

A FRAMEWORK FOR RESEARCH ENGAGEMENT IN SOUTH AFRICAN UNIVERSITIES

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ABSTRACT

This article analyses the concept of a research university. It addresses questions such as what a research university is, whether in a policy context it is a special type of university and what is the foundation for a research university. The author states reasons why an “one-size-fits-all” criteria to be a research university is not desirable. Doctoral degree programmes and commercialized research projects seen as the defining characteristics of a research university. In spite of higher-level research outputs, it is argued that research development and capacity-building will be ongoing activities at the research university. These activities can be supported and coordinated by a centralized research administration.

1. INTRODUCTION

It is evident from the National Plan on Higher Education (2001) that research is not an option: **Universities have to be engaged in research.** The Programme Mix (2002) and the New Academic Policy Framework (2002) compliment this imperative. In addition, it is accepted that research at universities and technikons will differ due to the niche areas of these institutions. The kinds of research found at universities and technikons are encapsulated by the Frascati definitions for research. According to this model there are the following types of research (Bawa & Mouton 2002:315):

- **Basic research:** Original investigation with the primary aim of developing more complete knowledge or understanding of the subject under study.
- **Fundamental research:** Basic research carried out for the advancement of knowledge and no positive efforts are being made to apply the results to practical problems or to transfer the results to sectors responsible for their application.
- **Strategic research:** Basic research carried out with the expectation that it will produce a broad base of knowledge likely to form the background to the solution of recognised current or future practical problems.
- **Applied research:** Original investigation undertaken in order to acquire new knowledge and directed primarily towards specific practical aims or objectives such as determining possible uses for findings of basic research or solving already recognised problems.

In the context of policy development the question is being asked whether a “research university” is a special kind of university (institutional type) or is it a special focus on research as one of the core activities of higher education? In view of these questions, this chapter will address three issues:

- What is a research university?
- What are the characteristics of a research university?
- What can institutions do to become a research university?

The first issue we need to deal with is the conceptualisation of a research university.

2. WHAT IS A RESEARCH UNIVERSITY?

A university can generally be defined as an academic institution engaged in **research** and **teaching**. New developments in the knowledge society reformulated a university's core functions by words such as:

- Research knowledge production
- Teaching knowledge transmission

Research and teaching also took on new forms. In the transmission of knowledge there is a shift from **teaching** to **learning** and in research from **research for the sake of research** (“blue sky research”) to research to address **industrial, business and community needs**. Learning diverted into new learning models and strategies such as resource-based learning and service learning. Research is now regarded as a commodity that can contribute to the so-called “third stream of income” of the institution. Students are now called clients / customers and researchers entrepreneurs and innovators.

Where does it leave the core activities of a university? One can answer by saying that the functions are the same (still teaching and research therefore the **constants** of the functions) but that these functions have taken on a new direction (contract research, service learning, etc. therefore the **dynamics** of the functions). A fundamental principle in conceptualising a university is therefore the constants and dynamics of its core activities.

The question now arises what is then a research university? According to the conceptualisation of a university, a research university is offering teaching and research but that the research activities are informing / leading the teaching. Research is therefore the leading principle at a research university and it is the “choir master” of all the activities at that kind of university. (The same principle could therefore be applied at a teaching university: The teaching informs all the activities of the institution.) A research university could therefore be defined as an institution where research is the major activity and it informs the teaching activities at the institution.

An international example can validate the definition. The **Carnegie Foundation** in the USA has two classifications for universities: A doctoral granting university and a research university. Strict quantitative criteria are applied to these two classifications. To be classified as a research university, 50 doctoral degrees have to be awarded and more than 15 million federally sponsored research (Thomas 2000: 52). The point is

that research is a leading activity, which influences the teaching assignment. The quantitative criteria are defined by the (American) context.

