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A Bourdieuan analysis of foundation programmes within the
field of engineering education: two South African case studies

by

Bruce Charles Kloot

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'All power is given unto me in heaven and in earth' – Matt 28:18b

Abstract

Foundation programmes are curriculum interventions in South African higher education, designed to assist students from what can be described as educationally disadvantaged backgrounds. They first appeared in the 1980s to support black students from dysfunctional schools that were perceived to be struggling in the elite, white English-medium universities. The dominant mode of assistance in this era was a non credit-bearing bridging year but in the 1990s universities began offering 'extended curricula' which entailed spreading the first year of a degree over two years. After the democratic transition in 1994, foundation programmes were included in state education policy to redress the inequalities of apartheid. In 2006, substantial government funding was put towards extended curriculum programmes (ECPs), a special type of foundation programme that consists of augmenting or extending a formally accredited degree or diploma.

While analyses of foundation programmes have traditionally focused on pedagogical innovations, curriculum design or student experience, this thesis investigates social structures in order to examine the potential that foundation programmes, in general, hold for the transformation of higher education in South Africa. The theoretical framework of the French sociologist, Pierre Bourdieu, is employed in order to map the structure of higher education in terms of power ('capital' in Bourdieu's terms) and to locate foundation programmes within the university as a social space. The discipline of engineering has been chosen for this investigation and the object of analysis is thus the *field of engineering education* where the term 'field' describes a relatively autonomous social space, according to Bourdieu's conception.

Two universities in the Western Cape province, the University of Cape Town (UCT) and Stellenbosch University, were chosen as case studies. Data was collected through 21 semi-structured interviews with academics at various social positions in both institutions. The interviews were analysed using the techniques of narrative analysis as described by Polkinghorne (1995). The first group of respondents consists of mainstream professors whose social disposition and momentum are used to determine the dimensions and structure of the field. The second group consists of respondents who were or are involved in foundation programmes in various ways, such as academic development managers or programme lecturers. The data from this group is used to understand academic development as a field phenomenon. Foundation programmes are then analysed as a particular manifestation of academic development.

The findings reveal that the structure of the field of engineering education favours the form of power that is associated with research activities, *intellectual capital*. Even though consulting, administrative work and teaching were found to be important activities for engineering academics, in terms of prestige, research simply carries more weight. This is understood in terms of the resonance of research with the fundamental principle of the university field, summed up by the maxim ‘knowledge for its own sake’.

A consequence of this power structure is that academic development – which in South Africa has a distinct focus on teaching and learning – runs counter to the traditional logic of the field. Nevertheless, the alignment of various social forces in the UCT context allowed the engineering faculty to ‘carve out’ a space for ASPECT, the foundation programme that was launched there in 1988. From within their niche, ASPECT lecturers were (and are) able to contribute to shifting the structure of the field, particularly by modelling a time-economy that was (and is) different to the mainstream. While mainstream academics naturally allocate more time to research, ASPECT lecturers model a dedication to teaching that indirectly puts pressure on mainstream lecturers.

About a decade after it was launched at the previously white English-medium universities, academic development was reinserted at Stellenbosch University. An intense struggle over the status of Afrikaans as a language of instruction and administration has impacted on the recruitment of black students for foundation programmes in this context. Academic development also appears to have been depoliticised, which has generated a reluctance to separate students into foundation programmes on the basis of ‘race’. Within engineering, the foundation programme has been laid open to mainstream discourses about skills and student success resulting in the foundation programme’s being severely marginalised.

Even though foundation programmes occupy a dominated position in higher education, these findings indicate that they can contribute to *shifting* the structure of the field under certain circumstances. The UCT case indicates that if a space is carved out for foundation programmes and the decision taken to separate students on the basis of race, foundation programmes may impact the field in various ways. However, the Stellenbosch case study shows that an unfavourable institutional environment can serve to marginalise and isolate foundation programmes. This indicates that, in and of themselves, foundation programmes are unable to *transform* higher education, even with the offer of extra funding from government.

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Acronyms

AAC	Anglo American Corporation
AAOP	<i>Afdeling Akademiese Ontwikkelingsprogramme</i> (Division for Academic Development Programmes)
AD	Academic Development
ADL	Academic Development Lecturer
ADP	Academic Development Programme
ANC	African National Congress
AOP	<i>Akademiese Ontwikkelingsprogramme</i> (Academic Development Programmes)
AsgiSA	Accelerated and Shared Growth Initiative for South Africa
ASP	Academic Support Programme
ASPECT	Academic Support Programme for Engineering in Cape Town
CHE	Council on Higher Education
CHED	Centre for Higher Education Development
CPP	Career Preparation Programme
DET	Department of Education and Training
DHET	Department of Higher Education and Training
DoE	Department of Education
EAP	English for Academic Purposes
ECP	Extended Curriculum Programme
ECSA	Engineering Council of South Africa
EDP	Extended Degree Programme
FET	Further Education and Training
FTE	Full-time Equivalent
FYE	Foundation Year for Engineering
GEAR	Growth, Equity and Redistribution
GNU	Government of National Unity
IPD	Institutional Planning Department (at UCT)
IRP	(Division for) Institutional Research and Planning (at Stellenbosch)
Narset	National Access and Retention in Science, Engineering and Technology
NCHE	National Commission on Higher Education
NEPI	National Education Policy Initiative
NMMU	Nelson Mandela Metropolitan University
NPHE	National Plan for Higher Education
NRF	National Research Foundation

SAC	South African College
SAJHE	South African Journal of Higher Education
SET	Science, Engineering and Technology
SFP	Science Foundation Programme
UFS	University of the Free State
UJ	University of Johannesburg
UKZN	University of KwaZulu-Natal
Unisa	University of South Africa
UWC	University of the Western Cape
Wits	University of the Witwatersrand
Wispe	Wits Integrated Study Programme for Engineering

University of Cape Town

Chapter 1 – Introduction

A number of fault lines run through South African higher education. The struggle between the Dutch-Afrikaans community and the English settlers meant that a division by language of instruction characterised the sector from about the 1930s (Giliomee 2003). Under apartheid, government legislation prevented those classified as ‘non-white’ from fully benefiting from higher education but of course, segregation at primary and secondary school level had a huge impact on eligibility at the tertiary level. Also during the apartheid years, institutions that focused on practical training called technikons – akin to the European polytechnics – were created and distinguished from the universities, traditionally focused more on knowledge than vocational training. These fault lines, of language, race and vocation, still characterise the sector today.

In the 1980s, as political change in South Africa became imminent, special units at the previously white English-medium universities began to explore ways of dealing with the small numbers of black¹ students that were trickling onto their campuses. It became obvious to the staff in these units that students coming from the Department of Education and Training (DET) schooling system, the state apparatus responsible for African education in ‘white areas’, were not properly prepared for tertiary study at these universities. They began to offer support programmes in an attempt to bridge the gap between DET schooling and first year at these comparatively elite institutions. The programmes that they offered became known generically as ‘foundation programmes’, the term used for them in this study.

The first democratic elections of 1994 changed the relationship between higher education and the state and began a widely consultative policy process aimed at transformation and redress in higher education. This culminated in the White Paper (DoE 1997) and the announcement by the Department of Education (DoE) of the goal of a single integrated, yet differentiated national higher education system. Importantly, there was recognition within policy that one of the ways that the learning needs of educationally disadvantaged black students could be addressed was through foundation programmes. The government committed itself to fund such programmes in

¹ The term ‘black’ in this study refers to those categorised as ‘non-white’ under the apartheid government. This includes those classified as black African, ‘coloured’ and Indian. It is acknowledged here that ‘race’ was used as a construct to institutionalise oppression in South Africa and such references are not intended to entrench racial classifications. However, given the history of South Africa and the nature of this study, it is impossible to avoid the use of these designators.

the White Paper although the details were worked out only much later. The relevant section is quoted below:

The Ministry will ensure that the new funding formula for higher education responds to such needs for academic development programmes including, where necessary, extended curricula. Such programmes will be given due weight and status as integral elements of a higher education system committed to redress and to improving the quality of learning and teaching. (DoE 1997 Section 2.3.4)

While foundation programmes are the focus of this study, they were by no means the only way in which transformation was to be brought about. Dealing with the fault lines sketched above was to be an enormous task, especially in a sector traditionally circumspect of state involvement. Following the period of policy formulation, the government published the National Plan for Higher Education (DoE 2001c), a document characterising a period of 'strong steering and implementation' (Badat 2009) and an attempt to implement some of the goals of the White Paper. For instance, it promised a tougher stance towards Afrikaans which, it maintained, 'continues to act as a barrier to access' (DoE 2001c Section 3.1.2). The National Plan also declared that the sector was to be restructured to 'address the racial fragmentation of the system' (DoE 2001c Executive Summary). As a result, some institutions were merged, and the distinction between technikons and universities was addressed with the former being renamed 'universities of technology'.

In the meanwhile, more and more institutions were launching foundation programmes so that at the beginning of the century, almost every institution in South Africa had a programme in one form or another (Pinto 2001). Based on the recommendations of Scott (2001), the Department decided to allocate earmarked funding to programmes as long as they satisfied the criteria as 'extended curricula'. After two preliminary funding cycles, the DoE issued a call for proposals in 2006, announcing the allocation of R367m of earmarked funds towards foundation programmes for the 2007/8–2009/10 triennium (DoE 2006). This resulted in a proliferation of foundation programmes at tertiary institutions across the country. About 200 programmes in all faculties were funded in this period, with two-thirds of these at universities of technology.

Given this substantial government backing and increased activity 'on the ground' at institutions of higher learning, a critical sociological study of foundation programmes is timely. Although there has been a multitude of studies undertaken by foundation programme practitioners promoting their version of a strategy for success (often

accompanied by promising throughput statistics), only a few studies provide a critical analysis of these initiatives. While the curriculum format that a foundation programme takes is important, to what extent does the social structure of higher education allow these programmes to become 'integral elements' of higher education? This leads to the formal research question guiding this study:

Research question:

Given the power structure of South African higher education and the social history of foundation programmes, what potential do they hold for transformation of the sector?

In order to address this question, it is necessary to examine the nature and functioning of foundation programmes and how their particular social history enables or constrains transformation. Connected to this is the need to understand the practices of social agents from their perspective in relation to the (transformation) discourse embedded in education policy. The following research aims express the intention to deal with these issues:

Research aims:

- a) To analyse the nature and functioning of engineering foundation programmes;
- b) To examine the difference between the perspective of social agents in the university space and policy rhetoric concerning engineering foundation programmes.

1.1 The development of foundation programmes in South African higher education²

Providing an overview of foundation programmes is difficult for a number of reasons. Firstly, there was no co-ordinated strategy for the implementation of foundation programmes in South Africa. Initiatives that were diverse in structure and practice were launched at a number of institutions at different times. The overall response to the learning disadvantage in higher education has been described as 'small in scale and ad hoc in nature' (Kotecha, Allie, and Volmink 1997). Secondly, foundation programmes, once they were launched, invariably evolved. Programmes generally started as quite separate from the mainstream and were then modified as they became, structurally at least, more integrated. Thirdly, foundation programmes were

² The section draws on Kloot, Case and Marshall (2008).

implemented within a fragmented education sector *despite* the government policy of separate education. Moves to improve access and retention for non-traditional students came as a result of pressure on the white English-medium universities to act on their professed stand against separate education and also from the reformist attitude of 'big business' as, according to Badat (1991), it sought to secure the reproduction of capitalist social relations.

Nevertheless, there is a number of trends that serve to guide an analysis of foundation programmes. It is important to note that the term 'foundation programme' came into use only in the 1990s. The dominant term in the 1980s was 'academic support' and inter-faculty *academic support units* were set up to try to deal with the small number of students from DET schools that were starting to come onto these campuses. Warren (1998) notes that the earliest model of intervention launched by these units was 'supplementary tutorial programmes' that ran concurrently with certain first year mainstream courses. These programmes consisted of additional tutorials or workshops that were non credit-bearing (and usually voluntary). Another form of programme launched in the early years was 'bridging programmes', pre first-year courses that focused on 'filling the gaps' left by inadequate schooling in the hope that students would then be able to cope with the demands of tertiary study. These were also non credit-bearing initially although many later shifted towards credit-bearing status. These programmes were known collectively as 'academic support programmes' (ASPs).

As already noted, there was not a very elaborate philosophy behind such initiatives. Lazarus (1987) points out that academic support was a 'reactive response' to the problem of poor academic performance of black students and that it started with 'no or little theoretical underpinnings' (p. 11). The aim was simply to assist students from DET schools in predominantly white tertiary institutions. By providing supplementary tutorials or a bridging year, practitioners tried to bridge the educational gap. While many academics were in favour of such a move, there was also a certain amount of ambiguity towards academic support. The attitude of the university 'mainstream' – the traditional programme offerings – was very much 'business as usual' while it was left to academic support to get on with the job of preparing disadvantaged students for an institution that was itself to remain unchanged. Mehl (1988) complained that the academic support unit was serving as a buffer between the university and the black community – a kind of 'academic group area' (p. 19). Scott (1986) even suggested that tinkering through ASPs was inhibiting transformation of the universities by diverting pressure for fundamental change. Growing criticism of adjunct academic support

programmes prompted universities to look more seriously at the issue of under-prepared students.

It was in this era that the discourse around 'educational disadvantage' emerged to describe the difficulties that black students faced on these campuses. This can be understood as an attempt by the academic support movement to link disadvantage to the apartheid education system from which these students were coming in an attempt to avoid the notion that disadvantage was located within the students' themselves. Despite these intentions, the discourse around 'disadvantage' was challenged by academics from the black universities who began to question whether it was not perhaps the white universities themselves that were disadvantaged (Vilikazi and Tema 1985) since they appeared unable to deal with the legitimate educational needs of black students.

It is important to flag that the educational disadvantage discourse appears in government policy post-1990, having been reconstructed in relation to what is regarded as a dysfunctional school system. While there is clearly a link between secondary schooling and performance in higher education, it is apparent that the dominance of this discourse tends to underplay the role of social class, an issue of particular importance in the South African context in the wake of apartheid. While not the focus of this thesis, it is important to keep in mind that the steady blurring of the alignment between race and class and the role of the education system in reproducing social class should be kept in mind as this thesis unfolds.

As result of various pressures, the paradigm at these institutions gradually shifted from *academic support* to *academic development* (Volbrecht and Boughey 2004) and universities offered more integrated foundation programmes in an effort to assist students from disadvantaged backgrounds. Academic development meant an apparent shift towards integration with the mainstream as tertiary institutions were gradually seen to take ownership of the phenomena of 'disadvantage' and 'under-preparedness' (Volbrecht and Boughey 2004 p. 62). Warren (1998) describes some interventions at this stage as 'semi-integrated' since students still attended mainstream classes but also 'met separately for two or three supporting classes a week' (p. 80). Other programmes concentrated on spreading the first year curriculum over two years and were called the 'slow intensive' model (Warren 1998 p. 80). Other programmes were called 'extended programmes' or, as mentioned above, 'extended curricula'. The two most important differences in these programmes were that the courses they offered were credit-bearing and they were designated by a faculty course code.

At this stage it is necessary to clarify the (sometimes confusing) terminology used for these initiatives. When the shift occurred from *academic support* to *academic development*, the term 'foundation' emerged to describe a set of courses that attempted to lay the necessary academic foundations for further study. UCT, for example, launched the Science Foundation Programme (SFP) in 1986. A similar programme was also launched at the University of Natal-Pietermaritzburg in 1991 with the aim of laying a 'foundation for meaningful learning' (Grayson 1996 p. 993) for under-prepared students. In terms of focus, these programmes were more forward-looking than the 'bridging programmes' that simply aimed to improve an inadequate secondary education. There was now a deliberate aim to prepare students for tertiary level. At UCT in the early 1990s, SFP courses were combined with first-year mainstream courses in the 'extended curriculum' model. Combining the courses in this way meant that the first year was spread out over two years (see Figure 1.1).

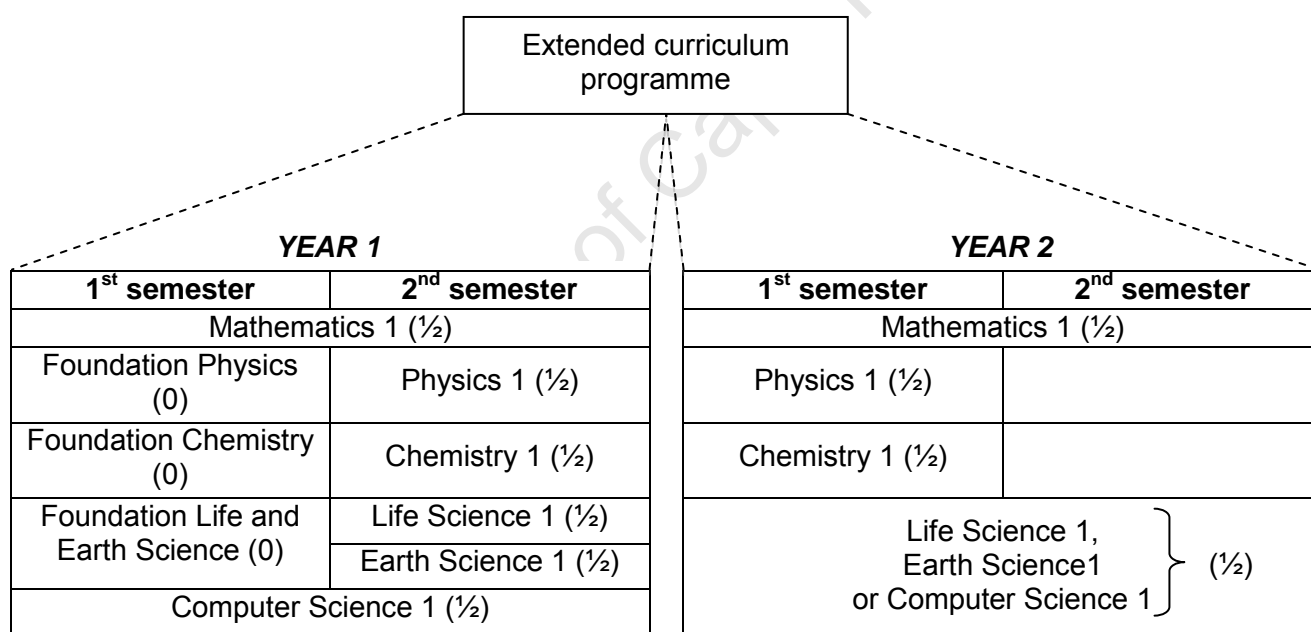


Figure 1.1. The structure of UCT's SFP after 1991 (the numbers in brackets indicate the credit value of each course or half-course).

This type of model became favoured within South African higher education, certainly at the white English-medium universities. However, it is important to note that the current definition of an extended curriculum (according to the DoE) refers not to an extended first-year but to a *full degree or diploma that includes foundation courses* (DoE 2006). Since the formal definition of a programme is the 'purposeful and structured set of learning experiences that leads to a qualification' (according to the Higher Education

Quality Committee's criteria), an 'extended curriculum programme' (ECP) thus refers to a *degree or diploma that is extended or augmented* by certain AD (academic development) components, courses or modules. This arrangement means that, theoretically, foundational provision need not necessarily be limited to first-year but could be built in at second- or even at third-year level.

Although a number of terms has been used to describe this diverse group of initiatives over the years and each signals an important aspect ('access programmes' is another example), 'foundation programmes' is used in this study as a general term to refer to ASPs, ECPs and everything in between. Such a convention is compatible with the literature. In 2001, for example, the University of the Witwatersrand (Wits) published the Directory of Science, Engineering and Technology Foundation Programmes (Pinto 2001) wherein more South African programmes (about 40%) contained the word 'foundation' in their name than any other designator. It is also interesting to note that programmes bear names as a result of history and this does not necessarily describe a particular approach. ASPECT (Academic Support Programme for Engineering in Cape Town) for example, although bearing the designator of 'support' in its name, fits the description of an extended curriculum programme as defined by the DoE.

The latest re-definition of extended curriculum programmes by the DoE represents a significant shift for foundation programmes nationally. Firstly, it binds them (theoretically, at least) more securely to the mainstream and legitimises their presence in higher education. Secondly, the huge uptake of teaching staff on these programmes, many of whom are unfamiliar with academic development issues and are quick to apply 'commonsense' understandings (Boughey 2002, 2007a) has implications for the educational effectiveness of these programmes (Kloot et al. 2008). Thirdly, the structural homogenisation brought about through the DoE's funding criteria tends to curb the structural diversity that has been a characteristic of these initiatives. Whether or not this translates into less diversity 'on the ground' in what is certainly still a divided and inequitable higher education system, remains to be seen.

In terms of analysis and documentation, foundation programmes in the sciences, engineering and technology have been a particular focus in the South African context (Kotecha et al. 1997; Pinto 2001; Kloot et al. 2008; Rollnick 2010). The similarities in curricula and the fact that they started at much the same time have contributed to their being treated together. The literature review that follows continues in this mode, focusing on the sciences and engineering and, to a lesser extent, technology. Furthermore, the contribution of engineering specifically to national economic

development indicates that the training of engineers is an area of great importance. The Minister of the Department of Higher Education and Training³ (DHET), Dr Blade Nzimande, recently (in May 2011) indicated the intention of the Ministry to 'turn around' higher education (Nzimande 2011). This includes developing the country's workforce and the 'removal of blockages and bottlenecks' (*Engineering News* 2011) for the production of graduates in scarce skills such as engineering.

Furthermore, my position within an engineering faculty⁴ has meant that an in-depth study of *engineering foundation programmes* has been elected as the focus of the present study. It is expected that the findings generated will shed light on the operation of foundation programmes in the sciences as well as in other disciplines.

1.2 *Review of the foundation programme literature*

The literature on foundation programmes is part of the voluminous body of literature on academic development in South Africa that spans three decades, beginning with the academic support movement that started around 1980. Since academic support was mostly funded by 'soft' money, the staff employed on foundation programmes in the early days occupied contract posts and, without the clear career path of the mainstream academic (Muller 1988), had little incentive to document their work (Sanders 1986), let alone do research or write for academic journals. As a result, the early foundation programme literature emerged from a small number of staff who saw it as important to reflect on the issues that they were confronting.

An important source of information from the early days is the conference proceedings from the annual 'ASPECTS' conference, a forum that had been running since the late 1970s at which practitioners from the universities involved would come together and present their work in various subjects. In fact, many important insights into academic development in general and foundation programmes in particular can be traced back to papers presented at ASPECTS. For example, in a paper presented at the 7th ASPECTS Conference, Martie Sanders seems to be pleading with her colleagues when, after six years of academic support at Wits University she says, 'We can't just go

³ The Department of Education (DoE) was divided into the Department of Basic Education and the Department of Higher Education and Training in 2009.

⁴ Although reference is made to the 'engineering faculty' at UCT, it is officially the Faculty of Engineering and the Built Environment (EBE) and includes the departments of Architecture, Planning and Geomatics, and Construction Economics and Management alongside the more conventional engineering disciplines of Chemical, Civil, Electrical and Mechanical Engineering.

ahead and teach, trying out new ideas if and when we get the inspiration' (1986 pp. 70–71) and argues that clearly defined goals, criteria by which to judge and more rigorous evaluation of ASPs will facilitate their improvement. We can connect the problem that Sanders is addressing to the origins of academic support as a 'reactive response' with 'no or little theoretical underpinnings' (Lazarus 1987), as mentioned already.

At the same conference, a paper entitled *Tinkering or transforming?* by Ian Scott from UCT argued that academic support was in fact diverting pressure for transformation to the institution by tinkering with supplementary support programmes for black students. (This paper was also mentioned above). One of the ways in which Scott proposed that academics contribute to making the university 'genuinely accessible' (1986 p. 14) to all sectors of the population was through what he called an 'integrated bridging programme', a curriculum intervention that he felt had 'major advantages', one of which was: 'they can concentrate on addressing the student's fundamental learning needs, and can thus provide a solid foundation for real competence and independence...' (p. 23). Scott describes the issue of accreditation as a 'major problem' for these programmes but suggests that 'every effort should be made to persuade the university to grant at least partial credit' (ibid.). These comments indicate that the notion of credit-bearing, integrated foundation programmes had just about crystallised by the late 1980s.

Merlyn Mehl from the University of the Western Cape (UWC) wrote about the developmental potential of academic support in *Academic Support: Developmental Giant or Academic Pauper?* (Mehl 1988). This paper was published in the second volume of the South African Journal of Higher Education (SAJHE), also an important source of literature about academic development in the South African context. Mehl (1988) argued that academic support was often relegated to the status of academic pauper – 'doing what the schools should do but do not' (p. 17). However, he said that the time had come for it to *change the university from within* by taking cognisance of the political, social and economic realities of the day, addressing issues of curriculum, improving teaching and learning and pursuing a 'clearly defined agenda of research and development' (p. 20). He envisaged that an Academic Development Centre 'within the university's departmental fabric' (ibid.) would elevate academic support to its rightful position and allow it to become a developmental giant rather than remain an academic pauper. Many of Mehl's ideas were in fact implemented through the 'infusion model' of academic development (Walker and Badsha 1993) that was launched at UWC in the early 1990s.

The papers by Scott (1986) and Mehl (1988) highlight a number of issues: firstly, the previously black universities (UWC for example, was established for the 'coloured' race group by the apartheid government and was a centre of resistance during the struggle against separate education) played a critical role in challenging the traditional, adjunct concept of academic support that had originated at the previously white English-medium universities. Vilikazi and Tema (1985), for example, presented a paper at an ASPects conference called *White Universities and the Black Revolution* which challenged the elite, white universities in terms of their role in South Africa. This leads to the second point: from its marginal position within the white universities, academic support/development began to challenge the institutional structure, agitate for transformation and put pressure on the mainstream to take the issues of black African students more seriously. The three papers mentioned above reveal that the challenge had a distinctly political dimension.

However, after 1990 and the "drawing in" of academic development as a national project' (Volbrecht and Boughey 2004 p. 67), the impact of innovative teaching strategies on mainstream practice (for example, Grayson 1997; Inglis, Akhurst, and Barnsley 1994) appears to be the dominant means by which academic development was to effect transformation. Given its focus on educational disadvantage, academic development in South Africa overwhelmingly tended (and still tends) to focus on issues related to teaching (Grewar 1987), including work on theories of learning (Postma 1993; Sanders 1988; Tunmer 1985), the acquisition of skills (Pinto and Rutherford 1994; Starfield and Hart 1992), second language instruction (Starfield 1988), and non-academic issues (Harwarden 1985) that could prevent black students from succeeding in the predominantly white context.

It must be emphasised at this point that the present study is *not* about teaching methodologies or the student experience; it is *not* about admission procedures for disadvantaged students or curriculum design. This study is about the social structure of the university and the struggle for transformation *through* foundation programmes; it is about the legitimisation of these programmes, and the consequences for the people who teach within them and the students who register for them. In essence *this study is about power*. This must be kept in mind as we continue to peruse the literature on foundation programmes.

Muller (1988) is one of a few authors within the literature who deals specifically with the impact of forces external to higher education, such as the state and the economy, on the academic support movement. In his paper *Coming in from the Margins: Options*

for ASP in a Pluralist University, he also addresses the marginal location of academic support within the social structure of higher education itself, noting that

...the literature on ASP is littered with exhortations...urging ASP or “the university” to do this, that or the other without regard to the feasible or the possible. University lecturers are frequently exhorted by ASP teachers to teach more and research less, for example, with scant regard paid to reward and other *structures* that shape academic work. Similarly, ASP is enjoined by insiders and outsiders to “develop” more and “support” less. I suspect that these exhortations achieve little more than a compounding of the apprehension, resentment and powerlessness that ASP people currently experience, and this is in truth part of the problem.

(Muller 1988 p. 120 emphasis added)

Muller’s critical (in both senses of the word) insight suggests that an analysis of social structure – the structure of higher education and the external structures impinging on higher education – would illuminate the dynamics of academic support/development. Such a focus on social structures is unusual since most of the academic development literature is written from an advocacy perspective, encouraging those involved to be ‘agents of change’ (Lazarus 1987). Given that Muller’s paper was written 23 years ago, his comprehension of the situation is remarkable and his idea of academic development practitioners becoming ‘change facilitators who can broker new forms of collective bargaining between the interest groups variously pulling in different directions at once’ (Muller 1988 p. 125) has proven prescient and is especially relevant today.

Before we deal in more depth with the literature on foundation programmes in the South African context, it is worthwhile noting the potential overlap with three bodies of international literature. The first is the literature on *developmental education* in the United States, better known as college remediation. This refers to course work that is offered below college-level in higher education institutions (Merisotis and Phipps 1998). There is overlap here in terms of representation of non-traditional students taking these courses (Attewell, Lavin, Domina, and Levey 2006) but the fact that college remediation tends to focus on ‘tutoring and skills development’ (Merisotis and Phipps 1998 p. ix) suggests a limited applicability to the South African case. Furthermore, remediation efforts are generally focused on community colleges (Rollnick 2010), institutions that tend to offer two-year (‘associate’) degrees that are equivalent to the first two year of a Bachelor’s degree.

The second body of the literature pertinent to this study is the literature on foundation *degrees*. These are similar to the associate degrees mentioned above and were

launched by the United Kingdom government in 2001. They refer to higher education qualifications designed with the help of employers that combine academic study with workplace learning degrees. Harvey (2009) sketches the benefits of these programmes for non-traditional students which is useful for the present study but also indicates that nearly half of the foundation degree students were studying part-time in 2006–2007 while roughly two-thirds were enrolled when they were over 21 in 2008. Since foundation programmes in South Africa are only offered full-time and the vast majority of students are straight from school, there is limited overlap here.

The third body of literature pertains to what is known as *academic development* in the global 'north', a region that includes the United States, the United Kingdom, Canada, Australia and New Zealand. While there is a degree of overlap here, the focus on equity and student development is what distinguishes the South African from the international literature (Amundsen and Wilson 2009; Brew 2002). Nevertheless, Clegg (2009b) suggests that a critical dialogue between the global 'north' and 'south' has the potential of providing a richer understanding of academic development:

[M]ore and different histories of academic development...analyses of how learning and teaching, not curricula, has come to the fore; and histories that trace how 'widening participation' and 'equity' came to be understood as requiring pedagogical rather than more radical sorts of intervention. This work needs to be carried out with a clear eye to the global context and with sensitivity to unevenness. South African academics and academic developers bring to these debates a renewed sense of urgency concerning the academic development project, which it is less easy to dismiss as simply a manifestation of managerialism. The question of whether academic development can be remade in ways that pay attention to other more critical discourses remains open. My view is that if this does come about it is likely to entail an engagement with the issues and writing from the global 'south' and not just those of the 'north'.

(Clegg 2009b p. 63)

We now turn to the South African literature on foundation programmes. A number of papers in the ASPects series document foundation programmes in various forms and disciplinary areas. For example, Bradley (1984) examines issues of assessment in the slow-stream Chemistry I course at Wits; Allie (1987) reports on the foundation course in Physics at UCT; and Volmink (1987) describes the science foundation 'package' offered in mathematics, physics and chemistry. But Kotecha and Rutherford (1987) is of particular interest for this study because it is one of the earliest papers about an *engineering* foundation programme, the Wits Integrated Study Programme for Engineering (Wispe) that was launched in 1987. This paper is quite typical of foundation programme literature in that it is essentially descriptive. It deals with the

rationale for the programme, its aims, the details of the proposed curriculum structure, issues of student selection and staffing, and a declaration of the 'fundamental importance [of] action and curriculum research' (p. 149) for the success of the intervention. No student results or perspectives are included but some of the problems encountered in the implementation of Wispe are dealt with. The paper concludes by emphasising the need for collaboration between the ASP and the engineering faculty and announcing the plans for the setting up of a Steering Committee and a Curriculum Committee before the next academic year.

Similar descriptive papers of this sort appear at various intervals in the literature. For example, Sharwood (1992) discusses the pre-technician course for science and engineering at the Port Elizabeth Technikon; Parkinson (2000) reports on the augmented model in engineering at the University of Natal, Durban; and Grayson (2010) describes the engineering foundation programme at the University of Pretoria, recently re-designed to meet the DoE's criteria as an ECP.

As we move into the 1990s, two papers appear that, like Muller (1988), put the issues surrounding foundation programmes into broader context: Hofmeyr and Spence (1989) and Moulder (1991). The latter's editorial in the SAJHE is entitled *Remedial education programmes: miracle or failure?* and is a reflection on a workshop run by Hofmeyr and Spence for 'business and university people that manage these programmes' (Moulder 1991 p. 5). The influence of Rod Spence, a group training consultant from Anglo American at the time, is discernible in the Hofmeyr and Spence paper that was published in *Optima*, Anglo American's in-house magazine. Entitled *Bridges to the Future*, it sketches the South African context and the implications of the 'high wastage rate at universities [that] aggravates the skilled manpower shortage' (1989 p. 38) and focuses particularly on programmes in engineering. It goes on to describe the 'bewildering variety of forms' (ibid. p. 40) of programme on offer at the institutions involved and describes the role of Anglo American in this 'field':

The Anglo American Corporation (AAC) is a major stakeholder in the field. Not only is it the main funder of these programmes, its involvement extends to innovation, selection, mentorship, affirmative action and a strong commitment to programme improvement and success. (Hofmeyr and Spence 1989 p. 40)

Hofmeyr and Spence comment on the difficulties of measuring programme performance and some of the other problems faced. Finally, the authors make these quite remarkable observations about the unique cultures of foundation programmes, their institutional location and their limitations:

Because of the expense, a shortage of resources and the close-knit, personal cultures of many ASPs, they are unable to 'go to scale' to any substantial degree. The central units are structurally fragile: they are marginally located and generally exist in opposition to the norms and interests of the rest of the university. Only through faculty-based models will departments take responsibility for underprepared students and address the problem on the scale that it demands. (Hofmeyr and Spence 1989 p. 47)

The problem of 'going to scale' is something that the Narset Report (see below) addresses. Before dealing with this issue however, it is necessary to comment on two papers by Diane Grayson (1996; 1997) that document the Science Foundation Programme (SFP) offered at the University of Natal-Pietermaritzburg in 1991. Although the programme is in science rather than engineering, the SFP is noteworthy for the present study because it represents the pinnacle of the foundation programme genre in terms of its educational philosophy (Kloot et al. 2008). But what is more significant for this study is that Grayson and her team spent a year developing their 'holistic model' (illustrated below) after finding that 'there was little experience in South Africa of programmes that were successfully producing black science graduates, and in places where people did have experience, there was very little documentation' (p. 1010). Grayson was speaking in the early 1990s.

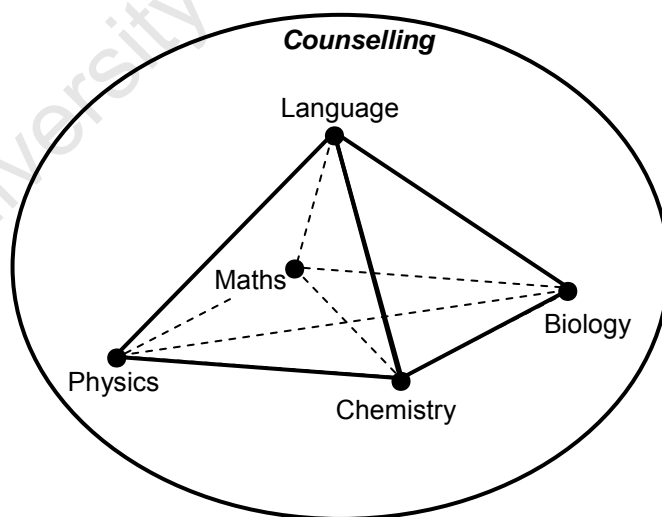


Figure 1.2. Diagram suggesting the relationship between the various components of the SFP.

Grayson's second paper (1997) documents some of the findings after implementation, including qualitative feedback from some of the students who had been through the programme. This is quite typical of the literature in the foundation programme genre.

The following three pieces of literature – the Narsset Report (Kotecha et al. 1997), a paper by Warren (1998), and the Directory of Science, Engineering and Technology Foundation Programmes (Pinto 2001) – were all published at roughly the same time and are the first attempts to bring some order to the rapidly growing field of foundation programmes. The Narsset Project was an investigation initiated by the Department of Arts, Culture, Science and Technology with the aim of increasing access to higher education in the fields of science, engineering and technology for students from disadvantaged backgrounds, and also to improve the retention rates of such students once they had gained access. The Narsset Report – ‘Narsset’ is an acronym for *National Access and Retention in Science, Engineering and Technology* – was the document produced by this investigation.

As mentioned already, much of the literature on foundation programmes is descriptive but the Narsset Report is a seminal document in this field because it compares the characteristics of 21 foundation programmes on offer around the country at the time, outlines the South African educational context as well as the unfolding policy context and broaches the possibility of ‘upscaling’. The higher education White Paper had not yet been released at this time, so the Narsset Report worked within the bounds of the policy framework of the NCHE (National Commission on Higher Education) and examined future funding possibilities for foundation programmes within SET (Science, Engineering and Technology). A finding of the Report pertinent to this study is:

Present responses to the problem of access into higher education in SET are argued to be institutionally-based and fragmented. Various models are being used at different institutions, there is little consolidation of ideas, and relatively little upscaling is possible with the present unsubsidised access programmes.

(Kotecha et al. 1997 p. 4)

As will be seen, the allegations of a fragmented response and ‘little consolidation of ideas’ across the sector still apply to foundation programmes at this time, 15 years later.

The second piece of work, Warren (1998), is a comprehensive survey of the educational interventions offered at the University of Cape Town since the late 1980s with particular attention to innovations in the humanities. The theme of the paper is ‘from “academic support” to “academic development”’ (p. 76) and he connects the shift in institutional policy at UCT to changes in government policy. Warren concludes by saying:

Key forces for change have been the impetus for national reform in higher education reinforcing institutional commitment to accommodating a more diverse student intake in well-designed and flexible curricula which foster students' academic development and so offer a chance for redress with success.

(1998 p. 82)

The Directory of Science, Engineering and Technology Foundation Programmes (Pinto 2001) is in fact the proceedings of the 'Indaba' of SET Foundation Programmes⁵ held at Wits in June 2001. This document contains a brief introduction and raises some issues pertinent to foundation programmes but, as its name says, it is really a directory. It contains a brief write-up from every institution running a programme at the time – there were more than 40 foundation programmes on offer at 23 universities and 15 technikons⁶ in 2001. This allows us to conclude that almost every tertiary institution in South Africa was offering a foundation in one form or another, including the previously white Afrikaans-medium universities that began to launch programmes in the early 1990s, and the previously black universities.

But the problems identified in the Narset Report do not seem to have improved by the time the Directory was published. If anything, the multiplication of programmes resulted in even greater fragmentation and lack of a shared understanding of their purpose. Despite two decades of experience at the previously white English-medium universities, there is clearly a lack of consensus regarding the optimal structure and best practice for foundation programmes. In the year 2000, the DoE introduced 'Foundation Programme Grants' as a form of earmarked funding (Boughey 2010) and asked institutions to submit proposals to benefit from this funding. After being assessed by the DoE these proposals provoked this comment in the National Plan (DoE 2001c):

However, an assessment of the proposals submitted by institutions to access the earmarked funds was worrying...almost half of the institutions submitted proposals that fell far short of meeting the key criteria, indicating a lack of understanding of the role of extended curricula in academic development...In many institutions the foundation or bridging programmes are not effectively integrated into the mainstream curricula. The add-on nature of many of the programmes is educationally unsound as best practice indicates that the success of academic development programmes is dependent on the integration of their structure of the overall curricula. (Section 2.3.2)

⁵ *Indaba* is a Zulu word that means a 'meeting at which people discuss an important topic'.

⁶ Some institutions offered more than one programme which is why these numbers do not add up.

Three papers from the mid-2000s indicate that the DoE's attempts to steer institutions in the 'extended curriculum' direction were unsuccessful. This is certainly the case with the Career Preparation Programme (CPP), launched in 1993 when 'ten institutions in the Free State region came together in a consortium to implement the programme' (Hay and Marais 2004 p. 63). This model diverges from all other programmes in the country – students do not study on the campuses of the University of the Free State (UFS) or the Central University of Technology (previously Technikon Free State) but are instead based at one of seven Further Education and Training (FET) or Technical Colleges around the Free State province. They register for two university-accredited courses and two N4 (FET) courses and, if successful, may continue at one of these universities (depending on the discipline) or any vocational college in the province. Although students could register for engineering studies when the programme began, these courses were discontinued after 1998.

The CPP has forged its own path since 1993, largely ignoring the lessons learned by the English-medium universities in the 1980s or the policy developments of the 1990s. Through a longitudinal study of student success, the purpose of the paper – according to authors – is to prove that bridging programmes are 'worthwhile and have a place in higher education' (Hay and Marais 2004 p. 60). The paper discusses some of the 'Institutional Outcomes' of the programme, one of which is influencing the 'future and lives' of the 610 black students who obtained degrees through the CPP. The language context appears to be important:

The UFS was also transformed at an increased rapid rate due to the influence of this programme and the growth of black student numbers. Previously classes were only presented in Afrikaans and this [p]rogramme has made the need for classes in English essential. This has led to the hastening of official acceptance of English as a second medium of instruction. (Hay and Marais 2004 p. 73)

A final section in the paper entitled 'Achievements' contains three quotations of positive feedback from 'numerous experts' about the programme. The programme was still being offered at the time of writing through the UFS and the Central University of Technology.

The student focus in South African academic development is evident in Wood and Lithauer's (2006) examination of student perceptions of the foundation programme at the Nelson Mandela Metropolitan University (NMMU) in the province of the Eastern Cape. At the time, its University Foundation Programme was a non credit-bearing bridging programme by which students could gain access to the first year in business,

science and the humanities. Wood and Lithauer attest to the 'added value' of the foundation programme, the title of their paper. According to them, the programme not only has academic benefits but also assists in the development of self-knowledge and self-management skills, and gives students an improved sense of self-worth.

Another recent example of a paper about a bridging programme is Machika's (2007) paper *Access to success: the value of bridging programmes in engineering at the University of Johannesburg*. In her comparison of two non credit-bearing bridging programmes for a national diploma in engineering at the University of Johannesburg (UJ), Machika defines bridging programmes as 'add-on to the mainstream curriculum, striving to prepare students for survival in the mainstream by providing support...' (p. 122). Even though she refers to the National Plan (DoE 2001c), her paper attempts to prove that 'place still exists for bridging programmes within the University of Johannesburg and the higher education sector in South Africa until the deficit within the education system is narrowed' (Machika 2007 p. 121). Despite being phased out in 2005 at UJ because the DoE would not fund it (it was not credit-bearing and focused on re-teaching school work according to Machika), she concludes by saying that bridging programmes

...lay a solid foundation for the students by equipping them with knowledge and skills necessary for success in mainstream diplomas such as the national diploma in engineering and put into practice the policy emphasis from "access" to "success" (DoE 2001) which has implications not only for the University of Johannesburg but the higher education sector in South Africa... (2007 p. 127)

These three papers demonstrate that bridging programmes of various kinds continue to be promoted, despite signals from government that such adjunct programme are not desirable. What is perhaps significant is that none of the four institutions mentioned belong to the group of previously white English-medium universities that were involved in the academic support in the 1980s (UCT, Wits, the University of Natal and Rhodes University). There is evidence that academics from Port Elizabeth Technikon and the University of Port Elizabeth (both now part of the comprehensive university, NMMU) were affiliated with ASP in the late 1980s (Blunt 1992; Sharwood 1992) but on the whole these institutions, those from the Free State mentioned above and those that now make up UJ (such as the old Rand Afrikaans University), had peripheral, if any, connection to the academic support movement. This suggests that institutional context is important in terms of the mode that academic development takes, an issue that this study examines closely.

At this point it must be made clear that this study does not assume that ECPs, i.e. programmes meeting the criteria laid down in *Funding for Foundational Provision in Formally Approved Programmes* (DoE 2006), are ideal. Indeed, the research question seeks to evaluate the potential that foundation programmes, in general, hold for transformation and this includes ECPs. Furthermore, it is hoped that in answering the research question, it will come to light why institutions such as the University of the Free State or UJ continued offering bridging programmes into the mid-2000s and why some institutions still continue to offer them up until the present time.

At about the same time that the above papers were published, Chrissie Boughey, a veteran of the academic support movement from Rhodes University in Grahamstown, began writing about academic development in relation to efficiency and quality. She noted that the transformation agenda driving academic development in the 1980s had given way to narrower reform objectives in higher education policy (Boughey 2007b) which tended to marginalise academic development work. In another paper, Boughey argues for a new vision of academic development (what she calls 'third generation' academic development) that '*marries a concern for equity with a concern for efficiency within an overall framework of a regard for quality*' (Boughey 2007c p. 1). According to Boughey, part of this vision entails the re-framing of academic development practices, especially in relation to the mode of student support and development offered. Drawing on her analysis of the submissions made to the DoE for the funding of foundational provision in 2006, Boughey notes that most institutions proposed that foundational provision be inserted in the first year of study and focused on teaching 'generic skills in numeracy and literacy' (2007c p. 9). Her reflections on the problems of offering such a mode brings us to one of the very few cases in the literature that considers the social implications of foundation programmes on staff:

The existence of programmes of this sort has implications for Academic Development for staff and students. Academic Development staff members involved in the provision of foundation tuition are often marginalised in the sense that they are not considered fully academic. Teaching loads are often higher than those employed elsewhere in the programme and there is no or little expectation that research will be produced. Students often experience the same marginalisation and are seen as different by virtue of the fact that they are required to take additional classes. In spite of intentions to formalise student development and locate it within programmes, therefore, the net effect on students and staff is much the same as in the early Academic Support phase of the Academic Development movement. (Boughey 2007c p. 9)

As mentioned previously, DoE funding in 2006 resulted in a proliferation of foundation programmes under the ECP banner and about 200 programmes were offered at institutions across the country. As Kloot, Case and Marshall (2008) point out, this recent increase in the number of programmes has meant that ‘an understanding of the issues pertaining to academic development, historically a marginalised field, has not spontaneously diffused to the great number of practitioners that have recently joined its ranks’ (p. 812). Following Boughey’s analysis of the DoE submissions and on the basis of her recommendation to the Department, it was decided that some funds be set aside for capacity building, to expose programme designers and lecturers to the critical debates in the field. The result was ‘Conversations about Foundation’ (Garraway 2007), a seminar attended by about 200 practitioners who presented papers and attended workshops and seminars. In her keynote address, Boughey challenged the ‘deficit thinking’ that was brought to light by her discourse analysis of the DoE proposals.

The discourse analysis on which this presentation is based is an attempt to alert those new to the field to the sort of critical thinking which can inform it. I would argue that, if we are sincere about making a difference to our students’ chances of success, we need to interrogate the work we do in order to ask whether dominant commonsense discourses preventing [*sic*] us from other ways of imagining foundation work. (Boughey 2007a p. 12)

At a similar event held in January 2009, the Rhodes University Foundation Seminar, Boughey once again challenged commonsense constructs and encouraged more critical ways of knowing in an attempt to make practitioners aware of ‘how other *structural* factors might be involved in denying success to some groups of students’ (Boughey 2009 p. 9, emphasis in original). Statements such as this are evidence of a struggle *within academic development itself* and suggest that a more thorough examination of the social structures generating the discourses that Boughey is combating is long overdue. In fact, these debates remind us of Muller’s observations in his 1988 paper, *Coming in from the Margins*, and his argument that the social structure within the university and forces impinging on higher education from outside need to be taken into account for a fuller understanding of academic development itself and its potential to bring about change in sector.

Lockett (2011) has taken up the challenge to ‘remake’ academic development (Clegg 2009b). Through a meta-analysis of a review of an academic development unit at a South African university, she critically deconstructed what she calls the ‘“common sense’ AD discourse’ (p. 12). This work is significant in the sense that Lockett is using

sociological theory – in this case Margaret Archer’s critical realist framework – to critique academic development itself, thus going one step further than Boughey. For example, Luckett makes the statement that ‘due to its early experiences of polarisation and marginalisation, AD discourse still tends to stereotype academics as autonomous, uncaring teachers and self-interested researchers’ (2011 p. 12).

It is clear that such analyses are crucial in terms of broadening our understanding of academic development and its location within higher education. But what is missing in the literature is an analysis of the curriculum intervention that has become a key part of academic development strategy in the South African context: foundation programmes. The present study thus aims to augment the literature through a contextually sensitive *sociological* analysis of the foundation programmes offered by the engineering faculties at two universities in the global ‘south’. It is hoped that an analysis of *social structures* will illuminate foundation programmes and academic development in South Africa.

1.3 Outline of the thesis

Chapter Two describes the theoretical framework that has been chosen for this study, that of the French sociologist Pierre Bourdieu. His conceptual tools – the triad of field, capital and habitus – are deemed suitable since they focus the analysis on social structure. However, there are contentions that Bourdieu’s framework is deterministic and these are dealt with by a detailed explanation of his concepts, emphasising the connections between them. A number of other issues, such as Bourdieu’s views on methodology and his emphasis on reflexivity, are also addressed. Lastly, Bourdieu’s analysis of the French university field is drawn on to define the research object for this study: *the field of engineering education*.

Although some points about methodology are dealt with in Chapter Two, the following chapter, *Methodology and research methods*, focuses on more practical aspects. It deals with the appropriateness of the case study methodology in the context of Bourdieu’s framework as well as the various sources of data drawn on pertaining to the chosen cases. Various issues relating to the interviews are then dealt with, which is the focus of this chapter. This includes the choice of interview respondents and the use of narrative analysis as well as ethical considerations. To complete this chapter, the issues of validity, reliability and generalisability are discussed.

The next two chapters set up the context of the findings. Chapter Four sketches the socio-historical backdrop by tracing the social trajectory of the two case study institutions since their inception and briefly considering the social and political milieu in which they were established and evolved. Particular attention is paid to the engineering faculties within these institutions. Included in this chapter is also a brief survey of government policy with regard to foundation programmes. Chapter Five goes into some detail about the foundation programmes within the engineering faculties at the two institutions under consideration. The curriculum structure of each programme and its evolution as well as various statistical data are examined, including registration and graduation rates with a focus on pertinent demographic information.

Chapter Six presents the findings of this study, drawing on Bourdieu's concepts introduced in Chapter Two. Referring mostly to interview data, the field of engineering education is constructed. Similarities and differences between the two case study institutions are noted in this process. This foregrounds an analysis of academic development as a field phenomenon within each institutional context. Particular attention is paid to influence from the political realm in this analysis. Thereafter, foundation programmes within engineering, as a manifestation of academic development, are discussed. In this stage of the analysis, the influence of industrial players is important.

Finally, Chapter Seven concludes the study in terms of the research question and associated aims. In the context of the power structure of the higher education it examines the contribution of the foundation programmes to transformation in their respective institutional contexts. It then proceeds to examine the potential that ECPs hold for the transformation of the higher education sector in South Africa. Lastly, some possibilities for future work are discussed.

Chapter 2 – Theoretical framework

2.1 Introduction

The previous chapter included a review of the literature on foundation programmes. It noted that despite government funding and ongoing efforts to alert practitioners to more critical approaches, adjunct programmes that are reminiscent of the 1980s persist at higher education institutions in South Africa. Considering that these programmes are the means by which institutional transformation is to take place, it seems pertinent to analyse why this is the case and, connected to this, why academic development still appears to occupy a marginal position despite years of work for its infusion or integration into the mainstream. Drawing on some of the critical voices from the early years of academic development, it was argued that an analysis of social structures – the structure of higher education and the external structures impinging on higher education – is necessary.

Considering the origins of academic development, it is not surprising that transformation has been thought about in terms of *agency*. Some authors, for example, focused on the role of academic development staff as ‘agents of change’ and encouraged staff to bring about institutional transformation from within. It is argued here that this understandable emphasis is in need of a counterbalance that brings in structure. Furthermore, the literature review suggested that an analysis of the operations of *power* is crucial in order to understand the possible hindrances to bringing about meaningful change. With these considerations in mind, we now turn to discuss the theoretical frameworks that are available for the present study.

If we consider the need to investigate the operations of power, the work of social theorists such as Michel Foucault (1972) have proven to be useful in terms of uncovering the relationships between power, knowledge and discourse in social institutions. A deconstruction of the academic development project in South Africa, especially considering its origins at the previously white English-medium institutions, may foreground important issues. However, Habermas (1986) has argued that Foucault covertly relies on the principles that he deconstructs, and the application of his ideas may result in an overly critical analysis.

The need to take into account structure and agency leads us to consider other options in contemporary social science such as the structuration theory of Anthony Giddens (1984) and Margaret Archer's (1995) morphogenetic approach. Although a polemical situation appears to have developed between these two (see Archer 1982), they both bring structure and agency together in useful ways. Archer's framework has been mentioned in terms of its application to academic development (Lockett 2011) and her concept of corporate agency (see Clegg 2009a) may prove to be especially fruitful when applied to the South African context. Giddens' work too, has proved useful, especially in terms of analysing institutional change (Dirsmith, Heian, and Covaleski 1997).

But despite attractive qualities in both of these frameworks, the theoretical perspective of the French sociologist Pierre Bourdieu has been chosen for the present study. There are three main reasons for this. Firstly, Bourdieu's theory gives due attention to the operations of power within society. In fact, Bourdieu contends that social structures – what he calls 'fields' – are *made up of bundles of power relations* and that the struggle over power (what he conceptualises as 'capital') is the motor of all social activity. Importantly, Bourdieu's theoretical tools were developed tackling practical problems and it is for this reason that his perspective, considering the pressing needs in South African higher education, is preferable to Foucault's approach.

Secondly, Bourdieu's notion that there are *different forms of power* is helpful in terms of an analysis of foundation programmes. As has been shown, these programmes emerged as a result of essentially political concerns which suggests the operation of a certain form of power; the role of 'big business' in setting up academic development programmes, especially in the context of engineering, point to another form of power. Thus, Bourdieu's tools should prove to be helpful in terms of disaggregating and analysing the forces impinging on higher education from other realms.

The final reason that Bourdieu's theoretical perspective has been chosen for this study is that his means of reconciling structure and agency tend to emphasise structure while still adequately accounting for agency. Through the notion of 'habitus', Bourdieu proposes that agents internalise the configurations of power relations in fields (it is important that his specific definition of social structures be maintained here) which results in the formation of a set of embodied dispositions. These dispositions are inscribed on individual bodies as 'mental and corporeal schemata' (Bourdieu and Wacquant 1992 p. 16), functioning below the level of the consciousness or the control

of the will (Bourdieu 1984)⁷ and largely determining social practice. The word ‘largely’ in the previous sentence is crucial since it qualifies that while the habitus *tends* to reproduce social structures, it is also generative so that agents can follow lines of action that transform structure.

