The early history of research funding in South Africa: From the Research Grant Board to the FRD

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The South African government has a long tradition of supporting research at public higher education institutions. Such support commenced in the early 20th century, although the exact nature of the support at that time is poorly documented. The oldest research funding model in the country was agency funding, which started as early as 1911 through the Royal Society of South Africa. A few years later, in 1918, a more coordinated funding body called the Research Grant Board (RGB) was established in the Union of South Africa. The RGB offered competitive funding to individual academics in the natural and physical sciences. The human sciences were only supported much later with the establishment of the Council for Educational and Social Research in 1929. Here we review the history of research funding in South Africa, with a special focus on the work of the RGB between 1918 and 1938.

Introduction

Many people assume that a limited number of models exist for the public funding of modern research systems. At the highest level, a distinction is made between 'core' and 'project' funding of research conducted at public research organisations and universities. Core funding (also referred to as 'block funding') for universities is usually channelled through a Ministry of Education or Higher Education. The term 'core funding' refers to state support for the core business of universities and other public research bodies, which is usually understood to comprise teaching and learning, research, and community engagement. There are basically two ways in which core funding to universities is calculated, namely *formula-based* and *performance-based* (or some combination of the two).

Formula-based core funding consists of calculating the core funds to be allocated to a specific university on the basis of an agreed-upon formula. The formula usually takes into account student numbers, growth in student numbers, staff numbers, infrastructure, and so on. By contrast, performance-based core funding is based on the past performance of a university. In the field of research, performance is usually linked to the research output of the university. In the field of teaching and learning, performance could involve any number of 'measures' such as student completion rates, student throughput rates, and absolute numbers of graduates and post-graduate students. It is not uncommon to have a system of core funding that consists of both formula funding and performance funding.

South African universities receive an annual core funding amount that is calculated in terms of students, staff, and infrastructure, as well as performance-based funding. Performance-based funding was introduced in 1985 and revised in 2003 and 2015, and it rewards the most research-productive universities.

Project funding, which involves supporting research projects at public research organisations, can be channelled either directly or through an agent. Direct channelling is not the norm in most countries. Agents that channel research funding could be a research funding council, such as the Economic and Social Research Council in the UK, or a foundation, such as the National Science Foundation in the USA. Foundations are usually accountable to a Ministry of Science and Technology but also sometimes to a Ministry of Higher Education. Project funding is often referred to as *competitive* funding, as such funds are usually disbursed on the basis of open competition, even where certain priority areas are designated or 'ring-fenced'. The process involves calls for proposals, subsequent peer-review, and monitoring of project deliverables and outcomes.

Funding and scientific systems have evolved and transformed over time. Historical trajectories and changes in the political and social climate create shifting spaces in which funding councils and scientific systems need to function. Context is vital to the functioning of these funding bodies and funding bodies need to adapt to survive. According to Rip, 'Funding agencies, with their aggregation machines, function in a particular historical context and translate contextual changes…' into their functioning.[1]

A review of the literature shows that there exists a clear consensus regarding the definition and main functions of science granting councils. Science granting councils or agencies serve as intermediary, quasi-public institutions that are positioned between the state and individuals or institutions that perform research.[1] The primary purpose of research councils, traditionally, has been to 'organise part of the funding relationship between government and universities as a peer-review based competition for project funding'.[2] The councils are 'expected to mediate the political and policy interests in scientific research into the world of science and technology and promote the interests of science and technology in the policy world'.[2] For example, Lepori et al.[3] consider a funding agency to be the body that disburses grants, irrespective of the origins of the funds. These agencies operate in an intermediary position between the knowledge production system and state policy, and between state and academy.

Research funding councils can be seen as a link in a chain of principal–agent relationships. The government acts as principal to the research council, and the research council as principal to the scientists. A research council would be both agent (in relation to the government) and principal (in relation to the scientists) at once. In simple terms, research councils are positioned both as agents of state funders and societal interests, with their task being to deliver the goods, as well as being the principal with respect to individual research providers and scientists.

Our focus in this paper is on the early history, specifically the institutionalisation, of the agency funding model in South Africa.