In South Africa, it will be an *a priori* that a research university has to be engaged in an extensive number of external (contract) research projects and that these research projects will be supported by the completion of a doctorate qualification. *To rephrase it:* Doctoral awarding programmes and research projects are the defining characteristics of a research university. I am, however, not in favour of setting one-size-fit-all quantitative criteria for a research university due to the geographical location of institutions (some institutions are situated in isolated industrial and business areas) and the access of institutions to international funds and grants to support research. Quantitative criteria should be set according to the size of the institution and its location. What I do favour is the qualitative criterion that doctoral programmes and research contracts / grants should be linked.

The question that now arises is whether South African universities and technikons in general are in a position to be classified as universities of technology?

3. RESEARCH IN SOUTH AFRICA

Bawa & Mouton (2002:317) make three remarks on the state of the art on research in South Africa:

- The government's policy of increasing support for strategic and relevant research already seems to have an impact on funding sources within the sector.
- There is an increase in contract research. Nobody knows the scale of increase and if this is affecting published research outputs.
- Basic and fundamental research are put under severe strain and could seriously constrain the growth of the knowledge base in the sector.

Although government is a major benefactor of research, there is at governmental level a shift in emphasis. Bawa & Mouton (2002:306) state that the main research policy aims of the Department of Education are to expand and strengthen the research base, develop a national research plan and to make access to knowledge production more equitable, both at an individual and institutional level. In addition, more than one governmental department is now involved in research. It shows the importance of research in the knowledge society but it is also indicative of the decreasing influence of the Department of Education as regards research (Bawa & Mouton 2002:324). What is important, however, is the realisation that research cannot be the responsibility of the Department of Education only. This is confirmed by, amongst others, the National Research and Development Strategy. This strategy is built on three pillars, which involve more than one Ministry. These pillars are:

- Innovation
- Science, engineering and technology
- An effective science and technology system.

One cannot but to derive at the conclusion that governmental policies and strategies lay the foundation for research universities in South Africa. The question now to be asked is what should be the criteria for research universities in South Africa?

4. FOUNDATIONS FOR A RESEARCH UNIVERSITY

4.1 Assumptions for a research university

It should be noted that the approach taken in this chapter is directed at the **development** of existing higher education institutions increased engagement with research and not the identification of the quantitative criteria for research universities. For the latter, the two criteria namely the commercialisation of research and research leading to the completion of doctoral degrees are taken as an assumption. For the purposes of discussions, assumptions in this chapter are best described as the foundation / building blocks of an argument / viewpoint. Assumptions influence the way in which we see

things / appreciate a viewpoint / understand reality. Assumptions are structured conditions that make scientific thought as such possible.

The development of a research university is influenced by two sets of assumptions. *Firstly*, there is assumption that research universities can revitalise the (South African) universities through the commercialisation of their research. For this there needs to be strong interactions between research universities and industry and business. *Secondly*, the development of research universities is based on the assumption that capacity-building linked to quality is of paramount importance. These two assumptions cannot be understood from a context free from the philosophy of science. Examples of assumptions are the **autonomy of reason, religious beliefs, value commitments, technological safeguarding** ("Machbarkeit aller dinge"), **social position**, etc. Assumptions are not similar to prejudices. Examples of prejudices include race, language, sentiments, nationalism, etc.

These assumptions will influence the way how the role of a research university should be understood within the South African higher education landscape.

4.2 The need for research development and capacity-building

The development of a research university requires a sustainable pool of researchers. In the South African context this pool of researchers should be characterised by natural and social scientists; scientists representative from the broad South African culture (equity), scientists that can function within the context of Mode 2 Knowledge and scientists that can create a scholarly community. According to Castells (2001:218-219) research development implies the following:

- The training or retraining of young faculty and doctoral students to be in line with global needs.
- The recruitment of new staff.
- The use of international faculty in strategic fields of research.
- The use of talent existing in the private firms and public

sector.

- The establishment between joint research centres and training programmes between technologically advanced private firms and national universities supported by international organisations.

To meet the five characteristics above, a specific approach is needed. I would like to present a framework for such development.

Grassroots participation has become an extremely important research paradigm. According to Muller (1996:111) it is a style of research that sets itself sharply against other forms of research. He advocates a 'participatory policy research'. He argues that participatory is different from representative. The core of this research paradigm is a research process and a resulting theory that are an expression and an elaboration of progressive popular feelings rather than abstract frameworks imposed by intellectuals on the messy complexity of lived experience.

