Elusive equity in doctoral education in South Africa

Chaya Herman
Department of Education Management and Policy Studies
University of Pretoria
Chaya.herman@up.ac.za

Abstract
This paper explores the drive to expand the quantity and quality of PhD’s in South Africa and the impact this has had on under-represented groups, in particular black South Africans. Based on both qualitative and quantitative data, the paper argues that while there has been a significant increase in the number of black students in doctoral education, these students are still under-represented compared to their participation in the population and that the increase of black graduates is to a large extent attributed to the intake of doctoral students from other parts of Africa. The relatively low participation of South African black students is attributed to a dysfunctional school system, high drop-out rates, insufficient funding, feelings of alienation and isolation at historically white universities, family commitments and the lure of the labour market. Since the disadvantage to black students affects the majority of the population in South Africa, the paper suggests that the PhD could become a key driver for economic development only if there is a concerted effort to address barriers to black South African students’ access to and retention in doctoral programmes.

Keywords
Doctoral education ; South Africa ; Equity ; Diversity ; Higher education

Introduction
It is often argued that national productivity and wealth in the knowledge society will to a large extent depend on the ability to create and apply knowledge. The pursuit of the knowledge economy has therefore become a target for education policy in advanced economies (Warhurst 2008). While different discourses of the knowledge economy have evolved with various implications to education (Välimaa and Hoffman 2008; Peters 2010) Warhurst (2008) argues that governments tend to follow what he terms “knowledge economy orthodoxy”, namely, a single account of the knowledge economy centred on the development
of thinking skills formed through the institutions of higher education. In this conception of
the knowledge economy nations have to produce knowledge workers, that is, graduates, in
order to achieve a competitive edge. In particular, emphasis has been given to the
development of PhD programmes, even though their economic benefit is difficult to quantify
(Casey 2009). The inclusion of doctoral education in the Bologna Process, for example, aims
to make Europe the most competitive knowledge-based economy by increasing the number of
researchers and enhancing research capacity, innovation and economic growth (Bitusikova
2009). It is argued that doctoral education generates economic growth by increasing
individual productivity and the productivity of those without a PhD alongside whom they
work. It is suggested, at least in the Organisation for Economic Co-operation and
Development (OECD) countries, that there is a positive relationship between the time people
spend in higher education and a country’s performance and productivity (Casey 2009, 222).

At the same time, the national need to achieve a competitive edge in the global
economy also exerts pressure on higher education institutions to diversify and to broaden
access to under-represented groups. Van Vught (2007) suggests that a diversified higher
education system is more able than a homogeneous education system to meet the diverse
needs of the labour market. It is also argued that the knowledge and the skills of a diversified
student population are essential elements in mobilising the creative capital of the university to
meet the challenge of the knowledge economy (Neuman 2002; Enders 2004; ASHE Higher
Education Report 2009).

After the transition to democracy, one of the fundamental goals of the higher
education transformation in South Africa was to address the legacy of apartheid by
broadening access to higher education institutions (HEIs) to under-represented groups, in
particular black and female students.1 At the same time, as South Africa set out to become a
global player, education policy had to grapple with a competing imperative of progress
towards the research, innovation and economic growth. Subsequently education policies post-
1994 demonstrated a tension between the local imperative of equity and redress and the
global imperative of competitiveness and economic development and (Kraak 2001; Bundy
2006).

With the basic skills shortage and high illiteracy in post-apartheid South Africa,
policy emphasis has been on undergraduate levels and first entrants into higher education.

---

1 Black in this paper is used to denote African, Coloured and Indian students.
Doctoral education was initially overlooked by both policy-makers and the research fraternity. It is only since 2006/7 that national policies have begun to view the doctorate as distinct from other postgraduate degrees (Backhouse 2009). It was argued that despite the acknowledged weaknesses of basic and secondary education in South Africa, the country could not wait until the school system was ‘fixed’. In order to achieve global competitiveness it became necessary to make resources available for innovation, research and skill development at postgraduate level. The Department of Science and Technology (DST) and the National Research Foundation (NRF) assigned a specific role to the Ph.D., as a key driver for economic development (National Research Foundation 2007).

This paper explores how, based on current trends, national policy has straddled the inherent tension between its two main developmental missions, that is, economic growth and equality and redress, in the context of doctoral education; and the impact this has had on historically under-represented groups, in particular black South Africans.

The paper consists of four parts. It begins with a brief discussion on the concept of diversity followed by a short overview of higher education in South Africa, thus providing the conceptual and historical contexts for the paper. It goes on to explore how national policies from 1997 to 2010 have responded to global pressures to develop Ph.D., programmes to provide a diverse labour force for the knowledge economy at the same time as they have attempted to achieve the goals of redress and equity. The paper continues with a quantitative analysis of doctoral graduates in the different disciplines and institutions. It disaggregates these graduation rates according to race and gender in order to assess the extent of diversity in doctoral education. The paper concludes by identifying various factors that affect institutional and students’ diversity.

The paper draws on document analysis, such as the 1997 White Paper on Higher Education and various policy statements, as well as on a secondary analysis of three studies of doctoral education in South Africa.

