incredibly important for children from poor black townships to meet successful black scientists. (Professor Prof Anusuya Chinsamy-Turan, University of Cape Town).

My colleague, Dr Mirriam Tawane, grew up in the area where the Taung Child fossil was discovered in 1924. When we address learners in that region, it is Mirriam who holds centre stage when she speaks to the children in Setswana. (Professor Francis Thackeray, University of the Witwatersrand).

⁵Thabo Mbeki, South African President from 1999 to 2008, questioned the existence of the human immunodeficiency virus (HIV) and challenged scientific consensus around HIV/Aids [Mbali, 2004]. Together with health minister Dr Mantombazana Tshabalala-Msimang, they promoted various untested therapies, including garlic, beetroot, lemon and the African potato, for people suffering from HIV/Aids symptoms [Nattrass, 2007]. The resulting delay in the roll-out of antiretroviral treatment in the South African public health system is estimated to have caused the death of more than 330 000 people, while about 35 000 HIV-positive babies were born in the country during this period [Chigwedere et al., 2008].

⁶TB = tuberculosis.

3.4 The natural environment

Natural scientists (particularly biologists, ecologists and palaeontologists) are inspired by South Africa's rich fossil heritage and biodiversity to share their findings with fellow citizens. For them, a shared interest in the natural environment offers unique connections between scientists and public audiences.

I like to tell people the fantastic story of the South African fossil record and our huge contribution to understanding the origins of life. It is something to be celebrated. (Professor Bruce Rubidge, University of the Witwatersrand).

South Africa is a unique place for doing and sharing science. Our ecologists work in the best open-air laboratory in the world. We have some of the richest biodiversity on the planet. (Dave Pepler, Academy for Environmental Leadership).

South Africans are really interested in wildlife and the wilderness. If you talk about these topics, the response is fantastic. (Professor Marcus Byrne, University of the Witwatersrand).

A new understanding

The examples discussed above provide insight into how factors linked to history, culture, politics, socio-economic conditions and the bio-geographical environment in South Africa affect the participation of local scientists in public science engagement. Earlier studies of the factors that motivate scientists towards public engagement have mostly neglected these influences, but the current study confirmed that these country-specific factors can largely determine scientists' outreach behaviour. These findings demonstrate the value of situated research and are relevant to policymakers and science managers who aspire to increase scientists' participation in public engagement. It also highlights the need for more research looking into the country-specific drivers and constraints that govern scientists' involvement in public engagement.

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