



World Science Forum

Cape Town, ZA

Plenary Session III.

Science for Africa and the world –

How to unleash the potential of African Science in Global Cooperation?

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08/12/2022

A very good morning, Ladies and Gentlemen!

As my colleague Early-Career Researchers in the earlier panels and plenaries have mentioned, we are hugely thankful to the organizers for inviting us and for availing the Global Young Academy and the Early Career Researchers the seats at the tables to contribute towards sustainable solutions.

Beyond the GYA, my academic background is in Astrophysics, so please allow me to draw examples from that background and do not feel alienated by this, as – I am sure – those examples are perfectly transferable to other fields.

There is a wealth of possible aspects to mention under the given theme of “Science for Africa and the World”, but I will focus on three partly related aspects, namely:

1. Science **for** Africa;
2. Science **in** Africa;
3. Fundamental Science **also in** Africa.

1. Science **for** Africa

Following earlier discussions at this World Science Forum, I dare asking whether there is, or even should be “Science **for** Africa” or whether we should rather discuss “Science **in** Africa”.

I’ll leave that for discussion and instead quote statements that were made during this World Science Forum:

“Science arrives in Africa already fully formed.”

“‘We’, as Africans, don’t feel we can contribute or challenge this pre-formed science.”

I do not want to diverge from here into discussing science systems but rather focus on the rephrasing of these statements as done by the former GYA co-chair, Dr Connie Nshemereirwe, who asked during the session of the International Science Council:

“How do we go from being receivers and consumers to become contributors and creators of knowledge and science?”

Let me share the anecdotal example I learnt about last week: We can agree or easily imagine that our fellow scientists from the US are and have been amongst the world-leading group of radio astronomers for decades. Still, for their largest upcoming instrumentation project, dubbed *ngVLA*, a fellow South African researcher was asked to help with the technical design. By no surprise, the colleague holds a Research Chair, which supplies the much-needed financial and student resources as well as freeing time from undergraduate teaching that many African academics are so heavily burdened with.

While this example only hints at possible answers to the question posed, it impressively demonstrates that it **is** indeed possible to not just become contributors but even world leaders in science on this very continent and in defiance of all African imposter syndrome, we shall never forget that.

2. Science *in* Africa

The topic of “Science for Africa and the world” is very close to me as it often seems quite far from being self-determined what “Science for Africa” should be. “Suggested” (or shall I say “dictated”?) by the international streams of donor funding, it appears that African science shall care essentially – or even *exclusively* – about “African problems”, namely agriculture, water, sanitation, vector communicable diseases, HIV/AIDS, and climate change adaptation. Almost univocally, you find these in the “Africa Strategies” of the countries in the Global North, but also the trail-blazing Future Africa speaks of such Challenge Domains and even in the Science, Technology and Innovation Strategy for Africa 2024 and the STI priorities of the African Academy of Sciences fall in line.

Tackling these challenges, which are indeed related to the Sustainable Development Goals, is immensely important for human development – in Africa and beyond! Please do not get me wrong on this! Still, *solely* focusing on problems cripples *Science in Africa*, as it does not at all take into account any areas of opportunity. Neglecting these opportunities appears as a fail-safe plan for *Science in Africa* to play catch-up indefinitely.

Contrary to this, you will agree with me that *Science in Africa* can use any bit of head start possible.

These opportunities may arise in various ways and while many of you might immediately think of indigenous knowledge, let me give an example of geographical advantage that science can have in Africa. For Southern Africa, particularly Namibia, South Africa, and Botswana, considerable geographical advantage exists in the field of astronomy: for as much as the lack of rain and clouds poses an immense challenge for agriculture and food security, it avails opportunities in astronomical research that are in the Southern hemisphere only rivalled by the Chilean highlands. This also exemplifies what former GYA Co-Chair, Prof. Roula Inglesi-Lotz, stated during the 1st plenary session: One shall see challenges as opportunities.

Unchained from the externally dictated – and often locally believed – need to *solely* focus on “African problems” and also embracing African *opportunities* is a way to pursue *Science in Africa for Africa* and the world.

3. Fundamental Science *also in* Africa

Another problem with this utilitarian, solely problem-focused approach to *Science in Africa* is its inherent short-sightedness. Let me remind everybody that amenities of our every-day life like GPS navigation, touchscreens in our phones, Wi-Fi, or even the worldwide web are mere by-products of curiosity-driven, fundamental research, decades before we started developing the well-known use-cases.

This, indeed, is not just a problem for *Science in Africa*: Recently the Global Young Academy published the report “*Back to basics*” on researchers’ perception on the global state of funding for fundamental research.

Prof. Anina Rich, GYA Alumna and lead author of the report summarized it as

“The findings of the report emphasise that researchers around the world see funding for basic research decreasing, in the context of increasing funding for applied research – and that this will come with significant societal costs in terms of future innovation and capacity.”

The Physics Nobel laureate George Smoot put it as follows:

*“If we **only** did applied research, we would still be making better spears.”*

Making use of the same metaphor, let me conclude by asking:

Is it socially just if *Science in Africa* should only care about spears?

I thank you.

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Dr Michael Backes is Associate Professor, Head of the Namibian H.E.S.S. group and Astrophysics Research in general and of the Virtual Institute for Scientific Computing and Artificial Intelligence at the University of Namibia, as well as Extraordinary Associate Professor at North-West University (ZA).

He obtained his MSc and PhD from TU Dortmund University in 2008 and 2012, respectively, and spend study visits at the Ruhr-University Bochum (D) in 2005 and the University of Birmingham (UK) in 2006.

Among his awards, he got elected a member of the Global Young Academy (GYA), a Fellow of the GSO Leadership Academy (both in 2018) and got invited to the Lindau Nobel Laureates Meeting in 2019 as Heraeus Fellow. He received the University of Namibia Meritorious Award 2017 for Best Academic Performance in the Faculty of Science, and the GfKl Application Award 2012 by the German Data Science Society (GfKl).

He serves as Vice-Chairman of the Namibia Scientific Society since 2015, and as elected Executive Committee Member of the Global Young Academy since 2021. Further, he serves as voting member on the Steering Committees of H.E.S.S. and of the International Astronomical Union's Southern African Regional Office of Astronomy for Development.