The first of these studies explored the process and outcomes of educating and preparing doctoral students in 16 PhD programmes in a range of disciplines in various South African universities. This was a qualitative study in which the experiences of PhD programme leaders were interrogated in order to identify the overt and covert factors that contributed to the success of their programmes. It also discussed the extent to which these

---

2 Proceedings of ASSAf Panel on the PhD, October 2009. Pretoria
3 These papers were sponsored by the Academy of Science of South Africa (ASSAf).
factors could be replicated as a means of increasing the number of PhD graduates in South Africa (Herman 2009).

The second study explored the experiences of PhD students in higher education institutions in South Africa. This was a web-based survey of 950 PhD students enrolled in the top 12 PhD-producing universities in 2009 (Herman 2009a).

The third study was a statistical profile of doctoral students in South Africa (Centre for Research on Science and Technology 2009).

**On diversity**

There are various definitions of diversity. Cultural diversity refers to differences in race, ethnicity, language, nationality, religion, etc, among various groups within a community. In South Africa, the word “diversity” is usually associated with racial diversity. This often overshadows other forms of diversity and discrimination. Hassim and Gouws (1999) argue that the prioritisation of racial exclusion as a dominant interest in South Africa has led to a narrow perspective on equality in education by improving access to education to racially based imbalances thus increasing the exclusion of women from higher education. While there is a significant increase in the number female graduates in the last decade, there is a continuing marginalisation of black women as race intersected with gender (Potgieter 2008).

Van Vught (2007), based on a typology adapted from Birnbaum (1983), distinguishes between external diversity, which refers to the differences between higher education institutions, and internal diversity, which refers to the differences within higher education institutions. Some institutions take the form of multiversity; these are institutions of large size and complexity that embrace different purposes, programmes and consistencies. In this sense, internal diversity correlates negatively to external validity (Birnbaum 1983, 38). While diversity refers to a variety of entities at a specific point in time, differentiation is an active process, which increases the diversity of the system (Van Vught 2007, 1).

In Birnbaum’s typology there are a number of types of differences, such as systemic diversity, relating to differences that can be found between institutions; structural diversity, referring to institutional differences of organisational dimensions resulting from historical and legal foundation; programmatic diversity, referring to institutional differences relating to the degree level, degree area, curricula, mission and services; and constituent diversity, relating to differences in student demographics etc.
Especially pertinent to this paper are systemic diversity, programmatic diversity and constitutential or student diversity. Systemic diversity is perceived to be desirable under certain conditions (Clarke, Thomas and Wallace 2001; Teichler 2008). However, Singh (2008) makes the point that systemic diversity takes on a different meaning in South Africa in the context of a history of differentiation based on exclusionary ideology. It could also compromise the other goals of national policies, especially those of equity and fair access.

The worldwide growth in the number of doctoral students has been associated with a more diverse student population. Doctoral students are more heterogeneous in terms of social background, age, level of preparation, study mode (part-time or full-time), nationality, work experience, race and gender (Enders 2004; Pearson, Evans and Macauley 2008; Thompson and Walker 2010). The diversity in the student population leads to an increased demand for diverse programmes and different routes to the PhD.

Kehm (2007, 315) maintains that “doctoral degree-holders are regarded as too valuable a resource to leave their education and training in the hands of academics alone” and calls for a national and even a supranational policy to manage doctoral education. Indeed, doctoral education has already become an object of policy debate and reform across the globe (Nerad and Heggelund 2008). More specifically, Neuman (2002) argues that policy has a critical role to play in encouraging diversity in doctoral education. The next section therefore explores the South African policy context with regard to diversity in doctoral education.

Higher education in South Africa in 1994
In order to understand how diversity has played out in the context of doctoral education in South Africa, it is necessary to describe briefly the evolution of the higher education system since the transition to democracy in 1994. At that time, South African higher education consisted of 36 institutions divided along multiple lines:

- A binary system of university and technikons, representing the traditional split between the “mind” and “head” (Bawa 2008).
- Separate universities based on race or ethnicity. This separated the universities into historically white universities (HWUs) and historically black universities (HBUs). While the HBUs had doctoral programmes on their books, these were extremely inefficient and ineffective as regards graduate education (Bawa 2008).
- Separate universities based on medium of instruction (English or Afrikaans).
Geographical location of urban or rural universities, whereby most of the rural universities were designated for black students (Nkomo and Sehoole 2007).

National policies and plans affecting the diversity of the doctoral population
The main policy objectives of the post-Apartheid society were to develop a single, national, integrated and coordinated system of higher education and to redress the race – and, to a lesser extent, the gender – inequalities created by the legacy of the past.

The National Commission on Higher Education (NCHE) was set up in 1995 to advise the government on the reform and restructuring of higher education. It suggested a single coordinated system of higher education encompassing universities, technikons, colleges and private providers, with programme differentiation rather than institutional differentiation. This allowed every HEI to offer postgraduate degrees. The NCHE called for increased access to higher education as a way of easing the tension between the local priorities for equity and the global demands of development. By raising the level of participation and by increasing the proportion of black students at universities, the NCHE hoped to address the economy’s need for a highly trained workforce while simultaneously addressing the legacy of apartheid (National Commission on Higher Education 1996 1.2.2). Scant attention, however, was given to postgraduate studies.