Early history of science funding in South Africa

Scientific activities have been taking place in South Africa from as early as the 18th century. In the early years, they were somewhat unregulated despite the existence of prominent institutions such as the Royal Society of South Africa and the South African Museum.[4] The Royal Society of South Africa was founded in 1877[5] as the South African Philosophical Society,[4] and received formal status through a Royal Charter in 1908 signed by King Edward VII.[5] It was also in 1908 that the Onderstepoort Veterinary Research Laboratory was built through generous government funding of GBP80 000.[6] A few years earlier, in 1903, the South African Association for the Advancement of Science, known as the S2A3, had been established as the regulatory body for all scientific activities in the country.[4]

In addition to research in veterinary sciences, other significant research activities that took place in the Union of South Africa during these early years included geological research by J.P. Johnson and herpetology research by G.A. Boulenger.[7] During this period, public funding of research in South Africa was not institutionalised, although some funding for research was available through donations made by prominent individuals, or in some cases by institutions such as the South African Literary and Scientific Institutions.[4]

Because of a perceived lack of co-ordinated research funding, the then President of the Royal Society of South Africa, Mr H.H. Hough, wrote to the Prime Minister of the Union of South Africa on 1 July 1910, requesting that the Society be recognised as a research agency.[8] In his letter, Mr Hough stated that:

> *The Royal Society of South Africa desires to draw the attention of the Union Government to the importance of considering at the present time the best means of promoting methodological scientific research, this being an agency on which, as is well known, so much of the material and moral welfare of a country depends. In the past, unfortunately, there has been no continuity in any such efforts made in our country, with the result that no really adequate return has been obtained for the money thus spasmodically spent.*

This plea was followed by a grant award of GBP500 from the Ministry of Education, through a budget vote, to the Royal Society of South Africa. The award was aimed at research support for the year 1911.[9] In what can be considered the first case of government funding for research in South Africa, the Royal Society awarded five grants totalling GBP250. In the following year (1912), the Society funded another six projects totalling GBP275.[10]

The Royal Society was faced with budget cuts between 1914 and 1916, when the Department of Education reduced its annual budget, first from GBP500 to GBP300 and then to GBP50.[5,11] This prompted a delegation from the Society to pay a visit to the Minister of Mines on 23 May 1917, as the mandate of providing funding for research had by then been transferred from the Ministry of Education to the Ministry of Mines. The delegation lobbied for the reinstatement of the original grant of GBP500 and was led by Dr L. Peringuey, secretary of the Royal Society of South Africa. Following their request, government agreed to have the grant to the Society increased in 1917 to GBP300.[12]

While the Royal Society of South Africa battled with a decreased budget and continued to negotiate for an increase over the following years,[13] discussions were taking place within government for the establishment of a national research funding body. This body would later be called the Research Grant Board. However, the fact that the Royal Society disbursed research grants to the universities on behalf of the government for the period 1911–1917 means it can be seen as the first 'research agency' in South Africa. Nonetheless, this function would always be seen as additional to the Society's main mission as an academy of science. It is therefore not surprising that by 1916–17, government was ready to establish a new body that would assume the role of a research agency.

The Research Grant Board

The history of the Research Grant Board (RGB) dates back to 1916, when the Industries Advisory Board was established on 13 October 1916.[14] At the first meeting of the Industries Advisory Board, held in Pretoria on 18 October 1916, the functions of the Board were explained to the eleven members appointed to the Board. The Board was required to deal with statistics of production, scientific and industrial research, factory legislation, encouragement of industries, development and utilisation of natural resources, and paper manufacture.[14,15]

The founding members of the Industries Advisory Board were all industrialists, and the Board reported to the Ministry of Mines and Industries. Membership was however extended in 1917 to include individuals with scientific and technical skills from the Scientific and Technical Committee. In 1918, the Minister of Mines and Industries approved a proposal to merge the Industries Advisory Board and the Scientific and Technical Committee.[16,17] The two bodies had argued that their consolidation would lead to better coordination of activities. The new institution that resulted from the merger was called the Advisory Board of Industry and Science. The Advisory Board of Industry and Science, within its first year of existence, recommended to the government that it should form a Research Grant Board, which would be based within the Department of Education.[18]