Choosing this framework is not without its problems. Various critiques have been levelled at Bourdieu’s theoretical concepts, especially his notion of habitus, and these will be addressed shortly. This requires venturing into issues of epistemology (the nature of knowledge) and ontology (the nature of existence or ‘being’). But there is another issue that needs to be addressed before proceeding: does not this choice of framework serve to alienate the university managers and politicians who are most able to effect change in higher education?

In order to try to address this concern, the following section will begin with the natural sciences and follow the developments that occurred in the social sciences before venturing into an explanation of Bourdieu’s theoretical framework. Thereafter, the relationship between theory and methodology will be discussed and the chapter will conclude by looking specifically at the issue of autonomy in relation to the *field of engineering education*, the focus of this study.

2.2 *Epistemology and ontology*

Generally speaking, research in engineering and the ‘hard’ sciences is underpinned by a positivist epistemology, i.e. knowledge is assumed to be absolute and to correspond with an objective reality. In the positivist tradition, the scientific method is the accepted procedure for testing hypotheses about the natural world. This entails controlling the physical environment and generating quantitative data that can be analysed in order to establish cause and effect relationships between variables. Depending on the *validity* of these data, that is, the proper demonstration of the causal relationship between variables, hypotheses can be confirmed or refuted. Since the relationships that positivist science explores rest on universal natural laws, it is assumed that the results are generalisable.

Initially, positivism also underpinned research in the social sciences. As with the natural sciences, it was assumed that knowledge generated about the social world

⁷ It should be noted that the citations of Bourdieu’s work refer to the date of the translated work. The date when the work was first published in French was often many years earlier.

was absolute and corresponded with objective reality. The aim was therefore to identify relationships between observable social phenomena and establish universal and generalisable laws about the functioning of society. But early social theorists such as Max Weber argued that people's subjective understandings were important (Gerth, Mills, and Turner 1991). A German sociologist, Georg Simmel, used the term '*verstehen*' to describe a kind of empathetic understanding of actors' subjective interpretations of society. Thus, various 'interpretative' methods emerged that sought to understand individuals and cultural groups from their particular point of view (Kaern, Phillips, and Cohen 1990). The opposition between these epistemologies – objective knowledge about the social world underpinned by positivist assumptions and subjective understandings of the social world – remains a powerful dualism within social science.

The opposition between structure and agency (as mentioned previously) is another example of an enduring dualism in social science. Evidence of theories of structure and those of action can be found in the work of the figures that established sociology in the nineteenth century. For example, Weber's work on the influence of the Protestant work ethic in industrial capitalist societies highlighted agency (Taylor 2011). On the other hand, there is evidence of 'structuralism' in the writings of Marx and Durkheim (Merton 1979). In the latter part of the twentieth century, the 'structuralist' movement that had originated in linguistics was developed in the social sciences through the work of Claude Levi-Strauss (Ritzer and Goodman 1992) and others. This approach diminished the subjective experience of individuals and sought to explain social action in terms of laws inherent in enduring social structures.

In the 1970s, 'critical realism' emerged in the United Kingdom through the work of Roy Bhaskar (1975; 1979). Bhaskar argued that the world exists independently of our knowledge of it but that it is stratified (it has 'depth'). This means that our knowledge can penetrate more or less deeply into reality. What is of interest here is Bhaskar's re-conceptualisation of the scientific endeavour. Bhaskar proposed that rather than trying to determine causal relationships between variables and focusing on the level of events (the 'actual' in his terms), science should instead seek to understand the workings of 'generative mechanisms' at the level of the 'real', the intransitive level of reality that gives rise to the events that are observed and recorded empirically.

This 'realist theory of science' (Bhaskar 1975) was to apply to the natural world – the 'hard' sciences – as well as to the social world (Bhaskar 1979). In the social world, Bhaskar proposes a method to identify the mechanisms producing social events. He

recognises that the social world is more complex than the natural world since events can be activated by innate psychological as well as wider social mechanisms. Importantly, Bhaskar does not believe that humans are at the mercy of mechanisms, whether social or innate, but 'rather, the person can actively transform his or her social world and is, in turn, transformed by it' (Houston 2001 p. 851). While Bhaskar's work has taken a 'spiritual turn' (see Bhaskar 2000), theorists such as Archer and Giddens have continued to focus on transcending the dualism between structure and agency within Bhaskar's broad realist framework.

Fowler (1996) has suggested that Bourdieu's work can also be placed within the critical realist tradition and has labelled his standpoint 'perspectively enriched realism' (p. 7). However, it must be noted that Bourdieu never described himself as a realist, preferring to call his method 'structural constructivism' (Bourdieu 1989 p. 14). In reflecting on his work towards the end of his career, Bourdieu wrote that trying to overcome the deep-seated antimony in social science between subjectivism and objectivism has been one of the most important intentions guiding his work (Bourdieu 1989). Elsewhere he said:

Of all the oppositions that artificially divide social science, the most fundamental, the most ruinous, is the one that is set up between subjectivism and objectivism. The very fact that this division constantly reappears in virtually the same form would suffice to indicate that the modes of knowledge which it distinguishes are equally indispensable to the science of the social world. (Bourdieu 1990b p. 25)

This has resulted in a very clear explication of his stance on matters of epistemology and even a handbook of 'epistemological preliminaries', the *Craft of Sociology* (Bourdieu, Chamboredon, Passeron, and Krais 1991). Bourdieu's intention to set sociological inquiry on a firm epistemological foundation meant an attempt to integrate subjectivist and objectivist forms of knowledge into a 'more comprehensive, third form of knowledge that he called a "general science of practices"' (Swartz 1997 p. 56). This entailed making two 'epistemological breaks': the first with commonsense, subjectivist knowledge and the second with objectivist explanation (see Bourdieu 1990b; Bourdieu and Wacquant 1992).

Bourdieu contends that a primary break with subjectivist knowledge must be undertaken if sociology is to constitute a scientific understanding of the social world. In simple terms, this means that the sociologist cannot take agents' subjective accounts of the world at face value but needs, through actors' accounts, to uncover the objective principles or regularities governing social practice. Next, Bourdieu posits that a second

epistemological break is required in order to correct for the assumptions of objectivism. This entails a 'critical reflection on the generative as well as the situated character of practices' (Swartz 1997 p. 58). This goes to the heart of Bourdieu's theory. By proposing that structures *are themselves socially constructed by the practice of agents*, Bourdieu points to the means by which agent's subjective accounts can be reinserted into objective social structures (fields). This links directly to his notion of habitus:

To speak of habitus is to include in the object the knowledge which the agents, who are part of the object, have of the object, and the contribution this knowledge makes to the reality of the object. But it is not only a matter of putting back into the real world that one is endeavouring to know...It means conferring on this knowledge a genuinely constitutive power, the very power it is denied when, in the name of an objectivist conception of objectivity, one makes common knowledge or theoretical knowledge a mere reflection of the real world. (Bourdieu 1984 p. 467)

This brings us to Bourdieu's position on matters of ontology. Elder-Vass (2007) suggests that Bourdieu is vague about the ontological relationship between structure and agency but in Wacquant (1989), Bourdieu clearly expounds habitus in terms of 'ontological complicity' (p. 43), a notion that he borrows from the philosophers Heidegger and Merleau-Ponty. He suggests that to capture the gist of social action, we must recognise the 'ontological complicity'

...between the agent (who is neither a subject or a consciousness, nor the mere executant of a role...) and the social world (which is never a mere "thing" even if it must be constructed as such in the objectivist phase of research). Social reality exists, so to speak, twice, in things and in minds, in fields and in habitus, outside and inside of agents. And when habitus encounters a social world of which it is the product, it finds itself "as [a] fish in water," it does not feel the weight of the water and takes the world about itself for granted. (Wacquant 1989 p. 43)

This idea is the crux of the conflict between Bourdieu and other scholars in the critical realist tradition such as Archer (1982) and Nash (2002) who are adamant that structure and agency should be separated for analytical purposes. Elder-Vass (2007) has noted that there is a strongly humanistic element to Archer's work and it is for this reason that she 'rejects views of human action that deny causal powers to individual humans' (p. 332). Referring to Archer's (1982) critique of Giddens, Elder-Vass (2007) similarly concludes that Bourdieu conflates structure and agency and his theoretical perspective thus contains an 'ontological error' (p. 334). While it is conceded that Bourdieu gives more emphasis to structure than to agency (Jenkins 1992), the opinion that his theory 'fails to make genuine agency a condition of practice' (Evens 1999 p.

13) is overstating the case. In his 'unremittingly critical' (p. 22) assessment of Bourdieu's work, Griller (1996) similarly errs by suggesting that Bourdieu has failed in his 'attempt to revive the subject in objectivist sociology' since his subject is 'a determined subject, devoid of choice' (p. 21).

In order to properly counter what are effectively accusations that Bourdieu's theory is deterministic, it is necessary to discuss his theoretical tools in more detail. In their study of the notion of cultural capital, Lamont and Lareau (1988) note that misunderstandings about Bourdieu's concepts tend to occur when they are isolated from the overall framework. An effort will thus be made to link the conceptual triad of field, capital and habitus together in an attempt to demonstrate that habitus does in fact account for human agency.

2.3 *Field, capital and habitus*⁸

This section begins by addressing the concept of *field*. A short definition, paraphrasing Bourdieu and Wacquant (1992), is useful here:

A field is a network of objective historical relations between positions anchored in certain forms of power.

This definition will be briefly unpacked: firstly, that a field can be described as a *network* of social *relations* indicates Bourdieu's intention to introduce a relational mode of reasoning. In fact, he emphasises that 'to think in terms of fields is to *think relationally*' (Bourdieu and Wacquant 1992 p. 96). Swartz (1997) notes that the concept of fields encourages the researcher to 'seek out the underlying and invisible relations that shape action rather than properties giving rise to commonsense categories' (p. 119). Secondly, the positions within this network are *objective* in that they exist independently of the agents occupying them and, in connection with one another, form the social structure. In fact, *the structure of the field itself* depends on the 'relations of force between players' (Bourdieu and Wacquant 1992 p. 99) and the distances, gaps and asymmetries between positions in the objective structure that Bourdieu calls a field.

Thirdly, that the positions in the network are *anchored* in certain forms of *power* indicates that power forms the basis of the field and that the occupants of positions –

⁸ The section draws on Kloot (2009).

whether individual agents, groups or institutions – can access, accumulate and wield it. As we will see shortly, each position in the field is determined by two variables: the volume and the form (type) of power. This brings us to the second of his theoretical tools: *capital*. In fact, the phrase ‘forms of power’ in the above definition refers to ‘species of capital’ in Bourdieu’s vocabulary. He is well known for his use of the term ‘*cultural capital*’ by which he signals a break with a Marxist analysis that recognises only economic capital, and instead contends that both material and non-material resources (for example, a knowledge of music or an educational qualification) are efficacious in terms of the struggle for domination within society. Importantly, ‘*capital does not exist and function except in relation to a field*’ (Bourdieu and Wacquant 1992 p. 101). In other words, outside the social space that recognises and attributes value to a certain form of power, it ceases to exist. On the other hand, in social spaces attuned to recognising certain forms of power – intellectual capital, for example, in the university field – they become the basis of struggle for agents within that field.

Bourdieu proposes that society is constituted by an ensemble of *relatively autonomous* spheres of play, each of which prescribes its own values and regulative principles (Bourdieu and Wacquant 1992). The logic that governs a field hinges on the maintenance of autonomy and the necessity to distinguish it from other fields. For example, in the artistic field, the maxim ‘art for art’s sake’ describes the ideal pursuit of art without any immediate concern for economic profit. This is homologous to the rule in the economic field where ‘business is business’ – that in business there is no room for feelings. The logic of the university field and its specific forms of power will be discussed shortly.

The reference above to ‘spheres of play’ indicates that a field can also be thought of as a space in which social action takes place. Social action can thus, in some ways, be likened to a ‘game’ that agents ‘play’ as they struggle over the species of capital active in the field. In this sense, a field is a ‘space of conflict and competition’ (Bourdieu and Wacquant 1992 p. 17) between opponents who enter the field and wield power in their struggle for domination according to the implicit, unspoken rules of the game. Indeed, ‘Bourdieu considers conflict to be the fundamental dynamic of all social life’ (Swartz 1997 p. 136).

When two agents confront one another in a field, the outcome of their conflict depends on a number of factors. Firstly, it depends on the volume of effective capital that they are able to access. The party with more capital is more likely to dominate since he or she is able to wield more power. However, we recall that capital exists in various

forms, the efficacy of which depends on the field under consideration. So it is really the *structure* of an agent's capital i.e. both the volume and the forms of power that he or she possesses that counts in a given field. The more capital an agent is able to access, the more 'force' he or she will be able to exert in the game.

Secondly, just like any game, success or defeat also depends on the *skill or strategy* with which an agent wields power. An agent may decide, at a moment in time, to make a move that is risky in order to try to wrest power from his opponent. Or an agent in a dominant position may decide to play with caution and conserve the structure of the field. The ability of agents to 'read the field' is really a function of habitus, a concept that is discussed below.

Thirdly, the outcome of a struggle also depends on the structure of the field, the 'lie of the land' at that moment in time. Agents that dominate the field are in better positions to be able to impose their *doxa*, i.e. their belief in 'the way things are' upon others and structure the field to their advantage in order to secure the rewards of the game. This also establishes their dominance in the field since it sets them up as 'culturally orthodox' and allows them to wield *symbolic capital*, defined by Bourdieu as a kind of 'credit' (Bourdieu 1990b p. 120) in terms of the honour and influence that are granted through the specific logic of the field. This explains why fields reproduce themselves – another key aspect of Bourdieu's theory – and why they are often so difficult to transform.

Lastly, the outcome of a confrontation also depends on the '*evolution over time*' (Bourdieu and Wacquant 1992 p. 99) of the structure of agents' capital i.e. their social trajectory. As can be imagined, an agent's disposition towards the game depends very much on what has happened in the field previously. Bourdieu therefore proposes that the entire social history of the struggles that have shifted, distorted or transformed the structure of a field *are inscribed on it* and influence the game at every moment. This brings us back to the opening definition in this section, that a field is a network of *historical* relations between positions.

However, likening social action to a game is not to say that there is a formal agreement by which agents that enter it agree to play. Almost unconsciously, agents are drawn into the game by virtue of their interest in the stakes of the field, what Bourdieu calls *illusio*. While agents may ferociously oppose one another in their struggle for power, they concur that the stakes of the field are worth fighting for and become *invested* in the game and its activities. The opposite of *illusio* is *indifference* – agents are not only uninterested in the stakes of a field, they are 'unmoved by the

game' (Bourdieu and Wacquant 1992 p. 116). Bourdieu borrows the term '*ataraxy*' from the Stoic philosophers, whose aim it was to reach an untroubled state of mind, as an antonym for *illusio*.

There is another way that a field is dissimilar to a game. While the struggles that take place in a field follow certain logic, the rules of a field are not explicit or codified but are themselves *a stake in the struggle of the game*. The boundary of the field too, and thus who is 'in' and who is 'out' of the game, is also a matter of contestation. Thus, agents may improve their position in the field by altering the rules of the game such as by changing the relative values of the different types of capital or contesting the boundary of the field. These are all at stake in the struggle of the game. What better way, for example, to gain dominance over an opponent than by discrediting the major type of capital she possesses or by tracing the limits of the field so as to exclude her?

At this stage it is helpful to consolidate these ideas. The following quotation encapsulates the triad of field, capital and habitus in a few short but dense lines:

A field consists of a set of objective, historical relations between positions anchored in certain forms of power (or capital), while habitus consists of a set of historical relations 'deposited' within individual bodies in the form of mental and corporeal schemata of perception, appreciation, and action.

(Bourdieu and Wacquant 1992 p. 16)

Thus we see that field and habitus are both manifestations of power, the former being a set of power relations objectified within institutions and the latter being a set of power relations inscribed within individuals. What is more, they 'function fully *only in relation to one another*' (Bourdieu and Wacquant 1992 p. 19, emphasis in original). Put another way, if a field is the game, habitus is the 'sense of the game' (Bourdieu 1990a) an appreciation for the operations of the social structures that agents inhabit.

With regard to the charge that Bourdieu's theory is deterministic, it must be made clear that he does not rule out strategic calculation nor does he imply that agents mindlessly reproduce the structure of the field of which they are a product, as automatons. Instead, habitus describes the real-world spontaneity with which agents react to each situation, what Wacquant calls the 'fuzzy logic of practical sense' (Bourdieu and Wacquant 1992 p. 19). But while agents may consciously calculate and act, the potential lines of their actions are determined by the habitus which may be thought of as 'systems of durable, transposable dispositions' (Bourdieu 1977 p. 72), inherited through exposure to a field. In other words, Bourdieu's contention is that social action is not a mechanistic obedience to a rigid set of rules but rather that it follows a

dynamic logic, a creative rationale that responds to the regularities of the field that are perceived and re-configured by human agents who are conditioned to play the game. In Bourdieu's words:

There is action, and history, and conservation or transformation of structures only because there are agents, but agents who are acting and efficacious only because they are not reduced to what is ordinarily put under the notion of individual and who, as socialised organisms, are endowed with an ensemble of dispositions which imply both the propensity and ability to get into and play the game.

(Bourdieu and Wacquant 1992 p. 19)

From this we understand that Bourdieu's subject is not 'devoid of choice' as Griller (1996 p. 21) suggests; nor is Bourdieu trying to 'deny causal powers to individual humans' as Elder-Vass (2007 p. 332) seems to think. But the problem is that meaningful social action occurs in the process of engagement with structures (fields) and this action is only possible through access to the forms of capital recognised within those fields as well as the disposition and skill to play the game. While everyone is free to dream, what we are actually able to *do* in terms of social practice depends on our ability to wield power and interact with social structures.

A final point will be made regarding Bourdieu's notion of habitus: it is durable but not eternal. Like field, habitus has a historical dimension. In this sense it is 'embodied history, internalised as a second nature and so forgotten as history – the active presence of the whole past of which it is the product' (Bourdieu 1990b p. 56). An individual's habitus is the product of his entire social trajectory through any number of fields and sub-fields. Just as the struggles within a field inscribe on it a social history which is 'carried along' by the field, so too does habitus have inscribed upon it an agent's entire social history as a series of struggles within various fields. While habitus is an embodied structure that follows a certain transposable logic, it is also a '*structuring* structure' (Bourdieu 1990b p. 53) that transforms or reinforces the logic of field in terms of its regularities, limits, recognised forms of capital and so forth. Hence, habitus and field are both durable but transformable reflections of one another.

2.4 *Theory as method*

In reference to the title of this chapter, it is important to note that Bourdieu never set out to develop a 'theoretical framework' as such. He insists that the concepts of field, capital and habitus were developed as 'a set of *thinking tools*' (Wacquant 1989 p. 50),

that is, temporary constructs derived from and employed to guide empirical work. He goes further to say, 'I never felt the urge to retrace the genealogy of the concepts I have coined or reactivated, like those [of] habitus, field, or symbolic capital' (Wacquant 1989 p. 51).

Of the notion of 'field' in particular, Bourdieu says that it 'functions as a conceptual shorthand of a mode of construction of the object that will command, or orient, all the practical choices of research' (Bourdieu and Wacquant 1992 p. 228). As far as the choice of research methods goes, Bourdieu often used both qualitative and quantitative techniques together, such as in *Distinction* (1984), and was as comfortable with ethnographic observations as he was with the standard, closed questionnaire. In order to construct properly the research object, Bourdieu says '[w]e must try, in every case, to mobilize all the techniques that are relevant and practically useable, given the definition of the object and the practical conditions of data collection' (Bourdieu and Wacquant 1992 p. 227).

But this does not mean that anything goes in terms of research methods. What Bourdieu makes clear is that the epistemological groundwork needs to be done before considering which methods are suitable and practical. For Bourdieu, theoretical and empirical work needs to '*interpenetrate each other entirely*' (Bourdieu and Wacquant 1992 p. 35). In fact, he views the rigid separation between theory and methodology in the dominant tradition as unproductive in terms of the 'construction of the object', for him the most 'crucial research operation' (ibid. p. 224). By this he means the process of establishing the power relations in the field that is being studied, an object that inevitably contains the researcher:

The construction of the scientific object requires first and foremost a break with common sense, that is, with the representations shared by all, whether they be the mere commonplaces of ordinary existence or official representations, often inscribed in institutions and thus present both in the objectivity of social organizations and in the minds of their participants. *The pre-constructed is everywhere*. The sociologist is literally beleaguered by it, as everybody else is. The sociologist is thus saddled with the task of knowing an object – the social world – of which he is the product, in a way such that the problems that he raises about it and the concepts he uses have every chance of being the product of this object itself. (Bourdieu and Wacquant 1992 p. 235)

The construction of the object goes hand-in-hand with what Wacquant (1992 p. 36) calls Bourdieu's 'signature obsession with reflexivity'. Bourdieu advocates that at every stage in the research, the researcher must be aware of introducing bias by projecting his relation *to the object* onto the research object. This does not only mean accounting

for position in social space in terms of gender, language or race and the effects that these might have on the relation to the object. Bourdieu is mostly concerned about the possible '*intellectual bias* which entices us to construe the world as a *spectacle*, as a set of significations to be interpreted rather than as concrete problems to be solved practically' (Bourdieu and Wacquant 1992 p. 39). This is linked to the act of the 'second epistemological break' discussed above and can be described in these terms: the subjectivity of *the researcher* must also be reinserted into the field, particularly in terms of her 'scholarly gaze' on the world.

This brings us to a set of critiques of Bourdieu's work. The first comes from Griller (1996) whose comments about determinism in Bourdieu's work were referred to above. He further argues that Bourdieu's belief in the efficacy of reflexivity reveals the 'positivistic tendencies' in his work. This indicates Griller's dissatisfaction with Bourdieu's attempt to reinsert the subject into his work as indicated by the title of his paper '*The Return of the Subject?*'. Griller's critique extends to Bourdieu's ethnographic practice which actually serves, he argues, to reproduce the traditional distance between the ethnographer and his subject.

But the heart of Griller's critique concerns his opinion that Bourdieu's theoretical framework is overly prescriptive. In referring to the research process described in *Distinction* and Bourdieu's use of 'heuristic schemes', Griller had this to say:

It is not, however, that his research is guided by "heuristic schemes" that is the major problem, but rather that his research is ultimately tautological. Though he presents his theoretical ideas relating to human practice as merely a guide to methodology...they do much more than that. If we begin research from the premise that within a field there will be positions in the social space, an homologous set of dispositions, *habitus*, which produce, through an interaction with the field, strategies geared to the pursuit of capital, power and dominance, what is left to study? (Griller 1996 p. 15)

In a similar vein, Nash (2002) argues that 'dispositional theories' like Bourdieu's are 'transparently vulnerable to the dangers of a circular argument' (p. 277). As the following quotation suggests, he links it to Bourdieu's approach to methodology that he believes is less than rigorous.

The extent to which such models make sense at all, they do so because what in the contest over methodology is often dismissed as 'subjective' and 'non-scientific' in so-called qualitative work, is replaced by a taken-for-granted knowledge of social practice. (Nash 2002 p. 280)

In response to these comments, starting with Griller's, it must be accepted that reflexivity has its limits. This is discussed by Swartz (1997 pp. 279–283) in relation to Bourdieu's own academic trajectory but can also be understood in terms of the difference between Bourdieu's *discourse on reflexivity* and the realities of research work. That Bourdieu is aware of the issue is clear in *The Weight of the World* (Bourdieu et al. 1999), a study in which he and his co-workers explore social suffering through a series of unstructured interviews. In reflecting on the methodology for this work, Bourdieu describes the ideal in terms of minimising the social effects of the interview but also notes the uncontrollable factors inherent in the interview process that prevent the complete elimination of bias. Thus, Bourdieu's emphasis on the importance of reflexivity and, related to this, his mode of ethnography, are not the result of 'postivistic tendencies' in his theory as Griller (1996 p. 16) suggests but are instead indicative of the practical difficulties in operationalising the concepts in his framework.

With regard to Griller's (1996) critique that Bourdieu's research is 'ultimately tautological', there are two things that need to be considered. Firstly, because of the level of abstraction at which Bourdieu makes his assumptions about the operations of society, the application of these ideas to a practical research situation means that the findings are not simply a repetition of the theory but explain practice at an entirely different level. Griller seems to be implying that Bourdieu's research is carried out simply to confirm his theory but this is not the case. Furthermore, since the framework is directly concerned with issues of power, dominance and oppression, uncovering their operations is not only interesting, it can have very real ethical consequences.

Secondly – and this relates to Nash's (2002) point about circular argument – it is true that Bourdieu assumes that social structures tend to reproduce themselves. And indeed, there is often a correspondence between the structure of the field and the dispositions of agents occupying positions within the field. It is for this reason that analysing the changes that occur in a field over time is essential (Bourdieu and Wacquant 1992) since it illuminates those that are attuned to the practices of a field and those that are 'as fish *out of water*'. At its base, the 'circular argument' critique stems from concerns about determinism and habitus that have been dealt with above (also see Harker 1984).

In terms of the critique that Bourdieu's theory determines the outcome of the research rather than simply guide his methodology, it is true that Bourdieu is often not explicit as to why he chose a particular methodology in his 'construction of the object'. This is

also because, as already discussed, he is critical of the deliberate separation between theory and methodology that distorts the very object that they are trying to discover. By way of a guide, Bourdieu has suggested that a suitable methodology – or mode of proceeding – within his framework consists of three ‘necessary and internally connected moments’ (Bourdieu and Wacquant 1992 p. 104): firstly, the position of the field must be analysed in relation to the field of power; secondly, the objective structure of the relations between positions in terms of the specific forms of capital available within the field must be mapped out; and thirdly, the habitus of agents, in terms of their disposition and trajectory, must be analysed.

In terms of analysing the field in relation to the field of power, Bourdieu’s detailed study of the university field, *Homo Academicus* (Bourdieu 1988) as well as *The field of cultural production* (Bourdieu 1993) are drawn on. Since this is essentially an outworking of his theoretical perspective, this first ‘moment’ makes up the final section of this chapter. The second and third ‘moments’ are simultaneous in this study since the habitus of agents are used to map out the objective structure of the field. This is done in the first part of *Findings and discussion*, in Chapter Six. The specific methods that are utilised in this process are discussed in the following chapter, *Methodology and research methods*.

2.5 *The issue of autonomy and the field of engineering education*

Since Bourdieu first coined the term ‘cultural capital’ in the 1960s (Bourdieu 1974 [1966]) it has become an important concept in his theoretical scheme, as we have seen. How cultural and economic capital operate in society is the starting point for a discussion about the issue of autonomy. According to Bourdieu, the distribution of the two major forms of capital in society, economic and cultural capital, follows two competing principles of hierarchisation. This results in a chiasmatic structure, where an increase in cultural capital corresponds with a decrease in economic capital and vice versa:

The distribution according to the dominant principle of hierarchization [*sic*]⁹ – economic capital – is, as it were, ‘intersected’ by the distribution based on a second principle of hierarchization – cultural capital – in which the different fields

⁹ Since Bourdieu uses the American form here, it is left as such in quotation marks without ‘[*sic*]’ hereafter. In the text, the Oxford form is used.

line up according to an inverse hierarchy, that is, from the artistic field to the economic field. (Bourdieu 1996 p. 270)

This relationship is illustrated in Figure 2.1 below, with 'EC' and 'CC' designating economic and cultural capital respectively.

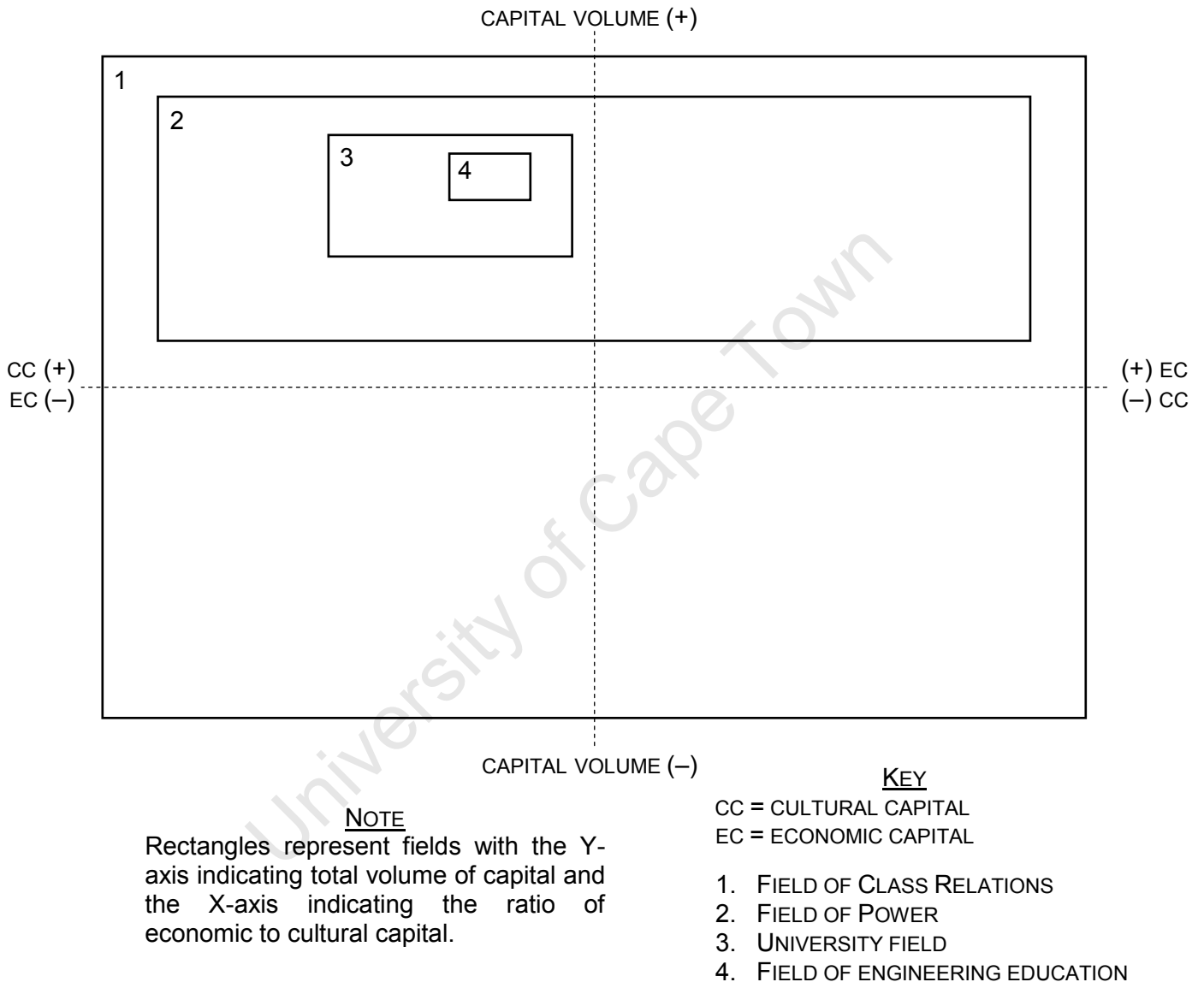


Figure 2.1. The distribution of capital in social space – adapted from Bourdieu (1993 p. 38).

What Bourdieu calls the *field of class relations*, represented by rectangle no. 1, designates society as a whole. The chiasmatic structure spoken of describes the distribution of capital in the *field of power* (rectangle no. 2). The field of power may be defined as a kind of 'meta-field' that 'operates as an organizing principle of

differentiation and struggle throughout *all* fields' (Swartz 1997 p. 136). As can be seen, it is located in the sector of greatest volume of capital within the field of class relations i.e. in the upper half of rectangle no. 1 in Figure 2.1. The field of power can be likened to a 'force field' with two principles simultaneously exerting their effects: the principle imposing economic capital is dominant towards one pole – the right hand side of rectangle no. 1 – while the principle imposing cultural capital is dominant towards the other pole. An object within the field will be influenced by these principles i.e. will experience a social 'force' depending on its affinity for these types of capital.

In the quotation above, it was mentioned that the different fields 'line up' within the field of power, 'according to an inverse hierarchy that is, from the artistic field to the economic field' (Bourdieu 1996 p. 270). In reference to rectangle no. 2 in Figure 2.1, the artistic field would lie farthest to the left while the economic field exemplifies the economic hierarchy and would thus lie farthest to the right. As we note from Figure 2.1, the university field (rectangle no. 3) occupies an intermediate position (Bourdieu 1996), but is closer to the artistic field (Swartz 1997). The university field occupies a *dominant* position within the broader field of class relations but because economic capital 'trumps' cultural capital, it also occupies a *dominated* position within the field of power.

Bourdieu argues that the chiasmatic structure within the field of power 'distributes and ranks *all* other fields of struggle' (Swartz 1997 pp. 137–138). In other words, the competing principles of hierarchisation that structure the field of power impinge on the university field and structure it in a similar way. This is linked to the observation in the previous section that fields are *relatively autonomous* spaces that prescribe their own values and regulative principles. The qualification 'relatively' in the above phrase is crucial in understanding how fields operate. This notion is unpacked by Maton (2005) in his analysis of university autonomy and higher education policy:

A field's *autonomy* is illustrated by the way it generates its own values and markers of achievement, but the *relative* nature of this autonomy means these values are not alone in shaping the field; economic and political power also play a role, albeit in a form specific to each field. (Maton 2005 pp. 689–690)

We have already observed that the university field is located in a dominated position in the field of power which is due to the fact that a non-material resource, knowledge, governs this field. Just as every field has its own logic, the university field is governed by the maxim 'knowledge for its own sake' and thus has a relatively high degree of autonomy (although not as high as the artistic field) within the field of power. Since the

dominant principle operating within the field of power is the preoccupation with economic profit, this is opposed to the dominant principle in the university field and its concern, first and foremost, with knowledge. Despite this independence, however, the university field also 'continues to be affected by the laws of the field that encompass it, those of economic and political profit' (Bourdieu 1993 p. 39). It is for this reason that the principle impinging on the university field from the dominant pole of the field of power, economic capital, may be termed the '*heteronomous* principle of hierarchization' (Bourdieu 1993 p. 38) since it is at odds with the principle underpinning the university field. On the other hand, the principle impinging on it from the pole of cultural capital assists in the maintenance of its autonomy and may thus be termed the '*autonomous* principle of hierarchization' (ibid. p. 38).

We now turn to Bourdieu's major work on the university field, *Homo academicus* (1988), in order to discover the origins of the two forms of power operating within this field. Bourdieu describes the heteronomous principle, that which corresponds to economic capital, as being 'specifically temporal and political' (1988 p. 48) and increasing in dominance as we move from the faculties of the pure sciences to the professional faculties of law and medicine. In terms of its links to the temporal realm, engineering would be located closer to this pole, as it has been positioned in Figure 2.1. On the other hand, the autonomous principle of hierarchisation which corresponds to cultural capital, is 'founded on the autonomy of the scientific and intellectual order' (Bourdieu 1988 p. 48) and becomes increasingly dominant as we move from the professional faculties towards the pure sciences.

The antagonistic principles impinging on the university field give rise to specific forms of capital within it. It is important to note that these forms of power are simply reinterpretations of economic and cultural capital in terms of the specific logic of the university field that values knowledge above all else. The first type of capital that occurs in the university field is *intellectual capital* (Bourdieu also calls it 'scientific capital'). This type of capital depends on the principle of legitimation that corresponds to the *cultural hierarchy* and is founded on the autonomy of the scientific and intellectual order. Intellectual capital may be described as 'scientific renown' (Bourdieu and Wacquant 1992 p. 76) and is a 'collection of powers of different kinds' (Bourdieu 1988 p. 79) that includes: citations, attending and speaking at conferences and seminars, 'the scientific power or authority displayed through the direction of a research team' (ibid.), the symbolic power of securing research funds from industry, a research fellowship at a particular institute, being part of the editorial board of a journal

and having supervised Masters, PhD and post-doctoral students. These are all ways in which intellectual prestige is accumulated.

At the other pole of the university field is the form of power that corresponds to the economic and political order but is reinterpreted through the logic of the university field as *academic capital*. While intellectual capital reinforces the autonomy of the university field, academic capital can be considered more 'temporal' (Bourdieu 1988 p. 48) than intellectual capital since it depends on the principle of legitimation that corresponds to the *social hierarchy* and is aligned with economic and political power. Bourdieu suggests that '[a]cademic capital is obtained and maintained by holding a position enabling domination of other positions and their holders' (1988 p. 84) and it therefore often corresponds to position within the institutional hierarchy. This type of semi-institutionalised power is also often 'closely linked with age' (Bourdieu 1988 p. 87) as well as 'with *position* and less to its holder' than intellectual capital (ibid. p. 297).

As mentioned above, the field of power operates as an organising principle across other fields. It therefore follows that the structure of capital in the university field also follows a chiasmatic arrangement. This is illustrated in Figure 2.2 which is an enlargement of the relevant section of Figure 2.1. In addition, the specific forms of power operating within the university field are made explicit.

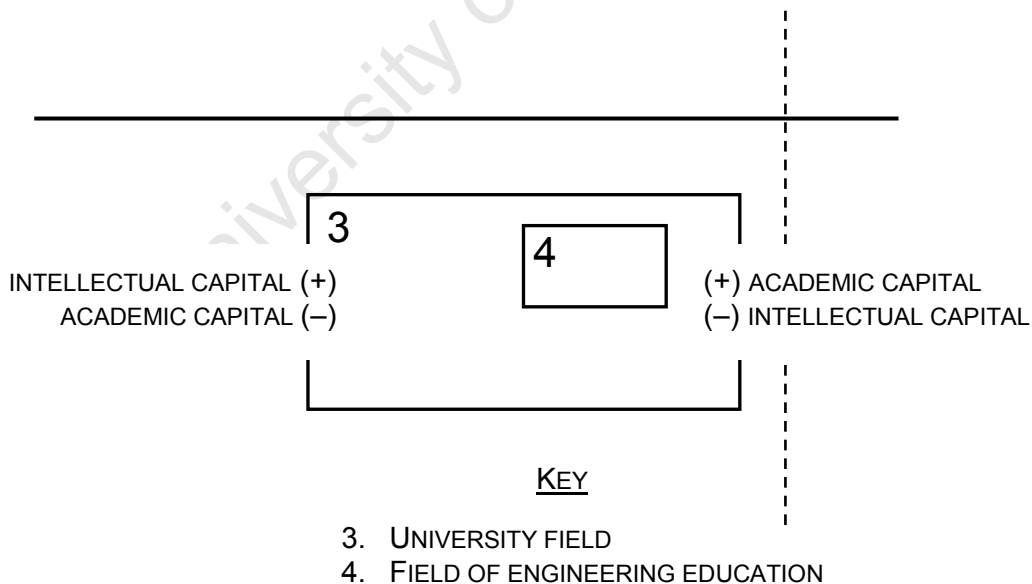


Figure 2.2. An enlarged section of Figure 2.1 showing the university field with its specific forms of capital and the field of engineering education within it.

Since the university occupies a *dominated* position in the field of power – to the left of the centre line in the diagram above – intellectual capital is bound to be more highly prized than academic capital. The reason for this is because it corresponds to the autonomous principle of hierarchisation and the maxim ‘knowledge for its own sake’. The opposite is true for academic capital since it corresponds with the temporal realm and works against the logic of the field. In the excerpt below, Bourdieu describes the nature of these two forms of capital in some detail:

It is understandable that academic power is so often independent of specifically scientific [intellectual] capital and the recognition that it attracts. As a temporal power in a world which is neither actually nor statutorily destined for that sort of power, it always tends to appear, even in the eyes of its most confident possessors, as a substitute, or a consolation prize. We can understand too, the profound ambivalence of the academics who devote themselves to administration towards those who devote themselves, successfully, to research – especially in a university system where institutional loyalty is weak and largely unrewarded. (1988 p. 99)

Despite this tension between the holders of academic and intellectual capital, there is also a possibility of ‘doubling up’ (Bourdieu 1988 p. 104). In other words, it is possible that intellectual and academic capital may complement one another (pp. 113–114). Although they stem from opposite poles, in the centre of the field these forms of power reinforce one another and result in a special form of symbolic power that can be wielded quite effectively in the field.

It is important to note that the *field of engineering education*, rectangle no. 4 in the diagram above, should not be thought of as part of the university field as an engineering faculty is part of an institution. Indeed, one must be careful to assume that the field of engineering education is a sub-field of the university field or that the Faculty of Engineering somehow fits into a wider ‘institutional field’. The approach here is to accept the notion that there is a ‘conflict of the faculties’ (Bourdieu 1988 p. 36–72) as dictated by the principles of autonomy/heteronomy but to avoid an attempt to organise the faculties in terms of the relations of power between them (which would prove to be an onerous exercise) or in terms of their knowledge structure which is not the focus of this study.

Moreover, the use of the term ‘education’ is not intended to limit this study to the realm of *education* (as in instruction) whether at undergraduate or postgraduate level; nor should the notion of the ‘field of engineering education’ be confused with the emerging *research field* of engineering education, as a part of higher education studies to which

this thesis is to contribute. Instead, the *field of engineering education* should be thought of as a field in its own right, largely operating according to the basic principles of the university field but with a special connection to industry that values the skills and expertise of the engineer. The forms of power that are valorised within this field and its particular logic are investigated in the present study.

Before we draw on an investigation into the South African university field that utilised Bourdieu's framework, a final concept in Bourdieu's armoury needs to be mentioned: the notion of *refraction*. Bourdieu uses the metaphor of a prism to describe the effects of external determinants on a field. Just as a prism refracts light, so does a field retranslate external determinants in terms of its own logic. Importantly, external determinants 'can have an effect only through transformations in the structure of the field itself' (Bourdieu 1993 p. 14). Furthermore, the degree of autonomy of a field can be thought of as its 'refractive index' – the higher the refractive index of a field, the more able it is to retranslate external determinants and maintain its autonomy.

In her application of Bourdieu's framework to the South African university field, Naidoo (2004) pays special attention to the relationship of the university field with the political field. She explored the vastly different strategies that two universities (she called one 'Mount Pleasant University' and the other 'Freedom University') pursued when the tertiary sector was opening up to previously disenfranchised black African students at the time of political transition in the 1990s. Interestingly, Naidoo refers to foundation programmes as 'subdegree courses', describing them as part of the strategy by an institution to insulate 'mainstream programmes from students from non-traditional backgrounds' (p. 462). This obviously has a bearing on the present study.

At this stage it is worthwhile exploring her arrangement of the university field into three tiers:

1. The *dominant tier* consisting of the white English-medium universities;
2. The *intermediate tier* consisting of the Afrikaans-medium, previously white universities; and
3. The *subordinate tier* consisting of the universities 'set up for the different groups of black South Africans' (Naidoo 2004 p. 461).

According to Naidoo, institutions in these tiers were related to the political field in terms of their degree of autonomy. The English-medium universities were 'relatively free from direct state control and...positioned in the autonomous sector' (Naidoo 2004 p. 461) while the Afrikaans-medium and black universities had heteronomous

relationships with the political field. It is obvious that this arrangement has been disrupted since the 1990s, the time at which Naidoo carried out her investigation.

Since this time, substantial government intervention in the tertiary sector has meant that institutions are no longer officially differentiated by race or language. Furthermore, following the National Plan (DoE 2001c), a number of mergers have occurred *across the tiers*, in some cases 'uniting' institutions from all three tiers. What were previously 'technikons' (and not included in Naidoo's model) have become 'universities of technology' and in some cases have joined with universities (again across the tiers) to become comprehensive universities. But although the structure of the field has changed considerably, if we bear in mind that a field carries its entire social history along with it, this work remains relevant and has influenced the choice of institutions as case studies. This is dealt with in the following chapter.

University of Cape Town

Chapter 3 – Methodology and research methods

In light of the discussion about the construction of the research object in the previous chapter, the methodologies and research methods utilised for this study are explored here. Two methodologies are included: *case study* and *narrative inquiry*, both of which are entirely compatible with Bourdieu's theoretical framework. In addition, general approaches to data collection, interviewing, ethics and issues of validity, reliability and transferability are discussed.

3.1 *Case study and choice of cases*

Grenfell and James (1998) write that '[i]n many respects, case studies offer an excellent opportunity to research in a Bourdieuan way' (p. 173). These authors distinguish between case studies of individual actors and institutional case studies. The former have to do with an analysis of the 'particular habitus constituents and life trajectories' (Grenfell and James 1998 p. 173) of agents within social fields. In this regard, Flyvbjerg (2001) notes that case studies provide insight into 'real-life situations' and allow a 'nuanced view of reality, including the notion that human behaviour cannot be meaningfully understood as simply...rule-governed acts' (p. 72). This links directly with Bourdieu's notion of habitus and is discussed in more detail in the section below that deals with the in-depth interviews.

The latter, i.e. institutional case studies, enable a "mapping of the field" and the positions within it' (Grenfell and James 1998 p. 174). Bourdieu (1992) 'strongly advise[s] researchers to study at least *two* objects' within a field to enable the discovery of 'the invariant properties that [each object] conceals under the appearance of singularity' (p. 234). The aim in the present study is to map the field of engineering education in order to discover the properties of the field. This analysis is expected to also reveal differences between the case studies.

Considering that the decision was made to investigate *engineering* foundation programmes, it was only possible to choose case study institutions located in two of the three tiers of Naidoo's (2004) model. While a number of options were available for historically white institutions (to represent the dominant and intermediate tiers), finding

an institution belonging to what was previously the 'subordinate tier' was not possible. In fact, only one previously black institution has ever offered engineering in South African, namely, the University of Durban-Westville, an institution created for the Indian population group under apartheid. However, this institution was merged with the University of Natal in 2004 to become the University of KwaZulu-Natal (UKZN). Since the dynamics of institutional mergers are not the focus of this study – and would probably have served to obfuscate the issues around foundation programmes (see Mathieson 2007) – two cases were deemed sufficient.

The institutions that were chosen were thus the English-medium University of Cape Town and Stellenbosch University, a predominantly Afrikaans-medium institution. There are two reasons why these institutions were picked: firstly, they are among the oldest institutions in the country. In fact, Philips (2003) suggests that the institutional model imported from Scotland upon which both of these institutions were established, constitutes the foundation of the higher education sector in South Africa. In terms of the present condition of the university field, there is no doubt that these institutions are two of the most influential and the following chapter gives substance to this claim. Secondly, both have well-established engineering faculties that have offered foundation programmes for some time: 24 years in the case of UCT and 17 years in the case of Stellenbosch.

3.2 *Data collection*

There are four distinct sets of data that are drawn on for this study. The first set has to do with the genesis and development of the case study institutions with respect to the political and economic realms. This includes various historical texts such as Walker (1929) and Philips (1993) with respect to UCT, and Thom (1966) with respect to Stellenbosch. Official university documents such as yearbooks and cultural documents such as newspaper clippings, memoirs and class photographs were also consulted. These data contribute to the description of the socio-historical context that makes up the first part of Chapter Four.

The second part of Chapter Four focuses on the development of government policy around foundation programmes, beginning in 1990. Official policy statements, working papers and policy analyses are the second set of data drawn on for this study. This

policy analysis sets the stage for a comparison of the perspectives of the social agents and policy rhetoric, one of the aims articulated in Chapter One.

The third set of data contributes to a detailed description of the engineering foundation programmes at each of the case study institutions. This is presented in Chapter Five. It includes a description of the curriculum structure of the foundation programme (and its evolution) as well as its relationship to the mainstream, central academic development structures within the university and industry. In addition, student registration and throughput statistics, broken down by population group, are included. With regard to these data, it is important that they are not read as *absolute indicators of success* but in conjunction with the institutional context described in Chapter Four. This point is worth emphasising: the purpose of these data is not to compare the case studies in a quantitative manner but rather to give substance to the description of the case studies in preparation for the qualitative analysis that is to follow.

This qualitative analysis draws on the fourth and final set of data that can be considered the primary data for this study: a set of in-depth, semi-structured interviews conducted with selected academics from both institutions. An industry representative who was involved with the foundation programmes at UCT was also interviewed.

These data make up the *Findings and discussion* that are presented in Chapter Six. It is to the issues of interviewing and narrative inquiry that this chapter now turns.

3.3 Interviews

As a method of data collection, interviewing is one of the most effective means of grasping actors' viewpoints within a realist conception of social science. Kvale (1996) effectively demonstrates that 'a strength of the interview conversation is to capture the multitude of subjects' views of a theme and to picture a manifold and controversial human world' (p. 7). This reminds us of Bourdieu's epistemological position and his endeavour to transcend subjectivist and objectivist modes of knowledge through habitus. Although Bourdieu tends to combine qualitative and quantitative research techniques (see Bourdieu 1984; 1988, 1996), it is significant that in a later piece of work, *The Weight of the World* (Bourdieu et al. 1999), he and his colleagues rely completely on in-depth, face-to-face interviews. In fact, transcriptions of about 40 interviews, each preceded by a brief analysis, make up 90% (in terms of pages) of the *Weight of the World*. This work is an inspiration for the present study.

In qualitative science, it is well understood that an interview is a co-construction (Block 2000). Kvale (1996) emphasises that it is an *inter view*, that is, an 'inter-exchange of views between two persons conversing about a theme of mutual interest' (p. 14). In Bourdieu's terms, an interview should be thought of as the meeting of two habitus, that of the interviewer and the respondent. The steps taken to reduce the potential of symbolic violence exerted through this encounter are discussed in Section 3.4 that deals with issues of validity. For the moment, the discussion proceeds with the issue of identifying and choosing interview respondents.

3.3.1 Identifying and choosing interview respondents

Following Lincoln and Guba (1985), purposive sampling techniques were employed in choosing respondents with two broad aims:

1. To determine the structure of the field of engineering education through interviews with mainstream academics;
2. To explore the nature and functioning of the foundation programmes by interviewing people who had been involved in the programme in some way or were presently involved as managers or lecturers.

With regard to the first aim, mainstream professors in the engineering faculties at UCT and Stellenbosch were targeted. The reason for choosing professors was the likelihood of prolonged exposure to the operations of the field. Nine full professors were emailed and asked whether they would be willing to participate in the study. Six responded positively and interviews were set up. During the process, care was taken to ensure that all four of the traditional disciplines – chemical, civil, electrical and mechanical engineering – were represented.

With regard to exploring the dynamics of the foundation programmes, choosing respondents at UCT was easier than at Stellenbosch. Two respondents who are retired but who were both affiliated with ASPECT can be considered key informants: the one is a retired associate professor who was the first manager of ASPECT; the other was the Anglo American liaison officer with ASPECT when it was first launched. Various other 'academic development managers' – some based in CHED (Centre for Higher Education Development) within UCT and some within the faculty of engineering – were also interviewed. Lastly, the entire complement of full-time staff members who lectured on ASPECT in 2008 was interviewed.

At the University of Stellenbosch, an initial interview with a couple of managers from the central academic development unit called Student and Academic Support (SAS¹⁰) guided me in terms of choosing other respondents involved in academic development. This led to interviews with a mainstream lecturer (not a professor) in engineering as well as a staff member lecturing on the foundation programme – then called the Extended Degree Programme (EDP) – in engineering. As will be seen, the structure of the foundation programmes at Stellenbosch is quite different from that at UCT which is why only one academic actually lecturing on the programme was interviewed. A further two academic development managers, one retired and one still working at the university, were also interviewed

The 21 respondents whose interview data contributed to this study are included in Table 3.1. The information here is deliberately sparse since a biographical sketch is included when each respondent is introduced in *Findings and discussion*, Chapter Six. The purpose here is simply to alert the reader to the structure of that chapter (with its sub-sections 6.1, 6.2 and 6.3) and how this relates to the time of service and institutional affiliation of the respondents.

Table 3.1. Some basic information about the respondents interviewed for this study.

Respondent	Institution and/or other details
<i>Mainstream professors (Section 6.1)</i>	
Prof Andrew Edmund	UCT: started 1975
Prof Etienne Eksteen	Stellenbosch: started 1983
Prof Daniel Marais	Stellenbosch: started 1984
Emer Prof Sebastian Nicholls	UCT: started 1965
Prof Niels Nortjie	Stellenbosch: started 1982
Prof Louis Terblanche	Stellenbosch: started 2006
Assoc Prof Steven Williams	UCT: started 1971, retired 2005

<i>Academic development managers (Section 6.2)</i>	
Prof Trevor Norfolk	UCT: started 1984
Assoc Prof Zachery Fischer	UCT: started 1988
Dr André Hartenburg	Stellenbosch: started 1988
Dr Leonard Naudé	Stellenbosch: started 1995, retired 2003
Dr Zelda Atkinson	Stellenbosch: started 2003
Dr Katherine Neethling	Stellenbosch: started 2006

¹⁰*Studente- en Akademiese Steun.*

<i>Industry, foundation programme and mainstream lecturers (Section 6.3)</i>	
Shawn Donovan	Anglo American: involved with ASPECT from 1988
Dr Eric Donaldson	UCT: started 1987, managed ASPECT
Emily Avani	ASPECT: started 2005
Xavier Edwards	ASPECT: started 2000
Dimpho Moroka	ASPECT: started 2007
Dr Glenda Yates	ASPECT: started 2006
Assoc Prof Sarel de Beer	Stellenbosch: started 1982, lecturing on EDP
Dr Eleanor Emmett	Stellenbosch: started 2007, mainstream lecturer

3.3.2 Interview protocol

The interviews were semi-structured and were guided by the schedule in Appendix A. Before the start of the interview, respondents were told that their identity would be protected as much as possible through the use of pseudonyms of persons and institutions and that they were welcome to review the research at any stage. The respondent was also asked whether it would be acceptable to record the interview and, following an answer in the affirmative (no one refused this request), a digital recorder was turned on.

In order to gain an understanding of the trajectory of the respondent, the first question was always, 'How did you get into higher education?' or, 'Please can you give me a short biography?' The intention was to identify the reason for the respondent's investment in the field – his or her *illusio* in Bourdieu's terms – and a construction of habitus. Although it obviously depended on the level of detail in the interviewee's answer, the response to this first question was often probed for the details of what exactly attracted the respondent to higher education. Given the important status of conflict in Bourdieu's theory, if the respondent alluded to tensions and struggles, these were also probed.

The interview was then steered towards the foundation programme. If the respondent was not explicitly connected to the programme, her opinion about the programme and understanding of its aims was sought. If the respondent had been or was currently involved with the programme, his connection to the programme was explored. The respondent's opinion of the role of government in higher education and, in particular, its efforts to fund foundation programmes, was also investigated. Lastly, the

respondent's connection to industry was explored in terms of consulting work or some other connection.