White Paper 3 on Higher Education (Department of Education 1997) called for the expansion of “enrolments in postgraduate programmes at the masters and doctoral levels, [in order] to address the [high skills levels] necessary for social and economic development and to provide for the needs of the academic labour market” (section 2.24) as well as for the needs of the “general labour markets” (section 4.56). It prioritised “access of black and women students to masters, doctoral and postdoctoral programmes” (Section 2.91). The White Paper raised concerns about “the attrition and ageing of well-qualified academic staff and the emigration of graduate labour,” the “current low levels of enrolment in and graduation from doctoral programmes” and “gross race and gender inequities … at the postgraduate level.” It encouraged the “mobility of students nationally and internationally to undertake postgraduate studies” as a means of adding to the skills base (Section 4.56).

The delay in implementing the recommendations of the White Paper created a period that was described as a “policy vacuum” (Department of Education 2001a). At the same time, the government’s neo-liberal agenda, the competitive market climate, a new common funding
formula and the loosening of the binary distinction between technikons and universities resulted in a “slow, but sure, move towards uniformity, with technikons increasing their degree offerings both at the undergraduate and postgraduate levels” (Department of Education 2001).

In 2000 the Size and Shape task team was asked to review the state of higher education. While the White Paper recommended programmatic diversity, the Size and Shape report recommended a diversified higher education system based on institutional differentiation. It proposed a new three-tiered institutional landscape (Council on Higher Education (CHE) 2000):

1. Institutions which constitute the bedrock of the higher education system, offering quality undergraduate programmes, limited postgraduate programmes up to a taught masters level.

2. Institutions whose orientation and focus is quality undergraduate programmes, comprehensive postgraduate taught and research programmes up to the doctoral level, and extensive research capabilities (basic, applied, strategic and developmental) across a broad range of areas. In these institutions a minimum of 5% of Full Time Equivalent (FTE) students should be at masters and doctoral level.

3. Institutions whose orientation and focus is quality undergraduate programmes, extensive postgraduate taught and research programmes up to the masters level, selective postgraduate taught and research programmes up to the doctoral level, and select areas of research (basic, applied, strategic and developmental). In these institutions a minimum of 10% of FTE students should be at masters and doctoral level.

These recommendations were rejected in the National Policy of Higher Education (NPHE) of 2001 (Department of Education 2001). There was a concern that the separation between teaching universities and universities that can award higher degrees would entrench the apartheid legacy of the knowledge divide and would introduce “an element of rigidity, which will preclude institutions from building on their strengths and responding to social and economic needs, including labour market needs, in a rapidly changing regional, national and global context.” (Section 4.2.1)

One of the aims of the NPHE was the restructuring of the HE system through mergers and incorporations. The rationale for the mergers, *inter alia*, was to achieve economies of scale and to create new institutions with new identities that transcended their racial and ethnic
institutional history (Jansen, et al. 2002). The new HE landscape consisted of 23 institutions, namely 11 traditional universities that focused on research and a mix of discipline-based and professional degree qualifications; six universities of technology that offered a mix of technological, vocational and professional programmes leading to a certificate, diploma or degree; and six comprehensive universities that combined both types of institutions. In Birnbaum’s typology, the last of these could be described as multiversity.

In order to encourage productivity in institutions with weak research cultures, such as HBU or technikons, the NPHE proposed special block grants for research support.

The NPHE continued the binary divide between technikons and universities but allowed each type of institution to offer programmes outside their traditional functions. Universities could offer professional diplomas, and technikons could offer postgraduate degrees. After much pressure from the technikons, their status was changed in 2004 to universities of technology (UoTs). This has reduced institutional diversity and the “academic drift” has undermined programme differentiation.

One of the priorities of the NPHE was to increase postgraduate enrolment and graduation rates since it was observed that “even with the current small enrolments, drop-out rates [were] high and completion rates [were] slow” (Section 5.3). The short-term goals were to grow the efficiency of doctoral outputs from 0.8% of the total annual output of graduates to 1% of the total annual output of graduates. The NPHE also encouraged HEIs to recruit postgraduate students from the rest of Africa and in particular from the Southern African Development Community (SADC) and other developing countries. To ease the process, the NPHE declared that “postgraduate students, irrespective of their countries of origin, would be treated as South African students for subsidy purposes” (Section 5.3). The NPHE also required institutions to increase the access of black, women and disabled students in masters and doctoral programmes, in particular, in business and commerce and science, engineering and technology according to an agreed quota, or to indicate a plan for doing so (Section 5.4.3.2).

After the year 2000 the higher education policies appear to have shifted decisively towards the global. There was a more focused awareness among policy-makers that research and innovation, especially in science and technology, were crucial if South Africa were to be able to position herself as a meaningful player in the global economy. In 2002, the newly established Department of Science and Technology (DST) adopted the National Research and
Development Strategy (NRDS), which was aimed at raising the national investment in research and development (Department of Science and Technology 2002).