The RGB was subsequently established in October 1918 as a subcommittee of the Advisory Board of Industry and Science, reporting to both the Minister of Education and the Minister of Mines and Industries. In addition to advising the government on issues of research at universities and museums, the RGB was given the mandate to manage all research grants allocated to universities from government funds.[13] This step effectively inaugurated the institutionalisation of research agency funding in South Africa. On instruction by the Minister of Education, the RGB also, during the 1920–21 financial year, took over the research funding components of both the Royal Society of South Africa and the South African Association for the Advancement of Science.[19,20]

Funding through the Research Grant Board

The RGB provided government research grants to university-based researchers, mainly those researchers who were permanent residents of the Union.[21] Prominent scientists such as Dr Basil Schonland, Dr Meiring Naudé, and Dr J.L.B. Smith were among the individuals who benefited from support by the RGB.[17] Over the years the RGB supported research in a variety of topics and disciplines. Examples of projects funded in 1919 include:

- Bushman and other native studies (A.M. Duggan-Cronin)
- Relative values of locomotive smoke box-char and various wood-charcoals as fuel for suction gas engines (W.S.H. Cleghorne)
- Flat worm parasites in South African wild and domestic animals and a survey of the trematodes in all classes, vertebrates and invertebrates, of South African animals (C.S. Grobbelaar).

Perhaps not surprisingly, the majority of projects supported through the RGB were in the natural sciences. The social sciences did not have a dedicated source of funding until 1929, when the National Bureau of Educational Research (NBER) was established under the Department of Education.[22] The broad social sciences field was only represented on the RGB through the inclusion of members with Arts and Humanities background in 1920.[23] Smit reported that because the NBER was established during an economic crisis in South Africa, some of its functions were compromised.[24]

In 1934, the mandate of the NBER was broadened to include the social sciences, and in line with this addition the name of the institution was changed to Council for Educational and Social Research.[22] Later the name was changed again, to the National Bureau for Educational and Social Research.[24] The initial funding administered by the Council for Educational and Social Research was obtained from the Carnegie Corporation of New York.[18]

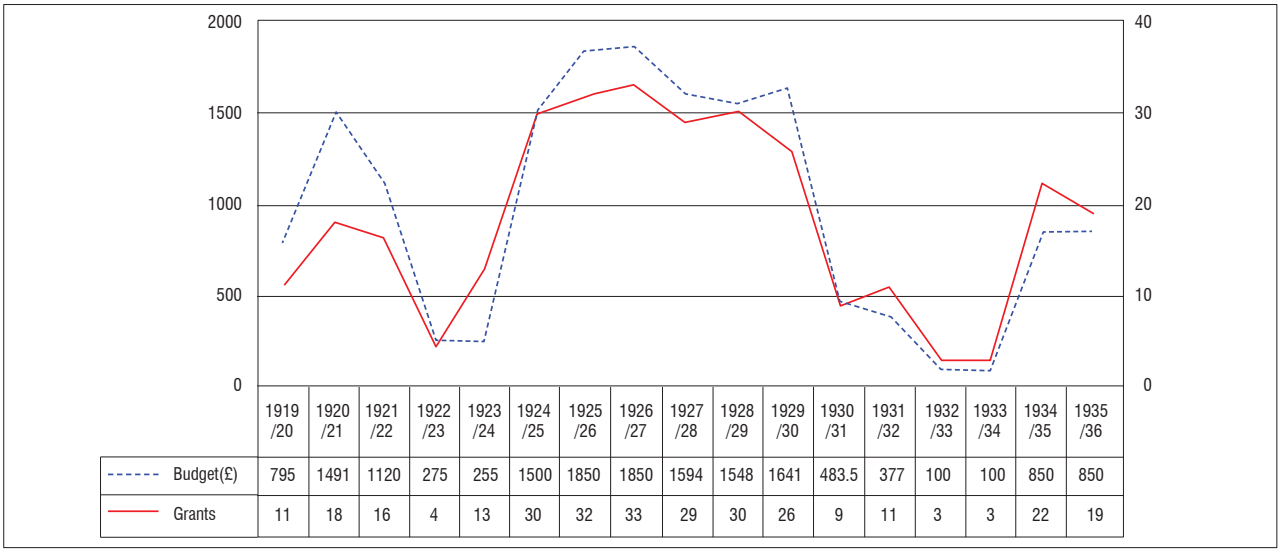

Figure 1: Number of RGB grants (1919–1935) and annual budget.