3.3.3 Transcription and coding

I transcribed most of the interviews but where professional transcribers were used, the transcription was thoroughly checked with the audio recording in order to improve reliability. In this process, the transcription style was also standardised (Kvale 1996 pp. 169–170). While the transcribed texts can be considered the primary data source for this study, the audio recording was retained and referred to in order to ascertain meaning and emphasis later. In the writing-up stage, interviewee quotations were often re-transcribed in an attempt to capture the exact sense of the verbal statement.

The transcription was then colour-coded by hand according to six categories. The reason for this 'loose' coding was simply to organise the data for the next stage of analysis. The categories employed in the coding process are listed in Table 3.2 with a description of the reason for including the coding category. As can be seen, these categories are related to Bourdieu's framework but are deliberately general so as to avoid imposing a rigid scheme on the data.

Table 3.2. The coding categories used to organise the interview transcriptions.

Code category	Reason
<i>industry</i>	These categories were included in order to identify the sections of the interview that dealt with the relationship of power between the university field and these realms.
<i>political</i>	
<i>research</i>	Care was taken not to set research and teaching up against each other in the interview situation but discussion often revolved around tensions between these activities.
<i>teaching</i>	
<i>foundation</i>	This category was included mainly for respondents from the mainstream in order to flag their references to the foundation programme.
<i>conflict</i>	Since conflict, according to Bourdieu, is the motor cause of all social activity, this category was included to flag instances of struggle. These instances often provided insight into characteristics of the field.

3.3.4 Narrative inquiry

As mentioned in the previous chapter, the second and third 'moments' of Bourdieu's methodology are accomplished simultaneously in this study since the habitus of agents are used to map the objective structure of the field (see page 45). In other words, it is through the drawing together of the 'habitus constituents and life trajectories' (Grenfell and James 1998 p. 173) of individual actors that the forms of capital, boundary of the field, implicit rules of the game etc. are determined. Central to this understanding is the notion that social action must be understood in terms of both the position *and momentum* of the actor in social space. With this in mind, the methodological tools of narrative inquiry in the mode of Polkinghorne (1995) are employed.

According to Polkinghorne (1995) narratives – or stories – are particularly suited as the 'linguistic form in which human experience as lived can be expressed' (p. 7). He continues to say that a 'storied narrative...preserves the complexity of human action with its interrelationship of temporal sequence, human motivation, chance happenings, and changing personal and environmental contexts' (Polkinghorne 1995 p. 7). Kvale (1996) and Mishler (1986) both explore the structuring of meaning through narratives and note the (often overlooked) prominence of narrative in the interview process. Flyvbjerg (2001), drawing on Clifford Geertz, even goes so far as to say that '[n]arratology, understood as the question of "how best to get an honest story told," is more important than epistemology and ontology' (p. 137).

Polkinghorne (1995) defines two types of narrative inquiry: the first is 'paradigmatic' analysis which draws on a set of narratives, the aim being to 'identify particulars as instances of general notions or concepts' (p. 13). These concepts may be derived from theory, as in the present study, or they may emerge from the data itself. The second type is 'narrative analysis' which 'gathers events and happenings as its data and uses narrative analytic procedures to produce explanatory stories' (Polkinghorne 1995 p. 5). This is similar to Kvale's (1996) notion of 'narrative structuring' (p. 192). The difference between paradigmatic analysis and narrative analysis is that in the first type, the narrative is produced by the researcher herself whereas in the second type, the data is already in the form of a narrative as told by the respondent.

These two types of inquiry were both used for the present study. After the interviews were transcribed and loosely coded, *narrative analysis* was employed to develop each respondent's life trajectory. The data for this analysis was mostly obtained from respondents' descriptions of their career as expressed in the interview but information

from curricula vitae, NRF (National Research Foundation) submissions or follow-up emails was often included. This information was synthesised in a separate document, termed the 'interview narrative' for the purposes of this study. An example of an interview narrative is included in Appendix B. It was intended that the biographical sketch situate the respondent in the field and contextualise the main themes that emerged from the interview. Although these themes consist of an aggregation of data from different places in the interview, the order of the themes was chosen so as to reflect the natural course of the interview. In most of the interview narratives a section entitled '*The workings of higher education*' was included. It was here that the respondent's views on the tension between teaching and research, if it emerged, were described. As can be seen from the example in Appendix B, this section might also include a discussion about promotion or the difference in operation between the foundation programmes and the mainstream.

For Bourdieu, such a 'rewriting' is an essential part of the analysis:

But the analyst will be able to make the most unavoidable intrusions acceptable only through a *rewriting* that reconciles two doubly contradictory goals. On the one hand, the discussion must provide all the elements necessary to analyze the interviewees' positions objectively and to understand their points of view, and it must accomplish this without setting up the objectivizing distance that reduces the individuals to a specimen on a display case. On the other hand, it must adopt a perspective as close as possible to the individual's own without identifying with the *alter ego* (which always remains an object, whether one wants it or not) and turning into the subject of this worldview. (Bourdieu et al. 1999 p. 2)

Once the interview narratives were completed, the data was subjected to *paradigmatic analysis*. This entailed comparing and contrasting the narratives with Bourdieu's concepts in order to 'identify particulars as instances of general notions or concepts' (Polkinghorne 1995 p. 7). This process allowed the identification of paradigmatic career trajectories, both in the mainstream and within academic development. In addition, similarities in the trajectories of academic development staff emerged through this analysis.

If we imagine the entire story of this thesis to be about foundation programmes, we can say that 'a sociological...plot [was] used to configure the data' (Polkinghorne 1995 p. 20). In other words, both of these types of narrative inquiry were part of the process by which the field was constructed, by which academic development was understood as a field phenomenon and by which the trajectory of the foundation programme within each institutional context was illuminated.

3.3.5 Ethical considerations

When it was first decided that human subjects would be interviewed, the appropriate procedures were followed in order to clear the study with the Ethics Committee of the Faculty of Engineering and the Built Environment at UCT. The relevant documentation is included in Appendix C. The Research Ethics Committee at Stellenbosch also required that this documentation be sent to them in order to approve the use of human subjects in the study.

As mentioned above, each respondent was told at the start of the interview that his or her identity would be protected as much as possible through the use of pseudonyms both of persons and of institutions. The reason that 'institutions' was mentioned here was because initially it was thought that the case study institutions would be assigned pseudonyms (see Kloot 2009). But as the social history of Stellenbosch and UCT were explored, it became clear that it would be obvious which institutions were being spoken of. Thus, only the respondents were given pseudonyms – these are reflected in Table 3.1 – and their identity disguised as much as possible by leaving out certain details.

As they were completed, the interview narratives were sent to respondents. They were asked to check the documents and confirm that they had not been misrepresented in some way. They were also asked to check the factual details included in the interview narrative and reply with corrections if possible. Such correspondence contributes to the reliability of the findings (see below). At this stage, one respondent withdrew from the study because he felt uncomfortable with the presentation of the interview data in narrative form. This respondent is not included in Table 3.1. At a later stage, all 21 respondents were sent a draft of the *Findings and discussion* chapter with an email informing them about the decision to use the names of their institutions rather than pseudonyms. (This email is included as Appendix D.) None of the respondents objected to this decision or disapproved the use of interview data at this stage.

3.4 *Validity and reliability*

It was mentioned in Chapter Two that the confirmation or refutation of a hypothesis in the 'hard' sciences depends on the proper demonstration of the causal relationship between two variables. This is known as *internal validity*. In qualitative research it can be thought of as 'the extent to which the findings and the research account accurately

reflect the social world of those participating' (Daymon and Holloway 2002 p. 79). Polkinghorne (2007) asserts that both the traditional scientific community and the 'reformist', qualitatively-oriented community aim to validate the knowledge that they produce. However, the means by which this is done differs because the kinds of knowledge claims being made by these communities are of a different order. In the realist conception of social science, validity can be thought of as the strength of the 'claim to truth' that is being made. In her introduction to Bourdieu's *Understanding*¹¹, Fowler (1996) comments:

The new realism makes claims about (relatively) invariant relations in social life which go beyond the constant conjunctions of logical positivism. However, its empirical propositions have no absolute status, but are only *claims* to truth, to be tested as adequate through the intersubjective judgement of the scientific community. (p. 8)

Since validity rests on consensus within a community, the purpose of this section is to demonstrate the degree to which the claims in this study are 'well founded and fully applicable to the matter or circumstances' (Polkinghorne 2007 p. 474). This discussion extends to the notion of *reliability*, which can be defined in qualitative terms as the 'consistency of the research findings' (Kvale 1996). It refers here mainly to the methods used to obtain interview data, drawing together some points already mentioned in this chapter. The notion of *generalisability* (external validity) refers to the extent to which the findings can be applied to other contexts. As discussed in reference to case studies above, discovering the 'invariant properties that each case conceals under the appearance of singularity' (Bourdieu and Wacquant 1992 p. 235) largely deals with this issue. Nevertheless, a brief discussion on the 'transferability' (Lincoln and Guba 1985) of these findings to other contexts is included below.

In fact, all three of these measures – validity, reliability and generalisability – are addressed by the key question: '*What measures were put in place to increase rigour in the process of constructing the research object, the field of engineering education?*' This question is answered in three ways: reflexivity with regard to the case studies, validity and reliability in the interview process and transferability of the research to other contexts.

¹¹ 'Understanding' was published in the journal *Theory, Culture and Society* in 1996. It is derived from a section in *The Weight of the World* (Bourdieu et al. 1999 pp. 607–626), published in 1993 as *La Misère du Monde*.

3.4.1 Reflexivity

The previous chapter outlined the importance of reflexivity in terms of the construction of the research object. While reflexivity has its limits, making explicit the possible sources of researcher bias is an essential exercise. There are three levels at which a reflexive return is adopted in this study: at the institutional level, within the disciplinary context, and as a mediator between academic development and the mainstream.

That Stellenbosch University and UCT have been chosen as case studies and that I am employed at the latter institution activates a rivalry between these institutions that is more than 100 years old. As will be shown in the following chapter, the origins of the tension between these institutions are cultural but are often expressed in terms of language i.e. the struggle between the English and Afrikaans communities (Giliomee 2009). In this regard, that I am English-speaking, and even that this document is being written in English, is significant. Bourdieu writes at length about language triggering a whole set of historical power relations (Bourdieu 1991; Bourdieu and Wacquant 1992 pp. 142–144) and this must be taken into consideration here.

As far as researching UCT itself is concerned, there is obviously a danger of unwittingly including the 'pre-constructed' (to use Bourdieu's phrase) in the object of study. The problems are exaggerated in the present study since I am not only employed by UCT but am an academic within the engineering faculty. The threat here is that taken-for-granted disciplinary norms may impact on the investigation. The research design was thus deliberately chosen to neutralise this bias as much as possible and to avoid the problem-solving utilitarianism that engineers often favour.

Lastly, it must be mentioned that I occupy the position of Academic Development Lecturer (ADL) in one of the engineering departments at UCT. In order to understand the significance of this for the present study, the origins of the ADL initiative need to be briefly explained.

The ADL concept was proposed in 2006 by members of the Faculty of Engineering and the Built Environment at UCT in response to an award of R16.3m to the faculty through the government's AsgiSA (Accelerated and Shared Growth Initiative for South Africa) initiative. These funds were given for the purpose of improving the university's throughput of black engineers. Rather than investing in physical resources, the faculty decided to put the funds towards employing one full-time, permanent staff member in each of the six departments in the faculty as well as in ASPECT, the engineering foundation programme. The idea was that the seven ADLs would work with the

(willing) mainstream staff in their departments to address academic development issues and also form a core of expertise in academic development in the faculty more generally. Although ASPECT operates mainly at first year level, the ADLs were meant to look at academic development in second or even third year. There are obvious similarities between this and the model developed at UWC in the 1990s (Walker and Badsha 1993) which attempted to infuse academic development principles into the mainstream.

There are advantages and disadvantages to my position as an ADL. On one hand, it can be argued that it has given me exposure to the tensions and contradictions between mainstream and academic development paradigms – academic development practitioners are usually housed in separate units or in foundation programmes but the fact that the ADLs are based *within departments* allows an uncommon perspective. On the other hand, in terms of my professional capacity, I am obliged to have a sympathetic view towards the academic development project generally, and this obviously includes ASPECT. Of course, an implicit aim of this study is a desire to understand foundation programmes in order to improve them – indeed, no one with antagonism towards academic development would devote attention to a study of this nature. But given that a strong advocacy role has traditionally been associated with academic development, I could be tempted to adopt this study as a platform to promote the cause of academic development. Every effort has therefore been made to distance myself from a conventional position of academic development, as Lockett (2011) has done, in order to try to *understand* the tensions between academic development and mainstream practices.

3.4.2 Validity and reliability in interviewing

Polkinghorne (2007) suggests that validity in qualitative studies is about how well the evidence within the generated texts is ‘understood to express the actual meaning of the participants’ (p. 480). With regard to interview conduct, the behaviour of the interviewer obviously has an impact on what the participant shares. Kvale (1996) provides some guidelines regarding approach and attitude on the part of the interviewer (pp. 147–151) but also notes that interviewing is a skill, a craft that is learned. With this in mind, a pilot interview was conducted to help me find my way around the questionnaire guidelines and gain a sense of familiarity with the topics that were likely to emerge in the interview.

The limitation of *language* within the interview situation, in terms of 'capturing the complexity and depth of experienced meaning' (Polkinghorne 2007 p. 480), has implications for validity. This applies generally but is especially significant in the case of interviewing respondents at Stellenbosch University, most of whom speak Afrikaans as their mother-tongue. This relates to the point mentioned above, that language embodies power relations that are activated in the interview situation. In fact, Bourdieu promotes an awareness of disproportionate amounts of capital between interviewer and respondents, especially linguistic capital. In *The Weight of the World*, he reflects on this issue:

Taking into account these...properties inherent in the interview relationship, we have sought to do all in our power to control their effects (without claiming to eradicate them) or, more precisely, to *reduce as much as possible the symbolic violence which is exerted through that relationship*. We have tried, therefore, to instigate a relationship of *active and methodical listening*, as far removed from the *laissez-faire* of the non-directive interview as from the directiveness of the questionnaire survey. (Bourdieu et al. 1999 p. 609 emphasis in original)

With regard to reliability, issues concerning the transcription, analysis and write-up of the interviews are worth mentioning. Once the interview had been recorded, attention to detail and standardisation of style in the transcription process can be said to enhance reliability. The coding procedure and the production of interview narratives in the analysis also contribute to replicability. Lastly, some level of correspondence with respondents after the interviews (as discussed above) can be said to enhance reliability of the findings.

3.4.3 Transferability to other contexts

In the previous chapter it was suggested that the field of engineering education be considered a field in its own right but largely operating according to the basic principles of the university field (see page 43). If this is true, then the operations of the field in terms of basic mechanisms should entail transferability to other disciplinary contexts, such as commerce or humanities, and to other institutional contexts. Considering that both UCT and Stellenbosch were originally modelled on overseas universities and given the effects of globalisation, it is likely that there would be some international transferability as well. However, the specific dimensions of the South African context compared to international programmes to improve access, could limit the relevance of this study. Within South Africa, merger dynamics have already been mentioned and

this may limit the application of the findings to institutions such as UKZN. In addition, an attempt for a transfer of the findings to previously black institutions (such as UWC or the University of Limpopo) as well as universities of technology and comprehensive universities needs to be carefully considered.

University of Cape Town

Chapter 4 – Socio-historical backdrop

It was mentioned in Chapter Two that analysing the changes that occur in a field over time is essential since it allows a break with commonsense perceptions and illuminates the trajectory of the field. The following section attempts this by examining the social history of the case study institutions with respect to the economic and political realms in the South African context. This leads into an analysis of government policy (Section 4.2) that focuses on foundation programmes and the emergence of extended curriculum programmes in the post-1994 policy context. The intention is to provide a backdrop for the analysis of the field of engineering education that is carried out in Chapter Six. Although Bourdieu's concepts are not specifically employed in this and the following chapter, the exact relation between the university field and the field of power (see page 38) can be inferred from the descriptions that follow.

4.1 Description of the social history of the University of Cape Town and the University of Stellenbosch

The social history of these two South African institutions will be considered in parallel and documented in five parts – 'the beginnings', 'university status', '1918–1948', 'under apartheid' and 'after democracy'. This will set the context for a study of the emergence of engineering foundation programmes at these institutions.

4.1.1 The beginnings

UCT began as the South African College, a private high school for boys which was established in 1829 at a bilingual (English and Dutch) service in the Groote Kerk in Cape Town. The school began with 115 students who satisfied the very basic admission requirements, and three professors, in English classics, Dutch classics and mathematics. Despite having to endure a number of financial and administrative setbacks – at one time the student body dropped to as few as 16 students and a single professor – a theme of Walker's (1929) account of the history of the South African College is what seems to be the indomitable ambition of the College to become a university.

While in its early years the College had to do the work of a combined elementary and secondary school having only a very small university superstructure. This began to change in 1874 when the junior students were separated to form the South African College *School*, an institution that occupied the same grounds as the College but had its own headmaster. Nonetheless, the College had to retain secondary school students for some years to come. In 1883, for example, there were only 18 students doing post-matriculation work compared to 70 at secondary level. In his tale of the first and last inspection by the superintendant of education in 1884, Walker (1929) writes:

The change of the spirit and structure of the College was all in one direction. Senate was determined that the College should be a university college and not a school, and it was determined that government officials and public should learn the difference. (p. 47)

Walker goes further to say that through the whole period of 1879–1900, ‘there was a steady elimination of school work and of the school spirit and outlook, a process completed in all essentials in 1900’ (p. 44). By this time the number of post-matriculation students at the College had risen to 200 and the pre-matriculation classes were successfully transferred to the School. Walker indicates the completion of the process with the words: ‘It only remained to emphasise this severance of school from university work by offering district scholarships to first-class matriculants and by transforming the old prize-giving into a commemoration day more in keeping with university traditions’ (p. 56).

At this time the subjects taught were modern languages (including Dutch, French and German), English, classics, mathematics and physical science. The demand for engineers on the gold and diamond mines in the Transvaal and Orange Free State prompted the South African College (SAC) to appoint a lecturer in dynamics in 1891 and to establish a chair in applied mathematics and physics two years later. However, it was some time before the College could offer an engineering qualification. The normal practice was two years of mining classes at the SAC followed by training at the School of Mines in Kimberley which became the Transvaal Technical Institute after the Anglo-Boer War (1899–1902). Students then attended a fourth year on the mines in Kimberley or on the reef around Johannesburg. A further hindrance to the establishment of engineering at SAC was that it did not set its own examinations – these were set by the University of the Cape of Good Hope, an examining university only that was not authorised to award degrees in engineering.

In 1903 the College established a chair in engineering, admitted the first class of six engineering students in 1904 (Kilner 1965), and moved into the new Engineering Block in 1905, the construction of which was enabled by a loan of £64,000 from the government. A second chair in engineering was established shortly thereafter and the discipline was divided into three sections: civil, mechanical and electrical. Diplomas in these subdivisions were finally recognised in 1915 by the appropriate British bodies as well as by the Johannesburg Technical Institute. A third chair in mechanical engineering was added in 1916.

The early development of the University of Stellenbosch is remarkably similar to that of UCT but perhaps this is not surprising, considering the small population of the Cape Colony in the mid-1800s, the relatively rudimentary level of education at this time and the strong European influence on all aspects of life. While noting the similarities, we also need to identify the differences at these embryonic stages, which are essential in understanding the different trajectories these institutions followed. For one, the town of Stellenbosch at that time was smaller and more rural than Cape Town. This meant there was more of a sense of community involvement in the establishment of the institution. It is also notable that both fledgling institutions were associated with the church in their early stages, but the establishment of the Dutch Reformed Theological Seminary in Stellenbosch in 1858 indicates the stronger influence of the church – and indeed the Dutch language – on Stellenbosch University. Both Smuts (1979) and Thom (1966) pay particular attention to this in their historical accounts.

It was in 1866, a full 35 years after the inauguration of the South African College, that Stellenbosch Gymnasium (as it was first called) was established. Smuts (1979) gives a wonderful insight into the times by quoting from the document proposing the establishment of this institution (translated from Dutch):

The object of the Gymnasium shall be thorough instruction in such subjects as pertain to a cultured education: preparation of the Examination for Admissions to the Theological Seminary, and the Government Examination for the Second Class Certificate in Letters and Science. (p. 325)

Like the College, the Gymnasium suffered a number of setbacks in its early years. A serious problem was staffing, especially for the post-matriculation subjects, and the institution was almost relegated to high school status by the superintendent of education in 1874 when the University of the Cape of Good Hope came into being. Nevertheless, the Gymnasium managed to weather the storm and continued to advance towards university status. It followed the same path as the South African

College, initially combining the work of primary and secondary education with post-matriculation studies, and was divided into two sections in 1879: Stellenbosch College and Stellenbosch College School. The former dealt with both matriculation and post-matriculation study while the latter included the junior classes. The number of students at this stage can be compared to those at the South African College, both having a relatively small post-matriculation contingent: in 1880 only 20 students were studying post-matric while 55 students were doing secondary work in the College section.

Although the mother tongue of most of the residents of Stellenbosch was Dutch, the medium of education of the entire educational system in the Cape Colony at this time was English. The subjects given were much the same as at the South African College: classical and English literature, mathematics and physical science as well as modern languages including Dutch, the teacher of the last being especially recruited from the Netherlands so that 'our mother tongue may now receive her due at our institution' as the 1875 annual report tells us (Smuts 1979 p. 326). The occasion of the inauguration of the new College building in 1886 illustrates the uncomfortable position of the Dutch-speaking population of Stellenbosch as they tried to affirm their identity under the rule of the British. Smuts (1979) tells us that one of the speakers 'specifically mentions that he was speaking Dutch because Stellenbosch deserved to be addressed in its own tongue on such a memorable day' (p. 328). On the same occasion, the Superintendent of Education suggested that the name of the college be changed to *Queen's College* since it coincided with the Jubilee of Queen Victoria. Several persons objected to this on the grounds that the Dutch translation was inelegant, but a compromise was reached and the institution was named *Victoria College*, the title it was to carry for the next 30 years.

At roughly the same time as the South African College had done, Victoria College transferred the last of its pre-matriculation students to the School and thus became a 'proper university' (Smuts 1979 p. 329). It also responded to the desperate need for engineers at this time by offering courses in mining. However, the establishment of an engineering department occurred much later than at the SAC. A three-year B.Sc. degree in engineering subjects was introduced in 1941 and the Faculty of Engineering was founded in 1944, nearly 40 years after engineering began at the South African College. Before describing these developments in more detail, we need to return to the 1890s to understand the events that would throw the SAC and Victoria colleges into the crucible that would result in the formation of three formally recognised universities.

4.1.2 University status

The events that precipitated the recognition of the universities of Cape Town and Stellenbosch as independent universities need to be understood in terms of the wider social and political context. It is clear from the discussion above that both colleges were developing rapidly and it would probably not have been very long before they were granted the authority to set their own examinations and confer their own degrees, thus freeing themselves from subordination to the University of the Cape of Good Hope. There were proposals as to how exactly the system should function, one of them being that there should be a federal university with a number of affiliated institutions, but the event of the Union of South Africa in 1910 meant that the question of the future of the SAC and Victoria College was changed from a Cape matter to a national one.

With its emphasis on English-Afrikaner reconciliation, the Union Government was keen to implement an idea suggested by Cecil John Rhodes in 1891, that of a single national teaching university on his estate in Grootte Schuur where both white groups could work together and lay the foundation for future cooperation. The financial means for the implementation of this idea came about through a bequest of £200 000 by Alfred Beit to which two of Rhodes's colleagues, Otto Beit (Alfred's son) and Sir Julius Werner added a further £300 000. This meant that a total of £500 000 was available for a new university in the Cape. While Rhodes envisaged the university to be an English-medium institution, the conditions laid down in the Beit bequest were that the university should be residential in character and open to English and Dutch-speakers alike (Phillips 1993). This was in keeping with the sentiment of English-Afrikaner unity at the time as expressed by the Minister of Education, FS Malan, in *The University South Africa Needs* (1912), in which he spoke of the need for the 'fusion of two races into one nation' (pp. 7–8). Importantly, and something that Phillips fails to mention in his account, Beit and Werner insisted on English as the medium of instruction 'as a means of attracting the best academic talent from Britain' (Giliomee 2003 p. 363).

It is necessary to point out that the word race (as in the above excerpt) was used to refer to the two white groups. In the early histories of both of these institutions there is a notable silence about people of colour – the underlying assumption was that higher learning was only for those of European descent. Phillips' (1993) account is perhaps the most racially conscious (in the modern sense of the word) as he was writing from the perspective of 1993. Indeed, his survey of UCT between 1918 and 1948 refers to

incidents of racism that may be shocking for modern readers but were considered the norm in the prevailing social climate.

There were misgivings from both the SAC and Victoria College about the formation of a single university and the issue of the 'University Question' was to remain unsettled for a number of years, coming dangerously close to 1916, the year in which Beit had stipulated his bequest should lapse if a university had not yet been set up. The Union Government tried to find a way around the objections, launching two commissions – one in 1912 and the other in 1914 – to look into the matter, neither of which was successful. A committee of three from Victoria College, including DF Malan who was later to lead the National Party to victory in 1948 and lay the foundation for apartheid, submitted a memorandum to government outlining their reasons for opposing the idea of some kind of amalgamated university. One argument was that Victoria College was one of the most advanced institutions in the Union. It was, for example, responsible for the most post-matriculation graduates in the country at the time. However, the main thrust of the memorandum was Victoria College's mission to the Dutch-speaking section of the population. The document passionately expressed this sentiment, contending that Victoria College

...has been closely bound up with the spiritual, moral and national life of the Dutch-speaking part of the nation. This is the place where the Afrikaner people have been best able to realize their ideals and from which they have been able to exert the strongest influence on South Africa. It is the best means the people have so far found to meet a deeply felt need. It stands for an idea!

(in Smuts 1979 p. 336)

It is interesting to note that Afrikaans was not an officially established language at this time; the word 'Afrikaner' in the extract above broadly refers to the population group whose members, although they spoke Dutch (of varying levels of purity), had more or less broken ties with Europe and saw themselves as Africans – 'Africaners' or 'Afrikaners'.

It was thus that Victoria College 'blocked the way' (as the English press put it) to the resolution of the University Question. In 1915, determined to avoid the lapsing of the Beit trust, a delegation from the SAC approached the Beit trustees directly and made the bold proposition that the South African College re-locate to Rhodes's estate and itself become the new university – it would even build the residences itself to ensure that the new university become residential in character as outlined by Alfred Beit. The trustees accepted the idea and government decided to draft three bills, one for the new University of Cape Town, one for Victoria College and the third for the remaining

colleges in the Union that would incorporate the University of the Cape of Good Hope, the Johannesburg School of Mines and the other colleges in a federal university.

If it was to grant Victoria College full university status and its own charter, the government set a condition: the institution had to raise £100 000 from the public. While both Victoria College and the SAC had been supported financially by their respective communities, especially in the early days, the report of the 1914 commission noted that Victoria College had been assisted to an 'exceptional extent' by private initiative and 'local liberality', as they put it. A wealthy Afrikaner mining magnate, JH Marais, displayed such liberality when he donated £100 000 just before his death in 1915. Importantly, he set the condition that Afrikaans or Dutch must take 'no lesser place' than English at the institution. According to Giliomee (2003), virtually no lectures were given in English by 1930.

The bills came into effect on the April 2 1918, when the South African College was officially inaugurated as the University of Cape Town, Victoria College as the University of Stellenbosch and the University of the Cape of Good Hope (and various other bodies) became the Federal University of South Africa, today known as Unisa. Following speeches in English and Dutch, the principal, Professor John Carruthers Beattie, explained that the new university would

...deliberately provide a broad undergraduate education to overcome the narrowness of school curricula and that at postgraduate level it would embark on research with a will. "No University was worth the name which did not make that one of its chief objects", he declared. (in Phillips 1993 p. 6)

As might have been expected, he also spoke of the importance of English-Afrikaner co-operation, as well as the mission of this unity as bringing civilisation to a land of 'millions of uncivilised people'. At the time of inauguration, the university had organised its various departments into six faculties that are compared to the faculties at Stellenbosch in the table below.

Table 4.1. A comparison of the faculties at UCT and Stellenbosch, (1918).

University of Cape Town	Stellenbosch University
Arts	Arts and Letters
Science	Mathematics and Physical Science
Law	Law
Education	Education
Engineering	Agriculture
Medicine	Music

It is interesting to note the similarity of the first four faculties in Table 4.1. In 1918, agriculture and music were established at Stellenbosch whereas the medical faculty was unique to UCT. It has already been noted that a Faculty of Engineering was founded at Stellenbosch University only in 1944.

The inauguration of Stellenbosch University took place in the Dutch Reformed Church in Stellenbosch and was led by the vice-chancellor, Prof Adriaan Moorrees, a professor at the Theological Seminary since 1907. Speeches paid tribute to the founding fathers, celebrated the realisation of the hope and spoke of the bright future of the first 'truly Dutch-Afrikaans university' – the sentiment expressed in the institution's charter of 1916. While there is clearly more of an emphasis in the service of Stellenbosch University towards the cultural heritage of the Dutch-Afrikaans sector of the population, a few years later Prof Moorrees is recorded as having referred to the academic mission of Stellenbosch University in much the same way as Beattie had done in 1918. He said that it was necessary '...to give our more gifted students the opportunity to perform original work in the interests of science; this, after all, should be the object of a university' (in Smuts 1979 p. 339).

4.1.3 The period 1918–1948

Phillips' (1993) excellent account of the formative years of the University of Cape Town (1918–1948) provides much of the detail of the social history of the institution for this period. Furthermore, in dealing with broader issues such as language, race, pressure to match European academic standards and relationship to government, Phillips gives us an insight into the logic of the times and the impact of these

influences on this institution of higher learning. Correlating this with Thom's (1966) comprehensive account of the history of the University of Stellenbosch and bearing in mind the trajectories of these institutions leading up to the attainment of university status, we are provided with a powerful lens by which to comprehend the shifting social positions of both of these universities in the period leading up to the election victory of the National Party in 1948.

With hindsight it is perhaps not difficult to see the problem with the establishment of a 'truly Dutch-Afrikaans university' on one hand and a university committed to 'the fusion of two races into one nation' on the other. If English-Afrikaner unity was indeed achievable why did the Union government grant Stellenbosch University status as a separate institution with its own ethnically-oriented charter? Or, if this goal was not achievable, why not establish the University of Cape Town as a 'truly English university' alongside Stellenbosch and be honest about the differences in national outlook between the two 'races'? The answer, of course, has to do with the nation-building efforts of the Union government in the wake of the Anglo-Boer War that had understandably produced bitterness and distrust among the Afrikaner population. In a gesture of reconciliation, the University of Cape Town publicly committed itself to fostering 'broad South Africanism' and welcomed both English- and Afrikaans-speaking students on to its campus (at this stage it was still located in the centre of Cape Town and was only to move to the Groote Schuur Estate 10 years later). As will be seen, this was a 'polite gesture' from the English who never took the matter of bilingualism very seriously, as pointed out by FV Englenburgh (in Giliomee 2004 p. 32).

Nearly all the professors at UCT in these years were Scottish as was the vice-chancellor, John Beattie, who ensured that the wishes of Otto Beit and Sir Julius Werner were adhered to – that the university remain an English-medium institution. On this score, Phillips (1993) alerts us to a student protest in June 1918, only a few months after the attainment of full university status. A mass meeting was held in which students called for the establishment of undergraduate courses in Afrikaans and the gradual introduction of Afrikaans as an alternative medium of instruction. Apparently buoyed by Afrikaner nationalism and coupled with the fact that the majority of students at UCT were in fact Afrikaans-speaking (55% – although this was unusual since a significant number of English-speaking students had volunteered to fight in World War I), the protesting students insisted that their language be granted equal status to English. This event gives us a sense of the tensions in wider society that were spilling over into university life. To supply the broader context, Table 4.2 shows us that the

majority population in the Cape (58%) and in the Union as a whole (54%) spoke Afrikaans in 1910.

Table 4.2. White population, (1910) – adapted from Giliomee (2003)

<i>Province</i>	<i>Total</i>	<i>Afrikaner total</i>	<i>Afrikaner %</i>
<i>Cape</i>	583 177	339 585	58%
<i>Free State</i>	175 435	137 995	79%
<i>Transvaal</i>	420 881	204 058	49%
<i>Natal</i>	98 582	12 300	15%
<i>Total</i>	1 278 075	693 898	54%

To give a sense of the times, it is worth referring to a protesting student's comment which appeared in the UCT Quarterly of 1918 and is quoted in Phillips (1993, p. 116):

Die Hollands-Afrikaanse element is tot nasionaal bewussijn gekom met die gevolg dat die Afrikaanse Taal [B]eweging nou algemeen geword is, en dit is om daardie rede dat 'n pleidooi vir Afrikaans aan ons Universiteit nie voorbarig of als 'n nuwigheid beskou mag word nie¹².

In response to this pressure, UCT implemented a course in Afrikaans the following year and also agreed to allow students to answer examination questions in the language of their choice. However, on the issue of medium of instruction, both Senate and Council refused to budge – the institution 'would continue...to be run along British academic lines' (Phillips 1993 p. 117) which, as Phillips points out in a later paper, was Caledonian in character (2003). In 1927, Beattie observed the 'undoubted tendency...for university institutions in South Africa to use one of the languages, English or Afrikaans, as the medium in the class room and in ordinary intercourse' (Phillips 1993 p. 117). In other words, at the same time at which JH Marais' condition that Dutch or Afrikaans occupy 'no lesser place' had resulted in the virtual displacement of English as the medium of instruction at Stellenbosch by 1930, UCT's 'broad South Africanism' resulted in this institution's determinedly following the British mould.

At this stage it is pertinent to step back and discuss the development of the Afrikaans language. As can be seen in the student quotation above, the phrase '*Hollands-*

¹² Translation: The Dutch-Afrikaner element has gained national consciousness of itself, with the result that the Afrikaans Language [M]ovement has now become widespread; therefore, a plea for Afrikaans at our University is to be seen as neither presumptuous nor as a novelty.

Afrikaanse' indicates that both Dutch and Afrikaans were still in use at this stage and such words as *'bewussijn'* are evidence that Afrikaans had not yet completely emerged from its linguistic substrate. A brief discussion of the history of Afrikaans, its fight for survival in relation to Dutch and its struggle for equality with English will afford a better understanding of the importance of the language in education as well as its role in the rise of Afrikaner nationalism.

Giliomee (2004) describes the emergence of Afrikaans as a 'shared cultural creation' (p. 27) and this must be understood in light of the quite fluid race relations in the Cape at the time. In this province, Afrikaans was spoken not only by Europeans, servants and ex-slaves but also by a significant number of 'coloureds', a term used to refer to the descendants of mixed marriages or liaisons between Europeans and the indigenous Khoisan or the descendants of slaves from Asia or Africa. To illustrate the indistinct nature of the colour line in the late 1800s, Bickford-Smith (1987) notes that the term 'coloured' was used 'at least by some of those who *thought of themselves as white*' (p. 39, emphasis added) to refer to others of slightly darker pigmentation. The 1875 Cape Town census reports a roughly equal proportion of 'Europeans or Whites' (25 567) and 'Other than Europeans or Whites' (19 236) (p. 37) but this was by no means an easy distinction to make as there were 'infinite gradations of colour in races so mixed as [is] our population' (Cape Times 1882 in Bickford-Smith 1995).

In the course of the 19th century, a significant number of English immigrants settled in Cape Town. They had better access to capital and were generally better educated than the Dutch settlers who had chosen to remain in the Cape and so quickly assumed a superior social position. Considering that English was the official medium of education in the Colony and that schooling was expensive, English children clearly had a better chance of obtaining a good education through the South African College or one of the other schools that had been established in Cape Town. These English immigrants were loyal to the British crown and looked down on the settlers of Dutch descent whom they considered to be uneducated and unfit to mingle with the upper classes of the city. The English also turned up their noses at the language that was spoken by these *burghers* which they considered a jargon, calling it 'kitchen Dutch' and denouncing it in the English press. Giliomee (2003) alerts us to the fact that the greatest enemies of Afrikaans were in fact the 'status conscious colonial Afrikaners' who were embarrassed by the language and considered it 'an impoverished dialect...a "Hotnotstaal" (Hotnot is a derogatory term derived from Hottentot)' (p. 216). They preferred to speak Dutch or even switch to English. Under these circumstances, the odds were clearly stacked against the survival of Afrikaans as a national language.

Giliomee (2003) outlines two Afrikaans language movements: the first had its roots in the 1870s when two Dutch ministers began to champion the use of Afrikaans among the uneducated poor, both coloured and white, to spread the Christian message. The momentum thus generated was transformed into a language movement which aimed to foster a sense of national pride, especially among Afrikaners of Dutch, French and German descent, and the *Genootskap van Regte Afrikaners* (Society for True Afrikaners) was founded in 1875. The movement combined a Calvinist theology with a nationalist ideology that emphasised the importance of Afrikaans as mother tongue. In order to try to popularise Afrikaans among the better educated sectors of Afrikaner society, there was a downplaying of the mixed cultural origins of the dialect. It was instead maintained that Afrikaans was a 'white man's tongue, a pure, Germanic language' (Giliomee 2003 p. 217).

A number of literary works were produced from this movement, including an anthology of Afrikaans poetry, a book setting out the first principles of the Afrikaans language and an Afrikaans nationalist history. The first political party on the subcontinent, the Afrikaner Bond, also arose out of the movement, showing the close link between Afrikaner nationalism and the rise of the Afrikaans language. Despite these successes, however, the first language movement fizzled out towards the end of the century. One of the main problems was that 'Afrikaans still carried the stigma of a *bastertaal*, or mongrel language, and as the language of the uneducated' (Giliomee 2003 p. 224) and opinions were divided as to whether Afrikaans should replace Dutch or be promoted alongside it. The *Zuidafrikaanse Taalbond* (South African Language Society), founded in 1890, attempted to revitalise high Dutch by simplifying the spelling but this effort failed. The trouble was that Afrikaans was widely spoken but Dutch was more socially acceptable, and there was relentless pressure on educated Afrikaners to turn to English, the official language of the colony at the time.

The second language movement was more successful and paralleled the reconstitution of Afrikaner nationalism after the Anglo-Boer War. Dr DF Malan was one of the founding members of the *Afrikaans Taalbeweging* (Afrikaans Language Movement) in 1906 and fought vigorously for Afrikaans as a vital ingredient in the recipe for Afrikaner nationalism. As early as 1908 he said:

Raise the Afrikaans language to a written language, let it become the vehicle for our culture, our history, our national ideals, and you will also raise the people who speak it...The Afrikaans Language Movement is nothing less than an awakening of our nation to self-awareness and to the vocation of adopting a more worthy position in world civilisation. (Pienaar in Giliomee 1975)

In 1914, Afrikaans was successfully proposed as an alternative to Dutch in primary schools in the Cape and the same occurred in the Transvaal and Free State provinces of the Union.

This background helps us to understand the conditions within which the Afrikaans student at UCT was speaking in the 1918 protest in favour of Afrikaans as a medium of instruction when he referred to the 'widespread' nature of the Afrikaans Language movement. In 1925, Afrikaans became an official language alongside Dutch, a serious gamble considering that no serious body of literature yet existed. By the early 1930s, the syntax and vocabulary of Afrikaans had largely assumed its current form and a number of writers and poets began to channel their energy into 'building a nation from words' (Hofmeyr 1987). In 1933, the Bible was translated into Afrikaans and academics began using the language in universities. When the engineering faculty was established at Stellenbosch University in 1944, Afrikaans was used as the language of instruction – although Thom (1966) mentions that there was some doubt as to whether it was suitable for this purpose. Despite these successes, writers like Louis Leipoldt warned against the danger of artificially developing Afrikaans in order to gain political advantage, rather than allowing it to grow naturally in aesthetic and cultural distinction.

Phillips (1993) notes the strained relations between UCT and the government when DF Malan was in his second term as Minister of Education between 1929 and 1933. At this time the Nationalist Party was in power, having won the election in 1924. Obviously in favour of the universities' employing suitably qualified South African – rather than overseas-trained candidates, the government exerted pressure on them in this regard. Malan, vigorously championing the Afrikaans language issue, proposed a bill that would give government the right to veto any university appointment 'with an eye to ensuring that staff able to teach in Afrikaans and English be appointed where possible' (Phillips 1993 p. 178). He even threatened that universities would not be allowed to develop in a manner that overlooked the language rights of the minority of students, referring, of course, to the English-medium universities. This incident illustrates Malan's boldness on the language issue that he saw as a primary means of furthering the Afrikaner nationalist agenda. As it had done when students protested a decade earlier, UCT now stood its ground against the government, invoking the principle of academic freedom. Phillips (1993) puts it in these terms: 'This threat to its academic autonomy UCT resisted with vigour, taking the lead in opposing what Beattie privately called "Malan's childish and fanatical Bill"' (p. 178).

Despite the calls for Afrikaner-English reconciliation after the formation of the Union of South Africa, we have seen that Stellenbosch and UCT tended to gravitate towards one or the other language as the medium of instruction and communication. There was tension in politics too, and in 1914, General Hertzog broke with the South African Party, allegedly because of its capitalist policies (Giliomee 2003). Hertzog's party came to power 10 years later but the nationalists were not able to secure their hold on power and Hertzog later decided to unite with Smuts after a coalition between the South African Party and the National Party won the majority of seats in the 1933 election. The new 'catchall' party that this coalition formed, the United Party, once again tried to bring together Afrikaans and English speakers. Significantly, Hertzog used the term 'Afrikaner' in a speech at this time in an inclusive sense, i.e. to refer to both Afrikaans- and English-speakers. In fact, Giliomee (2003) notes that the word was being used in a bewildering number of ways even to refer to black Africans as the 'oldest Afrikaners'. While in the provinces of the Transvaal, Orange Free State and Natal the National Party approved of the merger between the National Party and the SAP, DF Malan in the Cape broke with Hertzog and formed the Purified (*Gesuiwerde*) National Party in 1934. Malan used the language issue as a lever to gather nationalist support until the surprise victory of the Nationalists in the 1948 election.

4.1.4 Under apartheid

Understanding the social dynamics of the apartheid period is crucial if one is to comprehend the emergence of foundation programmes. Chapter One has already indicated that these programmes arose in the engineering faculties of the University of the Witwatersrand and the University of Cape Town in the early 1980s, i.e. *during the apartheid era*. This section therefore intends to sketch the social, political and economic landscape in order to understand why 'big business' – specifically the mining corporations – would work with the English-medium universities to support bridging education programmes catering specifically for black students. To do this, we need to trace the rise of Afrikaner power and analyse its relationship to corporate capital and industry (traditionally in the hands of English-speaking South Africans).

The Nationalists entrenched their position as the ruling party by championing the cause of the Afrikaner, especially the poor who were rapidly urbanising and by using the 'native' issue to encourage the unity of the two white groups. The Eiselen Commission of 1951 advised the government on how to proceed with regard to education for the 'native'. Upon the recommendations of the commission, the

apartheid government developed a policy of 'Bantu Education' to prepare blacks for life within their distinct racial grouping as envisaged by the architects of apartheid. In Verwoerd's infamous words in a speech in the 1950s:

There is no place for [the Bantu] in the European community above the level of certain forms of labour...What is the use of teaching the Bantu child mathematics when it [sic] cannot use it in practice? That is quite absurd. Education must train people in accordance with their opportunities in life, according to the sphere in which they live. (in Clark and Worger 2004)

In 1957, the Minister of Education, Arts and Science introduced the Separate University Education Bill which called for the establishment of separate universities for the different racial groupings. Two years later, the bizarrely-termed Extension of University Education Act of 1959 officially prohibited black students from attending white universities. Black students were to be steered to the hastily-erected black universities, the so-called 'bush colleges'. As mentioned in Chapter One, UWC was established in the Western Cape to serve the coloured community.

The English-medium universities opposed these measures. The Chancellor of UCT, former chief justice Mr. Van der Sandt Centlivres, contended that a university should be allowed to admit any candidate who was suitably qualified, regardless of the colour of his or her skin. While the protest against the state at this stage, both at institutional and student level, drew heavily on the tradition of English liberalism, it was the principle of academic autonomy that formed the core of its argument in opposition to the state:

But the main ground on which the Bill has been criticized is that it infringes a principle that is fundamental to the concept of a university. That principle is that a university in the true sense of the word is an autonomous institution, free to admit students whatever their race, colour or creed. (Centlivres n.d.)

The vice-chancellor at UCT between 1948 and 1955, Dr TB Davie, championed the cause of academic freedom, defining it as 'freedom from external interference in (a) who shall teach, (b) what we teach, (c) how we teach, and (d) whom we teach' (Du Toit 2001). In 1960, UCT sombrely recorded the 'snatching away' of academic freedom where a torch symbolising academic freedom was extinguished and a plaque recording this event, flanked by the bronze bust of TB Davie, was unveiled. The plaque commemorated 1960 as the year that academic freedom was lost, leaving blank the date in which academic freedom was to be considered restored.

The state, for its part, accused the English universities of opposing the policy of separate university education on the basis of imperialist tendencies rather than academic autonomy. In a speech in Parow, Cape Town, in 1959, the newspaper *Die Burger* reported that the Prime Minister, Dr HF Verwoerd, 'charged the opponents of university education with an ulterior motive (translated): "They are not concerned about the freedom of the university or the Bantu or the Coloured but about the political dominance of the heirs of imperialism"' (in Centlivres 1959).

Despite the tensions between the state and the previously white English-medium universities, Davies (1996) asserts that 'the fact of the matter is that the dealings between the state and these universities were never more than occasionally hostile' (p. 323). He advances a number of compelling reasons for this being the case, suggesting that, in the final analysis, the English universities were more concerned about the infringement of their institutional rights than the emancipation of black South Africans. In his opinion, the state was prepared to 'indulge these universities' institutional demands without too much fear of the consequences' (Davies 1996 p. 324).

The Extension of University Education Act did in fact allow black students admission to white universities under special circumstances (such as for degrees that were not offered at the black universities) but in real terms the numbers were small. In 1960, for example, only four of the 190 black African students who applied to the Minister of Bantu Education to study at the 'open' universities were accepted. Of these four, only two gained entrance, one each at UCT and Wits (Reddy 2004). The admission rates for coloured and Indian students were consistently better, although in absolute terms, once again, the numbers were small. Such admission policies caused the number of black students at white universities to dwindle in the 1960s.

Bunting (2002) notes that the historically Afrikaans-medium institutions made little use of the permit system and succeeded in implementing the separate education policies of the apartheid government. In fact, he suggests that support for the National Party government rather than language is the 'key element in making the distinction' (ibid. p. 39) between the Afrikaans- and English-medium universities under apartheid. His characterisation of these types of institutions is useful for the purposes of this study and is drawn on in the discussion below.

The historically Afrikaans-medium universities under apartheid can be described as 'creatures of the state' (Bunting 2002 p. 40). They acted in service of the government in implementing the policies of separate education and, although they made use of the

permit system, had small minorities of black students who were registered mostly in postgraduate programmes. Giliomee (2003) points out that the Afrikaans universities were better at attracting English students than vice versa. At the Afrikaans-medium institutions, a significant focus of undergraduate education was training staff for the apartheid civil service and various professions. Similarly, research was often focused on the national context, such as policy work for the government and 'technological work undertaken on contract for defence-related industries' (Bunting 2002 p. 41). The role of engineering in this regard is worth noting.

While there were links with universities in Europe, particularly those in Holland, the academic boycott that began in the 1970s resulted in the Afrikaans-medium universities becoming disconnected from the international academic community. In terms of funding, these universities relied on student fees, but 'their financial strength depended on them having good relations with the government as well as with the business sectors, with which [they] had close ties' (Bunting 2002 p. 40). Davies (1996) points out the Afrikaans-medium universities provided Afrikaner nationalism with its ideological underpinnings. There was therefore a convergence of interests between these universities and the apartheid state. In fact, Davies suggests that at the Afrikaans-language universities the 'boundary line between accountability and autonomy became totally blurred' (p. 323). Bunting (2002) identifies an 'instrumentalist' tendency at these institutions which he defines as 'the dissemination and generation of knowledge for the purpose defined or determined by a socio-political agenda' (p. 40), rather than pursuing knowledge for its own sake. Stellenbosch University is obviously included among the institutions influenced by such a tendency.

As indicated above, the English-medium institutions had an ambiguous relationship with the state during the apartheid years. While they were public institutions and thus benefitted from substantial subsidy funding from the government, they also pursued the ideal of academic autonomy. Thus, they did not acquiesce as servants of the state in terms of implementing the policies of separate education. In fact, Bunting (2002) says that many of these institutions 'exploited the ministerial permit system as much as they could' (p. 42) although Gerwel (1991) argued:

South African universities have greater autonomy than they have used to fight and challenge apartheid and the apartheid state. If universities have been ineffective in their open opposition to apartheid and reticent in their alignment with the democratic forces, the reason has often to be sought with the universities rather than with the state. (p. 125)

While these universities mainly served the white English-speaking population of South Africa, they identified strongly with the intellectual agendas of universities in the USA and Europe, particularly Britain. As such, these universities 'regarded themselves as being part of an international community of scholars [and] believed that knowledge was good in itself and hence that the pursuit of knowledge for its own sake was a major responsibility for any institution' (Bunting 2002 p. 43). In terms of funding, they succeeded in raising substantial funds from international donors and national companies like the Anglo American Corporation (AAC) and De Beers (Saunders 2000). This helped to decrease their reliance on government subsidy. While these institutions cannot be described as wholly instrumentalist in terms of service for the state, they did play a role in educating for the professions, such as engineering, and in this way can be considered instrumentalist 'in the narrow sense of producing graduates who could move readily into professions' (Bunting 2002 p. 43).

Although apartheid policy favoured the mining industry in a number of ways – it provided the mines with cheap, unskilled labour, for example – it was only when the political costs of apartheid began to take their toll on mining in the early 1970s that liberal constituencies within the mining sector began to push for reform. Corporations with substantial economic muscle, such as Anglovaal, Anglo American and Barlow Rand, exerted pressure on the government in various ways but Lipton (1986) carefully describes the myriad obstacles that progressive forces within the mining sector faced, including opposition to change within their own companies. She also contrasts the general attitude of this sector with the generally more liberal attitudes of manufacturing capital, for example, and notes that the tensions created by the confrontation spurred mining capital to push for reform by donating substantially to black education, housing and community development projects. Lipton goes on to say:

These political and moral pressures interacted in complex ways with changes in the gold price, labour supplies and technology to produce the significant, though still limited, changes in the policies of mining capital. (1986 p. 137)

Swainson (1991) points to the Soweto Uprising of 1976 as being a turning point for the liberalisation of education in South Africa. Both corporate capital and certain sectors of the state aimed to promote economic and political stability by instituting certain reforms. The relationship between these two groups peaked at the Carlton (1979) and Cape of Good Hope (1981) conferences to discuss decentralisation and industrial strategies. On the latter occasion, the Prime Minister, PW Botha, asked that business 'make a positive contribution to reform' while the private sector demanded

deregulation of the economy. These reforms can be seen as part of the government's strategy to legitimise the apartheid project through limited restructuring of certain sectors. In many cases this was financed by corporate capital that was voicing concerns about a black skills shortage, but it has been argued that the primary interest was the reproduction of capitalist social relations rather than social transformation (Badat 1991). Harry Oppenheimer of AAC said, 'Our aim must be that change takes place without violence, and a prerequisite for peaceful change is an educated and industrious people' (Christie 1994).

The state embarked on a programme to improve black tertiary education as part of its reform strategy by providing financial assistance for the creation of black universities as well as bursaries for black students, especially those at teacher training colleges. In 1977, for example, 8278 black students were receiving state bursaries (Badat 1991 p. 77). However, given the fundamentally flawed concept of separate education, these improvements only marginally improved the black education sector. It remained academically inferior to the established and well-maintained white system.

Swainson (1991) documents the impressive donations made by corporate capital in the years following 1976. In fact, through the Chairman's Fund, Anglo American was the largest single donor towards education in South Africa in this period. Other local and foreign firms channelled money through the Urban Foundation which initially focused on black housing but increased its spending on education in the mid-80s. Overall, in the late 1970s and 1980s, the private sector donated millions of rand towards scholarships and bursaries for black students, built technikons and schools and improved facilities at universities. Of note at this time were the projects that were launched in science and technology to improve tertiary access for black students and help students 'disadvantaged' in maths and science to 'improve the learning foundation and benefit future training' (Swainson 1991 p. 104). This is clearly a reference to foundation programmes.

It is important to note that while the initiatives of corporate capital and foreign agencies within the black tertiary education sector intersected with state initiatives, there continued to be differences between these forces over the form and content of restructuring within tertiary education (Badat 1991). For example, if we consider the numbers of black students entering white universities in these years, it would seem that significant changes were underway and reforms were taking effect. Figures from the South African Institute of Race Relations show that the number of African students in universities almost doubled from 488 in 1977 to 952 in 1981. These statistics mask

the fact that the Minister of Education was continuing to turn African students away from white universities in an affirmation of separate education. While the number of African students admitted to white universities increased in the early 1980s, the proportion of successful applicants in fact dropped from 48% in 1981 to 37% in 1983 (Badat 1991). After a vociferous confrontation with higher education institutions in 1983, the regime substantially relaxed the requirements for ministerial consent for all black admissions in 1984.

Not surprisingly, owing to the inferior education that many black students received at schools under the DET, they were at a disadvantage compared to the white students for whom the universities were geared. Students exiting white schools with 12 years of privileged education were better equipped to cope with the increased pace and workload at established institutions of higher education. Moreover, the teaching methods and content of the curricula at white universities favoured white students. Black students coming from under-resourced schools with overcrowded classrooms and poorly qualified teachers (especially in the sciences) were ill equipped for the demands of the degree and diploma courses at the white institutions. With funds provided by corporate capital and the support of the English-medium white universities, foundation programmes in the sciences and engineering were launched to assist black students.

4.1.5 Democracy

As mentioned in the opening chapter of this thesis, the 1994 democratic elections changed the relationship between higher education and the state in South Africa. However, the *mode of the transition* to democracy is crucial in terms of analysing policy debates about higher education restructuring and reform post-1994 (Reddy 2004). This section therefore only briefly refers to the macro-political context between 1990 and 1994 in preparation for Section 4.2 which examines government policy with reference to foundation programmes. Other issues impacting higher education policy in the democratic period, such as the government's change in macro-economic policy in 1996 and the details of the *taaldebat* (language debate), are all dealt with in Section 4.2.