The context for the NRDS, as described in the introduction given by the then President of South Africa, Thabo Mbeki, was the need to develop human resources to create wealth in the context of globalisation (Department of Science and Technology 2002). The strategy aimed at increasing the number of people with skills in science, engineering and technology and at redressing the skewed racial and gender profile of this skills base. The NRDS raised concerns about what has been described as “frozen demographics” that is, the context whereby the “human resources for science and technology [were] not being adequately renewed”, and “an overwhelmingly white, male and ageing scientific population [was] not being replaced by younger groupings more representative of [South African] demographics” (p.15). This, coupled with high attrition rates and emigration of academics, resulted in skills shortages and a growing tendency for South Africa companies to source research outside the country.

The NRDS called for direct intervention to address these concerns. There was no discussion of a specific role for the PhD in this agenda, but there was a general call to increase the number of matriculants, in particular blacks and women, with appropriate pass levels in mathematics and science, and to attract these matriculants to involve themselves in postgraduate degrees in science and engineering.

From 2007, the PhD occupied a more prominent position in policy debates. National policy-makers began to view the PhD as a means to develop the necessary high skills levels and to facilitate South Africa's transformation into a knowledge-based economy.

The National Research Foundation (NRF) was the key institution charged with promoting science:

Responding to challenges facing the South African National System of Innovation (NSI) the NRF identified as a key driver for all its programmes, “the production of large numbers of high quality PhDs that are required to provide the bedrock for an innovative and entrepreneurial knowledge society” (National Research Foundation 2007, 8) (emphasis in original).

The NRF sponsors about 25% of all doctoral students. In keeping with national targets of redress and building a more representative research community, the NRF allocated 60% of its total funds to black PhD students, 40% to women, 80% to South African citizens and 20% to
international students (National Research Foundation 2007). However, interviews with NRF officials suggested that the NRF was able to fill only 70-80% of its funding quotas for black South Africans as there were not enough suitable candidates.4

The DST’s Ten-Year Innovation Plan proposes indicators as a guide for the country research and technology enablers (Department of Science and Technology 2007). The plan made it clear that human capital development, research and knowledge generation are core elements in the transformation to a knowledge-based economy. The plan’s target was therefore to increase the number of PhD graduates from a rate of 1,200 a year in 2005 (of whom 561 were in science, engineering and technology (SET)), to 6,000 a year in 2018 (of whom which 3,000 would be in SET). The rationale for this indicator was the low PhD production rate in South Africa (23 PhDs a year per million of the population) in comparison to rate in other developing countries, such as Taiwan, Brazil and India. In order to achieve this increase, the plan recommended different routes for a PhD in addition to the traditional approaches; these included practice-based doctorates and professional doctorates. The plan paid very little attention to diversity issues and redress.

In 2007, the NRF, supported by the DST, launched the South African PhD Project, which sought to increase the numbers and diversity of appropriately skilled PhD graduates and to align the project with the country's National System of Innovation (NSI). The goal of the project goal was to secure the human capital to “. . . position South Africa as a leader in knowledge production in all fields of scientific research, including social science, humanities, law, natural sciences, and engineering and technology.”5

Interestingly, at the same time as the DST and the NRF envisaged the PhD as a driver for economic development, the Department of Education issued its Higher Education Qualifications Framework (HEQF), which required qualifications, including doctoral degrees, to be registered (Department of Education 2007). The HEQF viewed the PhD degree as training for academia. According to the HEQF, the graduate is required to “demonstrate high-level research capability and make a significant and original academic contribution at the frontiers of a discipline or field” and “must be able to supervise and evaluate the research of others in the area of specialisation concerned” (Department of Education 2007, 29). The HEQF was the first policy document that tried to answer the question “What is a PhD?”.

4 Interview April, 2009.
However, it demonstrated the ambivalence among policy-makers with regard to the role of a PhD and the lack of a common agenda.

In 2009, the NRF and the DST commissioned the Academy of Science of South Africa (ASSAf) to conduct a series of studies on the status and place of the doctorate in South Africa. The purpose of these studies was to provide evidence-based advice on how to expand the quality and quantity of PhDs in order for South Africa “to be a serious competitor in the global knowledge economy” (Academy of Science of South Africa 2009). The studies initiated the first national debate on the PhD that has the aim of informing future policy (Herman, 2010).

The policy-makers’ attention to the PhD, coupled with a funding policy that incentivizes HEIs to increase their throughput, have heightened the institutional focus on the degree. A question that remains is: “What impact will this have on equity and redress?” Significantly, in the latest NRF Bursary and Scholarship Rules for 2010/11 there is no funding preference to black or female students in the PhD category. The allocation of doctoral bursaries is formally divided between South African (80%), other African (15%) and rest of world (5%) (National Research Foundation 2009). However, it is claimed that the NRF favourably considers applications from black and female students.6

In summary, this review of the national policy on higher education identifies two distinct policy positions with regard to the PhD. From 1997 to 2007 there was very little reference to the PhD as a separate degree from a masters and the emphasis was on widening access to postgraduate degrees to under-represented groups, in particular in science and technology. From 2007 the main agenda of the policy was to make the PhD a key driver for economic development and global competitiveness. It is evident that with the growing policy focus on knowledge-based economy, competitiveness, high skills and development, less emphasis has been given to issues of equity and redress, even though this local imperative is still a dominant policy discourse. The next section therefore explores the extent to which doctoral education in South Africa resonates with the policy framework.