Key: Number of government research grants, 1919–1935 (solid line, right axis); budget in GBP allocated each year (dashed line, left axis)

Modern research councils or foundations typically utilise a wide array of funding instruments ('funding categories') to execute their mission. The introduction and administration of such instruments usually respond to the specific needs and policy imperatives of the research system. This is also true of the current National Research Foundation (NRF), which offers a range of fairly standard instruments such as postgraduate scholarships, grants for emerging scholars and established scholars, research chairs, and centres of excellence. The NRF also has instruments aimed at steering the research system to achieve national goals, including grants for 'women in science', Thutuka, and formerly the Technology and Human Resources for Industry Programme (THRIP).

Even in its early years, the RGB differentiated between a number of research funding instruments:

- Carnegie Research Grants (of New York), and Carnegie Travelling Fellowships, started in 1928
- University Research Grants and University Research Scholarships, started in 1934
- Mineral Research Scholarships, started in 1935 (and managed by the Director of the Mineral Research Laboratory at the University of Witwatersrand).[21]

Thus, in addition to funding received from government, the RGB administered research funding entrusted to it by the Carnegie Corporation of New York, which made available to it an allocation of GBP10 000 for the period 1928–1932, with a further USD30 000 for 1933–1937.[21] The fact that the RGB acted as an 'agent' of the Carnegie Corporation of New York is noteworthy, as it signifies the trust already accorded to the RGB, but is not unusual in itself. It has become a common feature of national research funding councils to become the conduit for various funding sources, including international funds.

Although the RGB operated under the auspices of the Advisory Board of Industry and Science, it enjoyed a substantial degree of independence. When the Advisory Board of Industry and Science was dissolved in 1923,[25] the RGB became a separate body aligned only to the Department of Mines and Industries. The RGB was ultimately transferred to the Department of Commerce and Industries in 1933.[21]

Between 1919 and 1936, the RGB supported 309 projects totalling an investment of over GBP16 000. The highest number of projects funded within a single financial year was 33 projects, during the 1926–27 financial year (see Figure 1). There was also variation in the average grant amounts, as shown in Table 1. For the most part, there was great variation in the number of funded projects and the amount of funding awarded from one year to the next. Fluctuation in funding between years was solely the result of the varying parliamentary vote or budget that was allocated annually to the relevant department towards the functions of the RGB. This unpredictable method of funding, with a different amount each year, was found to be ineffective by the RGB and resulted in uncertainty about the future of the Board. The RGB wanted the Government of the Union to implement a funding mechanism similar to that of Carnegie research grants, where funding was awarded for a five-year period.[21]

Table 1: Number of grants, total awarded, and average amount per grant (1919–1935)

Year of funding	Number of grants awarded	Total value of grants (in GBP)	Average grant value (in GBP)
1919–20	11	795	72
1920–21	18	1491	83
1921–22	16	1120	70
1922–23	4	275	69
1923–24	13	255	20
1924–25	30	1500	50
1925–26	32	1850	58
1926–27	33	1850	56
1927–28	29	1594	55
1928–29	30	1548	52
1929–30	26	1641.1	63
1930–31	9	483.5	54
1931–32	11	377	34
1932–33	3	100	33
1933–34	3	100	33
1934–35	22	850	39
1935–36	19	850	45
Total	**309**	**16679.6**	**54**

Source: NASA[21]

The Carnegie funding for the RGB was over and above the funding received from the South African government. During its initial funding period, the Carnegie Corporation awarded a substantial amount of GBP10 000 for the period 1928–1932, followed by an award of USD30 000 for 1933–1937.[21] Sue Krige[26] highlights that funding by the Carnegie Corporation of New York played a significant role in developing and extending research in South Africa between the 1920s and the 1950s.