In February 1990, president FW De Klerk announced the unbanning of the African National Congress (ANC) and other struggle organisations and the release of Nelson Mandela from prison. This marked the beginning of formal negotiations between the

leaders of the National Party and the ANC. The mode of transition according to Huntington (1991), can be described as 'transplacement' – 'when both regime elites and opposition elites together determine the collapse of the old regime' (Reddy 2004 p. 28).

Gillomee (1995) argues that South Africa fits the pattern of transplacement since the National Party and the ANC were of roughly equal strength as evidenced by the concessions made by both sides after the breakdown of negotiations in 1992. Davies (1996) briefly details these compromises, noting that the National Party accepted that the capacity of the ANC-led government to govern should 'not be fettered by massive dilution of state power and constitutionally entrenched white vetoes' (p. 329). In return, the ANC accepted power-sharing for five years (from May 1994 to April 1999) in the Government of National Unity (GNU), guaranteed white civil service jobs, reaffirmed private property rights and eschewed radical economic policies (Davies 1996).

In his portrayal of the 'misunderstood miracle' of South Africa's transition to democracy, Guelke (1999) points out that De Klerk embarked on the liberalisation of South African polity with a degree of confidence that the National Party would be able to control the pace of the negotiation process. However, a number of factors, such as the pattern of violence and the passivity of the extreme right during the transition, resulted in the ANC's emerging from the process in a politically dominant position.

A crucial point with regard to the analysis in the following section is that while the ANC dominated the political arena after democracy, the nature of the transition meant that whites still largely controlled the economy (Guelke 1999). Reddy (2004) suggests that the mode of transition in South Africa (transplacement) meant that civil society and therefore higher education were relatively unaffected by the substantial changes in the political realm. From a 2004 perspective, he notes that the impressive gains made in higher education 'sit alongside old patterns reproducing themselves both within the higher education sector and in the relations between this sector and society' (Reddy 2004 p. 39).

Before exploring the relationship between the state and higher education through a survey of government policy, it is worthwhile to mention that one of the concessions during the negotiation process concerned the status of Afrikaans as an official language. Many Afrikaners were (and still are) 'very concerned about the status of their language, especially in relation to English, which can be explained by the severe language struggles in the past' (Henrard 2002 p. 26). On the other hand, the leaders of the ANC could not accept the retention of Afrikaans and English as the only two official

languages. A compromise was thus reached in that it was decided that nine other official languages be promoted alongside English and Afrikaans. With 11, South Africa therefore holds the record as the nation with the most official languages.

4.2 *Survey of government policy with reference to foundation programmes*

It is useful to draw on Badat (2003; 2009) in order to analyse higher education policy in post-apartheid South Africa. He identifies four periods of policy development:

1990–1994: period of symbolic policy-making;

1994–1999: period of framework development;

1999–2004: period of strong steering and implementation;

2004–2010: period of institutional consolidation.

Before going into the details of policy regarding foundation programmes in government documents, it must be pointed out that foundation programmes are somewhat of an anomaly compared to the overall focus of the post-1990 policy project. As will be seen, the theme of government policy was the development of a 'programme for the transformation of higher education' – the title of the 1997 White Paper – in order to break with the apartheid past and realise a single, co-ordinated higher education system based on the principles of democratisation and the need to redress past inequalities. Implicit here is the notion that government is leading the process through the development of policy and its implementation. Since foundation programmes at some previously white English-medium universities had been functioning for close to a decade when the policy process began, there are clearly instances in which *practice was to lead policy* rather than the other way around. Since these initiatives arguably embodied the principles of equity and redress at these institutions, they appear in policy as facets of the system to be retained within a transformative agenda. In fact, the following review shows that foundation programmes appear as a key means by which the incoming democratic government was to reform higher education, using funding as a lever.

4.2.1 Period of symbolic policy making (1990–1994)

As mentioned above, FW De Klerk announced the unbanning of the ANC and other struggle organisations and the release of Nelson Mandela from prison in February 1990. This marked the beginning of a period of symbolic policy-making as the ANC, the self-reforming apartheid state and other contending actors sought to develop principles, values, visions and goals that would guide education reform, unconstrained by the realities of the context within which policy was to be implemented (Badat 2003).

After decades of fighting a liberation struggle using the strategies of 'oppositional politics', the ANC leadership was thrust into the unfamiliar arena of negotiations where such an approach was rendered inadequate (Wolpe 1991). Levin (1991) argues that the major problem the ANC faced was that it had insufficient time to develop organisational structures and processes capable of generating on the ground the policy it needed to take with it to the negotiating table. The task of translating the abstract goals of the Freedom Charter into concrete strategic policy was a difficult one, especially with regard to education. For example, in the context of the struggle against apartheid it may be appropriate to assert that 'The doors of learning and culture shall be opened' (ANC 1955) but this assumes that there are no limits of access to institutions or to the number of institutions or the resources available to them. Education policy that is implementable given certain economic, political and institutional constraints requires an altogether different approach than simply an oppositional one (Badat 1997).

Within this turbulent context, between 1990 and 1994, a 'race for policy position' began, as contending actors sought to establish symbolic statements of intent for change in higher education (Jansen 2001a). To complicate matters, the (apartheid) Ministry of National Education announced its Education Renewal Strategy in 1990, acknowledging that differentiation in education provision on the basis of race was unjust and that equal opportunity should be assured for all. At the other end of the political spectrum, the National Education Co-ordinating Council, a liberal organisation that was banned under apartheid, launched the National Education Policy Investigation (NEPI) that aimed to plot the way forward out of the apartheid past. A monograph based on a background report produced for the higher education group of the NEPI project (Bunting 1994) highlights the most pertinent issues for higher education as emerging from the apartheid past. It allows us to identify the beginnings of foundation programme policy as well as some of the contradictions and tensions within policy that emerged in later years.

The NEPI report argued that, since access to higher education was inequitable because of the history of apartheid education, the government must take steps to 'level the playing fields' to make the competition for the 'scarce resource' of higher education fair:

This 'levelling of the playing fields' could involve changing the language medium of institutions, supporting bridging or academic support programmes, and supporting other affirmative action programmes. (in Bunting 1994 p. 252)

In passing we note the reference to 'changing the language medium' as a way of levelling the playing fields, which obviously refers to the Afrikaans-medium institutions. However, the focus of Bunting's book is more on the inappropriateness of the funding formula for the financing of higher education under apartheid as described in the Department of Education document of 1982. More specifically, Bunting points out that in the past, 'preparatory/remedial instruction' was a category of activity *not* to be funded through the university subsidy formula (1994 p. 139). He therefore argues that the funding formula is a manifestation of an unacceptable ideological assumption about the nature of society. His proposal was that both government and higher education need to recognise the economic and social disparities that exist in society, and that this needs to be reflected in the allocation of funding. Bunting thus recommends that the funding formula be modified to take into account the 'need for higher education to play a role in the redressing of educational, social, and economic damage caused by apartheid' (1994 p. 141).

Overall, early policy initiatives such as NEPI advocated the principles of non-racialism, non-sexism, democracy, redress and a unitary education system (CHE 2004). The emphasis was a symbolic breaking with the unjust system of the past and forging a new direction towards an education system appropriate for a democratic nation. Even though it was unclear how these principles were to be effected since the first democratic elections had not yet taken place, it was obvious that education would have to function on the basis of democracy as well as tackle issues of individual and institutional redress. What was muted at this stage but was later to emerge as an important concern, were references to human resource development – 'skilling' – for participation in the global economy. This was the beginning of the tensions between equity and economic development in post-apartheid education policy. Kraak (2001), refers to the discernible discursive tensions between 'popular democratic' and 'economic rationalist' positions in policy documents before 1994. Badat explains why economic development is not necessarily in harmony with equity: 'Even if such 'economic growth' results in a general rise in living standards it may well be, and

frequently is, accomplished by an intensification of inequalities among the population' (1997 p. 27).

Arguably, the best way to redress the educational disadvantages of apartheid would be a large-scale 'people's education' project, with an emphasis on radical change to education structures and grassroots organisations driving education for the empowerment of the people. However, to do this properly would require vast amounts of money for little immediate gain. Furthermore, such a project would certainly meet with resistance from the private sector and civil society, including the previously advantaged higher education institutions. Redress for its own sake without being connected to a broader plan of economic growth would perhaps be too radically leftist for a country with a developing economy wishing to enter the global economic arena as a democracy. Thus, education (training and skilling) as a means of human resource development for economic growth is a paradigm that much better fits capitalist conceptions.

Badat (1997) notes the uncoupling of 'people's education' from 'people's power' once negotiations were under way (p. 15). The mass base that had given rise to the ideas of people's education had largely dissipated and educational transformation became a problem for experts to solve, leaving community organisations as spectators in the process (Levin 1991). A Council on Higher Education report (2004) points out that early in the development of policies around teaching and learning, some of the radical ideas of people's education with respect to pedagogy and curriculum and the 'political' formation of citizens were displaced by other discourses that emphasised skilling and training for the requirements of economic growth and globalisation.

Wolpe and Unterhalter, writing in 1991, warned that a settlement arrived at through negotiation (transplacement) would mean that the political and social order would change more unevenly and more slowly than was imagined during the struggle years when the aim was to overthrow the apartheid regime. They argued that

...the preoccupation with the provision of education and skilling which fails, on the one hand, to link this with a programme of people's education and with the restructuring of the social and institutional order, and on the other hand, with a clear development strategy, threatens to allow education, by default, to be edged towards performing predominantly a reproductive rather than a transformatory role. (Wolpe and Unterhalter 1991)

As the following section will show, the discursive tensions between policy aimed at social and institutional transformation and policy that emphasised skilling and its role in

economic development reached their climax a few years into the next period. One of the reasons for this was the national shift in macro-economic policy that emphasised economic growth and globalisation.

4.2.2 Period of framework development (1994–1999)

After the first democratic elections and the coming to power of the ANC in 1994, the rather abstracted policy statements of the first period began to gain substance as a coherent policy framework. Arguably, the most important work of this period was carried out by the National Commission on Higher Education (NCHE) that was established by presidential proclamation in 1994. The Commission was charged with advising the GNU on an appropriate framework for the restructuring of higher education, both in terms of addressing the inequalities and inefficiencies inherited from the apartheid era and responding to the new social, cultural and economic demands facing the nation (NCHE 1996).

The NCHE (1996)

The NCHE followed a democratic and consultative process and operated in a mode that was interactive and participatory. The first step was the establishment of broad consensus on the need for change and general agreement on a vision for the future. Principles underpinning the process of framework development were an elaboration of the general principles put forward by various documents in the previous period. As expected, they included the principles of equity, democratisation, quality and effectiveness/efficiency. Broadly speaking, the goals of redress and equality were to be met through *increased participation*. Although not as radical as a programme of people's education, the NCHE advocated moving away from an elite system through a planned process of 'massification' (1996 p. 47). This included the proposal to restructure the sector into a single, diversified yet co-ordinated system. There was also a focus on *increased co-operation and partnerships* within the sector and between the sector and the state, civil society and economy. In terms of the relationship between higher education and the state, the government was to become a partner – 'albeit a very powerful one' (NCHE 1996 p. 48) – with the sector. Lastly, the goal of *greater responsiveness* was outlined in the NCHE Report. This referred, among other things, to the need to shift away from 'elite cultures of privileged middle classes...to incorporate values of non-traditional communities' (ibid. p. 49), necessary due to increased enrolments from a wider array of social classes.

The specific proposals made by the NCHE relevant to this study are those that are associated with entry level courses, academic development and funding. They are:

- *Entry level courses (Proposal S12)*: The NCHE recognised higher education responses to students' lack of academic preparedness in the form of 'largely ad hoc' (p. 68) academic development and support initiatives such as bridging and foundation programmes. In terms of restructuring higher education, however, these programmes were seen to have 'limited capacity in their present forms'. One view within the Commission was that more successful access could be facilitated by reconceptualisation of the parameters and structures of the first degree/diploma. This was a call, in other words, for mainstream change rather than 'add-on' programmes that could be easily marginalised. The final proposal settled on something that seems to fit the description of an extended curriculum programme – entry level courses that are well articulated with the mainstream:

Higher education institutions should provide differential entry points by offering, as an integral part of their mainstream programmes, entry level courses up to one academic year below that of traditional first-year courses. (NCHE 1996 p. 68)

- *Academic Development (Proposal S22)*: This section noted the evolution of AD in South Africa from the paradigm of 'support' in the 1980s to 'mainstream development' as the proportion of underprepared students rendered the add-on approach ineffective (p. 85). This proposal refers to *Proposal S12* in the report, noting that AD will 'have a key role' to play at entry level in promoting student access and success. It was envisaged, however, that AD would go beyond entry level and affect the entire undergraduate process and promote 'quality teaching and learning through staff, curriculum and materials development' in the entire undergraduate process. It is important to note the means by which the NCHE expected AD to be infused into the mainstream: 'To perform this role effectively, AD has to be incorporated into the academic mainstream through *appropriate funding mechanisms*' (1996 p. 85 emphasis added).
- *Earmarked Funding (Proposal F9)*: The NCHE proposed a new funding framework consistent with principles such as equity, development, efficiency and effectiveness. However, in addition to regular funds made available to institutions for general academic, curriculum and institutional development, the mechanism of earmarked funds was to be introduced to target special development needs and projects. Earmarked funding to deal with specific inequalities and issues of redress was to occur through the 'submission of development-oriented project proposals and requests in the areas designated for earmarked funding' (NCHE 1996 p. 130).

The government's overview of the policy framework that emerged from the work of the NCHE (1996) is worth quoting in full, especially because of the phrase, 'Experience shows...' which indicates that the authors are obviously referring to institutions with a history of academic development i.e. previously white English-medium universities. Also note the use of the term 'extended curriculum programmes', the emphasis on articulation with the mainstream, and the reference to the funding mechanism:

The development of extended curriculum programmes will play an important role in promoting student access and success. Experience shows that such academic development-oriented initiatives cannot be confined to the entry level alone, but must affect the entire undergraduate process. [A]cademic development (AD) has an important role to play in the promotion of quality teaching through staff, curriculum and materials development at all levels of higher education. While curriculum development is a responsibility of all academic staff, a small professional core of specialists is needed to guide and co-ordinate AD work in institutions. AD must be provided for in the new formula funding mechanism, while earmarked funding should be available for the development of innovative new approaches and programmes. (NCHE 1996 p. 9)

The Green Paper (1996)

The release of the Green Paper in 1996 represented the formal response of the Department of Education to the proposals of the NCHE. The principles established by the NCHE for transformation of the sector such as redress, access, democratisation and efficiency, were clarified and strengthened in the Green Paper. It described a system of higher education that 'ensured equity of access and the possibility of success' (DoE 1996 Section 1.3.1) for anyone who cared to pursue studies in higher education. The goal of higher education transformation was both to overcome the inequities of the past and to develop the system so that it could make a contribution to social, economic and political development.

While on the whole the Green Paper endorsed the basic framework of the NCHE, there were also some important shifts. Firstly, there was change in the area of governance – the Green Paper deemed the idea of a single, semi-autonomous advisory body, the Council on Higher Education (CHE), more appropriate than the recommended two bodies proposed by the NCHE. Secondly, there was a discernible shift in rhetoric about the restructuring of higher education to foster economic development in order to 'place South Africa in a strong competitive position in the international economy' (Moja and Hayward 2000 p. 343). This is especially relevant in

terms of the role of SET in a modernising, global economy and the need to train previously disadvantaged students in these key areas.

In reference to foundation programmes, the Green Paper embraced and carried forward the ideas developed by the NCHE. In order to address the 'articulation gap' – a term used to describe the disjuncture between the demands of higher education programmes and the preparedness of school leavers for academic study – the Green Paper referred to the need for multiple entry points and extended curricula. It also explicitly referred to the need to support 'the shift in academic development from a narrow focus on access and bridging courses to the integration of academic development approaches in mainstream programmes' (DoE 1996 Section 4.6.3). Reference to this shift away from marginal foundation programmes and towards mainstream integration is key theme in the development of the framework of higher education policy.

With regard to the funding of foundation programmes, the Green Paper agreed with the NCHE that the extra costs of extended curriculum and academic development programmes should be taken into account through a new higher education funding formula. In this regard, the government noted that such programmes 'should be given due weight and status as integral elements of a higher education system committed to improving the quality of learning and teaching' (DoE 1996 Section 4.4.7). While the Ministry recognised that there was a cost differential associated with teaching students from disadvantaged educational backgrounds compared to teaching students from advantaged backgrounds, it considered earmarked funding the best means to account for this. This was a minor difference from the NCHE report which proposed the inclusion of an 'institutional factor' to increase funding for academic development programmes.

If we consider the tenor in the Green Paper with regard to overall funding (not just in relation to foundation programmes), the document stresses the need for redress funding but does so with caution, allegedly because there was unlikely to be much new government funding for redress. The cautious mention of redress caused fear from both the historically disadvantaged institutions and the historically advantaged institutions. The former interpreted the cautionary tone in the area of funding as downplaying the importance of redress despite the rhetoric in the rest of the Paper. The latter, on the other hand, feared that prioritising redress funding would mean that their budgets would be cut and they argued that this would compromise their ability to

maintain quality in delivering education, especially since they too catered for black students.

Most institutions were therefore unhappy with the redress rhetoric in the Green Paper (Moja and Hayward 2000) but apart from this and other differences of opinion in minor areas, it was felt that the Green Paper had carried forward the essential elements of NCHE recommendations. It was expected that after public discussion and some minor changes, the Green Paper would go forward as the White Paper and a base for the development of the Higher Education Act.

The White Paper (1997)

This was not to be. The White Paper released in April 1997 had the dubious privilege of being the first White Paper in South Africa to be regarded as a draft, since the Minister concluded that it was missing elements critical to effective transformation and compromised on the government's commitment to increased access for majority students. Many stakeholders felt that it 'gutted key values and principles' (Moja and Hayward 2000 p. 346) relating to justice, equality and redress.

The downplaying of certain equity and redress principles was accompanied by a shift in focus towards the role of education in economic development. The economic development rhetoric that had found its way into the Green Paper was expanded and elaborated so that it became the major thrust of the White Paper. This shift can be connected to the government's implementation of the GEAR (Growth, Equity and Redistribution) economic strategy. GEAR outlined liberalising reforms to the South African economy, abandoning state and regulatory protection by opening the economy up to global markets in the hope that South Africa would become competitive in selected niche sectors. The change in emphasis between the Green and White Paper can be interpreted as the tailoring of the (especially higher) education sector to provide skilled human resources, an essential element of GEAR strategy. Davies (1996) notes that this change in thinking about universities

...displays a technocratic orientation and echoes, to an important degree, the neo-liberal sentiments favoured by the corporate sector and the World Bank. This shift in strategy has actually resulted in vigorous debate within educational circles close to the ANC. The debate has been cast in terms of the classic dilemma – or the competing demands – between the pursuit of social equity, on the one hand and the promotion of economic development, on the other. (Davies 1996 p. 330)

This represented the final 'nail in the coffin' for a project of people's education. While the NCHE had proposed a strategy of 'massification', the White Paper argued for '*planned expansion* of higher education, with efficiencies achieved in the context of fiscal constraints and using designated policy instruments' (CHE 2004 p. 26 emphasis added).

The announcement of the Minister that the White Paper was to be treated as a draft sparked a heated debate. The furore over the unacceptable shift in focus and omissions resulted in a major revision of the document so that it more closely followed the recommendations outlined by the NCHE that were taken forward in the Green Paper. The result was a more balanced document that apparently settled the competing discourses of equity and development: the "economic rationalist" position was endorsed in a policy focus on the development of higher skills to meet the needs of economic development and global competitiveness...the 'popular democratic' position was endorsed in the declared commitment to a programme of redress' (CHE 2004 p. 232).

Of course, whether or not these positions are compatible in practice is another matter. We have already noted that a commitment to economic development, even with an espoused commitment to equity and social development, frequently results in an intensification of inequality. With this in mind, Badat (1997) proposes that the crucial question for policy formulation is actually this: 'How is the relationship – the balance – between these two poles, always in tension with one another, to be determined?' (p. 28). For Badat, the challenge for the new government is clear: 'to find a path which to some extent satisfies both demands as far as existing conditions permit' (1997 p. 29).

In terms of foundation programmes, the final White Paper recognised the need to improve the chances of educationally disadvantaged students' succeeding in higher education by accelerating the provision of bridging and access programmes. Importantly, it added that 'the learning deficits are so widespread that systemic changes in higher education programmes (pedagogy, curriculum and the structure of degrees and diplomas) will continue to be needed' (DoE 1997 Section 2.32). In other words, the trend towards the integration of foundation programmes with the mainstream that was alluded to in the Green Paper was emphasised in the White Paper. The mainstream needed to change and integrated academic development programmes were to be a primary means by which the mainstream was to cater for educational disadvantage.

Special funding was to be provided (as suggested in the NCHE and the Green Paper) to increase efficiency through a strategy of academic development within the mainstream. The following statement – which was referred to in the opening chapter of this thesis – is a repetition of a statement in the Green Paper:

The Ministry will ensure that the new funding formula for higher education responds to such needs for academic development programmes including, where necessary, extended curricula. Such programmes will be given due weight and status as integral elements of a higher education system committed to redress and to improving the quality of learning and teaching. (DoE 1997 Section 2.34)

A point of vital importance for foundation programmes, especially in terms of later developments in the sector, is the recognition that such programmes require extra funding for a number of reasons such as smaller staff/student ratios and more intensive tuition:

The Ministry recognises the considerable cost differentials involved in teaching students from inadequate educational backgrounds and teaching students from advantaged backgrounds. The Ministry accepts that academic development, foundation and extended programmes should be incorporated in the funding formula. (DoE 1997 Section 4.28)

The White Paper also echoed the proposals of the NCHE in terms of recommendations regarding earmarked funding, particularly for redress purposes as outlined in the Green Paper. Of particular note is earmarked funding to be awarded as an incentive for improved student throughput:

Incentives to encourage institutional success in improving the progression and graduation of students from disadvantaged backgrounds will be provided on a performance basis through earmarked funding. This would include successful academic development programmes, including staff development and curriculum development. (DoE 1997 Section 4.52)

Overall therefore, the third and final draft of the White Paper carried the central features of the Green Paper forward after the conflict between the 'economic rationalist' and the 'popular democratic' discourses were resolved. With regard to foundation programmes, it is obvious that the policy discourse alludes to a certain philosophy regarding foundation programmes, namely the programmes originating at the previously white English-medium universities. The beginnings of this discourse in relation to funding can be identified in the NEPI documentation. Broader notions of AD and the relationship of AD to the mainstream were articulated in the NCHE report, slightly modified and clarified in the Green Paper and finally expressed in the White

Paper. While there are other strategies by which government was to effect redress, such as increased financial aid and more flexible mainstream academic programmes, it is clear that foundation programmes, with earmarked funding as the lever, are one of the key means by which redress is to take place.

4.2.3 Period of strong steering and implementation (1999–2004)

By the time the arduous process of developing a policy framework had ended, it was becoming clear that, left to themselves, higher education institutions were not going to initiate the kinds of change envisaged by the state. Given that the White Paper was meant to be a 'programme for the transformation of higher education' and not a neutral policy document, the Ministry began to signal dissatisfaction with the pace of transformation, especially at previously white institutions. This can be linked to a number of factors, including the mode of the democratic transition in South Africa referred to in Section 4.1, the gradual downplaying of the redress rhetoric in the policy process and the high level of institutional autonomy traditionally enjoyed by many higher education institutions.

In their discussion of institutional autonomy in South African higher education in the first decade of democracy, Hall and Symes (2005) in fact point to 'a systematic increase in direct state control over higher education' (p. 200). The National Plan for Higher Education (DoE 2001c) is the document that most clearly signals the shift of the Ministry towards an approach of 'strong steering' (Badat 2009). This document also reflects the Ministry's attempt 'to make decisive choices and take tough decisions' (Luescher and Symes (2003 p. 7) and to implement some of the goals of the White Paper, as mentioned in Chapter One. In anticipation of objections that the measures it contained would infringe institutional autonomy, the National Plan (NPHE) acknowledged the balance between institutional autonomy and public accountability but also made its intentions clear: 'The Ministry will not however, allow institutional autonomy to be used as a weapon to prevent change and transformation' (DoE 2001c Section 1.5.1).

Of the four issues emanating from the NPHE to be discussed in this section, two have already been mentioned in previous chapters and will be briefly revisited; they pertain to institutional restructuring and academic development.

With regard to the first, Chapter One mentioned that the National Plan revealed the Ministry's decision to restructure higher education to deal with 'the racial fragmentation

of the system' (DoE 2001c p. 6). The tough stance of the Ministry on this issue is reflected in the excerpt below (from the draft of the NPHE):

What is clear, and on this there can be no disagreement, is that the current institutional landscape is not suitable to meet the human resource and knowledge needs of South Africa. The Ministry believes that the restructuring of the institutional landscape cannot be delayed. It is long overdue. It has not occurred earlier because of the reluctance of all concerned to confront the difficult realities inherited from the apartheid past. This cannot continue. We must grasp the nettle and chart a new direction for the higher education system if it is to contribute to the reconstruction and development agenda. (DoE 2001a Section 6.4.1)

The restructuring process initiated by the National Plan resulted in the regrouping into 23 higher education institutions of 36 universities and technikons. As mentioned in Chapter One, some institutions were merged and what were formerly technikons were renamed 'universities of technology'. Neither of the case study institutions in this thesis was merged – they were labelled 'untouchable' by some commentators (Fish 2009) – but the fact that the state embarked on such a course of action sent a powerful message to the sector as a whole – that the state was not beyond intervening if institutions continued to stall on transformation. When the formal restructuring process ended in 2005, there remained 12 universities, six universities of technology and five comprehensive universities, the final category resulting from a merger of a university with what was formerly known as a technikon.

The second issue arising from this period has to do with foundation programmes. Chapter One referred to a comment in the National Plan regarding the content of the submissions received by the Department from institutions requesting earmarked funding for academic development programmes (see page 17). The National Plan indicated that roughly half the proposals it received in this regard fell far short of key criteria, were not effectively integrated into mainstream curricula and indicated a lack of understanding of the role of extended curricula in academic development. It is significant that the National Plan affirmed the role of foundation programmes and admonished institutions to better engage with academic development practice. In further support of foundation programmes, the NPHE indicated that the 'role of academic development programmes in improving the efficiency of the higher education system in terms of graduate outputs is critical' (DoE 2001c Section 2.3.2).

This links to the third issue: the new funding formula for higher education. The National Plan asserted that the 'effective use of funding as a steering lever requires the

development of a new funding formula based on the funding principles and framework outlined in the White Paper' (DoE 2001c Section 1.5). It described the process by which this new funding framework would be developed, indicating that a discussion document would be released for consultative purposes. This is important for this study since academic development was, as expressed in the White Paper, to be funded as 'an integral component of the new funding formula for higher education' (Section 2.8.1).

In March 2001, the Ministry released the discussion document *Funding of Public Higher Education: A New Framework* (DoE 2001b). Ian Scott at the Centre for Higher Education Development (CHED) at UCT responded with an individual submission entitled *Public Funding for Academic Development: Analysis and proposals* (Scott 2001). This document contains a distillation of the thinking around extended curriculum programmes, their place in South African higher education and the mechanism by which they were to be funded. For these reasons, it is discussed below.

Public Funding for Academic Development (2001)

The Scott (2001) submission draws on points made in previous policy documents and positions itself strategically in relation to the White Paper and the National Plan. Scott argues that academic development programmes are essential in meeting equity and development goals, asserts that their intensely interactive nature (among other things) requires additional funding and suggests that they take a certain general form to necessitate an effective public funding approach.

The underlying thread of this section has been to show that in the post-apartheid era, equity concerns were gradually sidelined as the transformation agenda began to favour discourses about skilling, globalisation and economic development. It is obviously within the interests of those driving academic development to present the goals of equity and development as simultaneously achievable and not contradictory and Scott (2001) pulls these goals together in the following way: he notes the policy emphasis on prioritising student retention and graduation, and declares such developments as 'justified and welcome' – a reference to equity. He also suggests that the goals of the National Plan cannot be met without widening participation, not least in 'strategic programme areas' of SET and Business/Commerce – a reference to development. Finally, Scott (2001) brings extended curricula into the picture by proposing that 'AD approaches that have been used historically for widening access have a key role to play in increasing retention and completion rates' (p. 4). In doing so,

he locates foundation programmes at the intersection of the 'economic rationalist' and 'popular democratic' discourses, contending that '[i]n these respects, "equity" and "development" should not be *falsely dichotomised*, and AD strategies remain relevant to key goals set out in the NPHE' (Scott 2001 p. 4 emphasis added).

Scott (2001) refers to the commitments in both the White Paper and the NPHE to *stable, recurrent core funding* for academic development activities and argues that "extended curriculum" should be adopted as the central form of academic development provision for recurrent funding purposes' (p. 6). He defines *extended curriculum programmes* as programmes with 'additional foundational elements' that 'articulate successfully with the "mainstream" or standard curriculum' (2001 p. 6). While this definition allows a certain amount of flexibility in programme design, Scott argues that qualification for funding depends on a single criterion: the inclusion of 'a substantial amount of additional, foundational provision that extends the duration of the programme and is not covered by the standard funding formula' (2001 p. 12).

The advantages associated with this form of provision, according to Scott (2001), are that they:

- are 'readily "fundable"' (p. 6);
- effectively address the 'articulation gap' affecting disadvantaged students which is 'systemic in origin' (p. 9);
- have a 'proven track record of facilitating access and success for disadvantaged students, not least in...Engineering and Science' (p. 10); and
- can be 'steered by national policy goals' and may be 'a useful policy lever' (p. 10).

In order to improve accountability, Scott (2001) suggests that education institutions be invited to submit proposals to motivate for funding on specified extended curricula in three-year cycles. He also mentions that the approval of the FTE (full-time equivalent) places motivated for by institutions would depend on the approach set out in the new funding framework. As mentioned in Chapter One, two preliminary funding cycles preceded the DoE's call for proposals in 2006 when it was announced that R367m of earmarked funds would be allocated towards foundation programmes for the 2007/8–2009/10 triennium. As will be seen, the key ideas articulated by Scott (2001) appear in this document, entitled *Funding for Foundational Provision in Formally Approved Programmes* (DoE 2006). Since this document was published in the period of institutional consolidation (2004–2010), it is discussed in the following section.

The fourth and final issue in this period pertains to language. The National Plan recognised that the previously Afrikaans-medium institutions were gradually adopting a combination of dual and parallel-medium language strategies but it was also mentioned that 'language continues to act as a barrier to access at these institutions' (DoE 2001c Section 3.1.2). It continued, saying that 'even where a dual and parallel-medium language policy is in place, its implementation remains uneven with only some courses within a degree or diploma programme offered in dual and parallel-medium mode. This is unacceptable and cannot continue' (ibid.). The NPHE stated that the Ministry had requested the Council on Higher Education to advise it on the development of an appropriate language policy framework and that this would be used as a basis for determining a language policy for higher education. This document is discussed below and is linked to the *taaldebat* at Stellenbosch University.

Language Policy for Higher Education (2002)

In July 2001, the Minister of Education invited Professor Jakes Gerwel to establish an informal committee to advise him on the position of Afrikaans in the university system. Although the report generated by this investigation (Gerwel et al. 2002) recommended that two universities, the University of Stellenbosch and Potchefstroom University, assume as 'one of their main responsibilities attending to the sustained development of Afrikaans as academic and scientific medium' (p. 13), it was decided by the Minister that such a position was not appropriate for a public institution in a democratic South Africa. In accordance with the mood of the National Plan, the Language Policy for Higher Education (DoE 2002) took a firm stance on Afrikaans. While it acknowledged Afrikaans as a 'national resource' as a language of scholarship and science it did not agree that Stellenbosch (or Potchefstroom) University should be designated as a custodian of Afrikaans:

The Ministry does not believe, however, that the sustainability of Afrikaans in higher education necessarily requires the designation of the University of Stellenbosch and the Potchefstroom University for Christian Higher Education as 'custodians' of the academic use of the Afrikaans language, as proposed by the Gerwel Committee...The concern is that the designation of one or more institutions in this manner could have the unintended consequence of concentrating Afrikaans-speaking students in some institutions and in so doing setting back the transformation agendas of institutions that have embraced parallel or dual medium approaches as a means of promoting diversity.

(DoE 2002 pp. 11–12)

The state therefore continued (and continues) to push for Stellenbosch to adopt a language policy more appropriate for a public South African institution. In other words, for English to have precedence in the language policy so that black African students can be better accommodated.

This has been vigorously opposed by the *taalstryders*¹³ at Stellenbosch, a group that is intent on saving Afrikaans as an academic language and argues that 'dual-medium in particular but also parallel-medium' (Giliomee 2009) inexorably leads to the displacement of the local language. They insist that the only solution is that Stellenbosch be designated a single-medium Afrikaans university, and propose that lecturers be required to conform to this strict language policy or leave. Furthermore, they suggest that a monitoring system be put in place and that students write a proficiency test to be able to proceed at the end of first year (Giliomee 2009).

University management at Stellenbosch University is slowly shifting on the language issue but continues on the one hand to soak up pressure from the state and on the other to experience severe criticism from the *taalstryders*. Nevertheless, the number of dual- and parallel-medium undergraduate classes offered at Stellenbosch has risen over the years (Giliomee 2009). Although Afrikaans remains the default medium of instruction, the present posture of the university is the encouragement of parallel-medium instruction 'where it is academically possible and justifiable, as well as affordable' (*Language Plan of Stellenbosch University* 2010).

4.2.4 Period of institutional consolidation (2004–2010)

This final period of policy development in South African higher education can be taken to extend to the present and is described as a 'period of institutional consolidation' by Badat (2009). Following the considerable flux in the previous period, the state now began to accord priority to system and institutional stability and include greater certainty, consistency and continuity of national policy. Despite 'ongoing skirmishes' (Badat 2009 p. 461) between some institutions and the state about various matters, this period is marked by a resolution of the policy issues that were an object of contestation in the previous periods. Two other developments in this period are worth mentioning here, both of which were referred to in previous chapters of this thesis: firstly, the launching of the AsgiSA programme in 2006, a government initiative aiming to expand the production of high-level person power. This programme was mentioned

¹³ *Taalstryders* can be translated as 'language activists'.

in Chapter Three in relation to the appointment of ADLs at the University of Cape Town. The second development was the division of the Department of Education into the Department of Basic Education and the Department of Higher Education and Training (DHET) in 2009.

Only one document from this period will be referred to, namely, *Funding for Foundational Provision* (DoE 2006), released in May 2006.

Funding for Foundational Provision in Formally Approved Programmes: 2007/8 to 2009/10 (DoE 2006)

Since this document is essentially an invitation to institutions to apply for R367m of earmarked funding made available by the Department for the 2007/8–2009/10 triennium, it is concise. As mentioned above, the terminology and key ideas included in it are clearly attributable to Scott (2001). The most important notion carried forward from Scott (2001) is that foundational provision must be firmly articulated with an accredited mainstream programme. Indeed, the definition of an ECP according to this document is: a formally accredited degree or diploma that is extended or augmented by certain AD components, courses or modules (DoE 2006). As outlined by Scott (2001), an ECP qualifies for funding if it contains ‘substantial foundational provision’ and extends the duration of the regular curriculum by ‘at least 0.5 and not more than one academic year’ (DoE 2006 p. 4).

It is interesting to note that much of this document is dedicated to the technical exercise of how to calculate the FTE totals in an extended curriculum programme. In fact, since the details of this procedure (Section 6) depend on the calculation of credit values (Section 5) and determining subject matter classifications (Section 7), this means that more than half of *Funding for Foundational Provision* is taken up with technical explanations and calculations. This is clearly the Ministry’s strategy to give substance to the ‘fundability’ of the ECP model as expressed by Scott (2001).

Chapter 5 – Comparison of two foundation programmes

A brief history of foundation programmes in the South African context has already been given in the introduction. The following section examines the different strategies that were employed by the University of Cape Town and Stellenbosch University with regard to foundation programmes in engineering. This includes accounts of the initial design of the programmes and the modifications that occurred to them over the years of their operation. A brief quantitative analysis is also presented with the intention of providing an idea of the size of each of the programmes (in terms of the number of registrations) as well as their success in terms of graduation rates. As mentioned in the *Methodology* chapter, the purpose of this analysis is to give substance to the comparison in preparation for the qualitative analysis that is to follow in Chapter Six.

5.1 *The Academic Support Programme for Engineering in Cape Town (1988–2010)*

The University of Cape Town and Wits University were the first two institutions in South Africa to launch foundation programmes for black students in engineering. While the Wits programme was funded by a mining company, the fuel giant Shell Oil approached the vice-chancellor of UCT with a proposal for a bridging programme in engineering. According to one of the staff who was involved with the project early on, Shell was willing to fund the programme and find the students if the university was willing to accept them into chemical engineering. The vice-chancellor of UCT at the time, an individual noted for his progressive actions in the sphere of higher education, agreed to go ahead with what was later called the 'Shell Scheme'. Shell set about identifying and selecting some of the country's top black school students who, in 1981, were sent to the best private schools in the country for a post-matric year.

In 1982, the group arrived at UCT three weeks before the start of term for an orientation course with a designated mentor. This individual devised a short course to expose them to the principles of engineering (which included factory visits), as well as teaching study and note-taking skills in preparation for the academic challenge of university. After this, the students commenced a traditional mainstream four-year

engineering degree. Although UCT provided no explicit academic support (except for the three-week orientation programme), the students had the advantage of considerable extra-curricular support:

- Shell supported them financially by paying for everything from fees and accommodation to books and pocket money;
- The students were accommodated nearby in the university residences;
- A lecturer-mentor provided orientation and emotional support and the students were provided with counselling, tutor support and career guidance from within UCT;
- A “home-base” in the Faculty’ where the students could meet and ‘form a community’ was provided. (Sass 1988a p. 26)

The Shell Scheme was deemed a success – 12 of the 15 original students graduated with chemical engineering degrees in 1986, one with first class honours (Sass 1988a).

Parallel with these developments in engineering, a more systemic response came from the central ASP unit that was established in 1980. This unit became involved with activities aimed at assisting educationally disadvantaged students as well as implementing bridging programmes in various faculties. In the words of the 1985 Yearbook:

The Academic Support Programme attempts to ensure both that there is a place in the University for students with potential who experience difficulties because of a poor educational background, and that carefully designed programmes are available to assist such students to overcome the academic problems they may encounter. (University of Cape Town Yearbook 1985 Section 1, p. 35)

In 1985, an agreement between the ASP and the Faculty of Engineering meant that an academic support programme was launched alongside the Shell Scheme. This initiative was very closely linked to the one in the Science Faculty. In fact, 20 of the 50 places on the ASP in Science were reserved for engineering students (Sass 1989) who, like their peers in science, took non-credit bearing courses in mathematics, physics and chemistry as well as a language course called English for Academic Purposes (EAP), a ‘writing-based general skills course for “second-language” students educated in the former DET system’ (Warren 1998 p. 79). A credit-bearing course in Engineering Drawing completed the curriculum for the ASP in engineering. Figure 5.1 is a graphical representation of the two models as illustrated by Sass (1988a).

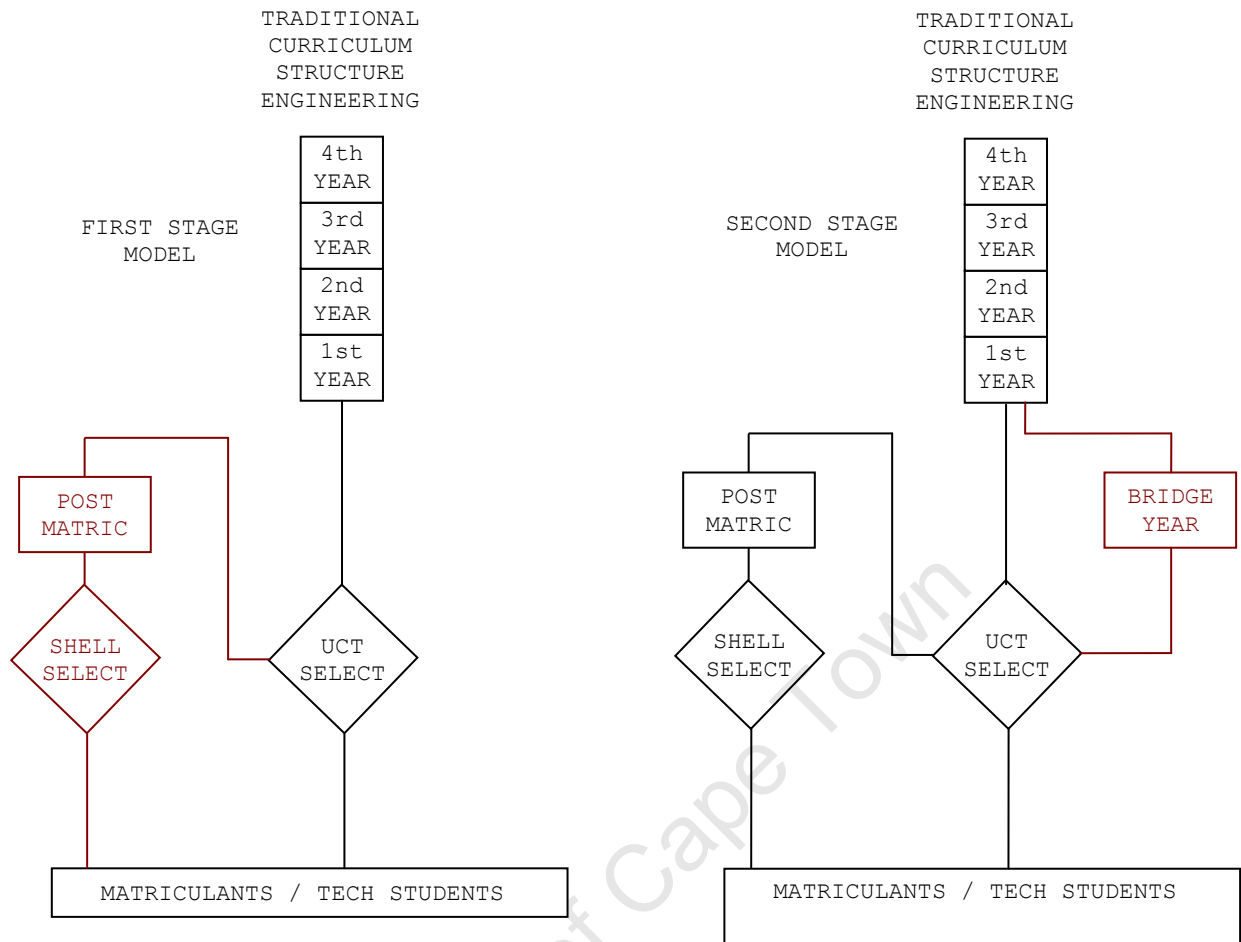


Figure 5.1. Two flowcharts showing the Shell Scheme (left) with the inclusion of the UCT Academic Support Programme (right), from Sass (1988, p. 25).

It is important to note that the ‘TRADITIONAL CURRICULUM STRUCTURE’ remains firmly intact in both models. This is linked to a very important consideration at the time – the university’s assurance that standards were not being lowered (*ASPECT bridges the gap* 1988).

Sass (1989) notes a number of problems with the ‘BRIDGE YEAR’ in the second stage model, also called the ‘Foundation Year Programme’. The most important of these is that students did not gain any credits towards their degree during the bridging year, something that was seen as a demotivating factor. According to Sass, those who did not succeed ‘at best wasted a year and at worst left UCT frustrated and disillusioned’ (1989 p. 3). The Foundation Year ran for only two years (Sass 1989) – it was discontinued at the end of 1987.

The following year, the Engineering Faculty developed and implemented a modified five-year programme called the Academic Support Programme for Engineering in

Cape Town or ASPECT. Although experience had obviously been gained from the previous models, it was officially '[d]evised under the leadership of UCT's Dean of Engineering, Professor John Martin' (*ASPECT bridges the gap* 1988) in conjunction with interested parties from industry and the Peninsula Technikon (Sass 1988a). In fact, Sass (2010 pers. comm.) specifically mentions that it was a 'Mech. Eng. model' i.e. that it was developed by academics within the Department of Mechanical Engineering.

In terms of its operation, ASPECT was to be 'run by the Faculty of Engineering with input from UCT's established Academic Support Programme' (*ASPECT bridges the gap* 1988). In terms of funding, industrial sponsors led by Anglo American, had committed themselves to giving bursaries to students entering the programme, paying for their accommodation in residence and other expenses, as well as paying UCT a R3500 surcharge (Sass 1989) for each student. This paid the salaries of the ASPECT lecturers. Thus, although the posts were owned by the ASP (which later became the Centre for Higher Education Development or CHED), they were managed jointly by ASP and the Faculty, a typical arrangement at UCT to this day.

5.1.1 ASPECT curriculum structure

In terms of curriculum structure, the crucial difference between ASPECT and previous models of support is that all the courses were credit-bearing and counted towards the student's degree. In other words, students did not do any non-credit bearing 'bridging' courses but the credit-bearing courses in the first two years of a traditional degree were now spread out over three years. Sass (1988a) depicts the structure of the ASPECT model in the following way:

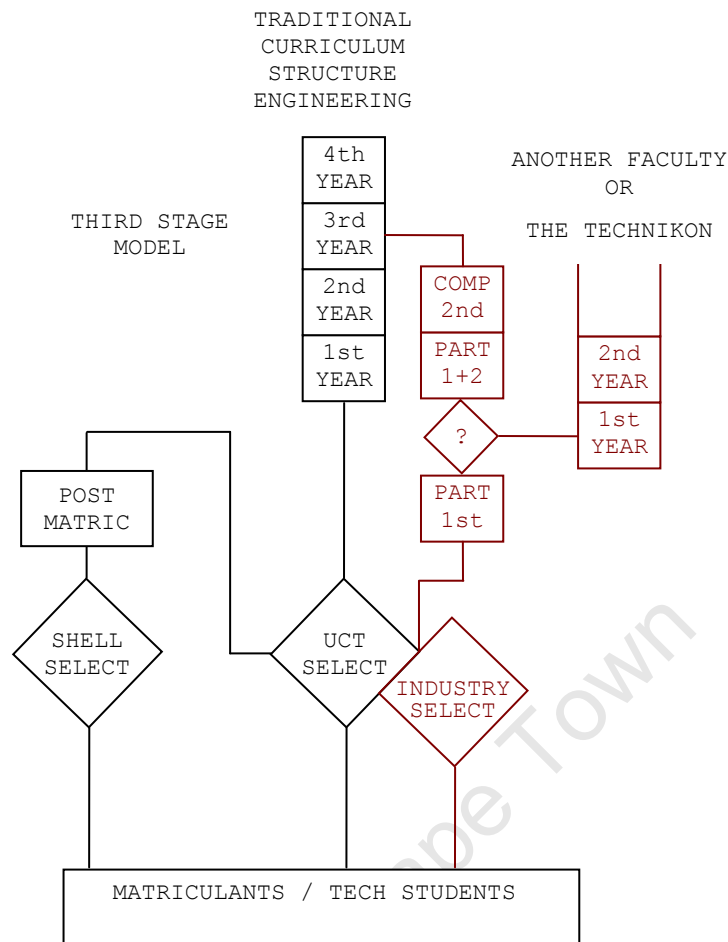


Figure 5.2. A flowchart showing the envisaged 'Third Stage Model' that was to become the ASPECT programme, from Sass (1988, p. 26).

Although a faculty report (Sass 1988b) indicates that some of the students coming through ASPECT were funded by Shell along with Anglo American and the other funders, the Shell Scheme shut down shortly after 1988. Figure 5.2 once again indicates that the 'TRADITIONAL CURRICULUM STRUCTURE' occupies the same position as it did in Figure 5.1. Nevertheless, ASPECT more closely represents a parallel stream than previously. As mentioned above, this is linked to the issues of maintaining academic standards in the mainstream as the Dean of Engineering makes clear in an article in UCT News:

I hope that at least half of those who succeed in the bridging year will end up in the normal engineering stream at UCT. But I would like to emphasise that there will be no lowering of entrance and exit standards in the Faculty.

(ASPECT bridges the gap 1988)

The bridging year that the Dean is referring to is the 'PART 1st' in the flowchart above. The '?' thereafter indicates the point at which the 'final decision on the most

appropriate route for each student to follow will be taken' (Sass 1988a p. 27). 'Academic considerations' were the most important determinant for the route the student was to follow and the decision would be made upon discussion with the participants involved, including the company sponsoring the student. As the diagram shows, the student could continue within engineering as part of the ASPECT programme, transfer to another faculty (such as the Science Faculty where credit for and/or exemption from courses was a possibility) or go to the Peninsula Technikon or perhaps another tertiary institution (Sass 1988a).

Compared to the ASP Foundation Year, the first year of ASPECT was designed to be relevant for engineering students. In 1988 it was based on two credit-bearing courses, the *Mathematics Bridging Course* and the *Engineering Bridging Course* (Sass 1988a), both of which were 'intensive' with 'twice the normal contact time of a first year course' (pp. 26–27). According to Sass (1988a p. 27), the first course was to include a 'fundamental review of key topics from high school mathematics as well as a full coverage of the regular first year mathematics curriculum'. The other, the *Engineering Bridging Course*, was to consist of four elements, two of which had been part of the Foundation Year, namely Engineering Drawing and English for Academic Purposes. The third element was the first half of a regular course in Applied Mathematics (which was to be repeated the following year) and the fourth was to be an 'engineering enrichment' element which was 'planned as a matrix [to] bind the other parts of the course together' (Sass 1988a p. 27). The intention of this last element was to include a variety of activities, such as hands-on experience in engineering workshops, plant visits, seminars, design projects and computer-modelling of engineering processes (Sass 1988a).

One of the difficulties of describing the ASPECT programme, as with other academic development initiatives from this period, is that there is little evidence documenting what was done. We are fortunate to be able to draw on a journal article by Sass (1988a) which describes the structure of the programmes and some of the philosophy behind it. However, even in such a case, other sources need to be consulted since this paper describes the intentions – it was written in 1987 before ASPECT was launched – rather than what was really implemented. A discussion document by Sass (1989), for example, describes the *Engineering Bridging Course* as being made up of three elements rather than four: '...Applied Mathematics (i.e. mechanics), Engineering Drawing and Communication Studies' (p. 5). It also tells us that ASPECT students did an in-house Communications Studies course and not the EAP course that was offered by the central ASP Unit.

Sass (1989) also describes the changes that were made after the first year of ASPECT's implementation. The name of the language/communications module was changed to *Technical Communication* and was to include instruction in 'all forms of communication, written, oral and graphical' (Sass 1989 p. 6), being designed specifically for engineering students. There was also a drawing component to this course that was to prepare students for the formal first year drawing course that ASPECT students would tackle only in their second academic year. The students apparently showed a lack of interest in the Applied Mathematics course (Sass 1989) that was a component of the *Engineering Bridging Course*. Sass suggests that the reason for this was that students realised that they were going to have to repeat this course the following year, regardless of their level of achievement. This resulted in the launching of an *Applied Mathematics Bridging Course*. Like its counterpart in mathematics, this course had twice as much contact time as the regular first year course although the ASPECT students wrote the same examinations as mainstream students (Sass 1989).

While there were some other changes after 1992 – such as the launching of a one-lecture-a-week course called *Introduction to Studying Engineering* and some alterations to the *Technical Communication* course – the next significant period of change occurred in 1995. At this time the university embarked on a process of programmatisation and the Engineering Faculty was restructured, becoming the Faculty of Engineering and the Built Environment in 1997. Until this time, students passing their first year ASPECT courses could, with their sponsor's concurrence, choose the engineering programme they wanted to follow in their second year, be it Chemical, Civil, Electrical or Mechanical Engineering. However, after 1995, ASPECT students took a discipline-specific *Introduction to Engineering* course along with mainstream students in a particular department. The purpose for this was to introduce 'students to the real world of engineering' (Sass, Reed, and Mchunu 1997 p. 264). The communication course was also redesigned and was called *Introduction to Communication*, the name that it bears to this day.

A more fundamental change occurred when the *Applied Mathematics Bridging Course* was replaced by an ASPECT Physics course. Initially, ASPECT students attended mainstream Physics lectures with ASPECT staff running additional collaborative workshops (Le Roux 2009) but this was changed to a model similar to the *Mathematics Bridging Course* i.e. the course was taught by ASPECT staff but the students wrote mainstream tests and examinations. In Physics, this practice again changed in 2005 with ASPECT staff setting their own assessments in liaison with the

Physics Department that also approved and externally examined the papers. A change of this kind occurred much more recently with the Mathematics Department – ASPECT staff began to set their own assessments for Maths at the beginning of 2009.

Although ASPECT is described as a programme where ‘the first two years are spread over three’, most of the support occurs at first year level. Since its inception, ASPECT expects students to complete the regular first year subjects as well as Mathematics II in their second academic year. The third year of study is then ‘devoted to completing the outstanding second year requirements of the degree programme’ (Sass 1988a p. 28). In the early years, support offered to ASPECT second year students included ‘supplementary tutorials, particularly in Physics and Chemistry’ (Sass 1988a) and in their third year, support with ‘design courses’ (p. 28). There was also to be ongoing counselling and mentoring for ASPECT students as they (hopefully) merged into the general student body. A glance at the ASPECT webpage indicates that this approach is virtually unchanged to this day (*Overview: The ASPECT programme* 2010).

It is clear that the support ASPECT students receive in their second and third years is more informal and less intensive than the support they receive in their first year. This results in a common foundation programme problem: students tend to struggle to make the transition to the pace and workload of mainstream courses (Le Roux 2009) resulting in a high attrition rate after first year. To counter this problem, something that the programme organisers were cognisant of in the late 1980s, it was emphasised that the first year of ASPECT was to be ‘academically demanding...not an easy option’ (Sass 1989 p. 5). This point is reiterated in a recent ASPECT report (Le Roux 2009). Another strategy to reduce the attrition of ASPECT students after their second year of study was the recognition of different criteria for readmission to UCT for the following year i.e. the minimum number of credits that an ASPECT student needs to obtain to be allowed back the following year is lower than for mainstream students (Martin 1991).