**Student diversity in doctoral education**

Following the surge in tertiary education opportunities coupled with the opening of all the country’s universities to all sections of the population, the annual number of South African

---

6 Private communication with NRF official, 28 March 2010.
university graduates has doubled since the end of Apartheid in 1994. However, the percentage of doctoral graduates of all university students remained static at 1%, or 4% of all postgraduate students.

In 2007 South Africa produced 1,274 PhD graduates. The highest percentage of graduates was in social sciences (34%), which, with humanities (20%), accounted for more than half of all PhD graduates. Natural and agricultural sciences accounted for 28%, health sciences 10%, and Engineering sciences, materials and technology only 7% - the lowest percentage of graduates.

The number of PhD graduates increased significantly between 1996 (699 graduates) and 2006 (1,100 graduates). Figure 1 presents a comparative analysis between PhD awards in 1996 and 2006 and indicates how far South Africa has moved towards equity goals. While 87% of all doctoral degrees in 1996 were awarded to white students, the profile changed dramatically 10 years later but was still not representative of the total population. For example, 56% of all doctoral graduates in 2006 were still whites (although whites made up only 9.2% of the total population), while the number of African graduates represented 30% of the total (although African made up 79.5% of the total population). The remaining number of graduates included Indians (8%) and Coloureds (5%). There was a slower but still important shift in the percentage of PhDs awarded to women (from 35% of graduates in 1996 to 42% of graduates in 2006), and especially of African women (from 1% to 10% over the same period).

However, the increase in the number of African PhD graduates was attributed largely to an increase in the graduate numbers from SADC and other African countries. Table 1 indicates that, in 2006, 61% of the African male graduates and 48% of the African female graduates were not South Africans. This means that institutions have been achieving their equity quotas partly by recruiting non-South African PhD students. While recruiting international students is a policy priority and can help the country to achieve a competitive edge, the issue here is the lack of redress to historically under-represented groups in South Africa. Furthermore, it is also imperative to acknowledge the risk of a brain drain that denudes other African countries of highly qualified graduates to the benefit of South Africa and its universities (Badat 2008 in MacGregor 2008).
It is also evident that the equity targets are not achieved equally across study subjects. The CREST (2009) study shows that while women are well represented in health sciences and social sciences (which includes education), only about a third of the graduates in natural and agricultural sciences and in humanities are women. In fact, there was a decrease in the proportion of female PhDs in the natural and agricultural sciences from 41% in 2000 to 36% in 2007. In engineering sciences, materials and technology, the proportion of women graduates remains extremely low (15% in 2007) (Table 2).

In terms of race, a significant improvement can be observed, with the pool of black graduates increasing in all fields. However, as mentioned earlier, this increase can to a large
extent be attributed to the intake of students from elsewhere in Africa. While 43% of the graduates in natural and agricultural sciences in 2007 were black, only 44% of this number were South African. The same applies in engineering sciences, materials and technology, with 40% of graduates being black, but only 36% of these being South African. On the other hand, however, the percentage of black South African graduates in the humanities and in health and social sciences had reached between 51% and 64% (Table 3).

**Table 2 Profiles of doctoral graduates in terms of selected demographic indicators by broad field, 2000 and 2007**

<table>
<thead>
<tr>
<th>Broad field</th>
<th>% Female students</th>
<th>% Black students</th>
<th>% SA students</th>
</tr>
</thead>
<tbody>
<tr>
<td>Natural and agricultural sciences</td>
<td>41%</td>
<td>36%</td>
<td>26%</td>
</tr>
<tr>
<td>Engineering sciences, materials and technology</td>
<td>17%</td>
<td>15%</td>
<td>16%</td>
</tr>
<tr>
<td>Health sciences</td>
<td>59%</td>
<td>62%</td>
<td>31%</td>
</tr>
<tr>
<td>Social sciences (including education)</td>
<td>48%</td>
<td>51%</td>
<td>33%</td>
</tr>
<tr>
<td>Humanities (including religion)</td>
<td>27%</td>
<td>32%</td>
<td>34%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>41%</strong></td>
<td><strong>42%</strong></td>
<td><strong>30%</strong></td>
</tr>
</tbody>
</table>

Source: CREST (2009)

**Table 3 Profile of doctoral graduates by race, gender, nationality and broad field, 2007**

<table>
<thead>
<tr>
<th></th>
<th>Natural and agricultural sciences</th>
<th>Engineering sciences, materials and technology</th>
<th>Health sciences</th>
<th>Social sciences (including education)</th>
<th>Humanities (including religion)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>% female</td>
<td>% SA</td>
<td>% female</td>
<td>% SA</td>
<td>% female</td>
</tr>
<tr>
<td>Black</td>
<td>21%</td>
<td>44%</td>
<td>22%</td>
<td>36%</td>
<td>65%</td>
</tr>
<tr>
<td>White</td>
<td>47%</td>
<td>87%</td>
<td>11%</td>
<td>92%</td>
<td>60%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>36%</strong></td>
<td><strong>68%</strong></td>
<td><strong>15%</strong></td>
<td><strong>70%</strong></td>
<td><strong>62%</strong></td>
</tr>
</tbody>
</table>

Source: CREST (2009)

