Evolution of science policy in South Africa

Michael Kahn
Centre for Research on Evaluation
Science and Technology. South Africa

1 Context

In the 21st century, science policy must itself innovate by changing the institutional landscape for research and innovation, and by setting priorities, framework conditions, and incentive regimes. An explicit or implicit contract between science and society characterizes the institutional landscape. International organizations such as UNESCO and OECD have also supported various initiatives to advance thinking on how the idea of a social contract for science has informed science-policy debates and approaches over the years. In addition, international declarations such as the Sussex Manifesto in the 1970s, the Bangalore Declaration in the late 1990s, and the Johannesburg Declaration in 2002 have helped focus international attention on the funding of scientific research and its associated S&T policy.

In the early 1990s, South Africa jettisoned the apartheid system. The key issue that confronted its researchers and policymakers was the future orientation, shape, and size of the inherited research and innovation system. In South Africa, before 1994, the science system was characterized by the separation of S&T into a highly fragmented system with very limited stakeholder representation. That system might be characterized as one in which "science walked on two legs" : one leg being that of own science, and the other leg being science for the apartheid state. Post-1994, South Africa looked to construct a new science policy that was both socially responsive and enabled international competitiveness. A white paper at that time served as the point of departure for subsequent policy development and analysis, and set out a bold agenda of change. It started with the premise that adoption of the innovation systems approach would serve the transformation agenda. Implementation of this white paper was slow, and some recommendations are still at an early stage 15 years later. The second major policy statement was the National R&D Strategy in 2002, which adopted a linear model, rather than the non-linear innovation systems approach. It argued for a set of new missions : poverty reduction ; a focus on knowledge-intensive new industries ;

advanced manufacturing ; leveraging resource-based industries ; and developing new knowledge-based industries. The third policy statement was a Ten-Year Plan for Innovation 2008–2018. This was more a vision than a plan, as it lacked detail, budget, and mechanisms for implementation. These ideas then fed into the National Development Plan. That plan stated that the best solution for science would be for the state to play an active role in both funding and guiding the type of research and development that the private and public sectors conducted ; however, it noted that the freedom of scientists to investigate and of entrepreneurs to innovate is critical. This position reveals a somewhat contradictory notion of the social contract.

2 Empirical Approach and Main Findings

The social contract is the glue that binds the components of the innovation system into a coherent whole. The nature of the social contract for science will be evident in the choices of policymakers and the voice of organized science. Documentary evidence and STI indicators suggest that the post-apartheid era social contract combined the freedom to pursue own science with a strong component of state-directed science, or big science. In this sense, science continues to march on two legs. To verify the above conjecture a structured interview schedule was developed and administered to 16 senior scientists who had a prior or present role in the formulation and implementation of science policy. Twelve had backgrounds in the natural sciences and engineering, and four in the social sciences and humanities. These questions were addressed : How would you characterize science policy pre-1994 ? Was there a social contract, implicit or explicit ? What were your expectations of science policy post-1994 ? What is the nature of contemporary science policy ; is there evidence of a social contract ? Who benefits/losses from current science policy and what are the reasons for such benefit/exclusion ? What changes might be needed in science policy ?

Pre-1994 science policy and the social contract — The strongest level of agreement concerns the nature of the pre-1994 social contract, with most respondents agreeing with the two legs characterization. A typical comment was that the social contract promoted research and innovation that supported the strategic goals of the apartheid government. However, two respondents rejected the qualifier “social” because they felt that this implied a non-existent commitment to the greater good.

Post-1994 — Post-1994 expectations were uniformly optimistic. The new policies at the time set out to promote inclusion and to be open to all. They included inclusive decision-making, evidence-based decision-making, and coherence. There was wide expectation that all sectors would be mobilized and that this would lead to significant change in public research organizations as part of the stated agenda of science for development. A massive restructuring did not come to pass. Instead, selective reforms advanced the cause of competitive funding instruments and performance measurement. As well, there was a shift from open consultative policy debate, to one conducted within the confines of government departments. The interviews confirm the implicit post-1994 social contract with its two legs — continuity of own science and the onset of big science.

Current nature of science policy and the social contract — It was widely argued that the main beneficiaries of the new policy dispensation were academic researchers who enjoyed the support of the journal subsidy scheme, the National Research Foundation rating system, and the South African Research Chairs Initiative and the Centres of Excellence programs. Essentially those positioned to lobby successfully have benefited and were able to improve their own positions substantially. Current negative concerns include poor country performance on innovation scoreboards, the perceived absence of an inclusive innovation agenda, a generally dysfunctional education system (pockets of excellence notwithstanding), lack of coherence at the topmost level of government, and uncritical adoption of foreign science policy instruments.

There was a convergence of opinion on two items that need to change. The most promising way to strengthen the delivery and alignment of science policy would be the implementation of the National Development Plan built on a competent, capable state and improved social capital. The second need was for mechanisms to specify demand, to foster cooperation, and to promote policy learning.

3 Main messages for policy and practice

This study examined the working hypothesis that the idea of a contract between science and society is a useful tool for exploring the nature of science policy. The social contract in South Africa can be viewed as walking on two legs. In the apartheid era, the legs were own science and science for the apartheid state, while in the present these have become own science and state-driven big science, both of which centre on basic research. The intent to promote science for social development, what might be termed welfare science, has gained little traction.

The field research supports the claim that there was a dual agenda at work before 1994. Post-1994 was a period of good intent and lofty goals that in the mix of financial realities and competing interest groups saw the continuation, if not strengthening, of the own-science agenda, with big science gaining some prominence. What comes through from the research is that the construct of the social contract is a useful analytical device.

The question of the social benefit of science activity must also be addressed. It might be averred that addressing social deficit is hardly a matter for basic research. The provision of potable water, primary healthcare, acceptable education, and environmentally appropriate housing does not entail advanced science. Failure in these domains is largely political rather than arising from a poverty of technology. This negative view misses the crucial point that the science community has prospered and has continued to pay its social dues. For example, in its response to the HIV pandemic, where despite the active denialism of government, scientists somewhat quietly got on with the task of understanding the aetiology of the disease and seeking testable responses. A second example is the ongoing provision of sound advice from the science community to government on issues such as energy, environmental impact, and genetically modified organisms. These examples speak eloquently to socially responsive science. These activities have allowed the science system to maintain its world standing and

in certain fields, such as infectious disease and mathematics, to be above the world average.

In parallel, as part of its commitment to, and in recognition of its leadership role on the African continent, South Africa has seen its approach to science policy being exported, first into the Southern African Development Community, and then into the African Union *via* the New Partnership for Africa's Development. However South Africa's export to Africa is not science for development but rather big science. This big science mainly calls forth basic research, rather than use-oriented basic research or applied research. How and why this agenda will evolve presents many research questions, especially regarding the way that this export might reinforce local scientific elites.