Although the above-mentioned research paradigm has as goal a democratic and empowering process, a major problem with this paradigm is that one has to accept the fundamentals of the research object before one can evaluate this object. This viewpoint undoubtedly leads to a lack in critical distance between the research subject and the research object. Although the new hermeneutic advocates that the 'text' and the 'reader' should become one and the same, one cannot critically evaluate the research object without exposing one's own paradigm (thought context). It has been proven over and over again in the theory of science that every researcher has his / her own methodological pre-hypotheses and value statement. These pre-assumptions should not be identified as similar to prejudice.

Next to participative research one should also identify collaborative research. As in the case of participative research, the intention of this research paradigm is reliant on team efforts opposed to individualistic research efforts. Within a context of capacity-building, collaborative research seems to be particularly timely, since an era of competitive and individualistic learning is being left behind and an era of interdependence and

mutuality is being entered. At the foundation of a research developmental paradigm should be an **action-development approach**. Here the CRASP model of Zuber-Skerrit is a valuable model in drafting various stages of an 'ideal' developmental research. The action research model of Zuber-Skerritt (1991:12-15) can be explained as:

Critical and (self-critical) collaborative enquiry by **Reflective** practitioners being **Accountable** and making the results of their enquiry public, **Self-evaluating** their practice and engaged in **Participative** problem-solving and continuing development.

This design and methodology will expect the researchers to approach the research in the following way:

Practical. The results and insights gained from the research are not only of theoretical importance to the advancement of knowledge in the field, but also lead to practical improvements during and after the research process.

Participative and collaborative. The researcher is not considered to be an outside expert conducting an enquiry with 'subjects', but a co-worker doing research with and for the people concerned with the practical problem and its actual improvement.

Emancipator. The approach is not hierarchical; rather, all people concerned are equal 'participants' contributing to the enquiry.

Interpretive. Social enquiry is not assumed to result in the researcher's positivist statements based on right or wrong answers to the research question(s), but in solutions based on the views and interpretations of the people involved in the enquiry. Research validity is achieved by certain methods.

Critical. The 'critical community' of participants does not only search for practical improvements in its work within the given socio-political constraints, but also acts as critical and self-critical change agents of those constraints. These participants change their environment and are changed in the process.

The development of a research university is not only depending on the capacity-building of their researchers but also requires that their scientists are in a position to communicate their scientific results to a broader community.

4.3 The communication of science as an instrument to develop a research university

During a **Public Communication of Science and Technology (PCST) Conference** in Cape Town (5-7 December 2002) the focus was on science communication to a diverse world. In two addresses, David King (UK) and Alex Tindimubona (Uganda) defined science respectively as a social construct put together over many centuries by people based on their observations of the real world and science as the systematic knowledge about nature, society and the self. Technology is used to manage these three elements of science. They said that science is a major developer of modern society and the global economy. It is a necessity and prerequisite for all kinds of societal developments. Science is therefore a major investment for any government. Although politicians do not always understand science or the role it can / should play in politics industrialists and business people recognises the role science can play in the development of an economy. King said that the latter is a growing phenomenon. In 1999-2000 199 spin-out companies were formed compared too 26 in 1997-1998. Many academics have been involved in setting up their own spin-out companies. The lesson to be learnt is that science can positively affect education and its participants.