Furthermore, the equity targets are not achieved equally across institutions. It is evident that former Afrikaans-medium universities, namely, University of Johannesburg (UJ), North-West University (NWU), University of Stellenbosch (US) and to a lesser extent University of Pretoria (UP) lag behind their former English-medium counterparts in achieving diversity (Table 4), especially racial diversity (Figure 2).
Table 4 Student percentages in top 10 PhD awarding institutions by gender and race, 2006

<table>
<thead>
<tr>
<th>HEIs</th>
<th>Former language medium</th>
<th>Male</th>
<th>Female</th>
<th>Black</th>
<th>White</th>
</tr>
</thead>
<tbody>
<tr>
<td>University of Stellenbosch (US)</td>
<td>Afrikaans</td>
<td>66%</td>
<td>34%</td>
<td>31%</td>
<td>69%</td>
</tr>
<tr>
<td>North West University (NWU)</td>
<td>Afrikaans</td>
<td>65%</td>
<td>35%</td>
<td>22%</td>
<td>78%</td>
</tr>
<tr>
<td>University of the Free State (UFS)</td>
<td>Afrikaans</td>
<td>63%</td>
<td>37%</td>
<td>45%</td>
<td>55%</td>
</tr>
<tr>
<td>University of the Witwatersrand (WITS)</td>
<td>English</td>
<td>57%</td>
<td>43%</td>
<td>44%</td>
<td>56%</td>
</tr>
<tr>
<td>University of Pretoria (UP)</td>
<td>Afrikaans</td>
<td>56%</td>
<td>44%</td>
<td>34%</td>
<td>66%</td>
</tr>
<tr>
<td>University of KwaZulu-Natal (UKZN)</td>
<td>English</td>
<td>56%</td>
<td>44%</td>
<td>54%</td>
<td>46%</td>
</tr>
<tr>
<td>Rhodes University (RU)</td>
<td>English</td>
<td>54%</td>
<td>46%</td>
<td>57%</td>
<td>43%</td>
</tr>
<tr>
<td>University of Johannesburg (UJ)</td>
<td>Afrikaans</td>
<td>52%</td>
<td>48%</td>
<td>19%</td>
<td>81%</td>
</tr>
<tr>
<td>University of South Africa (UNISA)</td>
<td>Distance/English</td>
<td>52%</td>
<td>48%</td>
<td>48%</td>
<td>53%</td>
</tr>
<tr>
<td>University of Cape Town (UCT)</td>
<td>English</td>
<td>47%</td>
<td>53%</td>
<td>63%</td>
<td>37%</td>
</tr>
</tbody>
</table>

Source: HEMIS 2006 Table 2.13 for universities

These findings are supported by a report commissioned by the NRF which analyses the demographic characteristics of NRF grant-holders in one focus area, that is, Education and Challenges for Change, 2003-2006 (National Research Foundation 2009a). The report reveals that all the available grants were not utilised by members of the previously disadvantaged groups for whom they were meant. Some 45% of the grant-holders were black compared to
55% who were white. The report also indicates that funded programmes benefited more women (68% of grant-holders) than men (32%), especially white women, who accounted for the highest number of researchers of all race and gender categories in 2004 and 2006. The report concluded that while the NRF funding policy has improved gender equity, funding opportunities have remained racially skewed in favour of whites.

**Institutional diversity in doctoral education**

Table 5 makes it clear that despite policy intentions to abolish the knowledge divide between Historically White Universities (HWUs) and Historically Black Universities (HBUs), and despite the “academic drift” of the Universities of Technologies (UoTs), 90% of all PhDs in 2007 were awarded at HWUs or at the newly established universities that had merged with HWUs.

**Table 5** Universities in terms of their share of doctoral graduates, 2007

<table>
<thead>
<tr>
<th>University</th>
<th>Institution type</th>
<th>2007 N</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>University of Pretoria</td>
<td>HWU</td>
<td>170</td>
<td>13%</td>
</tr>
<tr>
<td>University of Stellenbosch</td>
<td>HWU</td>
<td>153</td>
<td>12%</td>
</tr>
<tr>
<td>University of Cape Town</td>
<td>HWU</td>
<td>142</td>
<td>11%</td>
</tr>
<tr>
<td>University of the Witwatersrand</td>
<td>HWU</td>
<td>134</td>
<td>11%</td>
</tr>
<tr>
<td>North West University</td>
<td>HWU/MERGED</td>
<td>124</td>
<td>10%</td>
</tr>
<tr>
<td>University of Kwa-Zulu Natal</td>
<td>HWU/MERGED</td>
<td>106</td>
<td>8%</td>
</tr>
<tr>
<td>University of South Africa</td>
<td>DISTANCE/HWU</td>
<td>78</td>
<td>6%</td>
</tr>
<tr>
<td>University of the Free State</td>
<td>HWU</td>
<td>77</td>
<td>6%</td>
</tr>
<tr>
<td>University of Johannesburg</td>
<td>HWU/MERGED</td>
<td>75</td>
<td>6%</td>
</tr>
<tr>
<td>Rhodes University</td>
<td>HWU</td>
<td>48</td>
<td>4%</td>
</tr>
<tr>
<td>University of Western Cape</td>
<td>HBU</td>
<td>41</td>
<td>3%</td>
</tr>
<tr>
<td>Nelson Mandela Metropolitan University</td>
<td>HUW/MERGED</td>
<td>35</td>
<td>3%</td>
</tr>
<tr>
<td>University of Zululand</td>
<td>HBU</td>
<td>20</td>
<td>2%</td>
</tr>
<tr>
<td>University of Limpopo</td>
<td>HBU</td>
<td>17</td>
<td>1%</td>
</tr>
<tr>
<td>Tshwane University Technology</td>
<td>UoT</td>
<td>12</td>
<td>1%</td>
</tr>
<tr>
<td>Central University of Technology, FS</td>
<td>UoT</td>
<td>11</td>
<td>1%</td>
</tr>
<tr>
<td>Cape Peninsula University of Technology</td>
<td>UoT</td>
<td>10</td>
<td>1%</td>
</tr>
<tr>
<td>University of Fort Hare</td>
<td>HBU</td>
<td>10</td>
<td>1%</td>
</tr>
<tr>
<td>University of Venda</td>
<td>HBU</td>
<td>6</td>
<td>0%</td>
</tr>
<tr>
<td>Durban University of Technology</td>
<td>UoT</td>
<td>5</td>
<td>0%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td><strong>1274</strong></td>
<td></td>
</tr>
</tbody>
</table>