There are a few other points that need to be mentioned about the ASPECT programme before the registration and throughput data is analysed:

- It built on the success of the Shell Scheme ‘in that it aimed to provide a “home base” in the Faculty’ where students could ‘form a community’ (Sass 1989 p. 4). The community dimension is an important consideration of ASPECT to this day (Ahmed et al. 2009; Le Roux 2009).
- One of the advantages of intense industry involvement initially was that it made the selection and sponsorship of these students a much easier task than it had been with the ASP in engineering. However, as the number of black students

into the mainstream began to increase, industry sponsorship began to wane and the university took over the responsibility for paying ASPECT lecturers.

- Apart from what is described above, the ASPECT model has remained largely unchanged since it was launched in 1988. There have, of course, been small alterations to the curriculum in an attempt to streamline the programme and satisfy the requirements of the four departments that it serves. In this regard, it is interesting to note that in order to qualify for DoE funding formula as an ECP, a very minor adjustment had to be made: an afternoon tutorial in one subject had to run for an extra hour so that the programme could meet the criterion of double contact time according to DoE (2006).

5.1.2 Registration and graduation statistics for engineering at UCT

This section examines registration and graduation data for ASPECT and the engineering mainstream at UCT. While the complexities of the data presented in this section are further discussed in Appendix E, one issue will be mentioned here: there are in fact different categories of ASPECT student. Firstly, students who were entered into ASPECT by their sponsors but had very high matric marks were given the opportunity to complete the degree in four years. Such students were called ASPECT 'fliers'. From 1991 to 2003, 88 such students passed through the system. While this variation was to accommodate students who were academically excellent, the Engineering Foundation Programme (EFP) was launched in 1999 to try to address the significant number of students who were *not coping with the demands of ASPECT*. (This is the second unusual type of ASPECT student). This programme used the resources of the Science foundation programme (General Entry for Programmes in Science or GEPS) and two other courses that were taught by ASPECT staff (Pearce and Le Roux 2004). Le Roux describes the EFP:

...it was an experiment that ASPECT tried for a number of years to try and deal with students that had been accepted into ASPECT in order to make up the demographic profile but were failing terribly and didn't have much of a chance of making it. (Le Roux 2010 pers. comm.)

Compared to the SECOND STAGE MODEL depicted in Figure 5.1 (the ASP in Engineering), the EFP is similar in terms of curriculum structure. However, it must be noted that the EFP was an intervention *by ASPECT* for a small group of students perceived to have little chance of passing the five-year programme. It was decided that these students – 19 of them in 1999 – would be given the opportunity to prove

themselves with a curriculum load lighter than that of the ASPECT students. If a student was successful in this programme, he or she could be accepted into the five-year ASPECT programme which would mean that he or she would probably take at least six years to complete his or her engineering degree. This intervention ran from 1999–2003, with a total of 258 students registering over the six years (an average of about 43 students per year). According to Le Roux (2010 pers. comm.), this model was abandoned because the graduation rate was simply not good enough for the effort that was being put into it.

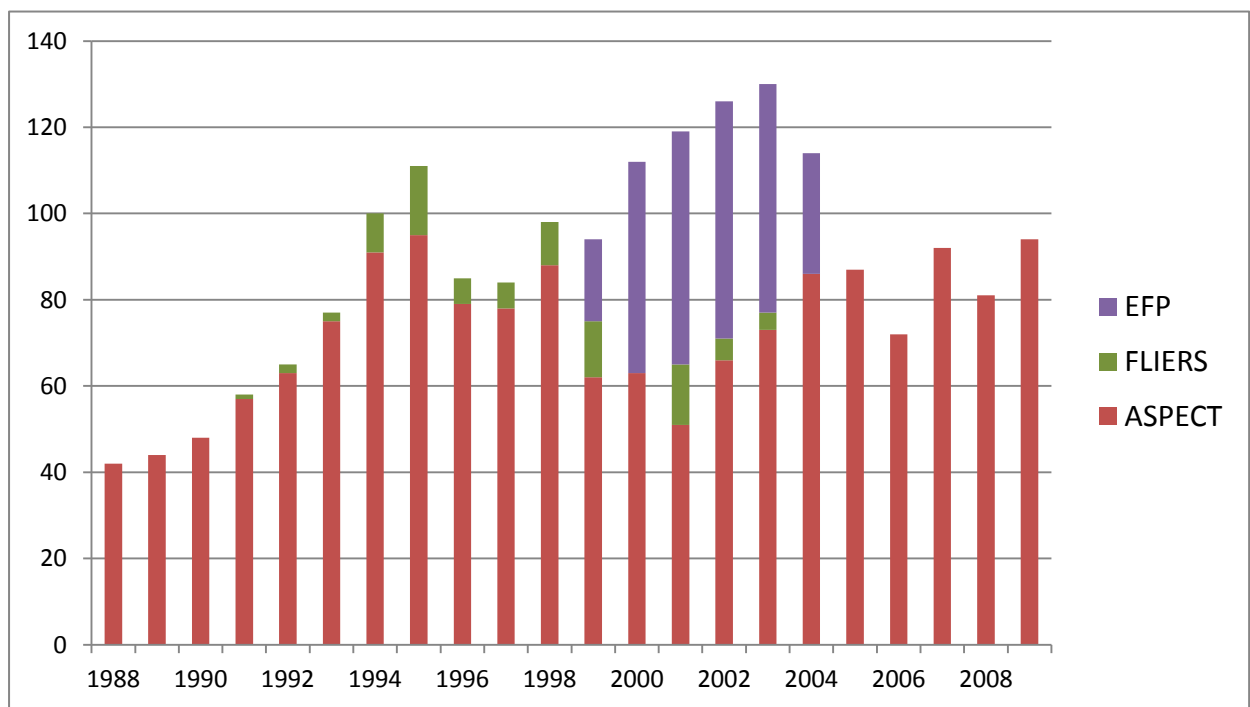


Figure 5.3. Number of ASPECT students in first year, including EFP students and the ASPECT ‘fliers’, (1988–2009).

Taking these categories into account means that the number of students registering for ASPECT starts at roughly 42 in 1988 and peaks at 130 in 2003. Of course, if we discount the EFP students and the ASPECT ‘fliers’ the highest number of students is 95 in 1995 and, very close to this, 94 in 2009. The above graph shows this variation.

While these numbers are small compared to the total number of students registering in the four main engineering programmes, if we examine the overall student intake by population group, we see that ASPECT makes a substantial impact on the number of

first time¹⁴ black African students accepted into the Faculty. The graph below summarises these data.

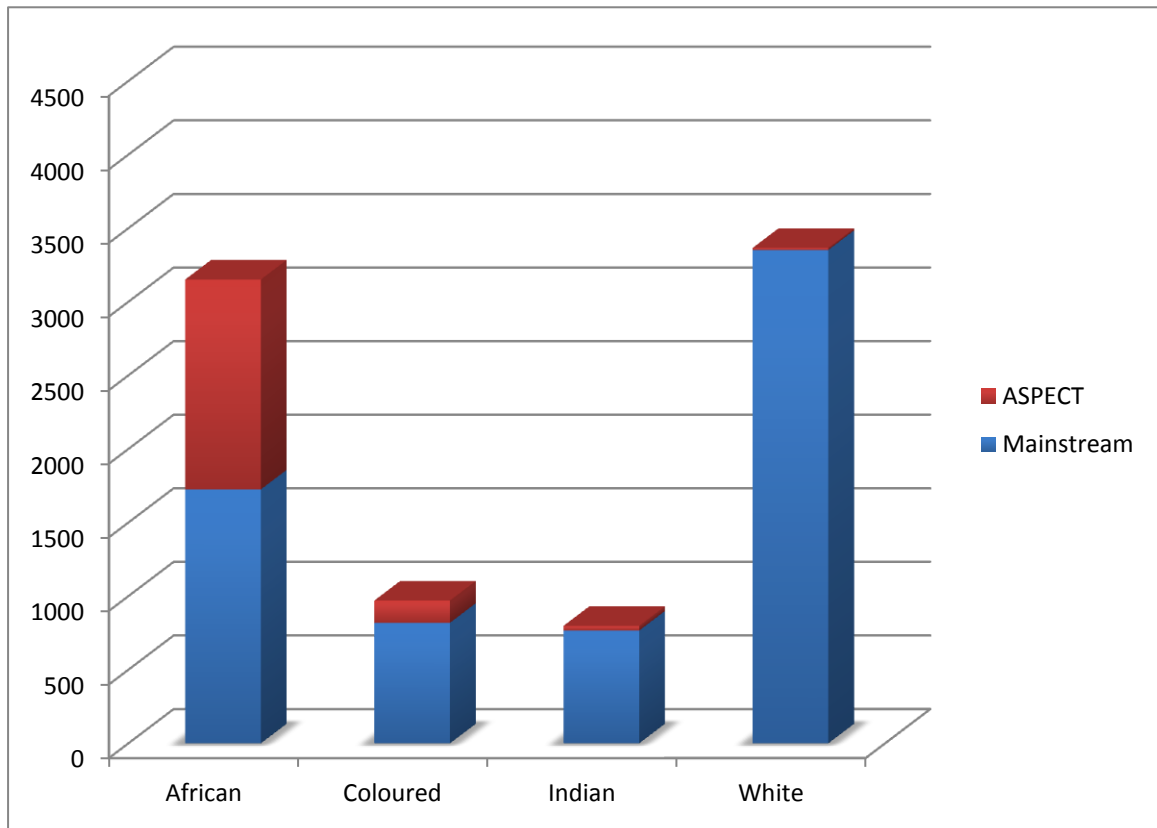


Figure 5.4. First year registrations in the mainstream and ASPECT in the Engineering Faculty at UCT by population group, (1988–2009).

This graph shows that 45% of black African students who registered for engineering did so through the ASPECT programme. Including these students means that overall, the number of black African students registered between 1988 and 2009 is nearly as much as the number of white students – 3151 as opposed to 3366. An outline of the history of the programme has shown that ASPECT and its precursors targeted black African students so these figures are not surprising. However, it must also be acknowledged that a number of students from other race groups have benefitted from ASPECT, as shown in the table below. For example, 16% of the coloured students who have been admitted into the faculty came through ASPECT. It is also important to note that the number of white students who have registered through ASPECT is small.

¹⁴ The difference between ‘first time’ entering students and first year students is discussed in Appendix E.

In fact, ASPECT registered its first white student only in 1998. In total, over the 22 years analysed, less than half a percent of the total number of white students registered through ASPECT.

Table 5.1. A comparison of mainstream and ASPECT registrations in the Engineering Faculty at UCT by population group, (1988–2009).

<i>Programme</i>	<i>Population group</i>			
	<i>African</i>	<i>Coloured</i>	<i>Indian</i>	<i>White</i>
<i>Mainstream</i>	1725	819	766	3352
<i>ASPECT</i>	1426	151	32	14
<i>% in ASPECT</i>	45%	16%	4%	0.4%
<i>Total</i>	3151	970	798	3366

It is interesting to look at some of the work done by Jawitz (1994) who examined the school background of ASPECT registrees in the early 1990s. He identifies students in ASPECT and in the mainstream from schools administered by the former DET. Perhaps the most important finding is that ASPECT helped to increase the number of DET matriculants in the Engineering Faculty from 6.2% in 1988 to 21.8% in 1993 (Jawitz 1994 p. 3). In 1992, the number of students coming from DET schools peaked at 84% of ASPECT registrations and made up 14% of registrations in the Faculty of Engineering as a whole. This study clearly shows that ASPECT was focused on improving access for students coming from educationally disadvantaged backgrounds.

A slightly earlier study, Jawitz (1993) attempted to monitor the effectiveness of the ASPECT programme. Here, he examined the progress of the first cohort of ASPECT students, trying to gauge their success (in terms of graduation) in comparison with mainstream students. Rather optimistically, he says that 'it is expected' that 54% of this cohort would complete a university degree and 78% would 'eventually complete a degree or diploma at a university or technikon' (Jawitz 1993 p. 2). While such a success rate was possible at the time of writing if all the students still in the system had graduated, a later more critical look at the data shows that only 8% of the first cohort graduated with *an engineering degree* in minimum time (five years) and an additional 14% completed the degree in six years.

At this stage we are in a better position to examine the effectiveness of the ASPECT programme through an analysis of 16 cohorts, starting where Jawitz did, in 1988. The table below compares graduation in the mainstream and ASPECT by population

group. The total number of students in each population group is significantly different from the numbers in Table 5.1 because the graduation data ends with the 2003 cohort. The reason for this is that sufficient time needs to be allowed for students to graduate. Since the minimum time for graduation in the mainstream programme is four years, students are tracked until 'minimum time +2' i.e. six years after registration. Given that the designed time for graduation through ASPECT is five years, students are tracked until seven years after registration. This means that students registering in 2003 with ASPECT have been tracked until 2009. For comparative purposes, the registration data from 1988–2003 is included in Appendix E.

Table 5.2. Success categories for the 1988–2003 cohorts in engineering at UCT by population group: totals.

<i>Programme</i>	<i>Population group</i>				Total
	<i>African</i>	<i>Coloured</i>	<i>Indian</i>	<i>White</i>	
Mainstream	748	545	451	2307	4178
<i>Graduating in 4 years</i>	125	121	118	1140	1561
<i>Graduating in 5 years</i>	140	107	83	427	782
<i>Graduating in 6 years</i>	83	53	38	117	296
<i>Other</i>	151	100	75	359	702
<i>Excluded</i>	249	164	137	264	837
ASPECT	997	79	21	6	1123
<i>Graduating in 4 years</i>	46	4	0	3	53
<i>Graduating in 5 years</i>	179	11	1	1	195
<i>Graduating in 6 years</i>	169	15	1	0	192
<i>Graduating in 7 years</i>	62	7	0	0	70
<i>Other</i>	174	5	2	1	188
<i>Excluded</i>	367	37	17	1	425
Total	1745	624	472	2313	5301

An analysis of the mainstream data shows that just under half (49%) of white students – 1140 of 2307 students – graduated in minimum time (four years). This is the highest proportion compared to the other population groups, with Indian, coloured and African students at 26%, 22% and 17% respectively. This is illustrated in Figure 5.5 below.

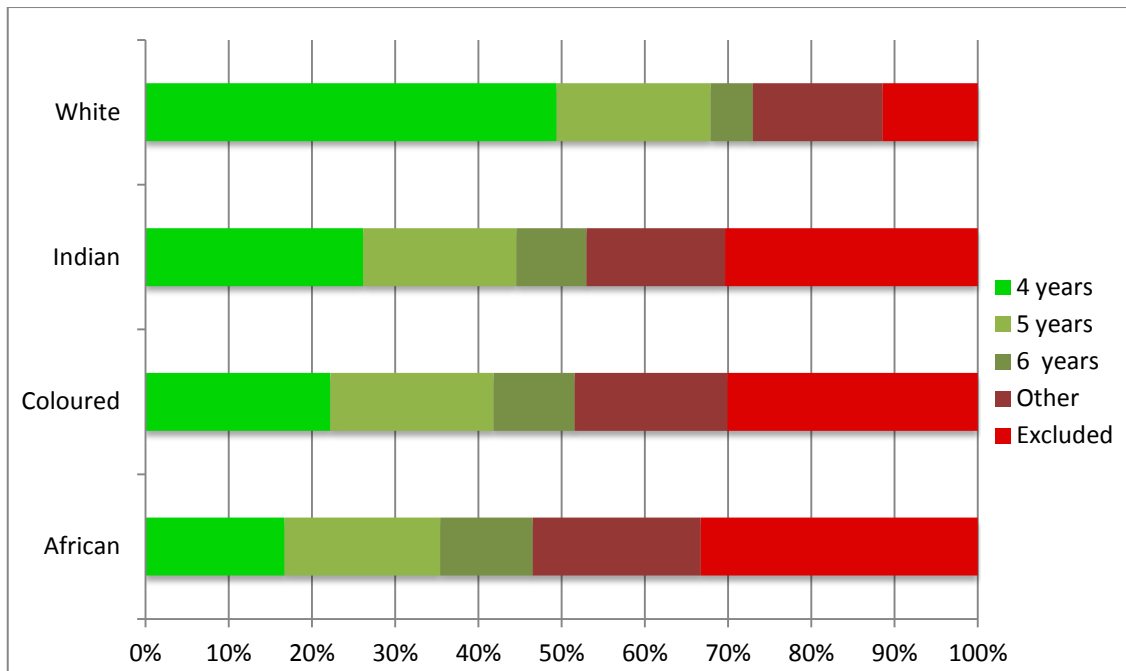


Figure 5.5. Success categories for the 1988–2003 cohorts in engineering at UCT by population group: mainstream.

It also shows that the proportion of students graduating in five and six years is fairly similar between the population groups. The 'other' category includes students who graduated in more than six years (typically a very small proportion) or are still registered (also a very small proportion). This category also includes students who graduated in another faculty, left in good academic standing or students that transferred to another faculty. Only those students who were excluded from UCT, either through the engineering faculty or another faculty, make up the 'excluded' category. In this regard, the number of white students who were excluded is significantly smaller (at 11%) than the other population groups. For coloured and Indian students, the proportion of students who were excluded is 30%, while 33% of black African students were excluded. Overall, the proportion of white students graduating in six years or less is over 70%. The equivalent proportion of coloured and Indian students is just more than 50% while the proportion of African students graduating in six years or less is 47%.

The graduation data for the ASPECT cohorts, illustrated in Figure 5.6 below, must be analysed with care. While the numbers of students in all four population groups in the mainstream are large, in the ASPECT cohorts the number of white and Indian students is six and 21 respectively. This accounts for the unusual profiles which will be briefly discussed before focusing on the African and coloured population groups. Considering

that the minimum time to complete the ASPECT degree is officially five years, that three of the six white students graduated in four years suggests that they were registered with ASPECT but were put on a four-year programme. They can thus be considered ASPECT ‘fliers’ (see Figure 5.1) and thus essentially part of the mainstream group. Indeed, the profile of the bar in the graph below is very similar to the profile of white students in the above graph. As far as the Indian students are concerned, more than 80% fall into the ‘excluded’ category for ASPECT, which is a much higher proportion than in the mainstream.

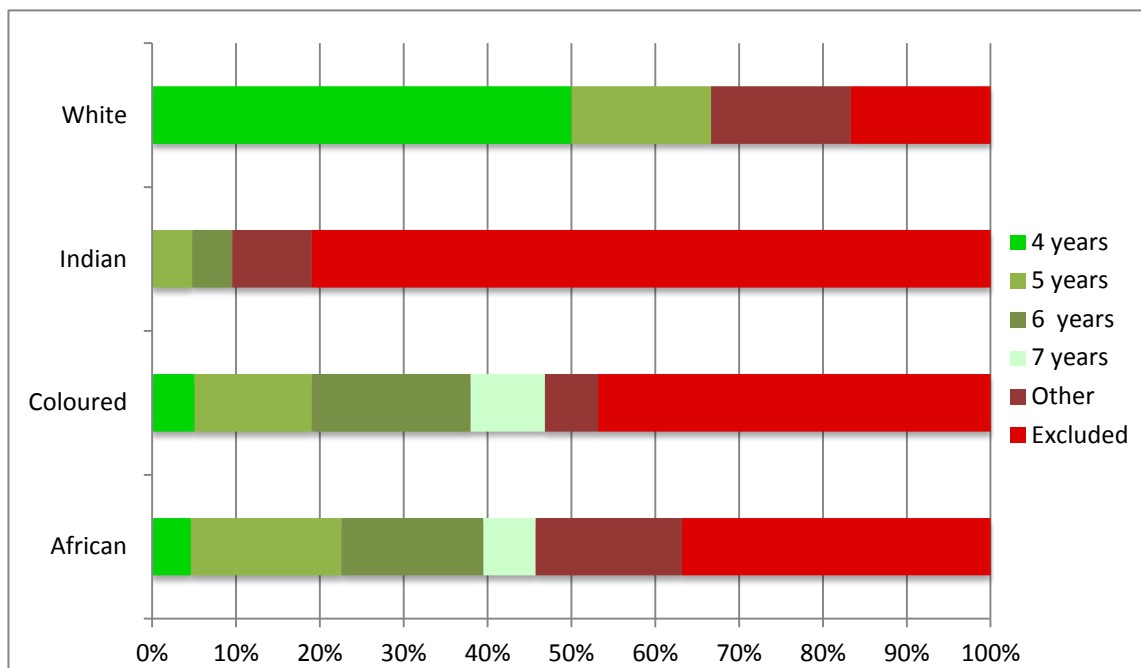


Figure 5.6. Success categories for the 1988–2003 cohorts in engineering at UCT by population group: ASPECT.

The success category profile of the black African and coloured population groups is similar. For both these groups, a small proportion of students who graduated through ASPECT in four years, probably the ‘fliers’ (see Figure 5.1) coming through the system. But since the minimum time for graduation for ASPECT is *five years*, it makes more sense to compare this category with the students graduating in *four years* through the mainstream. 18% of African ASPECT students graduated in five years which is nearly the same as the proportion graduating in four years through the mainstream, which stands at 17%. The proportion of coloured students graduating in five years is less than the proportion graduating in four years in the mainstream – 14% compared to 22%. The proportions of students graduating in six and seven years is

comparable to those graduating in five and six years in the mainstream. Overall, the number of coloured students graduating through ASPECT is less than 50% whereas in the mainstream it was slightly more. For the black African group, the numbers are very similar: 46% graduated in seven years or less through ASPECT while 47% graduated in six years or less through the mainstream. Since the number of black African students registering on ASPECT between 1988 and 2003 is more than the number of students registering in the mainstream, this means that the total number of ASPECT graduates is greater than mainstream: a total of 456 black African students have graduated through ASPECT compared to 348 through the mainstream.

5.2 *The Extended Degree Programme at Stellenbosch University (1995–2010)*

In 1994, Stellenbosch University established a Division for Academic Development Programmes (AAOP)¹⁵. The Division was to institute academic development programmes in various forms – bridging, ‘catch up’ and support programmes – and to lengthen degree programmes for students who ‘have potential but are educationally underprepared’ (*Ontwikkelingsaksies Kry Beslag* 1994 p. 1). Among its other functions, the AAOP was also to ‘develop and implement intensive language and other support courses for students from disadvantaged backgrounds before the beginning of the academic year’ (*ibid.*). The activities of the AAOP were not funded by the university itself but, as was the case with most other higher education institutions at this stage, by ‘big business’ and industry. At Stellenbosch, sponsors of academic development included Gencor and Murray & Roberts who gave funds as part of their social development contribution¹⁶.

In the 1996 Stellenbosch University Yearbook, we see that the AAOP had implemented various support structures by this time, including the Gencor Bridging Programme and the Tutor Programme. Various language programmes, in both English and Afrikaans, were also offered. According to the yearbook, Afrikaans support was given at three levels: for beginners, second language and ‘mother-tongue’ speakers ‘with a focus on listening and writing skills’ (*Universiteit Stellenbosch Jaarboek* 1996

¹⁵ The Afrikaans acronym for the equivalent, ‘AAOP’ (*Afdeling Akademiese Ontwikkelingsprogramme*) is used here.

¹⁶ It is interesting to note that the biggest sponsor of the AAOP in the early years was an American foundation that prefers, up until today, its name not to be mentioned.

Section 1, p. 151). Since 'most academic textbooks are in English' (ibid.), support in English focused mainly on reading. *Basisprogramme* (foundation programmes) were also offered¹⁷:

[T]hese are programmes that consist of lengthened degree programmes with various mechanisms to help ensure successful study. Foundation programmes normally consist of the spreading out of the first academic year over two years with assistance, preparatory and various support courses designed to offer students maximum help with their studies

(*Universiteit Stellenbosch Jaarboek 1996* Section 1, p. 151)

5.2.1 Curriculum structure

By 1996, foundation programmes had been established in six of the 10 faculties at Stellenbosch (de Klerk, van Deventer, and van Schalkwyk 2006). The Engineering Faculty had launched its academic development strategy the previous year, in 1995, which consisted of two interlinked programmes:

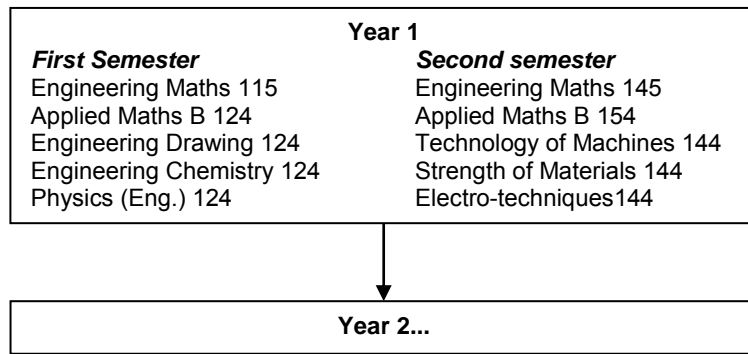
- The 'Five-year Plan' (FYP) which spread out the first two years of a four-year curriculum over three years; and,
- An Academic Development Programme (AOP¹⁸ in Afrikaans) which was structured around the Five-year Plan.

The first was simply a rearrangement of the courses in the first two years of the traditional four-year degree so that it would take five years to complete. According to the yearbook, the FYP was designed to 'make the transition between school and university easier' and 'to make it possible for every student to lay a good foundation for later study years' (*Universiteit Stellenbosch Jaarboek 1995* Section 11, p. 18). It should be noted here that the FYP was not specifically designed for students from educationally disadvantaged backgrounds and included no additional modules or extra support. While there were differences in the subject arrangement for each programme, they were all very similar. Some of the courses in the FYP for Mechanical Engineering are compared with the mainstream programme below.

¹⁷ Unless otherwise stated, the excerpts in this section are translated from Afrikaans by the author.

¹⁸ *Akademiese Ontwikkelingsprogramme*.

Mechanical Engineering Programme



Five-year Plan for Mechanical Engineering

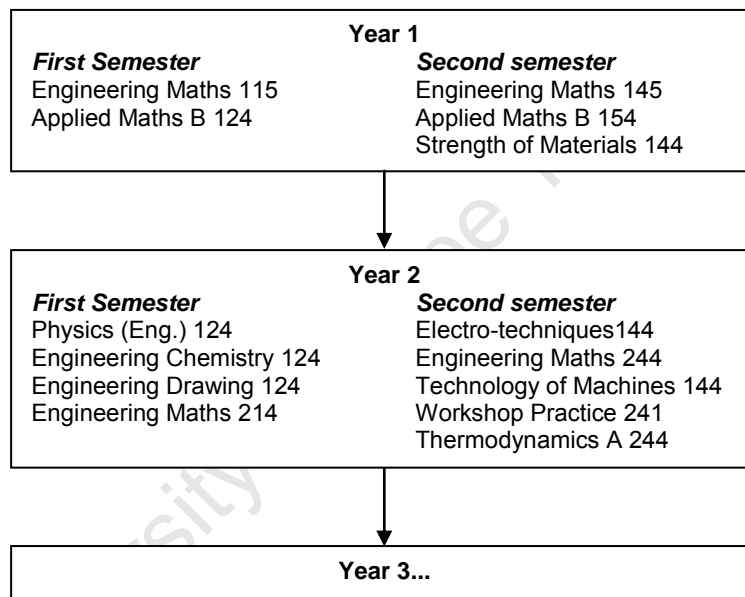


Figure 5.7. A flowchart showing the Five-year Plan for Mechanical Engineering.

Students struggling in the mainstream were allowed to transfer to the Five-year Plan but had to apply in writing to the Faculty before the April 25 (*Universiteit Stellenbosch Jaarboek 1995* Section 11, p. 18).

The AOP in engineering was implemented ‘to help students with inadequate educational backgrounds master the B.Eng. degree’ (*Universiteit Stellenbosch Jaarboek 1995* Section 11, p. 25). As mentioned above, this programme was structured around the Five-year Plan but also included a number of non-credit bearing courses so that the focus of the whole structure was designed ‘to help eliminate academic handicaps’ (*ibid.* p. 21). The Gencor Bridging Programme was included as part of this strategy. This was an intensive mathematics course that prospective

students had to complete successfully in order to gain entry to the faculty. The entire arrangement, generic for all programmes in engineering, is illustrated below:

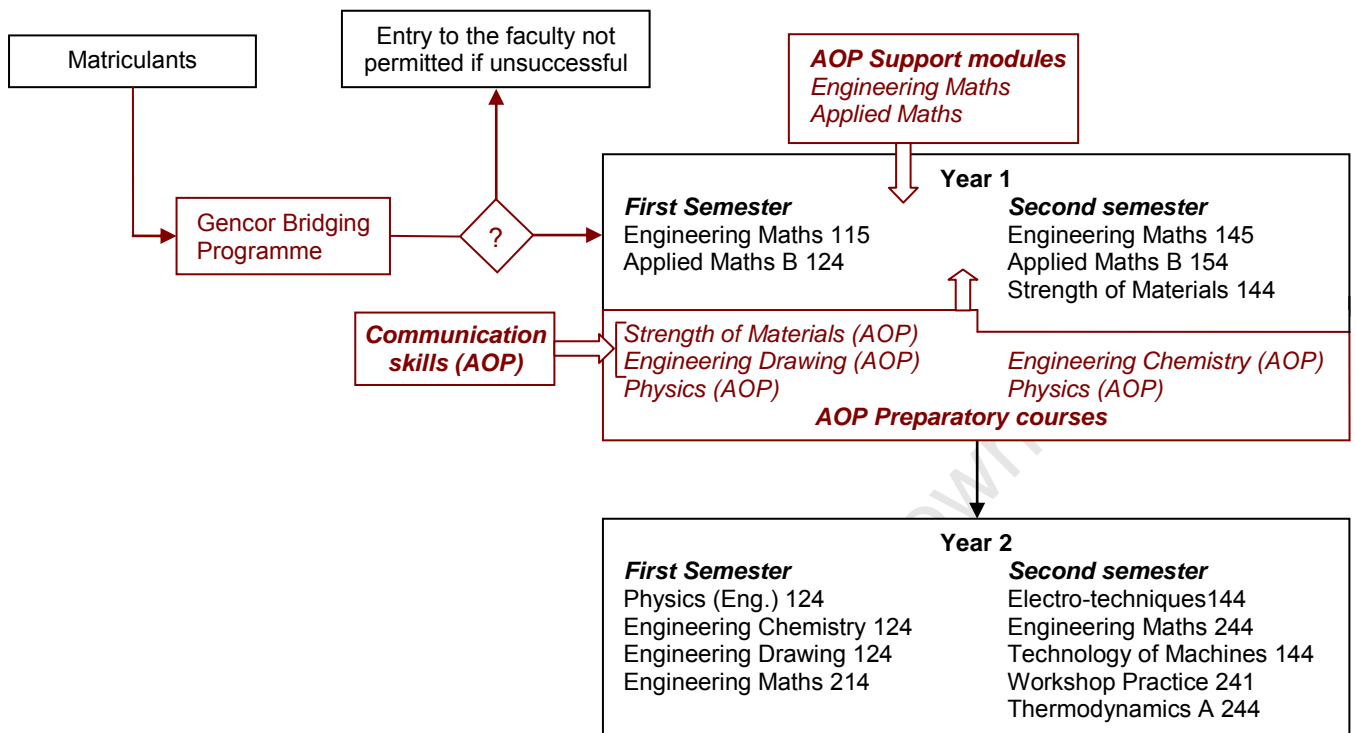


Figure 5.8. A flowchart showing the articulation between the various components of the Academic Development Programme and the Five-year Plan.

Specific aspects of the AOP include:

- Support modules in Engineering Mathematics and Applied Mathematics in the form of additional tutorials and seminars;
- Non-credit bearing preparatory courses in Physics and Chemistry, Strength of Materials and Engineering Drawing. Students were required to pass these courses in order to register for the follow-on subjects in second year;
- Communication skills were specifically developed in the AOP Strength of Materials and Engineering Drawing courses.

Only if a student passed all the courses in the first academic year of the AOP would he or she be allowed to register for the remaining conventional first year courses as well as some second year courses in his or her second academic year. It was planned that students attempt the remainder of the second year courses in the third academic year and, if successful, complete the first two years of the degree in three years.

In 1997, the option of a stand-alone Five-year Plan was discarded and the Academic Development Programme became the vehicle by means of which students could complete the first two years of the B.Eng. degree in three years. The university yearbook describes this route as including ‘various modules...in the first year of study to help eliminate academic handicaps’ (*Universiteit Stellenbosch Jaarboek 1997* Section 11, p. 19). These modules are identical to those in place before which meant that in structure, the AOP route was entirely unchanged. It remained like this for six years until 2003 when it was re-configured as an EDP.

Before we deal with differences between the EDP and the previous models, it should be noted that some alterations were made to the structure of the AAOP (the central academic development unit) in 2000. It was grouped together with two other divisions, the Centre for Student Information and the Division of University Education, and was called Academic Development Programmes (AOP). The umbrella structure co-ordinating these groups became known as Academic Support Services or *Akademiese Steundienste*. As before, the division ran bridging programmes (no longer prefixed by ‘Gencor’), the Tutor Programme, academic development programmes and language programmes. Two other programmes were added:

- *The Mentor Programme* to co-ordinate the recruitment and training of ‘special senior students’ to offer both academic and non-academic help for underprepared students and to point them to other support structures where necessary;
- *Outreach Projects* concerned with helping to improve teaching at school level ‘where the problem of underpreparedness often lies’ (*Universiteit Stellenbosch Jaarboek 2000* p. 168, Section 1).

In 2004, the structure of Academic Support Services was altered to a form that it resembles today. What was called Academic Development Programmes (AOPs) became the Centre for Teaching and Learning (SOL)¹⁹. This and a number of other units – most notably the Language Centre – were grouped under an umbrella body that was called the Centres for Academic Support (AS)²⁰. The SOL continued to co-ordinate and support the foundation programmes that were running in various faculties across the university, including that in engineering. In 2003, these initiatives were

¹⁹ Centre for Teaching and Learning or *Sentrum vir Onderrig en Leer (SOL)*.

²⁰ Centres for Academic Support is abbreviated as *Akademise Steun (AS)*.

officially renamed Extended Degree Programmes (EDPs). As the diagram below indicates, the structure of the programme in Engineering was virtually unchanged.

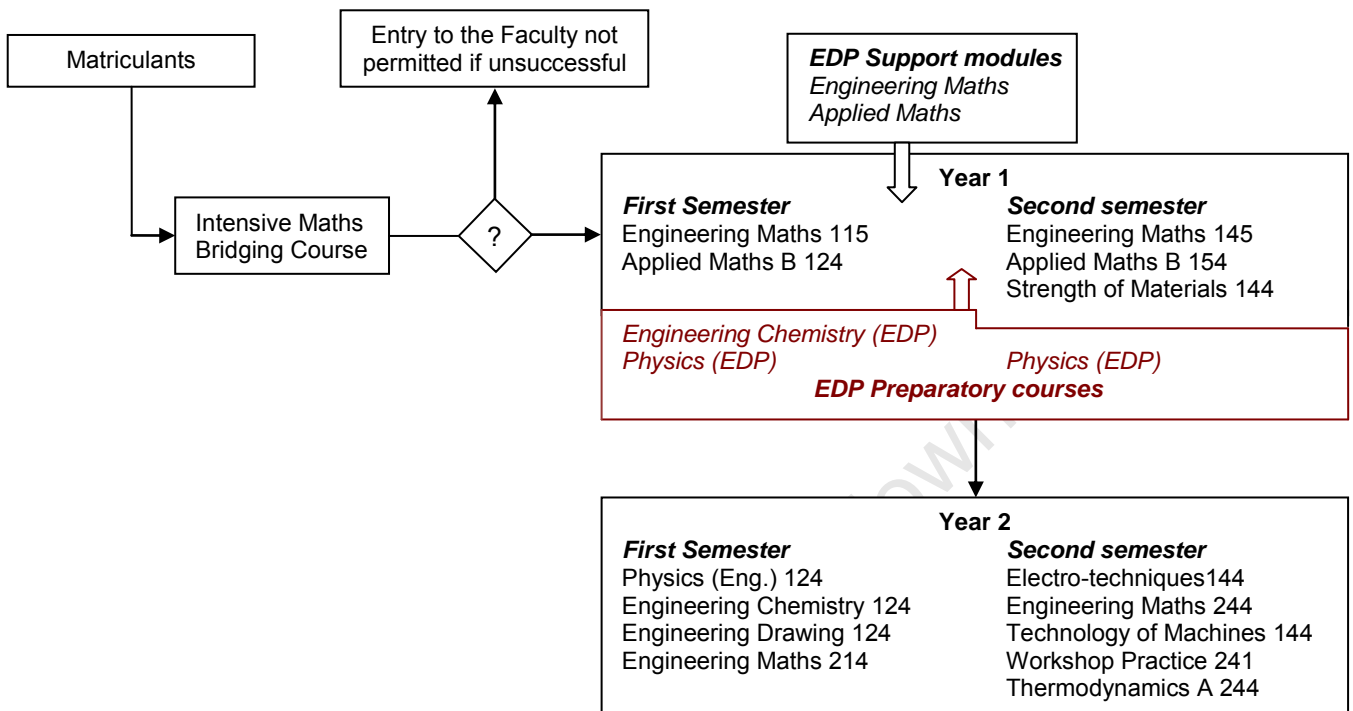


Figure 5.9. A flowchart showing the various components of the Extended Degree Programme.

Although it was not called the Gencor Bridging Programme, as already mentioned, students were still required to register for an intensive Mathematics bridging programme which ran for a period of four weeks before the start of the university year. During this period, students were exposed to the ‘demands and the workload of university study’ (*Universiteit Stellenbosch Jaarboek 2003* Section 1, p. 177) and had to write a number of tests in order to establish their potential for learning. Students who improved their test marks (not necessarily those who scored high marks in these tests) would be allowed to register on the EDP.

Once on the EDP, students took the same mainstream first-year courses as AOP students had done before, namely Mathematics and Applied Mathematics, with the corresponding support modules. However, Strength of Materials and Engineering Drawing (with their associated language support modules) were cut out of the structure of the first year of the EDP, leaving only Physics and Engineering Chemistry as non-credit bearing preparatory courses. It was compulsory for students to pass

these subjects before being allowed to register for Physics and Engineering Chemistry in their second academic year.

While Stellenbosch University itself was under pressure to cater for a more demographically diverse student intake, the Engineering Faculty faced pressure from both the Engineering Council of South Africa (ECSA) and the Department of Education to produce more black engineers (*Stellenbosch University News* 2008). In order to try to address this, the DoE provided substantial funding for the translation of course material and employment of part-time lecturers in the Engineering Faculty to ensure that courses, especially at first year level, were offered in dual medium. Dual medium, called the T-option at Stellenbosch where 'T' refers to *tweetaligheid* (bilingualism), refers to the use of both English and Afrikaans in roughly equal proportions in the lecture room. In 2006, the Engineering Faculty went one step further and introduced parallel Afrikaans- and English-medium streams at first-year level.

At this stage the Department of Education invited proposals for ECPs, academic development programmes that had to meet certain criteria in order to qualify for funding (DoE 2006). The Science Faculty at Stellenbosch responded and began to work with the Centre of Teaching and Learning in re-structuring its extended degree programme in order to meet the DoE's criteria and obtain funding. It is significant that Engineering decided not to follow this route but continued to offer its EDP in much the same format as before. Engineering decided instead to focus its energies on parallel language streams at first year level, which were introduced in 2006. Along with this, came a revision of the degree structure into a common first-year curriculum. Although students still registered for a specific programme, for example Mechanical Engineering, all first year students took the same subjects. The rationale for the common first year was the formation of larger first year classes, thus making the teaching of subjects in parallel language streams more manageable. Moreover, students could more easily switch registration to another engineering discipline if they wanted to.

The language streaming process occurred (and still occurs) at the beginning of first year through a language proficiency test administered by the Language Centre called *Communication 110*. The relationship between the test and the various routes that could be followed thereafter are:

- Students not achieving satisfactorily in the language skills test and lacking language skills in Afrikaans must register for *Language Skills (Afr)*;
- Students not achieving satisfactorily in the language skills test and lacking language skills in English must register for *Language Skills (Eng)*;

- Students performing satisfactorily in the language skills test are to register for *Philosophy of Engineers* and *Professional Communication*;
- Students whose communication skills in both English and Afrikaans are inadequate, are not be allowed to enter the B.Eng. degree directly.
(*Universiteit Stellenbosch Jaarboek* 2006 pp. 39–40)

It should be noted here that while the yearbook states that students ‘must’ register for certain language skills courses, official university policy states that no language skills courses are compulsory. However, the Faculty stipulates that if it recommends that a student do a language skills course and he or she chooses not to, ‘the student cannot use insufficient skills in the particular language as an excuse for special treatment with regards to language’ (*Stellenbosch University Yearbook* 2009 Section 1, p. 23).

Students had to either achieve satisfactorily in *Communication 110* or pass the language skills courses for automatic admission to any second-year course. The reason for this was that most courses at second-year level were offered in Afrikaans. This, however, changed in 2008 when the Engineering Faculty offered parallel English and Afrikaans streams up to second-year level (*Stellenbosch University Yearbook* 2010 Section 11, p. 19)²¹. Those students who had done language skills courses in their first year were encouraged to do the follow-on language skills course in second year in order to prepare them for the later years of study. For mainstream students, *Computer Programming* was (and still is) offered as a T-option module in the second semester of first year. The logic behind this was to give students the opportunity to develop their ‘weaker language’ (*Universiteit Stellenbosch Jaarboek* 2006 Section 11, p. 39) outside the dedicated language skills modules.

The structure of the EDP changed slightly in 2006 when the first semester course in *Engineering Chemistry* was changed to a full year course. This meant that now both Physics and Chemistry were offered as full-year, credit-bearing courses although they were still essentially preparatory. Students were allowed to do mainstream first year Physics and Chemistry in their second year only if they had passed the relevant EDP course. The intensive mathematics bridging programme was also discontinued in 2006 but, as in the mainstream, EDP students had to attend language skills courses after their proficiency had been determined. For example, those students deemed to be lacking both English and Afrikaans language skills (from the results of the *Communication 110* test) were instructed to take *Language skills (Eng.)* for two semesters and thereafter *Language skills (Afr.)*.

²¹ ‘*University Yearbook*’ is cited here rather than ‘*Universiteit Jaarboek*’ since this document was published in both English and Afrikaans from 2009 onwards.

In 2010, the Engineering Faculty decided to phase out the EDP and launch the Foundation Year for Engineering (FYE). This separate bridging year is designed to 'help students with an inadequate school background to master the B.Eng. Programme' (*Stellenbosch University Yearbook 2010* Section 11, p. 40). Only if a student successfully completes the Foundation Year is he or she admitted to the mainstream. The yearbook explicitly states that places on this programme are limited and preference is given to students from disadvantaged communities. The structure of the FYE feeding into the common first year is illustrated below:

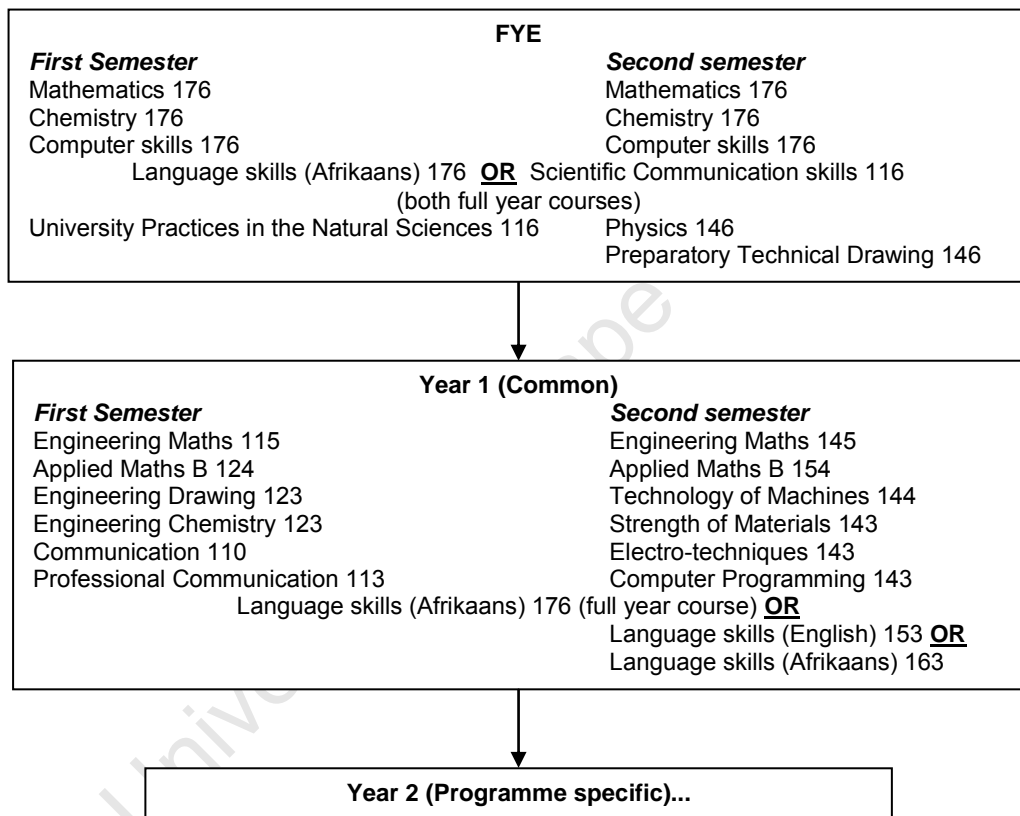


Figure 5.10. A flowchart showing the articulation between the Foundation Year for Engineering programme and the common first year in the Engineering Faculty.

Students completing the foundation year successfully are allowed to enter the first year of the mainstream degree in the language of their choice and with dedicated language skills modules if necessary. A student passing *Language skills (Afrikaans)* 176 in the FYE is obviously not expected to repeat the course in his or her second academic year but will enrol for other language skills courses if help is still needed with language.

5.2.2 Registration and graduation statistics for engineering at Stellenbosch University

This section examines some of the registration and graduation statistics for the mainstream and the foundation programme within engineering at Stellenbosch. Both modes of the foundation programme, the AOP and the EDP, are referred to hereafter as the EDP. The registration data were obtained through the centralised Division (of) Institutional Research and Planning at Stellenbosch. These data were gathered by a census on the first Tuesday in June from 1995–2009 and on April 30 in 2010. As with the previous section, some of the complexities of the data collection are discussed in Appendix E.

The graph below shows the number of students who registered for the foundation programme offered by the Engineering Faculty since 1995.

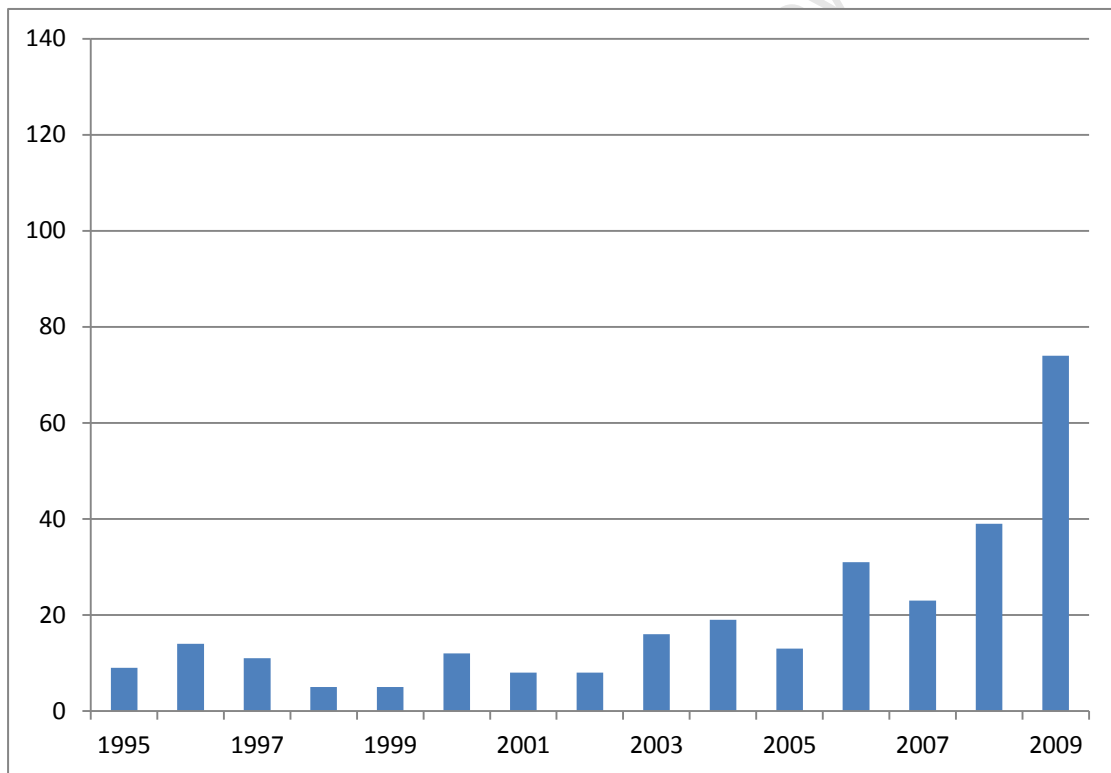


Figure 5.11. Number of engineering EDP students in first year, (1995–2009).

While the size of the programme is relatively small, the numbers do seem to be gradually increasing. In 2009, 74 students registered on the EDP.

Figure 5.12 below gives the demographic profile of foundation programme students in comparison with the mainstream. As can be seen, this profile ‘differs from what would

be found at most other higher education institutions' as pointed out by de Klerk et al. (2006 p. 154).

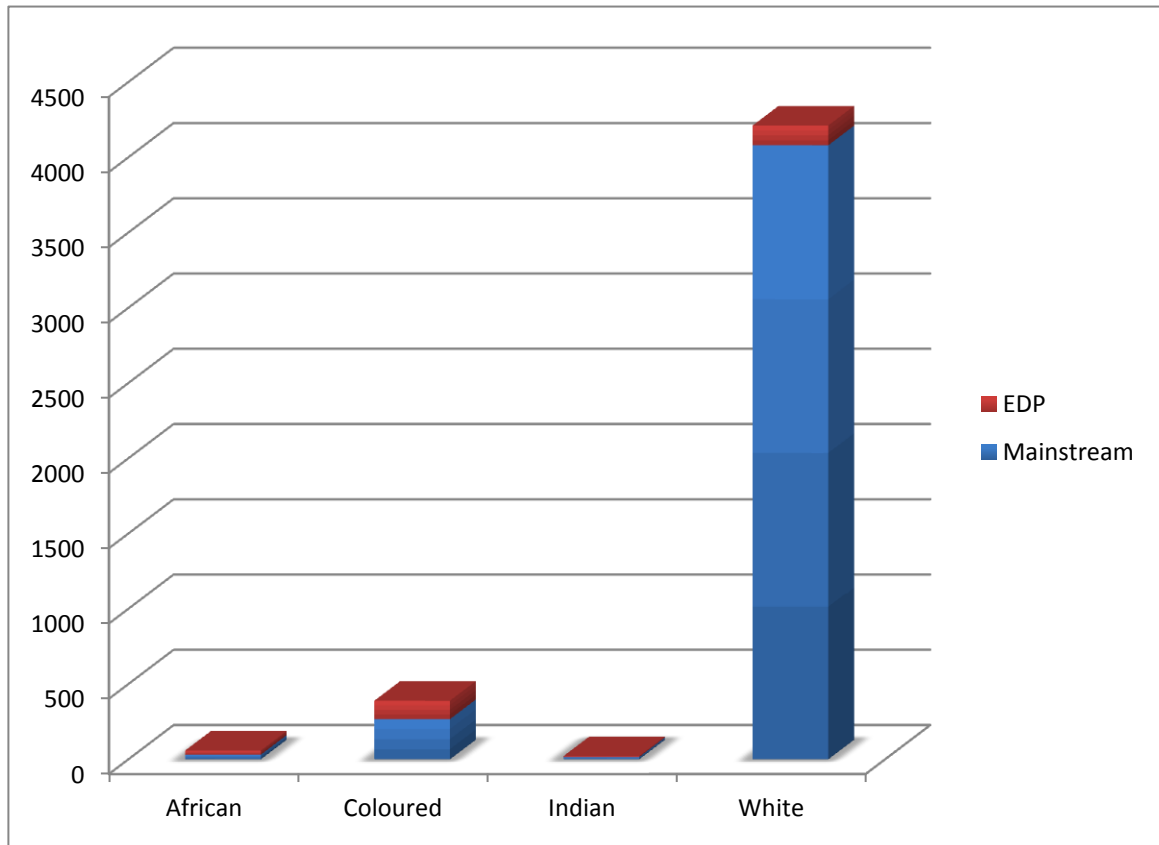


Figure 5.12. First year registrations in the mainstream and the EDP in the Engineering Faculty at Stellenbosch University by population group, (1995–2009).

Over the period 1995–2009, the vast majority, 90%, of students registering in the Engineering Faculty at Stellenbosch were white students. Coloured students were the second largest population group, making up roughly 8% of the registrations. With regard to the foundation programme, it is important to note that the number of white students entering the EDP is greater than that of any other population group at 46%. The proportion of coloured students is only slightly less at 43%. On the other hand, the number of African and Indian students is proportionally very small. African students make up roughly 10% of the EDP intake in the period 1995–2009 while the proportion of Indian students is roughly 2%. Overall, the total number of black African students entering the Engineering Faculty at Stellenbosch is only 58 students, just over 1% of the total, with slightly less than half entering by the EDP route. The table below presents the appropriate data.

Table 5.3. A comparison of mainstream and EDP registrations in the Engineering Faculty at Stellenbosch University by population group, (1995–2009).

<i>Programme</i>	<i>Population group</i>			
	<i>African</i>	<i>Coloured</i>	<i>Indian</i>	<i>White</i>
<i>Mainstream</i>	30	267	15	4080
<i>EDP</i>	28	122	6	131
<i>% in the EDP</i>	48%	31%	29%	3%
Total	58	389	21	4211

As with the previous case, a cohort analysis of the mainstream compared to the EDP in engineering now follows. Since this programme started in 1995, it is only possible to analyse nine cohorts, starting with 1995 and ending with 2003. The table below gives the actual number of students graduating from the Engineering Faculty by population group.

Table 5.4. Success categories for the 1995–2003 cohorts in engineering at Stellenbosch University by population group: totals.