Alan Leshner said that in the communication of science and technology, scientist themselves should be part of the communication strategy. The reason for this is that many people perceive scientists as a threat rather than problem-solvers. Another important communication strategy is to engage with the public about scientific developments instead of bombarding them with a number of issues without giving them the opportunity to dialogue / contest the issue. A third communication strategy is to clarify the meaning of research and to give straight answers on scientific risks. Despite the major advantages of research, there is still a resistance towards the developments of the post-modern society. People simply feel

uneasy with the possibilities of science and technology and are therefore avoiding it. This is a major inhibitor of the development of a research university. Janice Limson rightfully pointed out that executive managements are very often guilty for not spending time and / or money on training scientist how to communicate science and technology to a public community without incorporating jargon into their communication. Another inhibitor for the development of a research university is that the knowledge society is often characterised by information systems while the communities to whom should be communicated, is known for its Indigenous Knowledge Systems (IKS). Hester Meyer said that the challenge therefore is to ensure a constant flow of knowledge between these two systems. In doing so, three imperatives exist: Know your target group, develop knowledge in the process of communication and integrate the two systems. This will only be possible if rural communities are empowered to communicate their scientific needs. Unfortunately too many people view their expectations to be the needs of the developmental community. Therefore we need to listen to the needs and expectations of the rural communities.

Following on this, Verena Meyer argued that good communication should start with the delivery modes. Lecturers should make an effort to communicate science in an interesting manner. Students should be encourage to interact with their communities of origin to inform them about the advantage of science and how it affects our daily life.

Research universities also have the responsibility to create an environment that is accommodative of the needs of industry, business and communities. In this regard, Rick Brochette referred to what he called the "trust portfolio." He argues that trust has three components:

- **Competence / credibility** Will the public believe you? Do they have trust in you? Do you have the expertise and competence to deliver what you promised?
- **Integrity** = Will you do the right thing? Is your activity fair and just?
- **Dependability** = Will you always do the right thing or will you be influenced by politics and / or the public opinion?

Borchelt argues that three things can endanger the trust portfolio:

- **Competence / credibility** The least credible person tells the story to the public.
- **Integrity** It is right / just in a scientific perspective but not necessarily in the view of the public.
- **Dependability** Is there evidence that what I am doing, is right and just?

What is needed is an exchange and communal relationship. In the exchange relationship you do something in return for something else. In the communal relationship you do something for the cause and not to get something back. This is all reached through understanding, mutual awareness, communication accuracy, agreement and symbiotic behaviour (mutual control). He also said that building the trust relationship is not to count the number of times the web of the institution has been visited or the number of newspaper clips, but to assess the impact on the community. The latter should be the ideal for all research universities.

Next to the communication of the scientific results there need to be sufficient money should be available to support the research activities of the institution.

4.4 Financial incentives to support the activities of a research university

No research university can go without sufficient financial support available for the development of research activities and initiatives. The financial support, available in the form of research grants, should be aimed at the attainment of the research university's strategic objectives with respect to research development, which are the following:

- To increase the enrolment of postgraduate students.
- To increase research outputs across the spectrum of disciplinary enquiry, including basic research.
- To establish research co-operation and collaboration at regional, national and international levels.
- To create centres of excellence in niche areas within research areas of regional and national priority and global significance.

This calls for a strategic budget that will secure the spending of money in priority areas that can lead to the development of priority areas. A centralised research administration is pivotal in the regard.

4.5 A centralised research administration to support and co-ordinate research development

It is of extreme importance that a well-structured research administration supports all research development. It is desirable that at least the manager of such an administration should be somebody on the level of a dean. The next table will identify the key performance areas (KPA's) and tasks of such a manager:

| Key Performance Areas | Tasks |
|---|---|
| DEVELOPMENT OF A RESEARCH PROGRAMME | <ul style="list-style-type: none"> • Identify and develop a research programme for the faculty in line with regional and national research needs. • Identify grant opportunities for research programme. • Development of industrial and business links for the research programme. • The preparation of appropriate reports and feedback to the Central Research Committee and the Senate on the research programme. • Marketing of research programme. • Liaison with Research Foundations, regional, national and international higher education institutions on co-operation in research programme. |
| SUPERVISION OF POSTGRADUATE STUDENTS | <ul style="list-style-type: none"> • Identify research projects for post-graduate students within Faculty research programme. • Supervision of post-graduate students. • Workshops for students to enhance their research skills and abilities. |
| RESEARCH | <ul style="list-style-type: none"> • Identify new research programmes • Create opportunities for publication • Presentation of research results at conferences / seminars / workshops |

Part of the duties of the central research administration is to assess the progress made with the development of the research programmes.