Source: CREST (2009)
The analysis of the NRF funding for 2003-2006 also reveals that the funding is skewed in favour of academic universities, which received 4.5 times more NRF funding than universities of technology and thus had a much larger slice of the pie (National Research Foundation 2009a, 22). The funding relates to the number of researchers funded by the NRF at each higher education institution.

The NRF report also shows that HBUs have fewer grantees than HWUs – with one exception, namely the University of the Western Cape (UWC). In 2006, for example, HWUs received almost double the number of grants awarded to the HBUs and the merged universities. It is argued that while political pressure and institutional demand encourage universities to widen access to previously under-represented groups, HWUs have established support programmes to facilitate their participation. At the same time, HBUs are widening access to poor and academically weak black students in order to ensure institutional survival (Jansen 2010). This perpetuates the knowledge divide between the HBUs and the HWUs.

It is evident that the UoTs and HBUs are lagging behind the HWUs in terms of the number of researchers they have, as well as the research tradition that they have established and the PhD graduates they produce. This is a clear example of the tension between the democratic discourse of equity and redress and between the discourse of competition and economic development. The policy dilemma is whether South Africa should continue to spread the funding across too many institutions and allow each university to offer a PhD or whether the government should choose a few universities and support them so they become world-class institutions. While this debate takes place in different countries (Kendall 2002), it is, in the South African context, a political decision, as this choice can re-ignite the history of racial discrimination and knowledge divide.

There is a view that if South Africa is to become globally competitive it may be necessary to make this hard decision and allow the previously white universities with strong research traditions to continue to grow and produce “top class” research, with previously black universities reverting to teaching institutions. Such a step would exacerbate inequality and further marginalise black South Africans. The counter-view is that, based on the slow but inevitable transformation of most universities’ demographics in South Africa, all the universities will eventually become black majority universities. Therefore, strategic funding formulae should be considered in order to effect general improvement where it is most needed.
Explaining under-representation of black South African graduates

Two questions remain:

- “Why, in spite of a succession of policy documents that attempt to shift the demographic profile and to abolish the binary divide, does knowledge production at the PhD level remain skewed towards white researchers and historically white universities 16 years after the abolition of apartheid?”
- “Why, importantly, is there a relatively low growth in the number of black South African PhD graduates?”

The next section will explore three main factors that can shed light on black South Africans’ persistent under-representation in doctoral education.

The first factor to be considered is the chronically dysfunctional school system. Less than 50% of those who started in Grade 1 in 1995 completed all 12 years of schooling, and about third of these failed their Grade 12 examinations. Of those who passed, only 16% gained university passes and only 5% or less passed mathematics at the advanced level that would allow them entry into subjects with a high exchange value in the global economy, such as information technology, engineering, natural sciences and medicine. Most of these 5% were white students, with a small percentage of black middle class, leaving most black South African students behind in this critical juncture (Jansen 2010). It is evident that there is initially a small pool of potential black students that can pursue higher degrees in the desired subjects.

The second factor is insufficient funding. The NRF funding of a PhD is simply not enough for full-time studies. In 2009 a PhD bursary was R40,000 a year (or approximately US$5,000). This was significantly increased in 2010 to R55,000 (approximately $7,500) which is still not enough to support the average South African doctoral student, who tends to be older than his equivalent in other countries and to have a family to support. This is especially the case for most black South African students, who have family commitments and responsibilities more onerous than those of most white South Africans:

Black South African students, especially women, are coming here, working hard, but going away for the weekend, so are not here for long enough really to get the work done. Asking for more money, getting what everyone else is getting, and when you start to ask questions you learn about their family problems, about students trying to use bursary
money to feed their families and we just don’t have money to be able to do that. We’re
talking about totally different financial needs. (Interview with a PhD programme leader)

Lack of sufficient funding has resulted in many black students working part time, or even full
time, while they are studying. Often their studies become secondary to their employment
responsibilities (Portnoi 2009).