<i>Programme</i>	<i>Population group</i>				
	<i>African</i>	<i>Coloured</i>	<i>Indian</i>	<i>White</i>	Total
Mainstream	18	211	7	2304	2541
<i>Graduating in 4 years</i>	1	15	0	887	904
<i>Graduating in 5 years</i>	3	29	0	538	570
<i>Graduating in 6 years</i>	2	25	1	168	196
<i>Other</i>	6	42	2	201	251
<i>Excluded</i>	6	100	4	510	620
EDP	8	65	1	26	100
<i>Graduating in 4 years</i>	0	0	0	0	0
<i>Graduating in 5 years</i>	1	4	0	2	7
<i>Graduating in 6 years</i>	1	9	0	4	14
<i>Graduating in 7 years</i>	1	2	0	1	4
<i>Other</i>	1	5	0	3	9
<i>Excluded</i>	4	45	1	16	66
Total	26	276	8	2330	2641

What is immediately apparent is that a comparison of the data will be difficult because the number of students in two population groups, the African and Indian groups, is

small. According to the above data, only eight Indian students registered in the period 1995–2003, five of whom were excluded. Similarly, only 26 black African students registered in the engineering faculty between 1995 and 2003, 10 of whom were excluded. Only nine black African students and one Indian student are confirmed to have graduated over this period. While it is still possible that black African or Indian students may graduate from these cohorts²², these numbers are nevertheless negligible compared to the total number of students registered.

Much of the analysis in this section therefore focuses on the white and coloured population groups. Figure 5.13 shows that 38% of white students in the mainstream – 887 of 2304 – graduated in minimum time (four years). This is by far the highest proportion compared to the other population groups. For example, of the 211 coloured students in the mainstream, only 7% graduated in four years. If we take into account graduation in five and six years, it appears that the percentage of white students graduating is nearly 70% of the white students registered while a third of coloured students graduated in six years or less, that is, 69 of 211 students. Nearly half the coloured students were excluded while only 22% of white students were excluded.

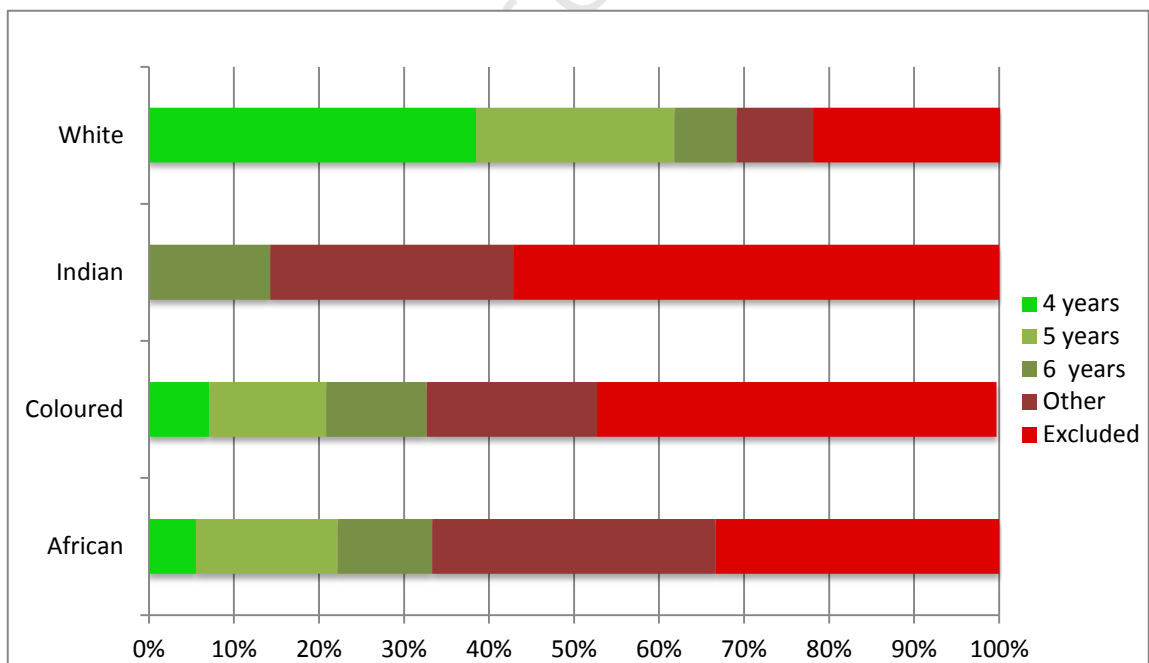


Figure 5.13. Success categories for the 1995–2003 cohorts in engineering at Stellenbosch University by population group: mainstream.

²² See Appendix E for a discussion of what constitutes the ‘other’ category in the Stellenbosch case.

It was mentioned above that white students make up the largest proportion of students in the EDP at 46%. However, it must be borne in mind that this figure was calculated from the registration data for the period 1995–2009 while the cohort analysis is concerned with the period 1995–2003 (see Appendix E for details). For the period 1995–2003, the majority of students in the EDP are in fact coloured students, at 65%. This is explained by the fact that white students were increasingly admitted between 2003 and 2009 while the number of coloured students admitted to the EDP stayed fairly constant. This is discussed in some detail in the following chapter and illustrated in Figure 6.2 on page 192.

Figure 5.14 below shows the success categories for the EDP. Once again, the number of African and Indian students is small but even the numbers of the white and coloured students entering the EDP – 26 and 65 respectively – are not very significant. This analysis is therefore undertaken tentatively.

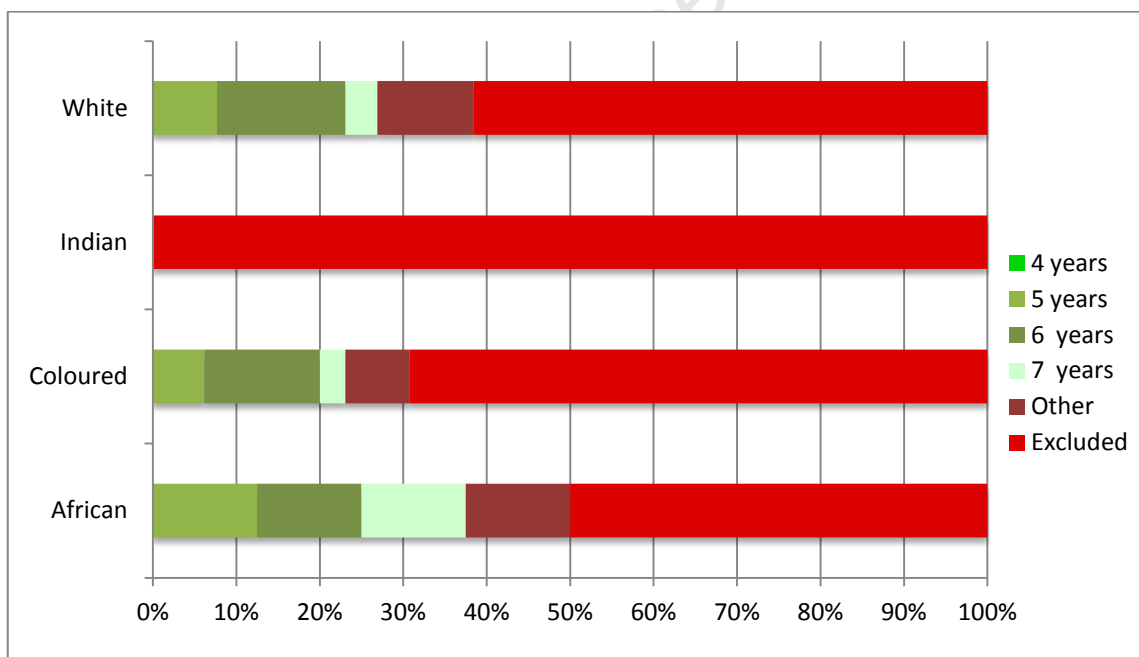


Figure 5.14. Success categories for the 1995–2003 cohorts in engineering at Stellenbosch University by population group: EDP.

Firstly, we note that a small proportion of students graduated in five years, considered to be the minimum time for the EDP. If we include graduation in six and seven years, 38% of African students graduated in under seven years while less than 30% of the white and coloured students did so. Only a few students fit into the ‘other’ category

while the number of students excluded for all population groups is 50% or greater. In conclusion, the EDP in engineering does not appear to significantly favour any of the population groups, including the white students who register for it. This is in contrast to the mainstream cohort analysis where white students undoubtedly performed better than African, coloured or Indian students.

5.3 Summary

As a way of concluding this chapter, it is helpful to compare the foundation programme strategies at the two case study universities.

5.3.1 Industry involvement

If we consider the role of industry, it is clear that the involvement of Shell Oil and Anglo American (among others) at the University of Cape Town was important in the conceptualisation and launching of the early foundation initiatives. Shell entirely financed the Shell Scheme and selected students for a post-matric year, essentially delivering the 'finished product' to UCT's Engineering Faculty. Anglo American was instrumental in drawing in other companies, especially from the mining sector, to fund the ASPECT programme. Through a stipend that was paid to the university per student, industry paid the salaries of ASPECT staff in the early years, awarded bursaries to most students passing through the programme and, importantly, established channels to engage with the faculty over curriculum issues and student progress. Industry involvement decreased after the 1994 elections until UCT took full responsibility for ASPECT by paying the salaries of lecturers (through the Academic Development Programme within CHED) and taking control of the academic offering. Of course, industry continues to provide bursaries for some students studying engineering through ASPECT as well as in the mainstream.

At Stellenbosch University, the role of industry has been more distant. This is partly due to the fact that academic development only really began after the first democratic elections at Stellenbosch. There was therefore less political impetus for industry to get involved in foundation programmes, especially at the Afrikaans-medium universities. Furthermore, there were no special connections between the Engineering Faculty and industrial or corporate sponsors (such as Gencor) but funding was channelled through the AAOP that became involved in academic development work in most faculties.

5.3.2 Programme structure

The Shell Scheme at UCT is described above as a 'classic bridging programme'. The separateness of this initiative is exaggerated by the fact that the students were sent off-campus to private schools for a post-matric year. UCT provided only some mentoring support to these students when they entered the traditional mainstream programme. The ASP in engineering (that ran for two years after the Shell Scheme) was located on UCT's campus although it was also essentially a bridging programme. It aimed to supplement students' inadequate secondary education by offering non-credit bearing courses in preparation for first year. If students were successful, they then entered the traditional engineering programme. When the Engineering Faculty took the initiative to launch ASPECT in 1988, the curriculum consisted of a number of non-credit bearing courses (such as Applied Mathematics) which demonstrates that ASPECT was a bridging programme in some ways, at least initially. Indeed, the description above reveals that a process of evolution occurred as ASPECT shifted towards an 'extended curriculum', the model that it resembles today (in 2011). One of the key ideas of this model is that all courses, except *Introduction to Communication*, are augmented or extended versions of mainstream courses.

At Stellenbosch, the EDP has been relatively stable in terms of structure. Certainly between 1995 and 2009, two prominent features were the intensive mathematics bridging course and the non-credit-bearing preparatory courses in Physics and Chemistry (as well as Strength of Materials and Drawing initially). The bridging nature of these courses and the fact that they are non-credit-bearing means they are similar to the ASP in Engineering course offered at UCT in 1986/7. Importantly, these courses at Stellenbosch also act as 'gates' that can keep students out of the institution (in the case of the mathematics bridging course) or out of the mainstream (in the case of the preparatory courses) since students have to pass them to proceed.

Another prominent feature of the EDP at Stellenbosch has been the supplementary tutorials and seminars that EDP students take for mainstream Mathematics and Applied Mathematics. On the one hand, EDP students are exposed to the mainstream – this occurs at UCT when ASPECT students do *Introduction to Engineering* courses – and have the opportunity to earn credits. But on the other hand the supplemental, 'add-on' nature of the support is something that the ASPECT programme has moved away from.

While ASPECT has tried to assist those students struggling with language through the *Introduction to Communication* module, Stellenbosch has gradually introduced more

serious measures to try to deal with the language issue. Dual medium (the T-option) in certain first and second year courses was the first approach. This changed in 2006 when the Faculty introduced parallel streams in first year and in 2008, up to second year. This approach included a language proficiency test and associated language skills modules in both English and Afrikaans. Within this framework, a student judged to be proficient in both languages was obliged to do a module called *Professional Communication*. On the other hand, students judged to be insufficiently competent in both English and Afrikaans were obliged to study through the EDP and to take skills modules in both languages, potentially up to second year. It would not be surprising if most students in this category were African students.

Finally, if we step back and consider the entire trajectory of the initiatives at both institutions in terms of integration with the mainstream, it seems that they are almost inverted. The ASP model at UCT that followed the Shell Scheme in 1985–1986 is similar to the FYE (Foundation Year in Engineering) that was offered at Stellenbosch in 2010. Both are bridging years, attempting to prepare students for a traditional engineering curriculum structure.

5.3.3 Relationship to the state

The role of industry cannot be divorced from what was taking place in the political sphere in the 1980s. The (largely rhetorical) stand of UCT against the government's policy of separate education created the opportunity for companies like Shell and Anglo American to collaborate on the foundation programmes that came into being in these early years. The discussion of policy in Chapter Four showed that the state's attempts to transform the higher education sector post-1994 have met with some resistance, including from the previously white English-medium universities. However, it is clear that the work done through foundation programmes in catering for black students has gone some way towards alleviating pressure from the state. Furthermore, UCT academics (mostly through ASP and then CHED) have played an important role in promoting foundation programmes as a means of transforming the sector, having this written into government policy and securing earmarked funding for such programmes. It is important to note that ASPECT very closely matched the idea of an *extended curriculum programme* when it appeared in government policy in 2006.

In contrast to UCT, Stellenbosch University did not have any rhetorical stance against separate education. After the first democratic elections in 1994 and the demise of

political apartheid, Stellenbosch began to implement academic development initiatives. Among the five designated Afrikaans universities, only Stellenbosch and Potchefstroom University (now the Potchefstroom campus of the North-West University) did not introduce a full set of parallel-medium courses. Consequently, Stellenbosch has had to face pressure from the state that sees Afrikaans as hindering equitable access. The Department of Education has provided funds for the implementation of the T-option and parallel language streams at first-year level in engineering and this has had some effect on the intake of African students, although the numbers are still small. Significantly, the Engineering Faculty decided not to change the structure of its programme in order to qualify for the government funding put forward for foundation programmes in 2006. In fact, the FYE structure in first year from 2010 can be interpreted as a move away from the type of programme the Department of Education is promoting through earmarked funds. This is discussed in more detail in the following chapter.

5.3.4 Registration and graduation

In terms of the size of the two foundation programmes, there is no doubt that more students have passed through ASPECT than the EDP of Stellenbosch University. If we exclude the previous models (the Shell Scheme and the ASP) as well as the EFP students and 'fliers' in ASPECT, about 1 600 students registered on ASPECT between 1988 and 2009 i.e. a period of 22 years. For the 15 years in which the EDP at Stellenbosch has been in operation, 287 students have registered. In relation to the mainstream, UCT's ASPECT programme comprises about 20% of the intake to the Engineering Faculty while at Stellenbosch, the EDP makes up 6%.

While ASPECT significantly boosted the intake of African students at UCT, the EDP at Stellenbosch has not had much impact on demographic profile. Since 1988, 45% of the 3 151 African students registering in engineering at UCT came through ASPECT. This has contributed to the fact that the number of African students is almost as many as the number of white students for the period 1988–2009. At Stellenbosch, a total of 468 black (African, coloured and Indian) students registered in engineering between 1995 and 2009, with a third coming through the EDP. Overall, black students make up 10% of the total registrations in engineering between 1995 and 2009. The demographic profile of the EDP is also substantially different from ASPECT. While 87% of the students on ASPECT were African students and less than 1% were white, at Stellenbosch more white students registered in the EDP than any other population

group (at about 46%). The number of coloured students was slightly less at 42% while the *total number* of African students entering the Engineering Faculty at Stellenbosch was only 58, just over 1% of the total, with slightly less than half entering by the EDP route.

The cohort analysis revealed that the graduation rates of white students in the mainstream, both at UCT and Stellenbosch, was better than those of the other population groups. At UCT, the proportion of African and coloured students graduating in six years or less through the mainstream was similar to the proportions graduating through ASPECT in seven years or less – around 50%. While more coloured, Indian and white students have graduated through the mainstream than through ASPECT at UCT, the number of black African students graduating through ASPECT is greater: 456 compared to 348 through the mainstream. At Stellenbosch, the small numbers of black students – especially African and Indian students – made a cohort analysis difficult. If we exclude Indian students from the analysis, it is apparent that the proportion of African and coloured students graduating in six years and under in the mainstream was similar to the proportions graduating through the EDP in seven years or less – around 30%. It is also significant that more students in all four population groups graduated through the mainstream than the EDP for the period 1995–2003.

Chapter 6 – Findings and discussion

This chapter examines engineering foundation programmes using Bourdieu's concepts of field, capital and habitus.

This is done in three basic stages: firstly, the field of engineering education is constructed through the analysis of data with mainstream academics. Particular attention is paid to what is valued, the principles governing the accumulation of capital and how these forms of power are combined. Against this backdrop, academic development is analysed as a field phenomenon. This second stage of data analysis explores the extent to which academic development appears to have altered the structure of the field at the two case study institutions. Lastly, Bourdieu's analytical lens is used to investigate the foundation programmes in the engineering faculties at Stellenbosch and UCT. Of interest here is the reinterpretation of academic development in the specific context of both engineering faculties and the practical implications for the foundation programmes under consideration.

As discussed previously, the transcription of each interviewee was analysed and written up as a separate document that gave prime place to each respondent's social trajectory and thereafter an aggregation of the main themes discussed in the interview. In this chapter, a similar format is followed since each respondent is introduced through a short biographical sketch prior to data from his or her interview appearing. Through comparing and contrasting the multiple habitus of respondents, the field is constructed and its features mapped out.

6.1 Constructing the field of engineering education

Interview data from six professors, two from UCT and four from Stellenbosch University, and one associate professor, Steven Williams from UCT, are used in this section to construct the field of engineering education. The cumulative experience in higher education of these seven respondents adds up to about 200 years and all except one has been working in the university context for more than two decades. It is also significant that six of the respondents have had unbroken periods of service since they began working at their respective universities. Of the seven respondents, one is fully retired – after 34 years of service – and another still serves as an Emeritus

Professor, helping out where he can and doing research. It is probably fair to say that the majority of individuals presented below are at the pinnacle of their careers. These interviews are therefore a rich source of data; the extended time that these agents have been in the field also allows us to identify certain shifts, particularly around the democratic transition in the 1990s, a significant phase for this study.

Prof Andrew Edmund (UCT, started 1975)

After a brilliant undergraduate career, Andrew went to work in industry to fulfil his bursary obligations but for a number of reasons was dissatisfied and returned to UCT. He did his masters and then his PhD and worked as a research officer for 15 years before being appointed to a research chair. He has published prolifically and supervised a large number of students in postgraduate study and was promoted to professor in 1990. Andrew was awarded an A-rating by the NRF in 2006 and is widely known as one of the most cited engineering researchers in the world.

Assoc Prof Steven Williams (UCT, started 1971, retired 2005)

Steven studied engineering at UCT and, after graduating, was effectively promised a job by the head of department if he decided to return. This he did after seven years, taking up a lecturing post in the department that he graduated from. He became dedicated to his teaching, was a good administrator and gave up doing research early on in his career. Steven was given a leadership position in the faculty, which he really enjoyed, and was asked to mentor students for the Shell Scheme; thereafter he helped develop and run ASPECT for its first six years. Steven was promoted to Associate Professor some years before retiring in 2005.

Prof Daniel Marais (Stellenbosch, started 1984)

After five years of undergraduate study at Stellenbosch, Daniel finished his masters and went into the army for four years. He then returned to a research-focused career at Stellenbosch at a time when it was more common for engineering academics to engage in consulting. Daniel excelled in the high-tech research area that he became interested in, quickly moved up the ranks to professor and also began to contribute to the management of his department and the engineering faculty at Stellenbosch. At the time of the interview, Daniel had been departmental head for nine years and was involved in a number of faculty and university management structures. He is currently B-rated by the NRF.

Emeritus Prof Sebastian Nicholls (UCT, started 1965)

After doing his undergraduate degree at a respected engineering university in the United States, Sebastian began his Masters at another USA institution. It was here that he says the 'academic bug' bit him and so, after finishing his degree, he decided to come to South Africa and work as junior lecturer at UCT. He completed his PhD part-time and did some consulting work but later focused on academic research. Sebastian moved up the ranks to professor, was departmental head for a total of nine years and became involved in a number of management and administration tasks at UCT. He has taught just about every course in his department where he continues to teach occasionally and do research. At the time of writing, Sebastian had been at UCT for 46 years.

Prof Niels Nortjie (Stellenbosch, started 1982)

After working briefly in industry, Niels was interested in research so decided to take up a lecturing post at Stellenbosch and study for his Masters part-time. He completed this degree and also became involved in consulting work. Through his consulting, Niels was given an opportunity to go to the UK, study for another Masters and learn about satellite engineering, the aim being to bring expertise back to South Africa. This he did and became involved in Stellenbosch's SUNSAT programme, being part of the team that worked on launching the first satellite in Africa. Niels has balanced his academic career with consulting work, obtaining his PhD in 1995. After a four-year stint working for a satellite company in the UK, he returned to Stellenbosch and took up a professorship in 2004. Niels is C-rated by the NRF.

Prof Louis Terblanche (Stellenbosch, started 2006)

Louis graduated from Stellenbosch and went to work in industry for his bursary company. He maintained his links with academia, studying for his Masters and his PhD part-time and also doing some lecturing for a university in Gauteng. Louis worked for industry for 17 years until he was given the option of going overseas or being paid out and he took the latter option. He ran his own business for a while and, just as he started to become bored with that, was offered a professorship at Stellenbosch University. He took this up in 2006 and still maintains strong links with industry arranging student projects, obtaining postgraduate funding and doing consulting work.

Prof Etienne Eksteen (Stellenbosch, started 1983)

Etienne graduated from Stellenbosch when engineering was a five-year double degree (B.Sc.B.Eng.) and then worked in industry for about six years. He found himself saddled with too much management responsibility at a young age, a problem compounded by an ineffective management structure at the company at which he was working, so decided to enter academia. He registered for his PhD part-time, essentially writing up some of the work he had done in industry for his doctorate. He became very involved in management in his department, the faculty and the university, with a focus on teaching and learning. Etienne has a good knowledge of the dynamics of the extended degree programme at Stellenbosch.

The first task in constructing the field of engineering education is detecting what is valued and identifying the activities that allow the accumulation of the forms of power that are efficacious in the field.

Firstly, we note that all of the full professors spontaneously mentioned the date they completed their doctorates in their interviews. This suggests that the PhD is an important academic milestone and also alerts us to the fact that research is high on the agenda. This is further evidenced by references (as can be seen from the biographical sketches) to publications, citations, postgraduate supervision and NRF rating, a symbol of consolidated capital in the South African context.

Secondly, positions of authority within the university appear to be important signifiers of prestige. Respondents often gave the year in which they were promoted to professor, for example. Although the criteria for promotion are linked to research as will be shown, position within the university hierarchy entails management, organisational and committee activities at departmental, faculty and/or university level.

Lastly, value appears to be placed on links with industry, something to be expected for academics in engineering. Most of the respondents either had been or were currently engaged in various forms of consulting.

The plan of this section is as follows: the two individuals at the most extreme positions in the field, Andrew and Steven, are contrasted in terms of the type of capital that they value. Thereafter, two professors who combine these forms of capital and occupy powerful positions in the centre of the field, Daniel and Sebastian, are discussed. This leads to a discussion about consulting and the identification of an important difference between UCT and Stellenbosch. Data from Niels and Louis, the academics with the strongest links to industry are then discussed. Etienne is unique in that he is able to combine a strong industry connection and engagement with research, although the emphasis in his career is probably on university management.

Professor Andrew Edmund is the best example of a *research professor* among the interviewees, exceptional in fact, in his pursuit of the ideals of research and devotion to his work. Andrew worked as a research officer for 15 years which is significant since it gave him a head-start and allowed him to take on less teaching and administration compared to a mainstream academic. Andrew repeats a quip that he remembered from the professor who trained him: 'Success in research is three things: to begin it, to finish it and to publish it.' The intensity of his research work has moulded Andrew's habitus in such a way that he is comfortable being 'this crusty old professor who

seems to brush us off the whole time' to the students in his undergraduate classes. The tension between research and teaching suggested by this statement is important and will be dealt with at a later stage.

With regard to consulting for industry, Andrew says, 'They give me the money, I give them the ideas,' but he prefers not to receive payment for contract research, mostly to avoid the associated liability. Instead, he sees what he does for industry as part of his responsibility:

I don't expect to get paid for it...I expect that that's the contribution I make back for the engineering fraternity. If they want to pay, they can stick the money in the research grant.

Andrew's status as one of the most cited engineering researchers in the world is made possible by the conditions created for him by UCT in its mission as a research-led university, a mission that Andrew in turn helps it fulfil. In fact, Andrew referred to UCT as a research-led institution eight times in his interview and says that he has 'always admired' UCT for creating the research environment that he grew up in, including the 'kitted-out lab' that is dedicated to his use. He sees what he does as his 'responsibility', his 'obligation' to translate the resources that UCT provides 'into what it feels is its mission, that is, research outputs – postgraduate students and publications.'

Overall therefore, Andrew can be considered the archetype of the engineering research professor who teaches only as much as he has to, denies the potential of economic gain through consulting, tries to avoid management and administration as much as possible but values the cutting-edge applied research that he does above all else. This has allowed him to accumulate vast quantities of intellectual capital, the form of power associated with research activities and the autonomous principle of the university field. On the other hand, the form of power connected to the heteronomous principle of the field, academic capital, does not appear to be important to Andrew. It is interesting to note, for example, that he has occupied the position of Head of Department for five years but did not mention this at all in the interview. Because of the distance that he puts between himself and the temporal space that he works in, Andrew can be considered a 'consecrated heretic' (Bourdieu 1988 pp. 105–106).

By contrast, Steven Williams occupied the post of associate professor when he retired in 2005. Steven can be described as a charismatic teacher (he lectured the author), an efficient administrator and, since he came to academia after working for seven years running the family's general dealership, having a good feel for hands-on engineering.

Steven successfully re-designed the course that he first taught and dabbled in research in this area but says that this was never really significant. He began to focus his energies on his teaching and administration and was appointed Assistant Dean in charge of undergraduate affairs, one of the first two assistant deans in the Faculty of Engineering at UCT. Included in his role was chairing all the undergraduate committees and helping the Dean in the management of the faculty in various ways. Being energetic and good with people, Steven was chosen to be a mentor for the Shell Scheme students when they arrived in the early 1980s. Thereafter he managed ASPECT for the first six years of its operation.

In the excerpt below, Steven describes his disposition when he began working as Assistant Dean:

So I was happy as Larry, I mean, I really was enjoying my work...I knew what I was doing and so I got to the stage where I said, "To hell with research! I'm happy as I am and provided I can go on doing what I'm doing, and nobody's going to shout at me, I'm very happy." And nobody did, I mean, John Martin [the Dean], as I said, then started fighting for me on other fronts to get me an associate professorship.

It has already been mentioned that Steven did not study for his Masters or his doctorate and this certainly contributed to his not pursuing research seriously and so coming to a stage when he decided, 'To hell with research!' Steven's concern that somebody would 'shout at him' if he didn't do research, and the Dean's fighting for him to get promoted although he had 'no academic research to speak of' says a lot about the field. The Dean was in fact contending the rules of promotion because of the important contribution that Steven had made in the area of teaching and management. The significance of this 'battle' is discussed more fully in Section 6.3.1.

Steven's position in the field of engineering education is diametrically opposed to Andrew's in that he wielded academic capital, the form of power 'obtained and maintained by holding a position enabling domination of other positions and their holders' (Bourdieu 1988 p. 84), but very little intellectual capital. Ironically, although his role meant that he worked closely with students and staff, and he was more involved in the day-to-day workings of the university than Andrew, in terms of power he was estranged from the form of capital that underpins the field as an autonomous social space: intellectual capital.

The extreme dispositions of Andrew and Steven appear to be uncommon since all of the other respondents combine intellectual and academic capital in various

proportions. Daniel from Stellenbosch is arguably the individual who has most closely followed the 'canonical curriculum vitae' (Bourdieu 1988 p. 108). Denying himself the opportunity of economic gain through consulting work early on resulted in his accrual of significant intellectual capital in tandem with academic capital. Although he mentions an interest in teaching before he entered higher education, his disposition at the beginning of his career is telling: 'I decided – my wife would say it was stupid but anyway, I decided – "I'll go the academic route. I'll do my PhD and I'll focus on research and not so much contract research, focus on research that tickles me."' Daniel's decision to engage in work that he found intellectually stimulating rather than financially rewarding meant a 'guaranteed fast-track' in terms of his career at a stage when most academics were taking on private consulting work. Because of this he gained authority within the university hierarchy, occupying the position of departmental chair for a number of years, as well as positions of power at faculty and university level.

As mentioned above, the PhD appears to be an important milestone in an academic career. For Daniel, it seems that the doctorate served the purpose of preparing him for a career in research. When he began at Stellenbosch, he says that 'apart from the professors, nobody had a PhD' but he sees the field as having shifted, fortuitously, in his favour. Daniel now plays a role in managing the faculty's research effort and believes that the doctorate is:

...the most important thing that any academic should do...I firmly believe that your PhD should *not* be your lifetime goal, in other words, it should be a thing that you get because that is one of the tools an academic would need.

Sebastian has a similar trajectory although his career spans more than four decades – he started working at UCT in 1965. Like Daniel, Sebastian completed his PhD early in his career, and it appears that the inclination for academics to engage in consulting work was prevalent at UCT as well. Sebastian says that contract research was 'one of the things that the university in those days used to push; we had to be in contact with industry because then when we taught, we taught the right stuff.' In the excerpt below, Sebastian compares consultancy – an activity that fits well with an engineering persona – with academic research:

...working with industry is not always research. You could find something important but that's to tweak something, it's perhaps to just find a quick answer to a problem, those kinds of things. So ingenuity comes in there, quickness of mind, a short cut, cutting a corner to obtain your objective... and those are not the type of things that you will put into a journal to try and publish.

Sebastian's use of the word 'ingenuity' here brings to mind the etymological root of 'engineer', from the Latin *ingeniator*. This suggests that engineering academics were quite close to industry 'in those days' – which we can take to mean the 1960s and the 1970s – and took on consulting work rather freely. Put another way, engineering academics were more like engineers than academics. But Sebastian was drawn to academic research as he realised what was rewarded in the field, the details of which are discussed in the following section. He was therefore able to accrue substantial amounts of intellectual and academic capital. The point here is that at both Stellenbosch and UCT, there appears to have been a shift in the field towards a valuing of academic research rather than consulting.

However, at Stellenbosch, this shift appears to have happened later than at UCT. When he started his career in the 1980s, Daniel says that it was possible for an engineering academic to 'really have a nice double life' and earn quite a bit of extra money from consulting but do only the minimum that was required by the university. Niels Nortjie, the individual who has combined consulting with his academic work most effectively throughout his career, specifically mentions these points:

...in the beginning at Stellenbosch University we were not really one of the so-called 'research' universities compared to UCT and Wits, maybe, in the country. We had more opportunities to do consultation for industry and that's where we spent a lot of our time and generate²³ a lot of extra income for a lecturer because salaries have always not been that great compared to industry.

The period that Niels is referring to here is when he started at Stellenbosch in the early 1980s, just two years before Daniel. This trend can clearly be seen in the graph below that compares the number of NRF-rated researchers at Stellenbosch and UCT since 1984. It shows that the number of researchers at Stellenbosch started to climb in the 1990s, until there was a difference of only three in 2007.

²³ Although these quotations have been 'smoothed' by omitting 'certain add-on developments, certain confused phrases, verbal expletives or linguistic tics' (Bourdieu et al. 1999 pp. 622–623) the grammar has purposely not been corrected.

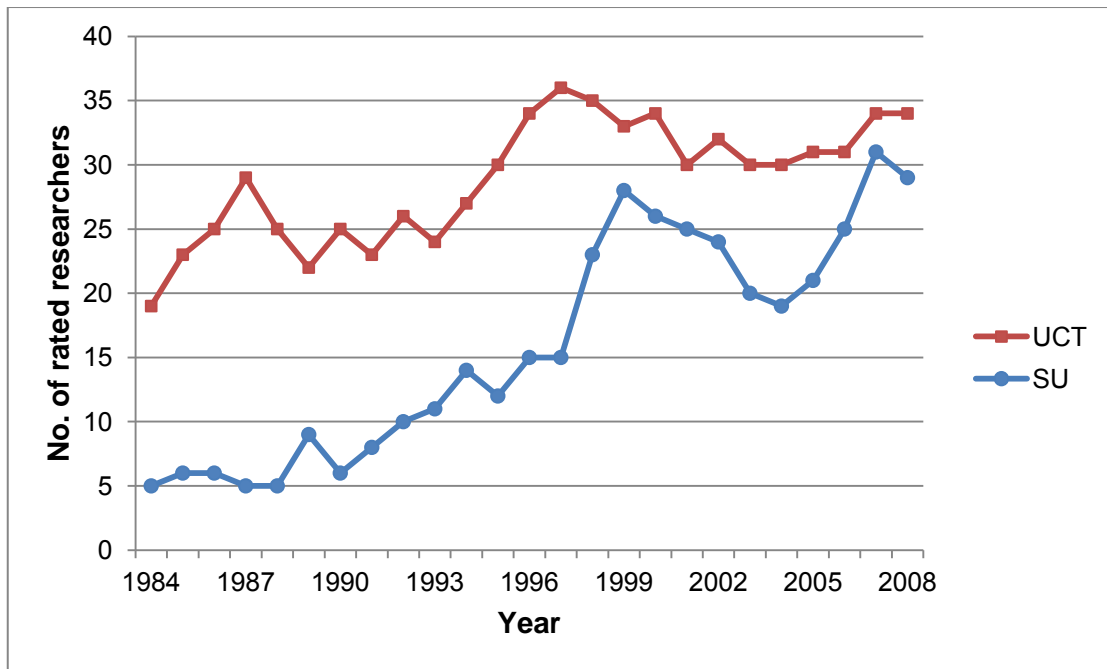


Figure 6.1. Number of NRF rated researchers (categories A, B, C, P, Y, L) in engineering for two universities, (1984–2008).

The pressures causing this convergence mean that it is now *not* possible for academics to have the ‘really nice double-life’ that Daniel speaks about. For example, although Niels still consults the equivalent of one day a week for industry he says that:

...we definitely have more on our plate, I would say, compared to 15 or 20 years ago. You don’t have a lot of time for external consultation with industry anymore because of more pressure to take in Masters students and PhD students and do research and produce research outputs.

While the economic benefits of consulting are becoming more difficult to procure because of these pressures, there is still a certain amount of prestige associated with industry work. The fact that Louis Terblanche was appointed a professor at Stellenbosch after 17 years in industry points to the fact that industry experience is still highly valued at this institution. Such an exchange of industry experience for academic capital was not encountered at UCT. Nevertheless, academic research is gaining ground at both institutions.

The factors causing this shift towards research and the implications for academic development are discussed in a later section of this chapter (6.2.2). Prof Daniel Marais sees this phenomenon in terms of a ‘re-think’ of the purpose of the university and the identity of the academic:

...I think it's a re-think of what the university should be and the main thing is that there became the recognition, listen, "As an academic, I *must* have an academic footprint". In other words, apart from your normal classes and so on, you must generate knowledge and generated knowledge without people knowing about it, is worthless, so you must publish. Now I know that there is this thing about publish or perish and all those kind of things but – and one shouldn't play that game, you shouldn't just turn out publications for the sake of publishing – you must publish them in good, high impact-factor journals where it can make an impact and where people can see it...

The importance of publishing can once again be identified in this excerpt. Although Sebastian first became involved in consulting as we have seen, research is as fundamental a part of his habitus as it is for Daniel. When he was asked whether research is an important part of being an academic, Sebastian replied:

Sebastian: Absolutely. If nothing else drives you, materially, you should do research.

BK: Materially?

Sebastian: Yeah. Material considerations should prompt you to do research because it means promotions, it means high positions, it's more involvement with higher levels of admin in the university. You know, you get to hob-nob with the 'know-hows' in the university, you know, the more respected people and eventually you gain respect as well in that sense. So, you won't get that unless you produce research outputs.

It is significant that the 'material considerations' that Sebastian mentions seem more to be indicators of symbolic prestige than financial benefit. Although 'promotion' obviously means more money, 'high positions' and hob-nobbing' with 'respected people' betrays what it is really about. Sebastian's trajectory is discussed more fully in the following section (6.2.1) where the valuing of research is even more marked. The point here is that research is important in terms of the autonomous principle of the field in accordance with the maxim 'knowledge for its own sake'. But because research is taken into account for promotions, it also results in the accrual of academic capital, the type of power linked to position within the university hierarchy. For example, both Daniel and Sebastian have chaired their respective departments for nine years and occupied positions in faculty management and university administration. So while one or the other form of power can be favoured as we have seen, these two professors demonstrate that 'doubling up' (Bourdieu 1988 p. 104) is possible and that intellectual and academic capital can complement one another (pp. 113–114). Although they stem from opposite poles, in the centre of the field these forms of power reinforce one

another and result in a special form of symbolic power that can be wielded quite effectively in the field.

It is worthwhile to note here that such a heavy dependence of university power on research is not evident in *Homo Academicus*, Bourdieu's (1988) study of the university field. This probably has to do both with the context – France as opposed to South Africa – as well as the era in which Bourdieu collected data for his study, the 1960s. It perhaps also has to do with the increase in the prevalence of journal publishing worldwide that is connected with the growth of electronic communication and globalisation (Altbach 2004).

The career trajectory of Etienne from Stellenbosch is interesting for a number of reasons. It demonstrates that management experience gained in industry can effectively be transferred to the university space. When Etienne came into higher education he wrote up some of the work he did in industry for his PhD. Although he began to do research, he was really drawn to teaching and administration, probably due to his management skills and his affable nature. About his promotion to professor, Etienne says, 'I may be one of the guys who got promoted to a professor more on his contribution to teaching and programme management than just on research.' On one hand, Etienne is saying that promotion to professor traditionally depends on research rather than any other category, a finding consistent with data from other respondents. On the other hand, it appears that the status of teaching and learning is gaining ground at Stellenbosch. Nevertheless, promotion to professor on the basis of teaching alone, without research or administrative outputs, does not appear to be a possibility at present.

In the interviews of Etienne, Sebastian and Daniel there is no suggestion of tension between teaching and research, something that both Andrew (once again, see Section 6.3.1) and Steven mentioned. Daniel, for instance, believes that teaching and research complement each other:

...you see, the one is useless without the other because in teaching you try to instil in the students some enthusiasm about these things and the potential for them to actually do those kind of things and so if you can light up the eyes of one or two of the students, it's just fantastic. And obviously I'm also trying to do a little selling job about my research area and it's interesting. [My research area] nowadays people just love it, they really, really go for it...I would lose my contact with my students if I don't have my undergrad student teaching so I would never opt not to teach. I really love it.

The enthusiasm that Daniel is talking about instilling here is clearly not for teaching but is about provoking a research interest. His doing 'a little selling job' for his research area obviously means that he is trying to recruit students from his undergraduate classes for postgraduate research. This once again points to the fact that the field is 'shot through' with research.

In conclusion, Andrew and Steven appear to have favoured opposing forms of capital on offer in the field of engineering education. Andrew accumulated vast amounts of intellectual power while Steven, during his career at UCT, appropriated mostly academic capital. Daniel and Sebastian demonstrate that effective accumulation of both forms of capital really depend on research-related activities, and therefore alignment with the autonomous principle of the field. Pursuing a research track early on in their careers meant intellectual prestige as well as academic capital through promotion that put them both in powerful positions in the middle of the field. Although their trajectories are very different, Niels and Louis both demonstrated strong links to industry. Along with Sebastian and Daniel's comments, data from their interviews allows us to explore a shift that appears to have occurred in the field away from consulting and towards research, something that seems to have taken place later at Stellenbosch than at UCT. Finally, the profile of Etienne Eksteen indicates once again that success in higher education really depends on research work. However, Etienne's profile also indicated that management experience in industry can be transferred to the university space and also that teaching and learning appear to be gaining importance.

6.2 *Academic development as a field phenomenon*

The aim of this section is to understand academic development as a field phenomenon. By this we mean using Bourdieu's analytical tools to examine a discourse that arose in the early 1980s at the white English-medium universities, and the challenge it posed to values traditionally embodied at the case study universities. This is achieved through unpacking the habitus of the key players involved in academic development at both case study institutions and, in the UCT case, contrasting them with the habitus of a mainstream professor. Furthermore, Bourdieu's concepts of *illusio* and *refraction* are used to understand the impact of this discourse on what then became the 'mainstream'.

The data for this analysis is derived from six respondents, two from UCT and four from Stellenbosch. All the individuals whose biographies are sketched in this section can be described as academic development managers. Steven Williams (who was introduced in the previous section and is referred to again here) as well as Leonard Naudé from Stellenbosch have retired. The rest are either co-ordinating or organising academic development at some level at their institutions. Since ASPECT pre-dates the Stellenbosch foundation programme, the UCT case study is dealt with first.

6.2.1 Academic development at the University of Cape Town

Prof Trevor Norfolk (UCT, started 1984)

Trevor was very involved politically when he studied for his Bachelor of Arts degree at UCT. After graduating, he travelled around Europe and became even more 'politicised', as he describes it. Trevor then returned to South Africa and taught in 'coloured education' for some years where he 'got hooked' by the notion of education as a vehicle for change in South Africa. After a brief stint in business, he began working at UCT as Director of Academic Support Programmes in 1984. Trevor has been one of the leading figures in the drive for transformation in higher education in South Africa and has influenced higher education policy in South Africa including the White Paper (DoE 1997) and the policy around foundation programmes. Although he has not done much academic research, Trevor is well known nationally and internationally in the area of education policy and development.

Assoc Prof Zachery Fischer (UCT, started 1988)

Zachery ('Zach') Fischer studied engineering at UCT but found it 'dreadfully boring' so he switched to a B.Sc. degree. Zach was involved politically while he was a student and, after completing his honours, went out of the country to avoid national service. When he returned, Zach began teaching in 'coloured education' in the 1980s but the climate was very volatile and he was 'very exposed politically' so he decided to take up the offer of a job teaching on ASPECT when it was launched in 1988. After some years, Zach transferred to CHED where he has remained ever since. He obtained his PhD in 2007 and was promoted to Associate Professor in 2009.

To start with, it is useful to compare the career trajectories of Sebastian, a mainstream professor who featured in the previous section, with the only professor in this group, Trevor. The reason for doing so is that in many ways their careers are paradigmatic and contrasting their habitus helps to elucidate the phenomenon of academic development. Of the mainstream professors Sebastian has been chosen because he possessed substantial volumes of both academic and intellectual capital at the height

of his career. His powerful position in the middle of the field makes him the best example of an academic from UCT whose habitus reflects the balance of power in the field of engineering education.

Trevor, his contemporary at UCT, has a profound understanding of academic development in the sense that he has fought for its survival, lived through its history, and preaches its principles. It would not be an exaggeration to say that in many ways, Trevor embodies academic development at the two case study institutions and perhaps even nationally.

Both Sebastian and Trevor describe an experience of being 'taken in' by education in some way, which reminds us of *illusio*, Bourdieu's term to describe an agent's interest in the game and its stakes. Sebastian candidly talks about the 'academic bug' that 'got him' when he was a teacher assistant in the United States. He explains what he means:

The academic bug, to become an academic: it's the look you get from the students when you're watching them when you're teaching and you can see their eyes light up or you can see their eyes go sleepy and you know where you're doing well or you're doing badly and I got excited...

Sebastian goes on to describe how the academic bug mutates from an enjoyment of teaching, the 'face-to-face' with the students, via consulting, to the 'research bug':

...the research bug begins like this. And then, through your own observations you see who is being successful in the university. Why are they being successful? Why are they in the positions where they are and how well are they respected and, you know, internationally known, are they being asked to go give lectures outside, all these things. And, before you know it, you realise that being a teacher only is not enough. You got to have that other output.

Sebastian attributes all of this activity to the effect of the academic bug including being taken in, almost unconsciously, by research. For Sebastian, the academic bug, through all its stages and with all of its facets, results in the formation of an 'all-around' academic, someone who is able to teach, consult, take on administrative responsibilities and do academic research.

Trevor also talks about getting 'really hooked' when he started teaching but the context in which this occurred was at a 'coloured school' on the Cape Flats. As his biographical sketch shows, Trevor was very politically motivated when he was a student at UCT and, as his political consciousness developed, he felt that he needed

to make some sort of meaningful contribution to society if he were to stay in South Africa. Trevor describes here what 'gripped' him about education:

Education was something that seemed to be an area that I felt I could make some kind of contribution. It was politically very relevant at the time and I think what truly interested me and – the taste – and what gripped me about it was that it was a mixture of the political and the social. I mean, education being something that is a crucial element of political and social development but at the same time something that was very concrete. I didn't want to be a politician, you know, or anything of that sort, I was not a military activist or anything but there was an area here...I think what grabbed me was the possibility of real change.

Trevor also worked briefly in educational publishing which gave him, he says, 'a serious taste for educational development'. When he was appointed as Director of Academic Support Programmes at UCT, he began grappling with the realities of trying to support students from black schools within an overwhelmingly white and, despite its liberal reputation, what he describes as an 'academically conservative' institution. Early on, Trevor and his colleagues in the ASP understood that 'you were never going to crack this problem unless you dealt with systemic issues'. Zachery, who came to work at UCT a few years after Trevor, echoes this, saying that 'a lot of people in this work had a social agenda, you know, they were all pretty much committed to helping crack the system and help the new system emerge out of it'.

In light of the structure of the field sketched in the previous section, Sebastian's *illusio*, which he describes as the academic bug, is what caused him to be drawn into the game, opened his eyes to what is valued in the field, to playing by the (tacit) rules of the game and, ultimately, to accumulating the various forms of capital on offer. As such, his habitus is aligned with the structure of the field, which means he attaches importance to research and position in the academic hierarchy. Being imbued with the field, Sebastian's disposition is naturally oriented to conserve the structure of the field and defend its principles, values and rules.

Trevor's experience, however, does not fit the classical definition of *illusio*. Although he describes an experience of being 'really hooked' by education and 'grabbed' by its potential for bringing about real change, Trevor was *never taken in by the stakes and values of the university field*. Instead, as a forerunner of impending political change and with the sanction of upper management at UCT, his aim was to bring pressure to bear on a system that he felt was an essential part of the effort in bringing about a more equitable society. Although Trevor was obliged to learn how the game worked, *this was in order to be able to alter the structure of the field*. Rather than struggling for

the rewards on offer in the university field, he and his colleagues entered the field and struggled for a critical revision of the role of the university in the emerging democratic South Africa.

It is important to note that in the early days, as a tiny, inter-faculty unit, tasked with assisting black undergraduate students in an 'extremely conservative' university within the context of an apartheid state, the ASP battled to be recognised, let alone fulfil its mandate. As we can see from his biographical sketch, Trevor did not have much intellectual capital and the power conferred on him as Director of the ASP put him at odds with the type of symbolic power ordinarily wielded in the university field. Furthermore, his teaching experience in many ways put him at a disadvantage in a field where research experience carries more weight. In fact, in his fight for legitimacy and transformation, Trevor and his colleagues pursued an essentially political line of reasoning: 'Our only argument really was a political high ground, a political cum moral high ground. There was no other strong argument that we could bring to bear, we had no money, we didn't have influence in other ways.'

To understand Trevor's struggle at UCT and thus the roots of the academic development movement here, we need to analyse what he means by 'academically conservative'. How could it be that the institution Sebastian claims to be 'perhaps the most liberal of all universities in South Africa' was academically conservative in Trevor's eyes? To understand this we may turn to one of Bourdieu's earliest observations of the education system – that it functions to reproduce social privilege. Through a great deal of empirical work, Bourdieu found that although the education system purports to be egalitarian, through its operations it tends to reward cultural capital with an equivalent proportion of academic success. Furthermore, Bourdieu shows that it does so *without the knowledge of its agents*, the academics, since they are themselves imbued with middle class culture.

So when Sebastian claims that UCT is liberal, he is of course thinking of its stand against the apartheid government and its (largely symbolic) rejection of the University Act of 1957 legislating separate education. It can be noted that UCT took this stand on the basis of *academic* autonomy summarised by the formula of TB Davie, 'freedom from external interference in (a) who shall teach, (b) what we teach, (c) how we teach, and (d) whom we teach' (Du Toit 2001) thus upholding the principle of academic merit above political considerations. However, in claiming autonomy from the political field during apartheid, UCT quite naturally focused on the pursuit of academic excellence. Given the structure of the field sketched in the previous section, it is understandable

how research continued to occupy the agenda, and the selection and teaching of undergraduate students continued much as it had before.

This meant that UCT naturally tended to serve a social group rich in cultural capital as it had done since the early 1900s, namely the white English-speaking middle class. In Sebastian's eyes, UCT could hardly be blamed for government legislation. Moreover, the lack of academically suitable black students for engineering, an unfortunate consequence of apartheid schooling, was not the fault of higher education. The institution's first priority was the pursuit of international acclaim in research and, secondarily, education of the undergraduates who did gain entrance. This included, Sebastian notes, a 'very small number' of 'non-white' students who were allowed to study at UCT by special permission from the Department of Education.

Trevor, on the other hand, was principally concerned with the social consequences of education. He saw it as unacceptable, both in terms of his personal ideology and in terms of his role as Director of the ASP, that UCT should continue serving the white middle class given the vast inequalities between black and white in South African society. In Trevor's eyes, the system was 'academically conservative' by virtue of the fact that in continuing to follow traditional academic procedures, it perpetuated social inequality. Furthermore, the low status afforded undergraduate teaching meant that, without much effort, those entering the system with a good secondary education would succeed despite, in Trevor's words, 'some pretty lousy teaching'. As already mentioned, Trevor realised that some marginal support of a few black students would not bring about the changes that were envisioned and he and his colleagues began trying to find ways of tackling the problem systemically.

While Bourdieu accepts that exceptional students from underprivileged backgrounds are able to succeed in higher education (he himself was one), he also contends that such cases only assist in masking the reproductive function of education. This is contrary to the keystone of Trevor's mission – social transformation through education – but is not assumed in this study. Instead, the approach here is that Bourdieu's framework brings a critical perspective to foundation programmes without ruling out the potential of foundation programmes to meaningfully change higher education.

If we return to Sebastian and Trevor's very different views of the purpose and principles of higher education, it is not surprising that a struggle over these issues ensued. Below is Trevor's account of the confrontations that he had with some 'established heads of department and other brokers' at UCT:

Trevor: ...what really struck me, and what still interests me about this area, was that I came in as a lecturer with a B.A. honours and heading this funny thing called ASP so I found it extremely puzzling that established heads of department and other power brokers in the place would get really angry with me. You know, I'd be sitting across the desk from them and asking for some concession or whatever and I would find fierce hostility going on. People frothing at the mouth, you know...I began to think, "How can I, or what I stand for be so threatening," because, of course, it took me aback completely, and it was very disturbing to get yelled at in that way. But I began to think, "Oh well, there's something more in this than meets the eye because there must be something that is inherently threatening to people and therefore it's got some kind of power."

BK: What is that?

Trevor: I think to a large extent it was the threat to established ways of doing things. It was the barbarians at the gates. So I say that while many people would have espoused a non-racial viewpoint, they actually still saw black people as the enemy of standards and if you let them in, you were going to go down the tubes.

It is useful to consider Bourdieu's analogy of the *priest* and the *prophet* here, descriptions that he uses to describe the workings of the religious field. The priests represent the defenders of the orthodoxy, the protectors of religious tradition, while the prophet represents an agent that challenges the system and the basic principles upon which it is based. In the case of the university field, the 'power brokers' represent the priests, who defend the establishment by virtue of their endowment with academic capital (derived from economic and political power) and their position within the university hierarchy. It is not only the 'established ways of doing things' that they are defending but the very principles upon which the university field, as an autonomous social space, rests.

Trevor takes on the role of prophet, possessing some academic power through the authority conferred on him by upper management at UCT, but really importing what is essentially a political argument from 'outside the conceptual framework of dominant modes of...thinking (Robbins 1993). Using his 'political cum moral high ground', Trevor seems to want to make the institution accountable for its actions. Even though he says that most people did not associate themselves with apartheid in any obvious sense, the 'whiteness' of the institution, both in terms of students and staff, was something that Trevor exploited. He was thus able to argue powerfully that UCT would be in a precarious position if the political situation suddenly changed, an event that looked more and more likely as the 1980s progressed.

At the same time, Trevor says that the ASP had to be careful not to put itself out on 'too radical a limb' where it would not be heard at all. He and his colleagues chose to

negotiate the middle ground between the radicals (especially at the previously black institutions) who believed that the whole system should be 'chucked out completely' and replaced, and the conservatives generally who saw the work of the ASP as 'fundamentally undermining standards'. Within UCT, Trevor had the advantage of liberal sentiments in upper management but he needed to temper his argument to make it favourable for academics.

According to Bourdieu, once the orthodoxy realises that an outright rejection of a challenge is not possible, it attempts to neutralise the external threat by making it part of a new orthodoxy. In other words, compromises may be made to the structure of the field, but always ensuring that its autonomy is protected. By accommodating Trevor, UCT had some sort of control over the challenge that he posed and, as an institution, was able to negotiate its response to such a challenge. At another level, Trevor and his colleagues could be seen as agents that UCT used to put pressure on itself in the hope of avoiding undue pressure from the incoming political dispensation that might not be as tractable. For Trevor and his colleagues, the challenge was trying to push for meaningful change to the system *while at the same time being a part of the system*.

The concept of *refraction* was introduced earlier and is useful to draw on at this point. According to Bourdieu (1993) external determinants 'can have an effect only through transformations in the structure of the field itself' (p. 14). In this instance, the external demands on the field as a result of the social and political pressure of the 1980s were refracted in terms of the logic of the university field resulting in certain changes to its structure. The establishment of the ASP unit represents one manifestation of this prismatic effect of the field. However, we must be careful not to conflate changes in institutional structure with changes to the structure of the field. While the ASP unit was important in terms of positioning staff like Trevor within the physical space of the institution, its effects on the structure of the university field were relatively minor. Nevertheless, the evolution of the *institutional manifestation* of academic development at UCT does indicate the extent to which the discourse penetrated the institution. In 1991 the ASP was renamed the *Academic Development Programme* (ADP) which signalled, according to Trevor, a 'difference of intent' to the higher education community from the paradigm of 'support' to 'development'.

In 1999, elevation to faculty-level status and the formation of CHED – which included the ADP among other units – demonstrated how seriously UCT was prepared to take academic development. Although the structure of the ADP has changed over the years, it now also contains sub-units such as the Language Writing Centre and the

Numeracy Centre. CHED has expanded to include five other units including the Centre for Education Technology and Careers Services (see Appendix F). Although these are apparently diverse, it is argued here that they can all be traced back to the same root cause, the same 'initial ray' that was refracted by the medium of the university field.