From RGB to the National Research Council and Board

During the mid-1930s, proposals were submitted to advocate for the establishment of a new institution, a National Research Council that would replace the RGB. One of the proposals was addressed to Jan Hofmeyr, then Minister of Education, by Professor M.M. Rindl, then president of the South African Association for the Advancement of Science. The proposal suggested that

> *… the new Council should incorporate the functions of the Research Grant Board, and that the moneys administered at present by the Research Grant Board be transferred to the general income of the National Research Council.*[27]

Two years later, the Department of Mines issued a memorandum supporting the proposal to establish a National Research Board and a National Research Council to replace the RGB.[28] The memorandum suggested that the proposed institution should be placed within the Department of Education, and would thus be removed from the Department of Commerce and Industries, where the RGB was placed. This proposal was motivated by the fact that the scope of the RGB had grown over the years, such that it was no longer appropriately placed within the Department of Commerce and Industries.

The growth in the RGB's scope resulted from the extension of funding responsibilities to include support not only for universities and museums, but also for other institutions that conducted research, and in general all areas of knowledge production. Furthermore, in 1923 when the Union of South Africa joined the International Research Council, later known as the International Council of Scientific Union (ICSU), the RGB took on the responsibility of managing this affiliation.[21] Other reasons for the reorganisation of the RGB were that the constitution needed to be changed, and there was a need for better coordination of research activities by different government departments. Furthermore, the departments concerned had expressed the view that in future, 'more stable financial provision should be made'.[28]

A committee was convened to lead the restructuring process. When the process was complete, recommendations were made and submitted to the Minister of Education. Some of the main recommendations were as follows:

> a. *The present Research Grant Board shall cease to function at 31st March, 1938; and in its place there shall be set up a National Research Council [and a National Research Board]. These bodies shall function under the Minister of Education, and*
>
> b. *The functions of these bodies shall correspond to those at present exercised by the Research Grant Board.*[29]

The RGB was reorganised in 1938 to form a 'larger and more representative body', and was subsequently replaced by two institutions, namely the National Research Board and the National Research Council.[30] The National Research Board took over the administrative duties of the RGB, and the National Research Council became an advisory body to the Minister of Education, offering advice on ways to improve research in South Africa.[31] These two institutions were collectively referred to as the National Research Council and Board (NRC&B), and were officially inaugurated on 25 July 1938.[29] In his inaugural speech, Jan Hofmeyr referred to the NRC&B as the

> *South African Parliament of Research – its primary function being to consider measures for the improvement of the research position in the Union, and to suggest directions along which research is desirable.*[29]

Despite the achievements of the RGB and its successors over the years, a high level of dissatisfaction with the status of research in the Union of South Africa remained, mostly among individuals who were in charge of research development, i.e. those who were part of the NRC&B. For the most part, their dissatisfaction centred on the lack of coordination of research activities and the lack of collaboration among researchers. The NRC&B was only in existence for few years before talks began calling for further change to the shape of the research institution. Among the suggestions for a new format was that the Union should possess an institution similar to the National Research Council of Canada. Early discussions also focused greatly on the calibre of the individual who would be in charge of managing the institution. It was highlighted that

> *… in this connection, the Council recognizes that the success or failure of the whole scheme, when established, will depend in great measure on the Executive Officer and that consequently every effort should be made to secure a man with the qualities indicated.*[32]

The right person for this job was also described as

> *… a man of high scientific attainments who is at the same time energetic, tactful and experienced in negotiations … and his mental horizon should be wide enough for him to take a statesman's view of researches in such diverse fields as, let us say, social anthropology and geophysics.*[32]

The post-war beginnings of the current research funding system

The NRC&B was reorganised at the end of the Second World War, in 1945, to form the Council for Scientific and Industrial Research (CSIR). Dr Basil Schonland was its first Chief Executive Officer. The CSIR took over part of the functions of the NRC&B (supporting research in the fields of industry and natural science). Those functions that fell under the scope of the social sciences were transferred, in 1946, to a new institution named the National Council for Social Research (NCSR).[22] The NCSR absorbed the responsibilities of the National Bureau of Educational and Social Research[18] in addition to those that were transferred from the NRC&B.

The CSIR was established under the Scientific Research Council Act 33 of 1945 (published in *Government Gazette* 3514 on 22 June 1945). It had a twofold mandate[33,34]:

- First, to conduct scientific and industrial research in its own laboratories, to complement research done at universities.
- Second, to support, through the provision of funding, research conducted at universities throughout the country.