The third factor is the high drop-out of black South Africans, either for institutional or for
individual reasons. While high attrition from doctoral programmes is not unique to black
South Africans, there are additional issues that act as barriers to their success:

• It is perceived that some black South African students do not have the skills to do a PhD.
  This is often blamed on the schooling system in South Africa:

  Compared with our own students, students from other African countries have a better
  background when they come here. We find that right through, they have a better
  statistical training, they have a better understanding… somehow there is just something
  lacking; our students have more to catch up than students from elsewhere in Africa. And I
  found it such a pity, because the potential is there, and it’s not the students’ fault: it is the
  schooling, the background. Students from private companies are almost all white and
  come from better schools, while black South African students usually come from a
  disadvantaged background... And there is no excuse for it because some of our students
  from Malawi, who have schools under trees, have a better understanding than students
  from some of our schools. (Interview with a PhD programme leader)

• There is a view that pursuing an academic career is not particularly attractive for black
  South Africans. Firstly there are very few academic role models (Jansen 2010). Secondly,
  the survey shows the almost 50% of black South African PhD students come from homes
  where neither parents had any schooling and only 16% come from homes where at least
  one parent has a postgraduate degree and very few with a PhD (Herman 2009a). This
  means that the overwhelming majority of black students are the first in their families to
  enrol in a doctoral programme; they have a very poor understanding of the rigours of
  higher education and the culture of academia. Thirdly, a number of PhD programme
  leaders commented that considering the background of many black South African a PhD
  is often not a priority:

  There is a sense in many black South Africans asking: “Why a PhD?” Many other
  African students come to do a PhD, they really want it, but most of our students have to
  be convinced that a PhD is something worth doing. It does not seem to have a value.
People would point to you and say that you have a PhD, but you are still poor. Maybe this has got to do with our legacy for black people that education is going to free us from poverty. If it doesn’t, what is the purpose? (Interview with a PhD programme leader)

- Some students don’t finish their degrees because they get job offers from industry. Companies lure promising black South African students into jobs in order to fill their equity quotas, and this often happens when the students’ families are pressurising them to earn a decent salary:

  Another issue that I come across time and time again, particularly in poorer communities, is that there is a lot of parental pressure for students to get jobs even after BSc or Honours and Masters. Because the investment of the family is quite substantial in getting the student that far, they are expecting a return and they can’t wait the entire eight-year period necessary to complete a PhD. (Interview with a PhD programme leader)

- Then there is the impact of institutional culture as well as overt and covert expressions of racism (Portnoi 2009). Soudien (2010) argues that many black students drop out of doctoral programmes because of the discomfort they feel in HWUs. This discomfort manifests itself in feelings of disorientation, dissonance and alienation. Disorientation is felt by black students who struggle to navigate their way through the physical, emotional and administrative space of HWUs. The sense of dissonance emanates from a clash of cultures, as the black students become aware of “how little their own social and cultural universe, in which they might have even held positions of high status, count in the new space of the university” (Soudien 2010, 188). Students who experience dissonance cannot fully engage with an intellectually demanding activity such as doctoral studies. As for alienation, Soudien refers to Thaver’s (2006) concept of “at home” and argues that black students who attend HWUs hardly feel “at home” at these institutions. They cannot “identify with the university and what it stands for, they resent what is taught, how it is taught and by whom” (Soudien 2010, 125).

**Conclusion – the elusive equity**

In this paper I argue that as the policy focus shifts towards the global viewing the PhD as a driver of economic development, less emphasis has been given to issues of equity and redress in doctoral education. While there are parallel policy demands for increased access to
underrepresented group, funding opportunities, and new institutional forms as the result of mergers, the fundamental knowledge divide between various universities remains, and there are also persistent inequalities in the profile of the graduates. Significantly, black South African students are under-represented in subjects that will afford them the opportunity to become players in the global economy.

Scott (2010) points out that in contrast to most developed countries, educational inequalities in South Africa disadvantage the majority of the population and this can have a devastating effect on the country’s economic growth. Diversity in doctoral education therefore concerns not only social cohesion and social justice – which are themselves crucial issues – but also the economy.

There is an array of strategies that need to be employed in order to increase the participation of black South Africans in doctoral programmes. These include mobilising funding adequate to meet the particular circumstances of black South Africans; fixing the school system to create a larger pool of potential students; identifying promising students and providing them with mentorship and support from school to doctorate level; reducing the drop-out rate of those who eventually make it into higher education; and, most importantly, changing institutional culture. It is evident that in order to ensure black South Africans’ access to and retention in high-level doctoral programmes it is necessary to “entrench diversity as both ideology and practice” in higher education institutions (Salo 2010, 306).

Acknowledgement

I would like to thank Professors Mokubung Nkomo, Johan Beckmann and Chika Schoole for their valuable comments on a draft version of this paper.

References


Kraak, Andre. “‘Academic drift’ in South African universities of technology: Beneficial or detrimental?” *Perspectives in Education* 24, no. 3 (2006): 135-152.


National Research Foundation. *Education research funded by the National Research Foundation- Education and the challenges for change status quo 2003-2006.* Report compiled by Dr Lorna Holtman and researchers from the University of the Western Cape (UWC), Pretoria: NRF, 2009a.