However, what is more important for this study is that the ASP facilitated the launch of alternative introductory undergraduate curricula for black students – *foundation programmes* – that were symbolically important in terms of their focus on the teaching and learning needs of a particular group of students. Trevor explains here how foundation programmes came about:

So we, you know, we had to do something systemic about it and yet, how could we against this massive monolith like UCT?...These impressions grew on us more and more and the understanding became that you can't just leave this to individual will and, you know, willingness to co-operate. You actually have to bring about systemic changes...Hence what came about with what we now call extended programmes, we would have called them foundation – we still use the term – we would have called them foundation programmes at the time...I think the key thing about them was that they were trying to address one of the fundamental systemic problems by creating an introductory curriculum that was closer to meeting the students where they were at. So it was trying to deal, systemically, with what was fundamentally a systemic problem.

For Trevor and his colleagues, foundation programmes were a bold attempt to insert their agenda meaningfully into the higher education system. Although they recognised the difficulties of separating students from the mainstream, Trevor says that he would choose this option and the possible 'injury to dignity' it might cause whenever faced with the other option – permanent failure. This is an important point that will be returned to when dealing with the Stellenbosch case.

The key question is: to what extent did this strategy actually shift the field? As a network of power relations embodied in agents and enacted through their habitus, what has been the real impact of academic development? To answer this question, we refer to Trevor's description of what he sees to be the fundamental mission of academic development:

I think our fundamental mission, quite clearly to me, is to make the most of the teaching and learning process, to make it as effective as possible, for the widest range of people. And in South Africa, we can never get away – well, we may one day but we can't for a long time – get away from the equity side of that.

If we analyse this statement in terms of Trevor's trajectory as outlined at the beginning of this section, we see how his desire for equity through education, because it was a 'crucial element of social and political development', has been re-interpreted in academic terms. The portrayal of the mission of academic development as making teaching and learning 'as effective as possible' divests it of political connotation and frames it as a *specifically academic issue*. The concern for equity is then understood as a particular consequence of a focus on effective undergraduate teaching in the South African case. Such an analysis suggests that the discourse of academic development has developed as a result of the appropriation of academic arguments that will most successfully bring about social change towards increased equity, their real intent.

Despite Trevor's compelling arguments as to why teaching deserves more attention – such as the fact that roughly 70% of the university's income comes from student fees or that South Africa is desperately in need of skills for economic development – academic development simply runs counter to the traditional logic of the field, a social space that prizes research above all else. In emphasising the importance of knowledge for the sake of students, equity or the nation, it comes up against the obstinate principle, so deeply ingrained in the structure of the field and summed up by the maxim 'knowledge for its own sake'. As Section 6.3.1 will demonstrate, this tension works itself out in very practical ways in the lives of engineering academics.

Before dealing with the foundation programme in engineering specifically, it is worthwhile noting that foundation programmes manifested themselves in different ways in the *different faculties* at UCT. Although they were launched at different times, all have followed a general trend of evolution towards articulation with the mainstream. The form that the foundation programme took in a particular faculty depended on, among other things, the extent of faculty support, the disposition of the mainstream towards this type of initiative, the staff that were tasked with the foundation work itself and funding. As will be seen, the thinking around this type of intervention within engineering was relatively advanced and faculty-level support was whole-hearted which is one of the reasons that ASPECT is traditionally seen as one of UCT's more successful foundation programmes.

A final point that must be borne in mind as we proceed is that the external determinants that resulted in such transformations continued to impact the university field as a whole. The political events of the 1990s were obviously significant in terms of legitimising the academic development agenda, as were the higher education policy

developments of the 2000s. Although UCT avoided having to merge with another institution following the National Plan (DoE 2001c), that the government embarked on such a course of action at all was a powerful message to the higher education sector. As mentioned in Chapter Four, the National Plan specifically mentioned that academic autonomy would not be accepted as an excuse for lack of transformation; such muscle-flexing by the state helped to further the cause of academic development. Up until the present, these and other external forces continue to make academic development a permanent part of the university field.

6.2.2 Academic development at Stellenbosch University

Dr André Hartenburg (Stellenbosch, started 1988)

André studied for his teaching diploma and began teaching at a prestigious boys' school in the Eastern Cape. He completed his Masters while he was teaching and was then accepted for a lecturing job at an education college in Cape Town. André continued studying and obtained his PhD in applied linguistics. He then began doing research work in the private sector and was appointed Chief Researcher in the Institute of Language Teaching at Stellenbosch University in 1988. It was here that his interest in the acquisition of language, especially second and foreign languages, peaked. Four years later, André was appointed the first Director of Academic Development Programmes at Stellenbosch and has remained in a leadership role in academic support/development ever since.

Dr Leonard Naudé (Stellenbosch, started 1995, retired 2003)

Leonard is unique among the Stellenbosch respondents since he would have been classified as coloured by the apartheid government. He studied engineering and started to work in construction but found himself at a company that 'wasn't as progressive during the apartheid years'. He decided to shift careers and began lecturing at a higher education institution classified as being for the 'coloured race group' at the time. He quickly moved into a management position at this institution and studied for his Masters in maths education at the same time. Leonard then got an opportunity to study his PhD in the United States and teach on an engineering foundation programme at a university there. In 1994, he returned to South Africa and took up the post of Director of Academic Development at Stellenbosch University in 1996. Although he retired in 2003, Leonard continues to do 'freelance' work for various higher education institutions.

Dr Zelda Atkinson (Stellenbosch, started 2003)

After completing her B.A. Hons, Zelda taught in 'coloured education' and, because she was very politically active, lost her job a number of times. She studied for the Higher Diploma in Education at UCT and, after graduating, continued to teach and studied for her Masters part-time, choosing to research language acquisition in her own multilingual classroom. Zelda then began working on a research project in higher education and at this time also embarked on her PhD in applied linguistics. She then moved to Pretoria and worked for the Department of Education for some years where she completed her doctorate. Her husband then wanted to move back to Cape Town so Zelda applied for a job at the University of Stellenbosch and took up a post managing a centre for academic development in 2003.

Dr Katherine Neethling (Stellenbosch, started 2006)

Katherine has a retail background and began lecturing in higher education in a retail business management course at a technikon (as it was called then) in Cape Town. It was during this time that she became 'very interested in issues around foundation' and lobbied for seed funding from government for one of the first programmes at the institution she was at. Katherine also studied for and obtained her Masters in higher education during this time. In 2005 she took up a post in academic development at Stellenbosch, one of her roles being to co-ordinate the extended degree programmes. Although Katherine has recently completed a PhD that looked at the experiences of students in foundation programmes, her focus has actually shifted away from foundation programmes to an initiative focusing on the first year experience.

To understand how academic development manifested itself in the university field at Stellenbosch, we will start by comparing the trajectories of Trevor Norfolk from UCT and his slightly younger counterpart, André Hartenburg. The effects of government pressure on the field at Stellenbosch, especially in terms of the language debate will then be examined. In this context, the narratives of André, and his two successors who had the responsibility of managing foundation programmes at Stellenbosch, Leonard Naudé and Zelda Atkinson, are drawn on. A theme that emerges here is that academic development appears to be less motivated by a political agenda compared to the discourse that emerged in the 1980s at the previously white English-medium universities. While the *institutional manifestation* of academic development at Stellenbosch can be compared to that of CHED at UCT, the key question that is considered is: to what extent did foundation programmes change the structure of the field? Finally, the comments of Katherine Neethling, another academic development manager, are used to illustrate starkly the effects of an intense *battle of heteronomies* at Stellenbosch University.

In 1992, André was appointed Director of the first Division of Academic Development Programmes (AAOP) at Stellenbosch, more than a decade after the establishment of the ASP at UCT. Like Trevor, André also comes from teaching background and in fact, describes himself as a 'teacher at heart'. Coincidentally, he taught at the same school that Trevor attended, a very different environment from the coloured school on the Cape Flats where Trevor became 'really hooked' on the notion of education as a vehicle for change. This alerts us to an important difference between these two: André was not as politically motivated as Trevor but followed an academic route, studying for his Masters and then his doctorate in applied linguistics. He also did some lecturing and then research for the private sector, which meant that he accrued more intellectual capital than Trevor.

The paths of these two men crossed when André became Director of the AAOP. We recall that Trevor and his colleagues put much effort into understanding what they were up against and how to proceed strategically during the early years. Being ready to learn from Trevor, André says that he was 'the obvious choice' in terms of whom to go to for help and was also his 'mentor...to a large extent'. André also tells how Trevor was invited by university management more than once and consulted on how to go about establishing a division for academic development programmes at Stellenbosch. Part of the answer to the question of how much academic development shifted the field at Stellenbosch has therefore to do with the form that it took as it was reinserted into the field in the Stellenbosch context. While the trajectory of André gives us a hint that it is less political, we need to examine the relationship of Stellenbosch with the political field to understand why this may be so.

Unlike UCT and Wits, Stellenbosch did not take any kind of stand against separate education but, along with the other Afrikaans-medium universities, consented to the policies of the apartheid government. The inevitable consequence was that the University played a role in legitimising the apartheid project by reproducing privilege amongst the white, Afrikaans-speaking portion of the population and 'socializing youth with a particular set of cultural values into the Afrikaner community' (Giliomee 2003 p. 658). We have also seen how academics at Stellenbosch were more involved in consulting than at UCT and it is notable that a good deal of such work, especially in engineering, was done for the South African Defence Force and the weapons industry (Bunting 2002; Wood 2008). While a more heteronomous relationship with the political field (Naidoo 2004) put Stellenbosch in a stronger position than UCT in terms of political power during the apartheid years, it also made the university more vulnerable as South Africa negotiated its way towards democracy.

We recall in Section 6.1 that consulting work – more of a focus in the field of engineering education at Stellenbosch – was being replaced by a focus on research. Figure 6.1 on page 141 confirms that since the 1990s, research has moved up on the agenda at Stellenbosch University, a trend that corresponds with the change in political dispensation. Niels Nortjie, a mainstream engineering professor, confirms that pressure from government is causing this shift:

Niels: And then it shifted in the early '90s...there was more pressure on universities to produce more research outputs.

BK: Pressure from where, Niels?

Niels: From government because government says, "OK your subsidy will depend on the number of students you have, undergrad' students, as well as on the number of papers and PhD and masters students you produce."

It is clear therefore that the structure of the university field at Stellenbosch is being altered as a result of pressure from the state. Ironically, a greater focus on research will probably mean greater academic autonomy in relation to the political field and therefore independence from the state. With regard to academic development, the previous section suggests that emphasising research outputs and intellectual capital are not favourable for the academic development agenda.

But the university is not responding as easily to government pressure to alter its language policy as it has to the pressure to produce more research outputs. Drawing on the discussion about the *taaldebat* in the previous section, it is significant that this debate mainly concerns the use of Afrikaans in undergraduate teaching. At postgraduate level, the policy on communication between supervisors and students is that it should be determined by convenience. Given the large proportion of foreign students pursuing postgraduate studies at Stellenbosch²⁴, the use of English is on the increase. Moreover, the language of publishing is predominantly English. Of the more than 5000 papers published by Stellenbosch academics in accredited journals for the period 2006–2009, 95% were in English²⁵. Chris Brink, former rector of Stellenbosch, from 2002 to 2007, notes the connection between what he calls a 'relaxed approach to language at postgraduate level' (Brink 2006 p. 136) and the significant growth in the proportion of black students over a five-year period, ending with 42% in 2005 of the

²⁴ Stellenbosch 'has one of the country's highest proportions of postgraduate students' – more than a third – 'of which almost ten percent are international students' (*About Stellenbosch University* 2011). This works out to roughly 1 000 students in 2010.

²⁵ About 4% of the articles for this period were written in Afrikaans. The analysis in Appendix G indicates that this proportion is slowly decreasing.

postgraduate cohort being black as opposed to 20% at undergraduate level. If intellectual capital drives higher education as has been shown, then it is clear that the argument for a single-medium Afrikaans university is working against forces that favour the accrual of intellectual capital and the structure of the field. Moreover, the possibility of strictly enforcing Afrikaans as the medium of instruction at undergraduate level while the use of English in communication and instruction at postgraduate level (not to mention publishing) continues to relax, seems increasingly remote.

The comments about the language debate from the professor arguably richest in intellectual and academic capital in this study, Daniel Marais, are worth mentioning at this point. What is of note here is that despite his volume of university capital, Daniel expresses deep concern for the opinions of the alumni, a body that is removed from the day-to-day workings of the university but intimately connected to the institution socially, culturally and historically. In the battle over language, he says that

...the people writing about the language issue virtually every day...it's not the local varsity people that actually fight, it's actually the alumni and this is obviously one of the things about the language issue that you must – you're really treading on very, very thin ice because you must go someplace where you do the right thing for everybody in the country with regard to training but you know that there is this body of alumni somewhere that can explode and just say, "Listen, I'm not going to give any money anymore," and that kind of thing so, ja, it's a tricky thing, it's tricky.

Daniel's comments about 'treading on very, very thin ice' and the fear that this body 'can explode' indicate the powerful influence that the alumni seem to exert on Stellenbosch University. Although there is a widely held perception that the university is dependent on the alumni for its financial operations Chris Brink calls this 'a small but annoying myth' (2006 p. 120) and attempts to dispel it in his book about the language debate, *No lesser place*. That this notion persists simply indicates the power that the alumni have, be it financial or otherwise. The struggle over language may therefore be explained in terms of a *battle for heteronomous influence* over the university field between the state that holds official political power and the white, Afrikaner ethnic community that holds a residual, socially sanctioned form of power. With this in mind, it is significant that Brink based his argument for the adoption of a more flexible language policy on the same principle evoked at UCT about 50 years before: academic freedom. He contends that academic freedom means not only that the state should not prescribe how the pursuit of truth and knowledge was to be carried out –

...it means that *nobody*, other than the academics themselves, should decide how the academic business is conducted. Specifically: no "cultural-historical

community” – not even one that feels a sense of ownership arising from past participation – should be able to prescribe to the university what to do.

(Brink 2006 p. 119)

He went on to say that the ‘business of the university is about knowledge, not culture or language’ (Brink 2006 p. 131). In Bourdieu’s terms, Brink was using the autonomous principle of the field to try to wrest control from the cultural-historical community so intimately bound up with Stellenbosch. Although Brink denied that the language debate and ‘other heated issues’ were the cause of his leaving, it is likely that this intense struggle was part of his decision (Breytenbach 2006). This helps us understand André’s statement that ‘you can’t speak to any Stellenbosch staff member without stumbling into the whole language debate and issue. It’s a heck of a thing here and it affects us quite dramatically’.

If we once again turn to the question of the political nature of academic development at Stellenbosch, it appears that the intense battle of heteronomies has simply not allowed academic development at Stellenbosch to significantly challenge the structure of the field. Part of the reason for this is that it began much later – André was appointed only two years before the first democratic elections. So while the *institutional manifestation* of academic development launched at Stellenbosch, the AAOP, was similar to the structure that was established in the early years at UCT, the kind of resistance that it encountered was of another order.

In the first place, having Afrikaans as the predominant medium of instruction made (and still makes) recruiting black students a problem. André says:

I think what you don’t realise, it has a *tremendous impact* on who we recruit so, in terms of black students qualifying, at the moment the limiting factor is the fact that we cannot go and recruit black students in Bishops and Wynberg Boys High and even Paul Roos...So it has a *profound effect* on our recruitment, the language issue at Stellenbosch.

Having enough black students at the university is obviously a pre-condition for successful foundation programmes. It can be imagined that one way of tackling this would be for academic development to lobby for English to replace Afrikaans in order to increase the number of black students. However, since the language issue is at the same time both a profoundly personal and a political issue for the academic community, the majority of whom are Afrikaans-speaking, such a stance would probably be interpreted as ‘selling out’ Afrikaans, as a mainstream professor in engineering put it. Following such a course would certainly have resulted in academic

development staff isolating themselves from the very university community that they were/are supposed to 'develop'.

Academic development therefore had little choice but to try to chip away at the monolithic edifice with which it was faced. We recall that at UCT, Trevor encountered fierce resistance from that he called 'power brokers' within the institution. At Stellenbosch, André appears to have had similar challenges and tells, for example, about the run-ins that he had with a certain dean: 'we really bumped heads with him and I wanted to throttle him more than once, not seeing, you know, that we had a role to play here.' While foundation programmes were established in six of the 10 faculties at Stellenbosch by 1996 (de Klerk et al. 2006), it becomes evident that their impetus as a 'systemic solution', the driving force behind their establishment at UCT, was lost in the Stellenbosch environment. The paper referred to above, *Small victories over time*, indicates that they were not a complete failure but have struggled to make an impact, as we will see. Before we explore foundation programmes in more detail, we will briefly discuss the status of academic development in general at Stellenbosch.

If we turn to the narratives of André's successors in foundation programme management, we see that in 1996 Leonard Naudé came in as Director for Academic Development Programmes (AOP) and André became responsible for the umbrella structure that later became Academic Support. The composition of this umbrella structure has changed over the years but what is significant is that units in charge of language and tutoring/mentoring have remained an important part of academic development at Stellenbosch. As of 2010, this division became known as Student and Academic Support (SAS). A comparison of the composition of SAS with CHED at UCT (Appendix F) indicates that the *institutional manifestation* of academic development at Stellenbosch appears to be operating more in the *support* paradigm. For one, the staff employed in academic development at Stellenbosch are appointed as administrative staff rather than academic staff even though they do research work. Also notable is that a focus on students appears to dominate the agenda which points towards a greater power differential in relation to the university field, rooted as it is in research power. In the quotation below, Leonard is answering a question about the importance of research at Stellenbosch:

Leonard: ...like any university that wants to be counted as one of the top universities, then research is a major thing and teaching is second. And you go to any university that is the situation: "Oh, no let me just go and teach quickly but my main thing is the research that I'm doing."

BK: Is that something that you then consciously addressed as academic development?

Leonard: No. No, no, I did not want to interfere with the ethos of the university.

This stands in contrast to Trevor's strong pushing of academic development against the structure of the field that, as the last section shows, resulted in a growing emphasis on teaching and learning. However, Leonard says that a shift towards teaching and learning occurred when he retired in 2004 and the AOP was renamed the Centre for Teaching and Learning (SOL). The responsibility for Extended Degree Programmes (EDPs) – as they had become known since 2003 – has fallen to the SOL since then.

Zelda Atkinson took charge of the SOL after Leonard's departure and is by far the most politically-minded individual who was interviewed at Stellenbosch, as her biographical sketch shows. Perhaps it is because she is an English mother-tongue speaker that Zelda talked relatively little about the language issue. When asked why, she said, 'Because it bores me to tears. I mean, I'm so sick of Giliomee I could die!' In terms of the operations of academic development, Zelda says that there is a huge difference in the way it works at Stellenbosch compared to UCT. She describes it as more of a 'collaborative model' and explains that in the main, the role of staff has to do with formulating policies and providing expert advice to the Vice-Rector (Teaching). They may, for example, have a policy passed for EDPs but then, Zelda says, it is up to faculties to implement it and academic development staff will operate in what she calls 'support mode'. The point here is that there is not as much of an emphasis on redress as at UCT. Given the level of resistance to changing the structure of the field, the academic development agenda appears to have been *deflected* more than refracted. In the excerpt below, Zelda describes the de-politicisation of the SOL:

...we had to convince people that you've got to keep some places for black students. But we don't fight that battle anymore because it's been accepted. A lot of the battles that we probably had to fight four or five years ago, other people fight now, you know, things about access and diversification and language, the Vice-Rector fights those, you know? So we don't see that as our role as much, so we get involved in equity issues and more just in recognition of teaching, quality teaching and support for teaching...So our role has changed, I think our big battle now is the scholarship of teaching, recognition of teaching and just plain, you know, professionalization, support, all those things, we have become less of a lobby.

If we now turn to foundation programmes specifically, Zelda's comments about operating in support mode while these policies are implemented indicates that the responsibility for foundation programmes is shifting to the faculties. In other words, faculties are encouraged to hire staff and run foundation programmes with the option of consulting the SOL for assistance. When Zelda was asked what she felt the challenges facing her were, she was frank about the status of foundation programmes:

...three years ago I would have said to get more extended degree programmes going, I used to be very anxious about that. Maybe it should be a challenge still because they're there but they don't draw enough people but I, to be brutally honest with you, I think the model with the logic behind them is slightly flawed anyway. It's not ideal for Stellenbosch, I mean, you are trying to do two things at once, you're saying you want to diversify and you want money to put people in a second order programme, you're implying that's the only way to diversify. I mean, in practice it might be so but – there's an issue there...

This brings us back to the question that was asked at the outset: what happened to academic development as it was reinserted in the Stellenbosch context? From Zelda's comment above, there seems to be uncertainty as to whether foundation programmes suit the Stellenbosch context at all. The issue at hand appears to be separating black students in the interests of diversity. Zelda seems to be saying that these things are actually working against each other: if all of the (African) black students were taken out of the mainstream and put into a 'second order programme', this would probably heighten the sense of segregation (and stigmatisation of black students) rather than improve integration and diversity within the university mainstream.

We recall that the idea of separating black students from the mainstream and offering them an 'introductory curriculum' was the crux of the *systemic response* of foundation programmes at UCT. The model was formulated as the solution to dealing with under-preparedness in students who had come from a dysfunctional (DET) school *system* and were now in what Trevor called an 'academically conservative' tertiary *system*. But from early on at Stellenbosch, students were not strictly separated on the basis of race as the statistics in Section 5.2.2 show. When he was co-ordinating the foundation programmes, Leonard actually pushed for racial diversity within the foundation programme rather than separation. When he found that only black students were going to be on a foundation programme, he 'insisted, "No, but where are the white students, there must be white students struggling, why don't you give them a second chance as well?"' This again shows that academic development at Stellenbosch is less motivated by a progressive agenda. Here, Leonard talks about foundation programmes in academic terms and 'struggling' students getting a 'second chance as

well' rather than a more politically-motivated systemic response. Zelda says that 'in principle we wanted to have white students because it de-racialises the thing...but on the other hand, having too many of them can shift the focus'.

The shift in focus that Zelda is alluding to has become a concern at Stellenbosch. Sometimes too many white students come into the extended programme and this results in the programme functioning more as an easier option for white (mostly Afrikaans) students and less as a *foundation* programme for under-prepared students. Katherine Neethling explains that this caused serious difficulties in one faculty where many white students were moved to the foundation programmes because they were not doing well:

...we now in the same class will have very affluent young kids, white kids, coming from top schools who simply didn't apply their minds at school and now they've landed in the foundation programme sitting next to a student who perhaps came from a rural area and a very poorly resourced school but who's actually a jolly hard worker, who actually rose above his or her circumstances to achieve a mark to get into university but not sufficient to go into mainstream.

The problem is that the attempt to de-racialise foundation programmes compromises the ability to provide specialised help to black students who are under-prepared by virtue of the school system they come from. Having a foundation programme class with such a diversity of ability (not to mention range of cultural capital) would certainly result in the black students losing out as the proportion of white students increases. By allowing too many white students in, foundation programmes become decoupled from the political agenda they were designed to fulfil and tend towards being a slow-stream option for white students.

It is argued here that this is a consequence of the pressure that the university is under, especially in terms of its language policy. Within this intensely heteronomous environment, academic development could not (and still cannot) afford to challenge the *status quo*. Thus, when the government called for applications for the funding of ECPs in 2006, academic development at Stellenbosch was in fact going in a different direction. We recall that the funding framework required the adoption of a certain format of foundation programme if funding was to be forthcoming (DoE 2006). Zelda explains that in many ways this wasn't suitable for Stellenbosch:

We were starting to argue for a much more flexible approach and de-racialised approach and then with that money it was like: "You can have this money if you have more black students." So it took us to a way of thinking which we weren't really – we were actually moving in a very different direction and so we then had to

re-orientate it back to this whole issue of race and to say to people, “Look we need to get more black students anyway and if we get them in through this then we can get more money.”...[O]bviously we wanted to be part of this because we want to be supportive of progressive aspects of things but it wasn’t a way of thinking which came organically or easily at that point, it really wasn’t. And we got tiny sums of money – well rightly so, we had very few black students and the battles – not the battles – but the struggles are still happening because we couldn’t understand why certain faculties couldn’t just say, “Let’s keep some places for black students and give them more support.”...[A]ll I can say on the record is that it didn’t suit the way we were thinking about it, not that we don’t want to diversify.

This issue will be returned to in Section 6.3.3, *The foundation programme at Stellenbosch University*.

To conclude, we refer to some comments from Katherine Neethling who managed foundation programmes some years ago under Zelda. She said despairingly, ‘Issues of race and language on this campus are just – some days you actually think, “I can’t fight this fight anymore.”’ When asked whether the source of pressure was the government, Katherine replied:

I think it’s coming from all sides but I mean, specifically the government yes, and the statistics are for anyone to see – we’re 70% white undergraduate and we just can’t be that anymore. We’re just nowhere near representative of the demographics of the country, I mean, we’re not even approaching it, we’re not even inching towards it...

For foundation programmes this means intense marginalisation although Katherine is of a different opinion: ‘I think we afford it too much significance by even saying it’s marginalised. I don’t even think it’s marginalised. On most people’s radar screens it simply doesn’t even feature. It’s worse than being marginalised in a sense’.

6.3 *Foundation programmes within the field of engineering education*

Having constructed the field of engineering education through data from seven mainstream professors and having investigated academic development as a field phenomenon, we now consider how foundation programmes manifested within the field of engineering education at the two case study institutions. What is of interest is the reinterpretation of the academic development ideals by engineering academics and the consequences of this in terms of the structure of the field. The role of industry

is also taken into account in this analysis and is found to be particularly important in the UCT case. At Stellenbosch University, the intense 'battle of heteronomies' seems to have resulted in a less decisive approach in terms of the structure and purpose of the foundation programme than at UCT.

This section is divided into three parts: the first two parts deal with the ASPECT programme at UCT and the third with the foundation programme at Stellenbosch University. The first part, entitled *ASPECT at the University of Cape Town*, describes the history of the programme and its impact on the field generally. Two new respondents are introduced here but data from all five of the other UCT respondents are also utilised. Since the four academics teaching on ASPECT in 2008 were interviewed, they are introduced separately in the second part of this section, called *The ASPECT space*. The reason for this is that their dispositions are sufficiently distinct from those in the mainstream to warrant a separate analysis. However, this was not the case at Stellenbosch since only one (of the two) extended degree programme lecturers was interviewed. It was therefore decided to include data from his interview in the final part of this section, *The foundation programme at Stellenbosch University*. As with the UCT case, data from the other Stellenbosch respondents are also utilised for this analysis.

6.3.1 ASPECT at the University of Cape Town

Shawn Donovan (Anglo American, involved with ASPECT from 1988)

Shawn studied for a degree in industrial psychology and completed his Masters degree at a university in the United States, specialising in Training and Development. From there, he was employed by Anglo American to set up an artisan development school in Botswana, a project that he was involved with for two years. Although he says that he is not an educationist, Shawn became interested in the question of how South Africa should go about producing the kind of engineers that the Anglo American group needed. He did a 'massive amount of research' in this area and visited universities and colleges in other parts of the world such as Japan, Germany and Israel to find out about engineering training practices. It was because of his interest in engineering education that he became involved in the implementation of the ASPECT programme.

Dr Eric Donaldson (UCT, started 1987)

After studying engineering at UCT, Eric decided that he wanted to do some postgraduate work so he bought himself out of his bursary commitments and went to study for his Masters in the United States. Although Eric worked as a research assistant there, he was always interested in education generally and continued to be, even when he came back to South Africa with his PhD. He took up a research assistant job for four years in engineering at UCT and was then offered a lecturing post in 1987. Because he felt that 'I couldn't divorce what my work was and my thoughts about the country', when the faculty started talking about setting up ASPECT, Eric expressed an interest. It was some years before Eric moved over to ASPECT to both co-ordinate and teach on the programme.

This section begins by examining various contextual factors that led to the launching of the ASPECT programme. The perspective of Shawn Donovan, the only industry representative interviewed in this study, is particularly important in terms of the rationale behind Anglo American's involvement with ASPECT and the substantial influence this had in terms of shifting the field. Thereafter the question of how ASPECT impacts the field is examined through the use of Bourdieu's (1988) notion of the *time-economy* of academics. The tension between research and teaching is of particular interest here. Finally, the views of Eric Donaldson are explored to understand the contestation of the rules regarding the accumulation of academic capital within the field of engineering education.

The Shell Scheme at UCT was important in that it was a testing ground for the collaboration between the academy and industry to bring black students into engineering. When the first Shell Scheme students graduated, Steven Williams says that the vice-chancellor of UCT and the MD of Shell '...were over the moon at the progress they had made and the easy way that the whole thing had fitted into the system.' It is noted here that the Shell Scheme was symbolically important but did very little to transform the university and indeed, that was not its aim.

As Section 5.1 describes, the ASP ran a support programme in engineering alongside the Shell Scheme (1986–1987). This was not very successful and caused engineering to take matters into its own hands. Trevor Norfolk, Director of the ASP, confirms that ASPECT

...came out of the heart of engineering from John Martin and others. They were responding to what they saw as an amateur – not nasty but, you know, we were amateurs in that way, we didn't really know the engineering set-up...in fact John Martin was fantastic with that and a couple of others in engineering as it was at the

time saying, "We see what you're trying to do. We think there's a much better way of doing it."

This quotation signals the shift from a programme devised by the interfaculty ASP unit and launched with the assent of engineering, to the ASPECT model that came 'from the heart of engineering' as Trevor says, i.e. it was designed by engineering academics for their own faculty. In other words, it represents a reinterpretation of the notion of foundation programmes in the space of engineering education. Sociologically, this represents an important shift because the staff in the ASP were mostly from the humanities and, as we have seen, had a strong political agenda, while the approach of the engineers was more technocratic in the sense that, as engineering problem-solvers, they were eager to find a solution for this 'problem'. Trevor recognises this when he says, 'John Martin and Steven [Williams] really cooked up the way ASPECT works and, with hindsight, it was a really, really excellent design.' Trevor goes on to describe how the ASPECT curriculum focused on intensively working on what were considered the fundamental building blocks of engineering, Maths and Physics.

To some extent the longevity of ASPECT can be put down to its stable design. According to Zachery, from the beginning ASPECT 'pinned [their] mast to a process of integrating and having an extended curriculum'. This meant that a 'first two years over three' model was the core that has remained with some minor variations in other aspects of its structure over the years. But what is of interest here are the conditions that made ASPECT possible and the sociological impact on the field of engineering education as a result of the collaboration between UCT and Anglo American, the leading player within the group of corporations involved in the ASPECT programme. On the surface, the reasons for industry's becoming involved with ASPECT are much the same as with Shell some years earlier. Firstly, there was the desire to contribute to engineering training to secure human resources for business needs. There was also the social responsibility agenda that had become commonplace for "big business" in the 1980s. An education project to train black engineers such as the Shell Scheme or ASPECT combined these two drivers.

However, Shawn Donovan, who worked for Human Resources at Anglo American and was its representative for ASPECT at UCT, reveals another dimension to the programme. Anglo was concerned that the education system which was supposed to produce the technical skills for its mines was miserably failing black African people, the majority population group. While intervention in the area of education was not really its

domain, Anglo decided to do something. After ruling out the possibility of becoming involved in the training of artisans or students at the technikons, Shawn describes how they saw the problem and what they would try to do about it:

So what education is actually available to blacks with a desire to bridge things into the workplace? The only way you could go is right to the top to universities, creating a whole new academic run. Not necessarily the wisest way because our results weren't great, never have been, but at least you had an opportunity to say, "Let's scout the market and see – we'd only do it for blacks, not for whites..."

What is significant about this quotation is Shawn's awareness of the magnitude of the problem that they were tackling and his frank opinion of its success (in terms of cost per graduate). In fact, his statement that they wanted to 'scout the market and see' makes ASPECT seem like a very expensive experiment in social engineering. Elsewhere, Shawn says that the idea of becoming involved with the universities was...

...wildly ambitious, hey, wildly ambitious. But I think for all the right reasons and it's good and if it paid dividends for today, that amount of money that we spent and we changed the lives of a few people I think it was just very healthy...And if you say there's many bridging education programmes and those programmes were at least made a little bit more pliable, a little bit more possible, a little bit more palatable, then it's been well worth it, I think.

Here Shawn reveals that a key part of Anglo's 'wildly ambitious' strategy was to shift the universities themselves. While the 'few people' that Anglo helped graduate through ASPECT was 'very healthy', as Shawn says, he was personally interested in pushing for a more practically-oriented degree which he believed would better suit the needs of Anglo. But at a deeper level, Anglo American was interested in 'changing the concept' of the engineering faculties at arguably the most influential of the English-medium, white universities at the time. In the excerpt below, Shawn describes Anglo's intent to help 'open' these universities to students of colour by its considerable economic leverage at a time when admitting students to UCT without consent from the Minister of Education was forbidden. Although Shawn was aware of the Shell Scheme and the efforts of the ASP at UCT, he expresses doubt as to whether the engineering faculty would have taken the initiative to transform without their help:

You think they would've started it? They would have taken another 10 years to get to this thing I would imagine, and what I think it did was maybe not have produced as many engineers per capita but it changed the concept of engineering faculties in three universities – Natal, UCT and Wits – because they became open and available to alter their dispensation before it was legislated by definition of colour. We broke the rules.

With this statement, Shawn displays his supreme confidence in the economic might of Anglo American. As a major player in the mining sector, the backbone of South Africa's economy, Anglo took the initiative to 'create a whole new academic run' to 'bridge [black people] into the marketplace', break the rules of government legislation and transform the English-medium universities. In sociological terms, this can be explained in terms of 'trumping' the forms of power in the political and educational fields with economic capital. In Shawn's opinion, the only downside of this foray into education for Anglo was that it 'cost a fortune' – he says that even some of the corporation's executives thought it was a 'bloody waste of money'. Nevertheless, he also says that 'it was small in the big picture anyhow'. When asked whether he meant in the context of Anglo's annual turnover, he replied: 'Ja, ja. It's more or less tiny; it's nothing; it's a joke; didn't matter.'

But the vast amounts of money that Anglo and other funders ploughed into ASPECT had very real effects. Trevor Norfolk, the Director of ASP at the time, describes some of these: firstly, he says Anglo 'did a huge job on student selection with the resources that we wouldn't have dreamed about'. Secondly, he explains that industry involvement was important for attracting students who would perhaps have preferred to go elsewhere rather than enter a foundation programme. In fact, UCT managed to convince Anglo that their black students stood the best chance if they went through the ASPECT programme and so industry made ASPECT compulsory for all its black bursary students. Trevor says this allowed ASPECT to 'attract the kinds of students that we knew were very talented that could do with the foundational work'. Lastly, Trevor believes that the prestige derived from the association with big firms like Anglo American and its partners was crucial in terms of the success of ASPECT:

...so that money was very important but I think as important as the money was the support, the *kudos* that came from involvement with those big companies like Anglo, especially in engineering, was very strong. It sort of legitimised the programme to a very large degree.

This is a crucial point in terms of understanding the changes to the structure of the field that were wrought through the intervention of industry. The involvement of big industrial players like Anglo American could not really be questioned by engineering academics and this made an intervention like ASPECT more amenable within this 'academically conservative' social space.

The perspective of Steven Williams, the first co-ordinator of ASPECT and thus closer to the 'coal-face' of engineering, is slightly different. In his opinion, it was the support

that ASPECT received 'from the top', i.e. from faculty and university management rather than from industry that gave the staff involved with ASPECT the freedom to fulfil their mission which, we must remember, was quite controversial in the climate of the late 1980s. He says that:

...the success of ASPECT is clearly carried by John Martin and Stuart Saunders [the vice-chancellor at the time] because we had complete commitment from the top. There was no "if", "buts" or anything else – "This is the right thing to do...". And when John Martin said something, you know, it carried a huge amount of weight and as I say, with Saunders and Martin together, you know, nobody was going to shake them and so it was an easy place to work from...

While the ASP struggled in some of the other faculties to implement foundation programmes, the whole-hearted support from management within engineering and the 'kudos' (not to mention money) from industry were instrumental in getting ASPECT off the ground and carving out a niche in the field of engineering education for teaching black engineering students. Nevertheless, the ASP remained a partner to ASPECT, providing institutional support and most of the teaching staff. In fact, Trevor Norfolk says that ASPECT was 'always a joint venture' with the engineering faculty but 'the staff belonged to us'. Such an arrangement, whereby the faculty owned the foundation programme but the ASP (later the ADP) owned the staff, was a key strategy to ensure that the posts were not 'hijacked' for regular departmental work, according to Trevor. It was a way of 'balancing the power' and ensuring that the academic development agenda remained on the 'radar screens' of mainstream departments. It also meant that when industry support fell away, the relationship between the engineering faculty and the ADP (at that time) reverted to the management model that was being followed in other faculties.

Although foundation programmes were intended to be a systemic response to a systemic problem, it is worthwhile reflecting on the impact of ASPECT on the field of engineering education. It has already been said that the intervention of industry helped in carving out a space within the field for things to be done differently. However, if we analyse this in terms of fields, it is clear that ASPECT occupies a marginal position in the field due to its prioritisation of teaching and the lack of capital of staff on the programme, at least in the early days. Indeed, if we bear in mind that the boundary of a field is always under contestation and also a stake in the struggle of the field, we see that ASPECT's *position in the field is even contested*. To understand this, we turn to an incident related by Steven Williams, when a full-time senior lecturer decided to teach on an 'ASPECT-type' course:

So the staff in [department] are up in arms: “Now we are going to have to pick up the load for teaching ASPECT...” All I’m trying to say is it’s once again, the selfish, “This is going to affect me, and this is bullshit,” you know, and I mean it’s a natural reaction, it’s the way people operate.

This alerts us to the fact that tampering with the ‘time-economy’ (Bourdieu 1988) of lecturers is hazardous, especially if they are attuned to the importance of spending time on research work. Moreover, the phenomenon is exaggerated if the students to be taught are educationally under-prepared students who, it is assumed, will require more attention than ordinary mainstream students. Because of the special needs of these students, it becomes increasingly difficult to focus on teaching and research at the same time. To give another sense of this tension, consider Sebastian’s explanation of why a ‘true researcher couldn’t run ASPECT’:

...because he is too busy teaching, too busy running around doing all sorts of other things, you know, so you don’t have the time for that [research]. Your energies are directly linked to finding people to help to teach, getting the material, breaking it down, chewing it up to give it to them, you know, all these kind of things.

In this quotation Sebastian firmly draws the boundary between higher education, the domain of the ‘true researcher’ and ASPECT, an initiative that he relegates to the realms of secondary school despite its physical location on the university campus. His description implies that the task of ASPECT lecturers is to spoon-feed students or, even worse, regurgitate material for them much as a mother bird would do for her young. Although this sounds unkind, Sebastian is pointing out in stark terms that *in practice* there is a major tension between teaching and research. Trevor says that this is ‘because it’s about time – and I will dare say your psychological energy – on *doing*’. Andrew Edmund, the most research-inclined mainstream professor, proved to be acutely aware of the balance in time between teaching and research. For him, ASPECT contributes to the tensions between these two activities.

So I grew up in a very strong, very focused research-minded environment and it is that strong-minded which I perceive UCT to mean when it says that it’s a research-led university. So I will cling to the name “research-led university” even when it comes impacting undergraduate teaching, for example. Because if we’re a research-led university, we should be *led* by research and we teach undergraduates second. Now I know there is a huge tension in that issue, massive tension, and those tensions are intensifying and have been over the last 10 years and it’s in that tension that the ASPECT programme lives. Because academics who are the researchers at UCT, who see themselves as the researchers at UCT will feel very hesitant, and resistant in fact, to become remedial teachers...

This excerpt captures what is perhaps the central struggle in the field of engineering education. Andrew identifies himself very closely with UCT's mission as a research-led university and, as we have already seen, strives to translate the resources that it makes available to him into research outputs. In terms of Bourdieu's theory, we can say that his habitus is aligned with the autonomous principle operating in the field and is therefore geared to the accumulation of the form of power most prized in this space: intellectual capital. This governs the structure of his time-economy which simply means that he cannot allow teaching to have priority in his schedule. He is a researcher and research activities are primarily what occupy his time; he will not spend any more time on undergraduate teaching than he absolutely has to.

Although Andrew uses the word 'teacher' in the excerpt above, 'lecturer' in fact better describes how he prefers to impart knowledge to his undergraduate classes. 'Lecturing' implies a greater distance between academic and student, an arrangement that suits the time-economy of a busy researcher like Andrew. By using the adjective 'remedial' in the last sentence above, he emphasises that the proximity to students that the ASPECT programme models, in terms of how seriously the staff take their teaching, runs contrary to the very structure of the university space that he is aligned with. Andrew and those who 'see themselves as researchers at UCT' simply cannot become as closely involved with undergraduate students as ASPECT lecturers do. Furthermore, Andrew and those of his generation were definitely *lectured* during their undergraduate studies so it is not surprising that they perpetuate such behaviour now that they are lecturers.

This is not to say that Andrew doesn't care about his students or is unsympathetic to the cause of ASPECT. On the contrary, he reflects deeply on his teaching and strives to find modes of explanation that will enable his students to understand what he is trying to get across to them. In terms of the cause of ASPECT, Andrew realises the difficulties that many black students face at UCT in terms of under-preparedness and recognises that the 'whole modus operandi of the way things work couched within white liberal UCT' may be experienced as alienating for black students. Nevertheless, Andrew's devotion to research, something that he describes as 'unbelievably time-consuming', simply does not allow him to dedicate time to the cause of teaching, and he must resist any pressure that draws him away from research. This is not easy for him as the quotation below reveals, since he feels this pressure keenly and quite personally at times:

I feel the tension, I feel the demand for time is there. Now I have to make a choice: do I want to be remembered at UCT as being this great undergraduate teacher who students all like because he's so helpful and he's always available or am I this crusty old professor who seems to brush us off the whole time...I'll do my best as a teacher – no, no, I'll do what's required to get most of them through but I can't get all of them through because student success rate doesn't entirely depend on my ability or inability or my time I'm spending on the students. It also depends on the time the students themselves spend on the subject...

These last two quotations from Andrew indicate that in emphasising teaching – and that students learn as indicated by the phrase *teaching and learning* – ASPECT contributes to forces opposing the fundamental principle of the university field. It is important to note that Andrew does not perceive ASPECT to be the cause of this tension, but rather to 'live' in the 'intensifying' tension between teaching and research because of its prioritisation of teaching at first year level. The scrutiny of undergraduate teaching through various government influences as well as through bodies like the Engineering Council of South Africa (ECSA) contributes to this tension. Within the field of engineering education at UCT, ASPECT affects mainstream lecturers in the sense that students coming through the programme might anticipate an intensity of teaching and a level of help that puts pressure on lecturers, as Andrew describes.

It is not difficult to understand the tension described above: the rewards for time spent on research, as long as it can be effectively converted into intellectual capital, are substantial, whereas time spent on teaching is hardly rewarded at all. It can therefore be said that the stakes of field, in terms of the forms of power recognised and rewarded, clearly lie in favour of research. Moreover, it is also true that the accumulation of academic capital – power often linked to position within the institutional hierarchy – largely depends on intellectual capital.

Due to the nature of their endeavour, it was clear early on that academic development staff would not be able to accumulate substantial amounts of either form of capital. While Trevor had some success at shifting the structure of the field through the power conferred on him by the university, we have also seen how he came up against serious opposition. Conventionally, agents can effectively transform the structure of a field if they wield the forms of power recognised in that field. For example, if a critical mass of academic development staff were able to get into positions of (academic) power, they would be able to change the structure of the field in favour of an academic development agenda. The problem here was that, apart from managers like Trevor,

the staff on ASPECT in the early days – Steven and Zach and later, Eric – were dedicated teachers and did not have the time or much of an inclination to do research. Indeed, we have seen that Steven gave up research early in his career.

Instead of going the conventional route and changing the field this way, ASP and ASPECT staff used what little power they had to try to challenge *the rules governing the accumulation of academic power* by arguing for a greater recognition of teaching in terms of promotion. Zach Fischer explains this struggle:

...the battle around recognition for contribution to teaching and associate professorship was a huge battle. It was won, I mean, there are key people...whose contribution to teaching has been what got them promotion, not their research, you know, which was unheard of previously...there were key moments when the university gave in. Whether they would still give in now – and I sometimes think we, in the last few rounds, have been at a harder place around research than we've ever been around a non-recognition of contribution to teaching for promotion.

What is especially interesting here is Zach's reflection on the temporary nature of the victory that was won in the early days and whether perhaps the battle has not gone the other way in 'the last few rounds'. This brings home the fact that this struggle is ongoing and, while the written rules (for example, in terms of promotion) can change, it is the unspoken, tacit rules of the field that really govern its operations. Eric Donaldson expresses this thought when he admits that teaching is

...not rewarded directly but increasingly there is a recognition that teaching plays as important a role as research...that is recognizing that there are different roles. But it's a long time coming in many ways...the model that people have used for promotion has stayed fairly traditional and conservative in favour of the research direction for most of the time that I have been around with some changes happening in written form but not necessarily always in practice but I think that has changed to a reasonable degree.

While Eric acknowledges that the model for promotion has traditionally favoured the research direction, something that the construction of the field in Section 6.1 confirms, he is more optimistic than Zach that it has shifted towards recognising the importance of teaching. But what is interesting is Eric's opinion that things are moving towards a position where 'teaching plays as important a role as research'. While teaching and research are arguably both core activities in higher education, *their equality in terms of prestige* and in terms of criteria for promotion and thus accumulation of academic capital in fact represents a radical challenge to the structure of the field.

In conclusion, it should be noted that much of the analysis above cuts across more than two decades, from 1988 until the present. Against the backdrop of the phenomenon of academic development within UCT, a good deal of the analysis focuses on the role of industry and faculty management in carving out a space for ASPECT within the field of engineering education. The metaphor 'carving out' implies that, once the space was made for ASPECT within the field, it was allowed to occupy this niche and fulfil its mission without much interference. Indeed, even when government decided to fund foundation programmes formally, the structure of ASPECT had to change very little, largely because policy favoured the extended curriculum model that ASPECT (and the other foundation programmes at UCT) had followed. Of course, the fact that UCT academics influenced the policy-making process is part of the reason that the ECP model came into favour.

With regard to the structure of the field of engineering education, the struggles outlined above are the defining features with respect to ASPECT. Although it remains in a marginal position, ASPECT challenges the customary structure of the time-economy of academics. Moreover, through ASPECT the traditional rules governing the accumulation of academic capital have been challenged as has the boundary of the field in terms of what is legitimately accepted as part of higher education.

6.3.2 The ASPECT space

Xavier Edwards (UCT, started 2000)

After studying engineering at UCT, Xavier went on to do his Masters but found that he really enjoyed the tutoring that he was doing. From being a regular tutor, he started running the tutoring programme for ASPECT and says that his interest 'just grew from there'. When an opportunity arose, Xavier suggested that a full-time ASPECT post be created. He drew up the details for this position and, after the post was advertised and he applied, got it. Xavier says that he has never looked back and has recently (at the time of the interview) begun co-ordinating ASPECT. In terms of his research work, he switched direction in his Masters quite early on but remains within a conventional engineering discipline. Xavier is now working towards completing his PhD.

Dr Glenda Yates (UCT, started 2006)

Glenda says that academia has always been a sort of 'philosophy of life' for her family and so it was quite natural that she enrol for a science degree at UCT. She went on to complete her honours and thereafter registered for her Masters. However, she found that she was enjoying maths tutoring far more than her Masters and so stopped studying and continued just to tutor maths for a couple of years. She then took up a temporary post in the maths department and began lecturing, and through this became interested in maths education. Glenda registered for her Masters in this field and, upon completing this, registered for her doctorate in maths education as well. When the post opened up in ASPECT, Glenda says it 'just seemed made for [her]', so she applied and got the post in 2006, the same year that she completed her PhD in maths education.

Emily Avani (UCT, started 2005)

Emily says that her family was not well off at all but her father nevertheless prioritised education and managed to place her in a good school. She did well enough to get into engineering at UCT and, once she had graduated, went on to do her Masters in interdisciplinary studies linked to engineering. During this time, Emily began tutoring and says that she 'fell in love with maths – again!' She also began doing some lecturing as a teacher assistant in a mainstream engineering department, something that she continued even after she finished her Masters and started studying for her doctorate. But Emily says that she didn't see much of a future for herself in the engineering department she was in, so when a post opened up in ASPECT in 2005, she took it. Emily was working on her PhD at the time of writing.

Dimpho Moroka (UCT, started 2007)

Dimpho did very well in her matric year and wanted to study engineering. However, since the township²⁶ school that she had attended did not offer maths on the higher grade, she was obliged to register for ASPECT which was taking in students with standard grade maths at the time. Dimpho graduated in five years, not failing a single course in her undergraduate degree, an uncommon achievement as Section 5.1.2 shows. She then decided to study for her Masters in engineering education, tutoring an *Introduction to Engineering* course during these two years. While she was finishing her Masters, Dimpho applied for one of seven Academic Development Lecturer (ADL) posts that the faculty created in 2006 after being awarded R16.3 million through the government's AsgiSA initiative. Dimpho was successfully nominated as the ADL in ASPECT and began teaching Physics in 2008, the same year that this interview was conducted. She is currently studying for her PhD in engineering education.

²⁶ The term 'township' in the South African context usually refers to the (often underdeveloped) urban living areas that, from the late 19th century until the end of apartheid, were reserved for those classified as non-white.

This section examines the ASPECT space from a Bourdieuan perspective. Following the comment at the end of the previous section – that once a niche was carved out for ASPECT it was allowed to fulfil its mission without much interference – we investigate the structure of this space through the habitus of the above lecturers. The analysis begins by tracking the dispositions of Steven and Zach who were both part of ASPECT when it started in 1988, and thereafter of Eric Donaldson. The degree to which these agents were motivated by political considerations and their investment in the field (or lack thereof) are dealt with specifically. Comments from the mainstream professor Sebastian and from Trevor Norfolk are invaluable in this regard. This leads to a consideration of the reasons given by the four respondents whose biographies are sketched above for working on ASPECT, as well as their attitudes towards teaching and research. The issues of university transformation and the marginalising potential of language are then examined. Finally, the possible future of the ASPECT space is briefly considered.

The trajectory of Steven Williams, the first co-ordinator of ASPECT, has been described in Section 6.1. We recall that he was a charismatic teacher and an efficient administrator who gave up research early in his career and retired as an associate professor after 34 years. With regard to the motivating factors behind his career, Steven says that he was not particularly interested in education but was driven by ‘self-preservation’ to a large extent. This is quite different from someone like Trevor Norfolk whose political convictions infused his work at UCT.

Zachery too, was very politically motivated and describes himself as one of the academics in the early days who was intent on ‘cracking the system’, the phrase he uses to describe the goal of transforming UCT into a more accommodating institution. His biographical sketch on page 145 remind us that he was politically active as a student and very committed to the ‘struggle’ during his school teaching days, remaining so after joining ASPECT in 1988. It is important to note that Zach did not continue teaching on ASPECT but moved to CHED where he obtained his PhD in 2007; then, after 21 years at UCT, he was promoted to Associate Professor. Zach appears to have been personally affected by the ‘battle around recognition for contribution to teaching and associate professorship’, the dynamics of which he described (see the previous section). That he did not remain a teacher in ASPECT but ended up taking his research (in education) seriously is significant. Lockett (2011) suggests that such shifts are a result of being ‘pushed by the contradictions of the situational logic’ (p. 12) of the institution towards roles that are more readily rewarded, both in terms of promotion and credibility. She also notes that such a shift in ‘personal

identity, often from that of heroic activist or saviour and ‘mother’ of students to that of scholar and/or change manager...may involve a difficult ontological shift from being against the status quo to being for it’ (Lockett 2011 p. 12).

Eric Donaldson, who took over the co-ordination of ASPECT from Steven, has been quoted above as saying that one of the reasons for working on ASPECT was that he ‘couldn’t divorce what [his] work was and [his] thoughts about the country’. Although Eric was not as actively involved in the struggle against apartheid as Zach or Trevor, his political convictions were part of the reason for his involvement in ASPECT. In the quotation below, the mainstream lecturer Sebastian identifies ASPECT staff, and Eric in particular, as being

Sebastian: ...quite politically minded. UCT’s ASPECT staff was quite politically minded.

BK: Really?

Sebastian: Absolutely.

BK: Compared to, let’s say, mainstream...

Sebastian: Oh yes, absolutely. We used to sit here, you know, and Steven wasn’t much of a political animal but Eric, geez, oh we used to have fights with old Eric in the very beginning because he used to come here and dictate – not dictate – he used to come here and say, “We’re very privileged, you know, we’ve got everything.”

And we agreed, “Yes, we’ve got everything etcetera.”

I said, “But we didn’t get it for nothing, Eric! I had to work, you know, I had to work overnight, I had to go and work until 12, one o’clock in the morning in the lab to get my PhD, that kind of a thing. I had to work during the day as a lecturer. You know, I didn’t get here because I was just white. Yes, I was privileged, I was given the opportunity, yeah, but I did work for it, nobody handed it to me”.

And Eric, in the beginning, because he was driven so much politically, couldn’t quite see that.

This account reminds us of the clashes Trevor had with academically conservative ‘power brokers’ in the early years but from the opposite standpoint. Ironically, Sebastian’s comments highlight the role of ASPECT staff as challenging the structure of the field of *engineering* education specifically. Sebastian’s emphatic comments about how hard he worked can be interpreted as a defence of capitalism but a field analysis suggests he is attempting to entrench his power, fighting to conserve the prevailing structure of the university field. Sebastian’s comments about the ‘political-mindedness’ of the ASPECT staff is one dimension of the difference between the ASPECT space and the broader field. Furthermore, his comment that Eric ‘was driven

so much politically [that he] couldn't quite see...' suggest drastically divergent opinions about the purpose of higher education between these two.

Before we explore this further, we refer once again to Trevor Norfolk's reasons for entering higher education that set him on the trajectory that was used to understand academic development as a field phenomenon in Section 6.2.1. In describing what 'hooked' him about education, Trevor says:

...I think that for myself and many of my peers at that time there was a real – it sounds, you know, terribly altruistic now but it was really meaningful to us and I think it's continued to be – that you had to make some kind of a contribution because as a white person, you were benefiting whether you liked it or not from being privileged.

