

Report on the symposium on 'Karoo Futures: Astronomy and its impacts

21 November 2019, South African Astronomical Observatory, Cape Town

Hosted by the Office of Astronomy for Development (OAD), co-organised with the NRF/DSI SARChI Research Chair in the Sociology of Land, Environment & Sustainable Development, Stellenbosch University (www.cosmopolitankaroo.co.za)

Background on the Symposium

This symposium was held to mark the launch of a special issue of the *Journal of Southern African Studies* (JSAS) on 'Karoo Futures: Astronomy in place and space' and to encourage dialogue between astronomers and researchers in the social sciences and the humanities on their work. It followed a related launch event that was held in Cambridge on October 25th 2019, hosted by Prof Saul Dubow at Magdalene College.

The Cape Town symposium was attended by approximately 50 people from a range of backgrounds. In addition to the organisers and panellists participants included astronomers, other academics and postgraduate students in the social and natural sciences and humanities, project management personnel from the SKA, representatives from the Ministry of Science and Innovation and the tourism, heritage and conservation sectors, plus other members of the public.

Programme

- 09:00 Welcome, introductions, purpose of symposium
- *Kevin Govender (OAD)*
Authors' panel
- *Cherryl Walker (Stellenbosch), Michael Gastrow (HSRC), David Morris (McGregor Museum), Davide Chinigò (Stellenbosch), Hedley Twidle (UCT)*
Discussion
- 10:30 Tea
- 11:00 Presentation on methodologies utilised in the special issue
- *Davide Chinigò*
Presentation on issues for further research raised in the special issue
- *Cherryl Walker*
Discussion
- *facilitated by Vanessa McBride (OAD)*
- 13:00 Lunch, followed by optional tour of the SAAO

Summary of the special issue

Karoo Futures: Astronomy in Space and Place, *Journal of Southern African Studies*, vol. 45, issue 4. Edited by Cherryl Walker (Stellenbosch University), Davide Chinigò (Stellenbosch University), Saul Dubow (University of Cambridge).

Full text of the introduction is available here

<https://www.tandfonline.com/doi/full/10.1080/03057070.2019.1654664>

The special issue is the result of an interdisciplinary dialogue among scholars in the social science and humanities, on astronomy in South Africa, in particular on the Square Kilometre Array (SKA) radio telescope, post-apartheid's most ambitious investment in big science. Against a background in which the roots of modern astronomy in South Africa lie in the country's colonial past, the editors of the special issue argue that the development of the SKA in the long-marginalised Karoo region of South Africa raises significant conceptual, methodological and ethical challenges across different scales of analysis. These include questions about whose Karoo it is, how the benefits from this global mega-project should be distributed, and what responsibilities lie with the SKA, nationally and internationally, for addressing local development concerns. Major themes addressed in the special issue include the relationship between space, place and time in the configuration of the Karoo as a major astronomy site, the role of the state, and the politics of knowledge, including how to understand the cultural artefacts produced by the study of the cosmos.

Summary of the discussion

In the opening panel five of the authors of articles in the special issue of JSAS who could be present gave short summaries of their articles, focusing particularly on the Square Kilometre Array (SKA) project in the Karoo. In the general discussion that followed the inter-disciplinary and in some cases exploratory nature of the research that was presented was stressed. There was very useful input from the audience in terms of both questions about the research and suggestions around how scientists in different domains could work together more constructively, including around the implementation of specific recommendations relating to human development in the local communities affected most directly by the development of the SKA infrastructure.

Possibilities for new areas of research were raised, for example comparative studies of the SKA in Australia and South Africa, the importance of monitoring ongoing developments as they unfold, as well as questions around governance and decision-making in the Karoo -- a region challenged by limited government support structures (with the result that, in one participant's words, "SKA is the government by proxy").

The discussion on research methodology was lively and revealed significant differences among participants around understandings of methodology in the social vs the natural sciences; clearly more time was required to distinguish between and address areas of dispute and issues of misunderstanding. Debating points centred particularly on the role of qualitative (as opposed to quantitative) research in the social sciences, the nature of validity and "proof" in research more generally, and the role of theory in interpretation and analysis. It was noted that the discussion was marked by some defensiveness in tone at times, in relation to both the value of the local development interventions that have been carried out by the SKA in the Karoo and the limitations of some of the research findings presented in the special issue.

For most of the astronomers who were present, as well as the stakeholders involved with delivering SKA and MeerKAT, an additional difficulty was that some of the research seemed highly critical of their work, yet provided few recommendations for doing things better. They expressed an openness to collaborative work in what they acknowledged is a difficult environment due to social problems and the failings of local governance. For some of the social scientists who were present what was important was that their focus on raising questions which may lead to deeper insight around social dynamics, or raise issues for further exploration, should be recognised as legitimate research. Furthermore, the value of independent, critical research should not be undermined.

It was also pointed out that while research methods in astronomy and the social sciences may be vastly different, there can also be significant similarities in motivation. Many astronomers conduct their research out of curiosity about understanding the universe, not necessarily because of its potential impact on socio-economic developments on Earth. Similarly, many scholars in the social sciences and humanities explore issues and concepts because they are challenging or intrinsically compelling or offer a window on understanding the human condition, not to produce recommendations for change or policy implementation. A phrase that was frequently used in this discussion was that issues involving humans are "complex" and not one-dimensional; in recognition of this we should make every effort to be respectful of divergent points of view.

Other questions for further debate that came out of the discussion included:

1. While marginalized views are important, how do we account for the prevalence of such views (especially in our reporting), and what other perspectives are also important for effective policy-making?
2. Understandings of "development" are likely to change with time across different levels (local, national and international); what will we see of current priorities when we look back in a decade?
3. What is the meaning of objectivity (noting that the starting point for some scholars is that there is no single truth but, rather, different ways of depicting and exploring what is considered reality)?
4. Can social scientists play a role both in communicating science (which is urgently needed) and critiquing the science project itself? How can a constructive dialogue around this be maintained?
5. Given the aspirational dimensions of a big science project such as SKA, might it allow alternate views of identity in the Karoo and South Africa to emerge and thereby contribute to building greater social cohesion?

In conclusion the organisers thanked the panellists and the audience for their participation in a very stimulating discussion.