To fulfil its dual mandate, the CSIR received a grant allocation from the Department of National Education (through Parliament). Funding for university research took the form of the CSIR awarding grants to academic staff and bursaries to students. With regard to its own onsite research, the CSIR started out with three laboratories: the National Physical Laboratory, the National Chemical Research Laboratory, and the National Building Research Institute.[35] The first head of the National Physical Laboratory was Dr Meiring Naudé, who later succeeded J.P. Du Toit to become the third president of the CSIR in 1952 (until 1971).[36]

The support and development of research at universities started during the first year of the CSIR's existence. In this regard, Dr Schonland developed university research grants to provide funding for academics and students alike. Research grants were managed under the University Research Division (URD), which supported research of the

scientist's own free choice or self-initiated research.[37] During its first year of funding, there was little demand for this kind of support, with only GBP16 526 being requested from a total budget of GBP27 800. However, the demand for funding increased over the years. In 1962, for example, the CSIR received requests of up to ZAR537 338 from a budget of ZAR299 754.[37] In the mid-1970s, the URD became the Research Grants Division (RGD) and started supporting researchers at museums and technikons as well as at universities.[38]

The CSIR also established several discipline-based research units. The first was the Medical Research Unit, established in the 1950s. By the mid-1960s, nine research units had been established. The research units were headed by eminent researchers and were based at various universities and research institutes.

Alongside the RGD, the CSIR introduced the Co-operative Scientific Programmes (CSP) in 1975, initially referred to as the National Scientific Programmes. The aim of the CSPs was 'to identify problems peculiar to South Africa which, because of their magnitude and complexity, required the co-ordinated effort of a number of different organizations in planned research programmes'.[37] The CSPs therefore supported projects aimed at addressing problems of national importance through multi-disciplinary research.

In 1984, the Research Grants Division and the CSPs were combined to form the Foundation for Research Development (FRD).[37,39] The mandate of this new body was 'the provision of appropriate human resources in science and technology to meet the requirements of the national economy'.[40] The FRD officially became a funding agency of the CSIR on 1 April 1984, and later became the main research support programme within the CSIR.

In 1990, the FRD was awarded autonomous status through the Research Development Act (Act No. 75 of 1990). The Act identified the mandate of the FRD as research development, which included not only providing financial support to higher education institutions and museums, but also managing some expensive national facilities. The latter group was made up of the National Accelerator Centre (NAC), now iThemba Labs; the South African Astronomical Observatory (SAAO); the Hartebeeshoek Radio Astronomical Observatory (HartRAO); and the Hermanus Magnetic Observatory (HMO), now SANSA Space Science. The FRD thus became the largest research support agency in the country during the 1990s, although it supported only the natural sciences and engineering.

In 1999, FRD was merged with the Centre for Science Development (CSD), its counterpart from the Human Sciences Research Council (HSRC). This merger resulted in the formation of the National Research Foundation (NRF).

Concluding remarks

South Africa has come a long way in research development, with government showing its commitment through financial support. Furthermore, the institutionalisation of research funding through an agency, consolidated with the establishment of the RGB in 1918, laid a solid foundation and ensured structured support for research in the country. The placement of the funding agency was an important consideration during the early years, as the institution needed to be strategically placed to meet the needs of the entire research sector. The RGB and its predecessors faced several challenges over the years, including constant budget cuts that left the agency ineffective in supporting research. The high demand for research funding therefore started much earlier than is generally assumed, although it has intensified in recent years. A grant from an external source, the Carnegie Corporation of New York, allowed the RGB to support more research and provided greater stability in the system – which had been lacking with government funding alone.

Another milestone during the early years was the introduction in 1929 of a dedicated funding institution for the social sciences, through the National Bureau of Educational Research. This move marked the beginning of differentiation among funding instruments for various scientific fields, which continued under the CSIR and its successors (the FRD, CSD, and NRF).

Many of the funding principles established under the RGB were carried through over the next decades. These principles included, for example, the allocation of funding based on the outcome of a peer-review process, and utilisation of a diversity of funding instruments. Such principles continue to form an integral part of resource allocation by funding agencies in South Africa, almost a century later.

Authors' contributions

This publication is a result of research done by N.M.L. towards her PhD; J.M. was her supervisor.

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