4.6 Assessing the research development at a research university

It is important that the progress of development is measured at a research university. Two levels of assessment are needed. The first level deals with the assessment of the individual performance and the second one deals with the assessment of the research unit's performance. Without going into too much detail, the following characteristics are associated with the assessment of research at a research university:

The assessment of individual performance:

Self-assessment: The conventional approach to repeat / elaborate on what is already known (the metaphor of writing book 101 100 books already exist on this topic) versus a "new look" at controversial issues (the metaphor of writing a new book - book 1). Avoid old wine in a new skin. This is linked to what Ramsden (28:207-226) describes as "the problem of evaluating research well" when he distinguishes between four related but distinct ways of evaluating research performance: **impact, quality, importance, and quantity.** Impact is a measure of the influence of a piece of research and is evaluated by means of the number of citations made to it by other scholars. This bibliometric measure is most typically used at aggregate (academic unit or group) level. Importance and quality are evaluated through expert value judgements, typically using peer review; importance may not become clear until time has passed. Neither quality nor importance can be captured through bibliometric indicators alone. Quantity is the simplest of the measures. It concerns the number of publications or pages produced. There is a strong correlation between impact and quantity.

The following criteria are important guidelines in outlining a self-assessment framework (see Strydom 1997):

- Received an external, competitive research grant.
- Supervised at least one master's student.
- Supervised at least one doctoral student.
- Participated in institutional discussions on common research problems.

- Participated in one or more joint research projects with colleagues.
- Served on an editorial board of an academic journal.
- Reviewed one or more proposals for a funding agency.
- Refereed one or more articles for a journal.
- Delivered one or more conference papers in the research area of speciality.
- Maintained professional contact with colleagues overseas.
- Publish at least two articles in a peer reviewed refereed journal.

The purpose of research development will be defeated if the developmental context is ignored and the criteria applied in a rigid and empirical (quantitative) way.

The research unit's performance:

A unit should be assessed against the following framework (see Strydom 1997):

Financial resources

- equipment budget
- operating, travel and library budgets
- space (including classrooms and laboratories)
- value of capital equipment

Human resources

- research, teaching, administrative and technical posts (by category, in full-time equivalents and in currency)

Enrolments

- number of post-graduate and especially doctoral students

Curriculum development and delivery systems

- number of post-graduate degree programmes
- number of continuing education programmes
- number of examinations administered
- number of hours of courses, seminars, practical sessions.

Achievements

Outputs should be in line with Mode 2 Knowledge production. The following criteria are an indication of such thinking and can be listed as a framework to outline the achievements of the research university (see Lategan 2002):

- Accredited Journals (earns subsidy)
- Scientific articles which do not earn subsidy
- Popular scientific articles
- Articles published on CD Rom and / or the www
- Contributions to books and monographs
- International Conferences
- National Conferences
- Published Conference Proceedings
- Artefacts and patents
- Editorials
- International visits
- Staff furthering their studies
- Supervising students
- Research projects
- Contributions to (inter)national reports
- Contributions in refereeing research (in various categories)

Indicators of recognition

- external funding
- □grants for young researchers and for advanced researchers
- invitations (courses, lectures, congresses/conferences, doctoral examining boards)• honours received

- participation in international networks
- work done at other universities
- number of references to work published by staff (if it can be established sufficiently, reliably and at reasonable cost).

5. SUMMARY AND CONCLUSION

From this chapter it is evident that the research university in South Africa will have both qualitative than quantitative characteristics. With this is meant that in the current South African higher education landscape aspects such as research development, financial support and research management are important to sustain research at universities. The quantitative criteria should not be set **for** the institutions but **with** the institutions. With this is meant that benchmarks for the research university should be set according to its geographical location, the business and industries that can support the vision and the mission for the research university, the number of post-graduate programmes especially on the doctoral level and the research outputs (as per research publications, patents and PhD qualified graduates). The most important task for research is to add value to the value chain that goes beyond the development of scholarship and the publication of results.

6. LITERATURE

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