In contrast to Sebastian, we noted previously that Trevor was never actually taken in by the stakes and values of the university field and that his experience did not fit Bourdieu's classical definition of *illusio*. In fact, Trevor's disposition towards the *rewards of the university field* are better described by 'ataraxy' (Bourdieu and Wacquant 1992), an indifference to the stakes of a field, of being 'unmoved by the game' (p. 116). In other words, Trevor's sense of personal accountability as a white South African and the meaning that he still derives from contributing to the upliftment of previously disadvantaged groups manifests itself as a kind of denial of the rewards of the university game.

In terms of his indifference to the values at play in the field of engineering education, Eric appears to have followed a similar trajectory to Trevor and this helps us understand Sebastian's reaction – in his telling of the story above – to Eric's 'political-mindedness'. As we will see, Eric appears to have dedicated his life to the ASPECT project rather than pursue the rewards of the field which immediately sets him at odds with someone like Sebastian, who very much played by the rules of the game in his career. Sebastian's outrage that the legitimacy of the prestige and privilege that he enjoys should be questioned is evident in his tale above.

Like Zach, Eric also appears to have been affected by the battle for the recognition of teaching in promotion criteria. We recall Eric's contention that 'teaching plays as important a role as research' which has been explained as an attempt to subvert the structure of the field. But Zach's comment that 'in the last few rounds' (see page 174) academic development is possibly now at a harder place around the recognition of teaching for promotion than it was some years ago, has probably affected Eric who has remained a dedicated teacher, focused on administrating ASPECT for most of his

career. However, Eric's predecessor, Steven Williams, believes that this has to do with the absence of the progressive dean whom he worked under and who fought for him to be promoted. Consider the exchange below:

Steven I think that if John Martin was still around, Eric would be a professor by now. Eric's a bright boy...

BK: But is he playing the game?

Steven: No, no, he's not playing the game, he's like me. He's happy doing what he's doing...he gets his kicks out of helping people – that's my impression anyway – and he's happy doing what he's doing and I really don't think he cares a damn whether he gets a professorship or not but had John Martin been around...

Although Eric entered UCT with his PhD in 1987, his focus on education and love for teaching and the management of the practical issues of ASPECT mean that he has not published much (although he has written a few papers) and this has limited his chances of promotion. It is significant that Eric entered UCT as a senior lecturer in 1987, before Zachery, who began as a lecturer, and has not been promoted in the 23 years that he has been at UCT. As the excerpt above suggests, Eric appears unmoved by this, accepting it as a consequence of the course that he has decided to follow.

Xavier Edwards has worked under Eric since he began tutoring for ASPECT and at the time of the interview, had begun taking over its co-ordination. Unlike his older colleagues, Xavier does not express his reasons for working on ASPECT in political terms and when he was asked whether he had any political views, tellingly said, '[T]his is one area that I'm not versed in to actually say Yes or No. I probably could be political without knowing it...' This needs to be understood in terms of the rapid changes that have taken place in the political sphere compared to when Trevor, for example, entered higher education. Whereas aligning oneself with the struggle against apartheid was considered almost noble then, the contemporary political space is more complicated for white South Africans and Xavier's ambiguity is understandable. His motivations are instead strongly linked to an enjoyment of the challenge of helping students understand the concepts he teaches. In fact, he likens his work to coaching sport, something he does after hours, and says, 'I suppose I'm just hard-wired to want to do that'. When he was asked what drives him, Xavier replied:

My love for teaching. Coming in in the morning and having students come and get help and being able to help them, that's what keeps me going. Going to the lecture and coming out and saying, "That worked, this didn't work, tomorrow I've got to

change this, I've got to sort that person out, I need to help with this." That's what keeps me going. If I'm doing that for the rest of my life, I'll be happy as can be.

So, although there is no evidence of an explicit motivation to contribute to redress, Xavier's love for teaching and the enjoyment he derives from helping students loom large in his habitus; he mentions the word 'help' three times in the excerpt above. In this sense he is much like Eric and displays the same kind of ataraxic disposition towards the field:

For me, at the moment, I haven't been too fussed about the promotion route. I'm not that ambitious to climb the ladder that I need to be seen as a professor tomorrow or the next day, it doesn't really fuss me too much at all.

With regard to motivation for teaching on ASPECT, the comments of Glenda Yates are even more interesting in terms of her *determination to avoid politics altogether*. When she was asked about the role of the government in education, she said that she thought the education system in South Africa was in a 'big, fat mess because of our chequered history' and, somewhat naïvely (by her own admission) tends to take the view that 'good-hearted people are doing their best' to fix it, and prefers to leave it at that. She then said:

I loathe and detest politics, I think about it as little as possible, I read it as little as possible, I listen to it on the radio and the news as little as possible because politics tends to turn my stomach and I just avoid it. I'm a small cog in a large machine and I'll just do my job. Terrible isn't it?

Such avoidance tactics are somewhat surprising for someone working on a foundation programme, especially considering the political origins of the academic development discourse as discussed in Section 6.2. Such a disposition can also be explained in terms of the extent to which academic development has been refracted by the field and re-interpreted as a specifically academic issue as discussed earlier. The other aspects of Glenda's habitus appear to support this idea. Like Xavier, Glenda also loves teaching but appears to be more attached to the subject matter that she teaches, saying, 'I love teaching *maths*. Maths rocks! [laughs] Maths is beautiful. It's beautiful and it's practical, it doesn't get any better than that...We're doing calculus at the moment and really, calculus is fabulous, it's fabulous stuff!' As her biographical sketch shows, Glenda has also taught in the mainstream and insists that even in the mainstream, students have serious educational deficits. Although she knows that she's not supposed to use the word "remedial", she sees herself as part of the effort of trying

to help students overcome the conceptual problems that they bring with them from school. For her, the ASPECT environment allows such work to take place:

...so there is a lot of remedial work that needs doing and in ASPECT we have the time and we have the space and we have the mindset, we have the colleague support, we have all of that to be able to at least try and address any problems that we perceive...

While all of the other respondents are at various stages in their PhDs, Glenda is the only ASPECT lecturer (at the time of the interview) who had her doctorate. She is therefore most serious about her research work and is quite certain of the direction that she wants it to take. The strong link between her research and her teaching focus is evident in this excerpt:

...my research future I feel is very much in maths education with an engineering spin, definitely. I study maths education because I want to be a better mathematics teacher, so my research interests are very much fuelled by what I do in the classroom so because I teach engineers nowadays, I'm interested in engineering maths education and that's very much where I see myself going...'

Such a disposition towards research is in fact uncharacteristic for the ASPECT niche in terms of the foregoing analysis. Given the alignment of research with the autonomous principle of the field and its role in the accrual of capital, Glenda's determination to pursue her research interests suggest that she is being influenced by the game – *illusio* rather than *ataraxy*. On the other hand, the intense, interactive nature of teaching on the ASPECT programme sets up a time-economy that limits the production of research outputs. The familiar tension between research and teaching that was noted in Andrew Edmund's habitus (but inverted in terms of priority) may be relieved by the fact that Glenda is interested in maths education. In terms of the structure of the field, education research may serve to soften the boundary between the field and the ASPECT space.

As we turn to consider the third ASPECT lecturer, Emily Avani, it should be noted that both Glenda and Xavier are white, while Emily and Dimpho are not. This is significant in terms of the rationale for making, in Trevor's words, a 'meaningful contribution' to South African society. The sense that one has benefitted from the unjust policies of apartheid and the desire to contribute to the betterment of the new South Africa are obviously the domain of those classified as white. Trevor most clearly articulates such sentiments but Zach and Eric, and to a lesser extent Steven, Xavier and Glenda, all appear to be motivated in similar ways. Furthermore, we have seen how lack of

interest in or a denial of the stakes of the university field are often linked to such intentions.

In this light it is interesting that Emily is also motivated by wanting to contribute to the building up of society and the betterment of the disadvantaged. She in fact links her work on ASPECT very strongly to a social justice agenda: 'I really want to give back...the reason for me being on ASPECT, basically, is I want to make a difference and this is the best place I know how to'. Emily specifically uses the word 'transformation' when talking about this in the context of 'empowering people', not with monetary resources but in terms of education. In terms of other motivating factors, her biographical sketch indicates that Emily loves what she teaches, enjoying the teaching itself as well as the ASPECT environment. In terms of research, Emily is working on completing her PhD (at the time of writing).

Dimpho Moroka is the only black African respondent in this study and is one of a handful of engineering academics who have graduated from a foundation programme. As her biographical sketch shows, she passed ASPECT in minimum time, thereafter embarking on a Masters degree in the area of engineering education and is now busy with her PhD, also in engineering education. Although she is obviously motivated by an interest in the education endeavour, Dimpho's interview revolved around her experiences as an ASPECT student, which led to a discussion about inequality within higher education.

In contrast to the other three ASPECT lecturers and indeed, the other respondents involved in academic development work, Dimpho does not seem to be content to deny the rewards of the field for the joy of helping the educationally disadvantaged. Instead, she gives the impression that she is frustrated at the conservatism and lack of transformation that has occurred within higher education and at UCT specifically. When she was asked about the relationship between the government and higher education, she didn't think that the government had done enough to promote 'real transformation' and also believed that institutions were not doing all that they could to transform. In fact, she says that institutions have 'ways of protecting themselves' and exploiting 'loopholes in policies' to hinder transformation, even though they make certain pronouncements about these issues. She adds that at an institution like UCT it is worse because it is happening in subtle ways:

...the government will say, "Transformation", "Racism" and all these big issues, right? And the institutions have a way of saying, "We condemn racial incidences", they love to use this word, "We are opposed to this", you know. But what are you

doing about it? You are opposed to it, yes, but it doesn't mean it's not happening in your institution. You're just saying you condemn it. It's not good enough. It's happening. So the institutions have a very clever way of saying things. And it's worse for institutions like UCT because it's very subtle. Now the difference between what happened at the University of Free State^[27] where it was just a barbaric act, it's different...transformation issues are dealt with but in a subtle way. You know, there are very subtle ways of hiding things that are happening. Very subtle...

That she is black is of course significant and that it was made by a staff member at UCT, commonly thought of as a progressive institution, is significant. Moreover, Dimpho does not appear confident that things are changing but sees UCT's transformation efforts as ineffective and in some ways complicit with the prevailing conservatism. Indeed, Dimpho's comments can be taken as being critical of academic development itself and it does not appear that she is convinced that foundation programmes are the answer to the problem, despite having come through one. All of this is a consequence of setting up foundation programmes as *separate entities* since they allowed the mainstream to continue reproducing its structure, largely unhindered.

Importantly, Dimpho specifically refers to language as having a powerful marginalising influence, something that emerged as important at Stellenbosch but was hardly mentioned by other respondents at UCT. At undergraduate level, she says, the difficulties posed by language are not only encountered in listening to and reading, but also in writing English. She found that she really struggled later in her degree, from third year onwards, when she had to write a lot of reports: '[W]hen you write reports, that's when you become exposed that your level of writing or your level of language is not what it should be...you are made to feel that what you do is not good enough'. Dimpho sees language issues as being deeply entrenched and says that at Masters level, she continued to feel the effects of not being a first-language English speaker. In fact, even after taking up a lecturing post at UCT, Dimpho says that because 'you are very much judged on what you write', the language issue has become something that she lives with: '[I]t will never really completely go away...it will improve with time but it's still not the same'.

The global status of English means that UCT is not under pressure to change its language policy to cater for students who do not speak English fluently. Although the issue is less visible compared to Stellenbosch, for example, Dimpho's comments

²⁷ Dimpho is talking here about an incident in February 2008 when four white male students from the Reitz residence made a video depicting five black workers being subjected to various humiliating activities in protest at racial integration in the residences.

indicate here the potential of language itself as marginalising, whether it be Afrikaans or English. When she was asked whether 'being on the margins', a phrase that she used to describe her experience as a student earlier in the interview, was all about language, Dimpho replied that language was just part of it:

...from where you're sitting it's very hard to be where I am sitting. Because not only are you judged from what you say, how you talk, you're also judged by: you are female, you are black, you are in this institution that is predominantly run by white males. You know, it's not easy...

In reflecting on her ASPECT experience, Dimpho believes that ASPECT 'works' as a programme and is grateful for the opportunity to have studied through ASPECT. She mentions that the strategy of lengthening the curriculum and allowing students to carry a lighter academic load is important for students from educationally disadvantaged backgrounds, so that they can adapt to the university and overcome the problems of language and other obstacles to success. However, at the same time, she believes that the institution is not making an effort to accommodate the type of student who comes to ASPECT, using the excuse that it doesn't want to 'lower standards' in order to preserve the *status quo*. In this way, Dimpho says that 'ASPECT serves as a reason why the institution *shouldn't* change'. She sums up the argument in this way:

I'm talking about being a student. I wouldn't have even had a space to get in if a programme like ASPECT didn't exist. Whether the institution itself should be transforming so that we won't have people who are in ASPECT, that's something else that I see not happening any time soon. So for as long as things are the way they are, then ASPECT has a place because it does provide access to other people, people on the margins, you know.

We once again return to the issue of ASPECT as a separate programme which unintentionally insulates the mainstream from change. Whilst the other individuals involved in academic development, without exception, had access to top quality education and were *themselves motivated* to contribute to the betterment of society through helping those who had been deprived of educational opportunities, *Dimpho was one of those supposed to have been helped*. In a sense, Dimpho is talking about herself when she says '...it does provide access to other people, people on the margins...' and we note here a homology between her ASPECT student experience and her current staff experience.

That Dimpho feels discriminated against because of her colour and gender, and because English is not her mother tongue, is clear. But she also carries with her the burden of having been a student 'on the margins', an experience that she finds

mirrored by the structure of the university field where the staff involved in academic development are on the margins. While many of these individuals appear to be content to exist on the margins, it must seem unfair to Dimpho that she should be expected to do so as well, having excelled at the special curriculum designed by UCT for students such as herself to be able to overcome educational disadvantage. Finally, Dimpho has to deal with the added complication of being part of a team of seven ADLs within Engineering and the Built Environment at UCT, the other six of whom are embedded within mainstream departments. As it is, the challenges that the ADLs face in terms of trying to mediate between two worlds is difficult enough²⁸ – Dimpho has to deal with three!

To conclude, the ASPECT space is a niche occupied largely by liberally-intentioned individuals who manifest their desire to contribute to society in various ways. In the early days, there was a strong political undercurrent but this appears to be giving way to a habitus characterised by a social justice agenda coupled with a love for teaching and the pure enjoyment of helping educationally disadvantaged students. Within this niche, the pressure to publish is suspended – or at least relieved – a feature to which the ASPECT habitus is attuned in terms of its ataraxy towards the rewards of the field of engineering education. The time-economy of ASPECT lecturers is dominated by intense, interactive teaching and, although it appears as if research is coming up on the agenda, it is very much subservient to teaching rather than the other way around as in the mainstream. Dimpho's criticism of UCT's stubborn conservatism and her indictment of the transformation effort extend to ASPECT which she sees as serving as a reason for the mainstream not to change or insulating the mainstream from the need to transform. These comments indicate that there is a long road ahead for academic development within higher education, if indeed it is able to 'come in from the margins' (Muller 1988).

Finally, we consider two versions of the future for ASPECT, one provided by Sebastian and the other by Xavier. While both agree that ASPECT must ultimately end, their opinions of how this will occur powerfully illustrate the vast difference in opinion regarding the purpose of ASPECT, the need for it as the democratic transition recedes into the past and whether mainstream needs to change or not.

Sebastian: Some schools have changed tremendously, others haven't managed to transform themselves yet to the point to where they can produce matric students who are capable to come and do engineering at university etcetera. But

²⁸ The reader is reminded that the author is one of the seven ADLs.

as a whole, I would say, looking at the amount of black students that are now able to enter through the matric points system...that are able to enter as a normal student like everybody else and that there is now the majority of the students coming in like this, is it necessary to maintain ASPECT? ASPECT is becoming, in my opinion now, anachronistic. You don't need him anymore.

Xavier:...[ASPECT] has to have an end, a termination. But for me it's not a shrinking termination, it's an expansion until it becomes the norm because it's a first year experience that we're dealing with here and what we doing, the type of students we getting more and more, what we're doing is becoming more predominant than us being phased out. So I would see us being – what would the word be? – becoming mainstream essentially but still following what we've been doing the whole time, just expanding on that. So I don't see us reducing and getting smaller and smaller and less influential, I just simply see us merging with mainstream but bringing what we've got to the party and that being still a dominant factor.

6.3.3 The engineering foundation programme at Stellenbosch University

The final two respondents who were interviewed for the Stellenbosch case study are drawn on in this section. The first respondent lectures second and third year courses in the mainstream and the second is an associate professor based in the science faculty who lectures both in the engineering mainstream and on the extended degree programme.

Dr Eleanor Emmett (Stellenbosch, started 2007)

Eleanor studied engineering at Stellenbosch University and after graduating, registered for her Masters in the faculty. Although she had some research success through her Masters work, she didn't complete this degree but instead took the opportunity to do her doctorate overseas where she also worked as a research assistant. After finishing her PhD, Eleanor continued to work briefly in the laboratory at the university at which she was based. It was during this time that her alma mater made contact with her and offered her a lecturing position. After another year abroad, Eleanor came back to South Africa and took up a senior lectureship within the faculty of engineering. Eleanor has published a number of papers in her field and has recently become involved in a national engineering education forum.

Assoc Prof Sarel de Beer (Stellenbosch, started 1980)

Sarel graduated from Stellenbosch University with a double degree in engineering but instead of paying off his bursary through employment in industry, worked on a promising research project within the science faculty at Stellenbosch. Once he had fulfilled the requirements of his bursary company, he began his Masters degree (in science rather than engineering); it was at this time that Stellenbosch made him an offer and he took up a research post within an institute at the university. Sarel obtained his doctorate in 1988 and was promoted to an associate professorship in the science faculty in 2003. He began teaching mainstream classes for first-year engineering and decided to become involved (just in the assessment side initially) in the extended degree programmes in 2008. In 2009, the same year that the interview was conducted, Sarel began teaching on the EDP.

This section begins by re-capping the arguments of Section 6.2.2 that dealt with academic development generally at Stellenbosch University. Stellenbosch is then compared with UCT to try to understand the dichotomy that the foundation programme within engineering at Stellenbosch exhibits in terms of its function as a 'slow-stream with support' option for white students rather than an introductory curriculum for educationally disadvantaged black students. The demographic profile of the programme over the 15 years of its existence as well as qualitative data from the interviews with Eleanor Emmett and Prof Daniel Marais, are employed in this regard. The faculty's response to the language issue is then considered, as well as how the struggles within the field resulted in the faculty's not adopting the DoE-funded ECP model for its foundation programme. The structure of the field also helps us understand the nature of the deliberations in the faculty that led to the conversion of their programme to a separate Foundation Year in Engineering (FYE) in 2010. Lastly, we discuss the perspective of Sarel de Beer, the only respondent teaching on the foundation programme at Stellenbosch.

In Section 6.2.2 it was argued that pressure from government on the language issue has resulted in a fierce 'battle of heteronomies' between the state and the *taalstryders*, many of whom are associated with the alumni, a community intertwined historically and culturally with Stellenbosch University. This has had the effect of de-politicising academic development as it was reinserted into the Stellenbosch context and the metaphor of *deflection* rather than *refraction* was used to describe its impact on the structure of the university field. Although foundation programmes managed to transform the field to some extent at the English-medium universities, at Stellenbosch they seem to have been seriously marginalised. The de-racialisation of these

programmes in some faculties has resulted in their serving as a slow-stream for white students rather than a foundation programme for educationally disadvantaged black students.

At UCT, we recall that the economic might of Anglo American was instrumental in the launching of ASPECT and that it also 'legitimised the programme to a very large degree' according to Trevor Norfolk. This took place with the support of faculty management and in collaboration with the ASP which suggests that an alignment of purpose of these three entities enabled the disruption of the structure of the field and the 'carving out' of a space in the field of engineering education. Although ASPECT was described as a reinterpretation of the aims of academic development by engineers for their own faculty, the driving force behind it was essentially political in nature; it specifically targeted black students and only much later and under exceptional circumstances were white students allowed on to the programme.

At Stellenbosch, this kind of alignment of purpose does not appear. Firstly, there is no evidence of the kind of involvement of industry in terms of funding and engagement that occurred at UCT. Although industry funding played a role – part of the original programmes was called the 'Gencor bridging programme' (see Section 5.2), for example – it was not nearly on the scale or with the kind of purpose that impelled ASPECT initially. In fact, mainstream lecturer Eleanor Emmett believes that 'loyal alumni' involved in industry somehow hold sway over the faculty and are working to ensure that their sons are educated at a university where they are not going to be 'sidelined because of a black student'. Eleanor begins by talking about the commitment of faculty leadership to transformation:

I do think our dean...he is very much dedicated to modernising the whole faculty and to driving it into a more diverse and inclusive environment. Whether he's going to get it right or not, I don't know but he has enthusiasm and he's very focused on doing that and he's very dedicated to his job of trying to do that. I'm not completely confident that they're going to be able to do that...At the same time there's such a strong support from industry for having a forum for white Afrikaans men to study engineering in an environment in which they feel strong and that a lot of private funding, I think, comes because people who are working out there in industry and who want to support the university, want to support a university where their sons can go and feel comfortable.

Although Eleanor's statement could just be an extension of the 'annoying myth', in Chris Brink's (2006) terms, that the university is beholden to its alumni for funding, it does suggest some nuances to the 'battle of heteronomies' in the engineering context. Whether this influence is quite on the terms described by Eleanor is another matter.

But what is quite certain is that industry did not provide the economic muscle *or the legitimacy for the foundation programme at Stellenbosch* as it did in the UCT case.

This brings us to the other point raised by Eleanor: the commitment of faculty management to transformation. Interestingly, respondents from academic development spoke highly about the faculty in terms of their commitment to education generally but there appear to be tensions between these groups. André Hartenburg says that engineering was 'very reluctant, at first, to buy in' to the idea of a foundation programme because the staff there were 'doing their own thing and we didn't have many black students at that stage, in the early 90s'. André's comment that they were 'doing their own thing' is important because it indicates that even after the faculty did 'buy in' and designed and implemented its own programme it did so on its own terms and fitted the foundation programmes into its system of doing things. This independent spirit seems to have remained until today. Zelda Atkinson, who came to Stellenbosch much later than the days that André is referring to, said that engineering was the faculty that she felt most kept her division of academic development 'at arm's length'. Although some people in engineering do 'care deeply about education', she describes their relationship with engineering as...

...quite distant really...the Dean of Engineering always had this notion of 'he can do it' and he doesn't really need us, so they would very proudly show their new model to us, but there wasn't a desire of 'we are colleagues and partners'...Partly because he does think about these things and he really does care about his students, I mean he would have a Dean's Morning with all his students once a month or once a week and that's amazing, so why must he take instruction or be in dialogue with someone else? And they devised their own model and they are quite serious about their thinking.

While Zelda acknowledges that faculty management and the dean in particular do 'amazing' things and are 'quite serious about their thinking' *educationally*, there is not the mutual sense of purpose in terms of a specific model of foundation programme or a specific political purpose that we noted in the UCT case. It is argued here that this 'serious thinking about education' is couched in a different paradigm to the approach to transformation that academic development is pushing, which stems from an essentially political discourse. So while both are apparently pushing for transformation, *there is a struggle over the terms on which this is to occur*. In other words, without a space being 'carved out' in which to fulfil its mandate, the foundation programme at Stellenbosch is appropriated by a mainstream discourses about standards, student success and engineering training. This results in the foundation programme's being caught between serving as a slow-stream support option for (predominantly white)

mainstream students and an introductory curriculum for educationally disadvantaged black students, but without really fulfilling either goal. The following discussion goes into the details of this struggle in the engineering context.

As we have seen, engineering was initially quite resistant to the idea of foundation programmes but once staff decided to launch their own, according to André, they implemented one of the first 'really sensible' programmes. The details of this AOP (to use the Afrikaans acronym) are outlined in Section 5.2.1 which shows that although the academic development modules for one or two courses (such as Strength of Materials in mechanical engineering) were linked to the first year mainstream course, the programme mostly consisted of non-credit bearing, bridging courses with parallel support in mathematics and applied mathematics. It is important to note that the AOP was at first designed around a slow-stream model called the Five-year Plan (FYP). According to the 1995 yearbook, the aim of the FYP was 'to make it possible for *every student* to lay a good foundation for later study years' (*Universiteit Stellenbosch Jaarboek* 1995 Section 11, p. 18, emphasis added). The reference to 'every student' suggests that the FYP was intended for struggling mainstream students (the vast majority of whom were white) who, instead of failing and carrying courses, could opt for this alternative curriculum arrangement to complete their degree in five years instead of four.

Although the FYP, as a separate programme, was discarded the following year, it is argued here that the philosophy that the AOP (and later the EDP) could also be an option for struggling mainstream students remained embedded. This is not immediately obvious though because the AOP initially did cater for students classified as black as the graph below indicates. Figure 5.11 on page 123 showed the total number of students on the AOP and EDP from 1995–2009 but if we break this down by population group, we observe the following:

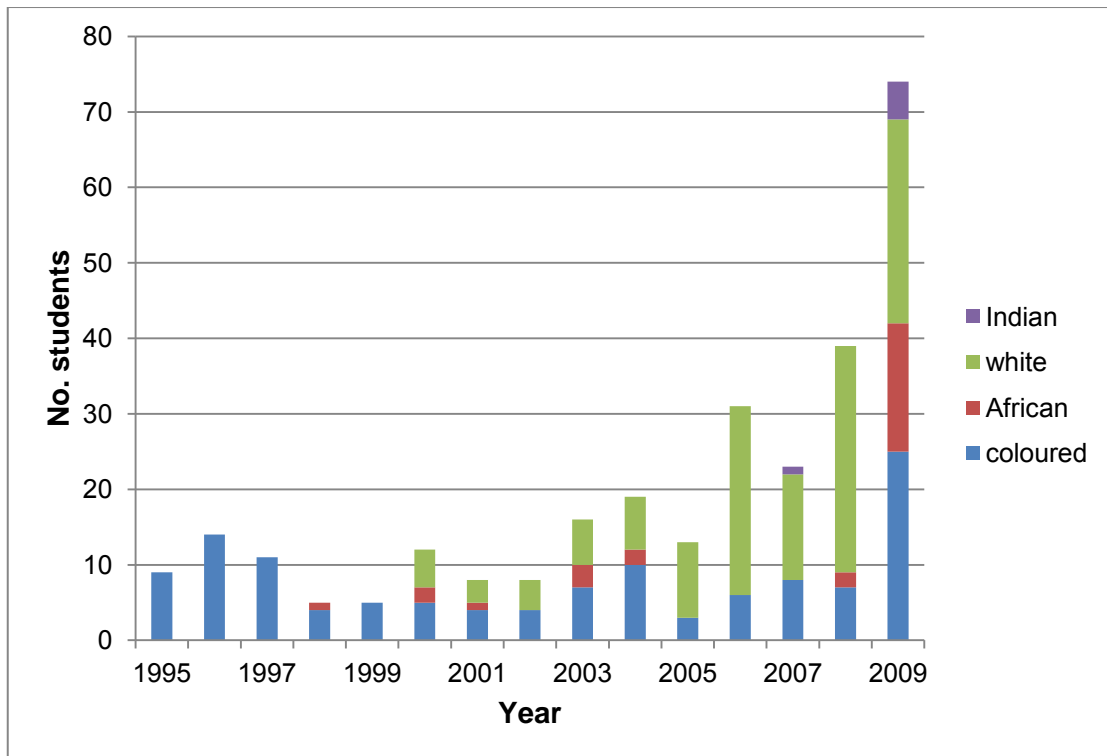


Figure 6.2. Number of engineering EDP students in first year by population group, (1995–2009).

It is perhaps understandable in the context of the demographics of the Western Cape and given the impact of the language issue that initially coloured students were the majority population group on the AOP. In the first 10 years (1995–2004) of the AOP, 78% of the students on the foundation programme in engineering were coloured students. But what is interesting is that, from the year 2000 onwards, the number of white students on the programme began to grow until at one stage, in 2006, more than 80% of students on the programme were white. This indicates that the foundation programme came to be seen as a way of improving the faculty's first year success rate, thus undermining the purpose of catering for educationally disadvantaged black students. A young mainstream lecturer, Eleanor Emmett, describes here her impression of the extended degree programme when she returned to Stellenbosch in 2007:

...and when I came back I saw they had this extended degree programme and as far as I could see, it was just a more formalised version of what was always there, you know, they're not studying anything different, they're just putting less credits in each year for people who maybe can't handle the course load.

When Eleanor says 'what was always there' she is referring to her student days and her impression that the majority of the class did not finish the degree in four years

because they failed one or more courses. Since they had to repeat these courses, these students took five or six years to finish their degrees. For her, the EDP was then simply a pre-emptive curriculum arrangement for students who were struggling academically. Given that Stellenbosch occupies a more heteronomous position in the university field and that it was traditionally not one of the 'so-called research universities' in the words of Niels Nortjie (Section 6.1), this phenomenon can also be understood in terms of the social history of Stellenbosch University and its duty of care towards white students. The role of single-medium schools and universities in uplifting the Afrikaner community, historically not as well off as the English-speaking community, is well documented (Giliomee 2003). This is particularly relevant for Stellenbosch University given that it was established to serve the Dutch-Afrikaans community and was harnessed to the aims of Christian National Education under apartheid. Indeed, it appears that Afrikaner culture and values infuse relationships at Stellenbosch, inculcating respect for authority in staff (Bunting 2002; Jansen 2001b) and in students. In the excerpt below, Leonard Naudé compares the institutional culture of Stellenbosch with that of UCT:

...it is just a different culture there. Put it this way, that at University of Stellenbosch, when a student comes up the passage and I walk down the passage, the student will greet me, OK, if the student knows me, the student will also say, "Good morning Dr Naudé". You don't find that at UCT. The students don't even care who you are, even if they know you – "You're only important if you can give me knowledge," you know. So there's that difference that I experienced and so much more respectful at University of Stellenbosch which makes the student much easier to deal with because when a student is of the kind that is almost disrespecting then it's difficult to get close to that student, whereas with the other students who are respectful – they're almost like they're your children you know, at University of Stellenbosch. It feels as if it's my son speaking to me, now you're immediately very close and you can work very closely with that person.

Although this institutional culture appears to be another reason why foundation programmes became de-coupled from the political agenda they were designed to fulfil as mentioned in Section 6.2.2, the intimacy described by Leonard in the education process, if harnessed for disadvantaged black students, may result in Stellenbosch's making significant gains in foundation programmes in the future *provided they are focused on the specific learning needs of these students*. Whereas at UCT, foundation programmes were purposely linked to dealing with disadvantage as a result of DET schooling, the term 'educational disadvantage' is interpreted differently at Stellenbosch. Leonard explains how academic development also considered white students 'historically deprived' and therefore in need of help:

I always said they're also historically deprived because they were at schools where they were taught certain things in a certain way and it was mostly rote learning. So when it came to university and they had to find things for themselves, go to the library themselves and do the work themselves, they fell flat and we picked some of them up as well.

To understand how this relates to the foundation programme within engineering, we refer to the comments of the mainstream professor Daniel Marais. Daniel was interviewed for this study in 2009, the year he himself began interviewing students, after their early assessments, as one of his faculty management responsibilities. The procedure followed in the faculty is as follows: after the first set of tests, senior staff meet individually with the students who do poorly in order to decide on the best way forward. Students may be put on to the faculty's mentorship programme, encouraged to do special language modules or are perhaps given the option of shifting to the extended degree programme. Daniel says that although there previously seemed to have been some sort of stigma attached to being on the programme, things seemed to have changed recently (at the time of the interview) and he was seeing a lot of students wanting to make the shift. For him, the 'funny thing' is that the students wanting to move over were 'from mainline schools that feel that they are just not coping'. Here Daniel explains his reasoning in allowing these students to move over to the EDP:

...they're not the typical candidates for the extended programme. From my point of view, it's very difficult for me to say, "Listen, you don't fit the profile, struggle on." I feel if they have a better chance of passing their subjects, I say, "Go on the extended programme and if you have the luxury then to actually adapt better and do your basics right, your maths and your applied maths, then I've got no problem."

Whereas the 'typical candidates' for a foundation programme would be black African students, Katherine Neethling describes the demographics of foundation programmes at Stellenbosch as 'quite rare' in the broader South African context. In the 15-year period analysed in Figure 6.2 above, white students (at 46%) make up the majority population group registering for the programme, followed closely by coloured students (43%). Importantly, black African students make up a small minority at only 10%, more than half of whom registered in 2009.

In other words, the reluctance to separate students on the basis of race in engineering is driven by an educational logic about student success, standards and engineering training which weakens the political argument that was strongly pushed at the English-

medium institutions. This can be further illustrated by an excerpt from Etienne Eksteen who, from his biographical sketch, appears to be quite involved in promoting teaching and learning at Stellenbosch. Etienne raised the concern about the need for engineers in the country: 'If you allow people, let's say, white kids on to the extended degree programme, you're not shifting [the demographics] but at the same time the country is in need of more engineers, so to balance this is not that easy...'

About the issue of standards, Eleanor mentions that...

...Stellenbosch University has traditionally had a very good engineering degree and has had very good research and very good lecturers so that is something that is frequently brought up and emphasised is that, "Yes, we want to diversify numbers and so on but we're not going to do it at the cost of losing quality."

This reminds us of the 'academic conservatism' that Trevor Norfolk encountered when he began to confront the issues surrounding black students at UCT as described in 6.2.1. This analysis reveals that it is not an outright rejection but rather a confusion of purpose that creates a dichotomy and makes thinking about the foundation programme conceptually difficult. Whereas from early on at UCT, engineering pinned its colours to the mast of an integrated, credit-bearing, 'two years over three' model, it appears that at the time that the interviews were conducted (in 2009) the engineering faculty at Stellenbosch was struggling with whether a foundation programme was indeed the best way to deal with student under-preparedness:

Etienne: But it becomes very complicated so I think the thing that we're struggling with, and I think probably all universities, your extended degree programme, what do you actually want to achieve?

Daniel: But we're struggling to find the correct sort of way of dealing with the students that's not well prepared to do engineering.

We now turn to the issue of language and the quite radical views of Louis Terblanche, the academic mentioned in Section 6.1, who assumed a professorship at Stellenbosch mostly on the basis of his industry experience. Although he obtained his PhD while working in industry, Louis' industry experience seems have had the dominant effect on his habitus: 'I didn't come through the ranks in academia...I'm probably someone who's known here for sometimes challenging some academic procedures because to me, it's always been about efficiency and delivering certain outputs'. This disposition allows Louis to take a radical stance on some sensitive issues. When asked what the challenges facing the university were, he said:

There's one challenge in this university, and that's the language issue and it's becoming ridiculous...we're clinging to the fact that we're an Afrikaans-speaking university which, for various reasons of heritage and so on, might be noble but let's just think about the practical implications of what we're doing to ourselves...[In engineering] everything is costing us double the money. Now, from an efficiency point of view, that's just so ridiculous...We're clinging to this identity thing which we are proud of but it's costing somebody a lot of money and I believe, you know, if you're really that happy with your Afrikaans background then there's no reason why you can't speak Afrikaans to whoever you want to but when we do business, then the company is run on a language of choice which should be English. So, *ons maak groot kak vir onself!*²⁹

The impact on the foundation programme within engineering is complex. Although there was general pressure on the university from government, the engineering faculty was specifically targeted and funds were approved by the Department of Education (DoE 2007) to cover the cost of offering parallel courses in English. Despite the arguments from the *taalstryders* that the introduction of parallel- and dual-medium instruction inevitably results in the displacement of the local language (Giliomee 2009), engineering decided to implement a common first year curriculum in 2006 and run parallel language streams. As Section 5.2 describes, language tests were administered at the beginning of first year to determine whether students needed to develop their language skills in Afrikaans or English or both. Students deemed not proficient in both languages were put on to the foundation programme.

According to André, engineering was advised by the academic development language specialists that parallel-medium streams at first year level would not prepare students with weak Afrikaans sufficiently to cope at second year level where instruction was predominantly in Afrikaans. He explains here how engineering decided to go ahead anyway but then ended up extending the offering of parallel-medium instruction to second year.

...we told them – the language people told them – there is no way that you can get somebody with little Afrikaans, maybe a bit of conversational Afrikaans, within a year up to the level where they can cope academically in, you know, fully-blown academic Afrikaans in engineering. And they didn't believe us at first and then the reality showed them that at least we knew what we were talking about. So they extended into the second year and then moving into what we call the 'T' option, which is using both languages in the same class, around about 50/50 but even that they found was not sufficient for the second year so they're extending it now to the third year. And we've got a suspicion – but that you cannot say too loudly because it's like looking into the crystal ball – but I won't be surprised if, in the end,

²⁹ We're making big trouble for ourselves!

it's going to become, you know, a full scale programme, two programmes running in parallel from first to the final year...

At the time of the interview, engineering was planning to implement parallel-medium instruction at third year level in 2010 and at the time of writing had done so. Considering the small number of coloured – but especially black African – students who are graduating from engineering at Stellenbosch (see Section 5.2.2), the government will probably continue to push engineering on the language issue. If it does, André's 'looking into the crystal ball' might prove to be right, a disastrous state of affairs for the *taalstryders* for whom parallel- and dual-medium instruction puts the university on the 'slippery slope towards *verengelsing*³⁰' (Brink 2006 p. 153).

At the same time that engineering was planning to implement its parallel-medium first year, the DoE issued guidelines for extended curriculum programmes (ECPs) and called for proposals to fund such programmes. The structure of the AOP had changed slightly when it was renamed an 'extended degree programme' by the university in 2003 (see page 118) but it still largely consisted of non-credit bearing courses with parallel support modules in the mathematical sciences. As such, it did not meet the criteria for funding set out by the DoE. While the science faculty decided to change the format of its foundation programme to fit the DoE's criteria (under an enthusiastic dean, according to Zelda and Katherine), engineering decided not to. Katherine Neethling explains why:

...we couldn't get it through for the DoE's requirements and because engineering found that their system works for them, they quite rightly didn't want to change it simply for the little bit of money that they would have been able to generate because they've got so few black and coloured students in any case.

Katherine is referring here to the funding formula that determines how much money an ECP may generate. It is important to note that, according to DoE (2006), the funding formula depends on the number of full-time equivalent (FTE) students in the programme (see page 98). It does not specifically mention race or disallow funding for white students although the intention is clearly to focus on black students as the reference to, for example, 'students whose prior learning has been adversely affected by educational or social inequalities' (DoE 2006 p. 2) suggests. Katherine's quotation above indicates that she and those involved from the Faculty of Engineering at Stellenbosch certainly interpreted the policy in this way. Whatever the reasoning, given that funds had already been approved as well as the symbolic importance of

³⁰ *Verengelsing* is translated 'englishification' (Brink 2006).

implementing parallel-medium instruction in the mainstream, it seems clear that engineering opted not to alter the structure of its extended degree programme in 2006 but instead decided to concentrate on implementing parallel-medium instruction at first year level (initially). However, because parallel-medium instruction up to third year level looked a distinct possibility in 2009 when the interviews at Stellenbosch were conducted, André was of the opinion that the structure of the foundation programme would change. He said of engineering:

...they won't keep this structure, I don't think so. Because of the language provision in English, we are drawing more black students and we are drawing more coloured students who prefer English as the medium of instruction so *they will have the numbers* and the pressure will be on them, if they want that money...

From André's description of the situation, things seem to be coming to a head for engineering. A glance at Figure 6.2 suggests that engineering is increasingly attracting black students. In fact, in 2009, more African students registered on the programme than in all the previous years combined. As André says, this puts pressure on engineering to change the structure of its foundation programme to fulfil the criteria laid down for ECPs by the Department of Education (now the DHET), that is, 'if they want that money'. On paper, it seems simple: make explicit links to the accredited mainstream curriculum and ensure that the modules in maths and applied maths are credit-bearing and the EDP would qualify as an ECP.

However, if we consider that even the academic development staff at Stellenbosch felt that the focus on race implicit in the ECP model was contrary to the 'more flexible...and de-racialised approach' that they were taking to transformation, it is not strange to suggest that engineering would be hesitant to 'buy into' the ECP model with its funding scheme. Furthermore, catering specifically for educationally disadvantaged black students would have the effect of increasing the pressure to extend parallel-medium instruction to final year. Although it seems likely that it will occur, taking the leap to an entirely separate English stream is something that the engineering faculty probably feels it is not ready for yet. Firstly, it would mean that the need for Afrikaans support modules would fall away and even greater numbers of black students would be taken into the programme. It is fitting to quote Chris Brink here, who believes that the 'entire conundrum of a language policy for Stellenbosch University can be summarised in one question...'

Is it, or is it not, part of our vision for Stellenbosch University that there will be significant numbers of African blacks on our campus as students and academics?
(Brink 2006 p. 134)

Professor Etienne Eksteen answers this question for engineering and affirms the role of the extended degree programme, in whatever form, in enabling engineering to contribute to improving the diversity profile of the university:

...the university has actually taken a decision on how it wants their diversity profile to improve over the next five or six years and we as a faculty will also contribute to that and in order to do that we need to have a successful extended degree programme whether it's the first two years spread over three years or a foundation year first year...whatever the model we end up with...

If we refer again to Figure 6.2, we see that for the first time in five years (2005–2009), in 2009 black students outnumbered white students in the foundation programme, making up nearly two-thirds of the foundation class. The question now arises why engineering would decide to implement a Foundation Year in Engineering (FYE) in 2010 when bridging models are specifically not funded by government. One reason may be that the faculty wishes to ensure that fewer (or not) white students register on the programme so that it can serve educationally disadvantaged black students. On the other hand, adopting such a model also ignores the experience gained by the English-medium white universities, most of which started with such support programmes in the 1980s.

The perspective of the only respondent who actually teaches on the foundation programme within engineering, Sarel de Beer, is now considered. It is important to note that dedicated lecturers are not appointed to the programme but are instead seconded from mainstream or elsewhere to teach a course or two. Leonard Naudé explains that when he was running the AOP, outside funding was used to pay lecturers and administrative staff who were working on the various academic development programmes across the university. He adds that of his staff of 115...

...eight of them were professors that were working part-time for me so they did their normal lecturing but they also did on a part-time basis – we didn't call it that, we had to call it 'additional remuneration' – they did academic development programme work.

The situation has not changed today: Sarel de Beer is an associate professor in his department (in the science faculty) and lectures a first-year course in engineering but is remunerated through the private trust that finances the extended degree programme

in engineering. This is important in terms of the status and legitimacy of the programme in the field of engineering education. Whereas at UCT, the lecturers teaching on ASPECT seemed to exhibit a habitus that distinguished them from mainstream lecturers, Sarel's approach is, not surprisingly, more mainstream. Although a committed lecturer, Sarel is not especially dedicated to helping educationally disadvantaged students but has consulting work and his research career to pursue:

I mean I take more pride in [research] but I'm a proud person and I hate my students failing and I will not reduce my standards. So what do I do? I reduce the apparent amount of work by not handing out this year any memorandums...

As far as the structure of the programme is concerned, Sarel revealed that he was aware (at the time of the interview) that engineering were considering changing its extended degree programme into a foundation year but did not think this was the best idea 'from a pedagogic point [of view]'. In his opinion the EDP should be retained for those students 'scraped off after the early assessments' and the foundation year – or 'gap stream' as he called it – implemented so that students from educationally disadvantaged backgrounds could be brought 'up to speed', to borrow a phrase from Leonard Naudé. In this latter stream, the focus would be on equipping students with the skills to enable them to cope in mainstream. Sarel describes below how the foundation year would be the place...

...where you 'up' matric work and a bit of varsity work and where you teach them life skills. So it's a study methods and communication skills and reading skills and comprehension skills, and you hammer them on that – writing, writing, writing, writing, they cannot write! They don't know how to write, the weaker student! Your stronger student's not a problem...

This point suggests what Boughey (2002; 2007a) might call 'commonsense' notions in dealing with student disadvantage given that the skills approach was deemed inadequate two decades ago by academic development practitioners (Warren 1998). Sarel's emphasis on communication skills raises the issue of medium of communication. Although he doesn't specifically mention that Afrikaans should be taught alongside English, evidence elsewhere seems to indicate this. For example, when he was asked about the university's response to government pressure to change, Sarel was reluctant to answer, saying, 'I'm not interested in politics – I'm a scientist.' Nevertheless, he immediately started talking about the language issue with some exasperation:

So I think it's all a lot of hoo-haa. This university gets *donnered*³¹ because it's an Afrikaans university but it's not...They always say Stellenbosch has stood for an idea. Somebody must just tell us what the idea is because at one stage they said that Stellenbosch would be an Afrikaans university.

When Sarel says that Stellenbosch is not an Afrikaans university, he is referring to the erosion of Afrikaans as the language of instruction. Given that the textbooks are in English and the lesson slides are normally prepared in English in the dual-medium class that he teaches, the growing expectation of accommodating students who are weak in Afrikaans means that English is taking over as the medium of instruction. Sarel believes that this is unfair to the other group: 'Now I'm not accommodating the Afrikaans student at all because he doesn't see Afrikaans anywhere!'

Although Sarel is in favour of a foundation year that focuses on 'bridging the gap between the university and the school', he firmly believes that there must be mixing with the mainstream, especially where communication skills are concerned:

If you have a foundation year, communication skills must be run with mainstream. You must go into mainstream classes, he must see what is required of him, right? There must be challenges, academic challenges, and he must meet them and if he doesn't make the grade then, sorry, you know, there must be cut-offs because the student must be taught to take responsibility.

In conclusion, these comments reinforce the impression that the foundation programme within engineering at Stellenbosch is influenced by mainstream discourses about standards, skills and success. This has resulted in the foundation programme serving as a slow-stream option for white students – certainly up until 2008 – rather than an introductory curriculum for educationally disadvantaged black students. However, things appear to be shifting and perhaps the FYE that was implemented in 2010 will better cater for the needs of the latter group. Indeed, if more of an emphasis is being placed on teaching and learning at Stellenbosch and this effort can be focused on the specific learning needs of black students, there is no reason why Stellenbosch cannot see greater gains in a short time than are possible at an institution like UCT. If André's prediction of two fully parallel language degrees is fulfilled, such gains will almost certainly be realised.

³¹ 'Donnered' is Afrikaans slang and can be translated 'beaten up'.

Chapter 7 – Conclusion

The opening chapter of this thesis identified the fault lines of language, race and vocation that cut across the landscape of South African higher education. While division on the basis of race existed from colonial times, language divided the sector from about the 1930s and division on the basis of vocation appeared during the apartheid era. The challenge facing the Department of Education after the democratic transition was thus the creation of a single integrated, yet differentiated higher education system (DoE 1997). This was to be achieved through various means including the re-working of the higher education funding formula to include academic development activities (DoE 2001b), a vigorous restructuring programme (DoE 2001c) and a language policy intended 'to promote multilingualism and to enhance equity and access in higher education' (DoE 2002 p. 15).

The purpose of this study has been to analyse foundation programmes, a key strategy of government in the drive to transform higher education. Although foundation programmes originated a decade before the democratic transition, they are included in the White Paper as 'integral elements of a higher education sector committed to redress and to improving the quality of learning and teaching' (DoE 1997 Section 2.3.4). A directory of the more than 40 programmes on offer in science and engineering at the beginning of the century (Pinto 2001) reveals a great variety of programmes. Indeed, despite signals to the contrary from the DoE (2001c), adjunct programmes continued to be offered at a number of institutions well into the 2000s (Hay and Marais 2004; Machika 2007; Wood and Lithauer 2006). Furthermore, when the DoE launched the ECP strategy in 2006 and the number of foundation programmes on offer climbed to about 200 nationally, the design and motivation for these programmes tended to show a lack of familiarity with academic development literature (Kloot, Case and Marshall 2008).

Following in the line of argument of the relatively few voices that have adopted a critical perspective in the academic development arena, this study employed the theoretical tools of the sociologist Pierre Bourdieu in analysing the structure of higher education and the external structures impinging on higher education. The salience of social structure and history in considering the transformative potential of foundation programmes now leads us back to the research question and the associated research aims:

Research question:

Given the power structure of South African higher education and the social history of foundation programmes, what potential do they hold for transformation of the sector?

Research aims:

- a) To analyse the nature and functioning of engineering foundation programmes;
- b) To examine the difference between the perspective of social agents in the university space and policy rhetoric concerning engineering foundation programmes.

The term 'power structure' in the research question refers to Bourdieu's notion of *field*. This power structure has been investigated through an analysis of the *field of engineering education* at two case study institutions. As was noted in Chapter Two, the field of engineering education largely operates according to the basic principles of the *university field*. In terms of the case studies chosen, Chapter Three mentioned that the institutional models adopted by UCT and Stellenbosch constitute the foundation of the higher education sector, according to Phillips (2003). It is therefore expected that the discussion of the potential of foundation programmes to contribute to transformation in these two case studies might be relevant to the entire higher education sector.

This section proceeds as follows: after some discussion of the dimensions and operations of the power structure as revealed by this study, the *social history* of UCT's ASPECT programme, as a strategy of academic development, is briefly retraced. This is in order to set the context for a discussion of the contribution of ASPECT to transformation at UCT. As an institutional case study, UCT is important since it is a relatively favourable context for foundation programmes and can even be considered the institution from which the ECP model was derived.

Following this, the social history of the engineering foundation programme at Stellenbosch University will be revisited, bearing in mind that academic development was in a sense 'reinserted' from the previously white English-medium universities. As with the UCT case, this will provide the context for a discussion of the contribution of this programme to transformation at Stellenbosch University. These two institutional contexts provide a basis for a discussion of the potential that foundation programmes, in terms of their latest version as ECPs in government policy, hold for the transformation of South African higher education.

7.1 *The power structure of South African higher education*

This study has shown that the dimensions and operations of the social structure of higher education are important in terms of understanding foundation programmes. Two aspects need to be reiterated here: firstly, the high value placed on research has an overwhelming influence on the power structure of higher education. Due to its alignment with the fundamental principle of the field, research was found to be closely associated with intellectual capital. This is easily understood. However, research activities were also found to be vital in terms of accruing academic capital, the more temporal form of power in the university space. Consequently, the professors who are able to marry these two forms of capital within the field of engineering education, wield substantial power. Sebastian at UCT and Daniel at Stellenbosch University are examples of such individuals.

Following this, the similarities of the structure of the field and the logic of academic practice at the case study institutions are striking. Despite the fact that consulting, for example, was found to be traditionally more highly valued at Stellenbosch, the high status of research at both institutions, especially in relation to teaching, is worth noting. This can be traced back to indications of the valorising of research in the early 1900s at both of these institutions. This suggests that the scaffolding responsible for this structure was laid down roughly a century ago (Phillips 2003) and indicates that as social institutions, universities have formidable inertia.

In terms of the relationship of this power structure to the field of secondary education, it is significant that both case study institutions were once private boys' schools that developed a post-matriculation superstructure. Chapter Four describes how this superstructure split from the elementary and secondary school level and went on to become the universities of UCT and Stellenbosch. The historical trajectory of these institutions seems to resonate with the behaviour of most of the professors in this study: they have 'no other choice but to reject every practice that might make them seem like secondary school teachers lost in the corridors of higher education' (Bourdieu 1996 p. 99).

This leads to the second aspect that needs to be reiterated as far as the field of higher education is concerned: that higher education functions to reproduce social privilege. Bourdieu asserts that this takes place without the knowledge of the academics involved, since they are themselves imbued with middle class culture. Thus, the low

status – and traditionally, poor quality – of teaching in higher education means that students who are rich in cultural capital and who have been exposed to a good education at secondary school level, ‘naturally’ succeed at tertiary level.

Given the alignment of class with race in South Africa, it is hardly surprising that the working class black students who began trickling onto the campuses of the previously white English-medium universities in the 1980s found it difficult to cope. How this gave rise to foundation programmes is briefly revisited in the following section. The point to be emphasised here is that the social structure of higher education *in terms of power wielded by university lecturers and professors* enables social reproduction through a certain attitude towards teaching. This not only explains why black students fared badly at UCT in the 1980s but also explains why the ASP’s efforts to intervene met with such resistance – Trevor and his colleagues were contending the mechanism of reproduction of white English-speaking privilege (see Kloot 2009 p. 480).

The role of language in this process is described in detail by Bourdieu (1988; 1991) and it is significant that the issue of language arose at both institutions. Dimpho Moroka referred to the marginalising effects of language at UCT and the experience of not being an English mother-tongue speaker. At Stellenbosch, the issue of language is magnified because of the threatened status of Afrikaans, as noted in Chapter Four. Given the role of Stellenbosch in the establishment of Afrikaans as a formal language, the ‘total struggle’ (Bourdieu 1991 p. 57) of the *taalstryders* to ‘save’ Afrikaans is understandable. That efforts to intervene in the process of social reproduction at this institution met with fearsome resistance can well be comprehended from this perspective.

7.2 *The contribution of foundation programmes to transformation*

This section discusses the contribution of the foundation programme in each case study institution to transformation in particular institutional contexts, starting with UCT.

7.2.1 **ASPECT within the University of Cape Town**

The first part of this section is devoted to retracing the social history of foundation programmes at UCT. This is accomplished by drawing on Section 6.2 which examined

academic development as a field phenomenon. The purpose of this discussion is to set the context for the emergence of foundation programmes as a specific strategy of academic development. Thereafter, ASPECT is dealt with in terms of its contribution to transformation.

The starting point of Section 6.2 was the juxtaposition of the career trajectories of two academics, one a mainstream engineering professor and the other, Trevor Norfolk, an influential figure in academic development circles. In light of the power structure sketched in the previous section, it is important to emphasise that Trevor was not attracted by the forms of power on offer in the social space of higher education. His motive for entering higher education, as appears to be the case with most of his colleagues involved in the ASP movement at UCT, was to try to bring about *social change through education*. Rather than seeking authority over other positions of power within the university or international acclaim through research, Trevor and his colleagues engaged in a struggle for a critical revision of the role of the university in the emerging democratic South Africa.

Despite UCT's being widely thought of as progressive in the days of its professed stand against apartheid education, Trevor found it to be very 'academically conservative' after he took the role of Director of the ASP in the mid-1980s. As discussed above, the undergraduates rich in cultural capital, most of whom were white middle class students, would succeed despite some 'pretty lousy teaching' (in Trevor's words), whereas the small numbers of black students that began trickling onto UCT's campus, for which the ASP was meant to provide support, did not fare well at all. As Trevor and his colleagues began to understand what they were up against – and experienced fierce opposition at times – they realised that the kinds of support offered by the ASP would simply not bring about the change that they felt was necessary.

It was in this context that foundation programmes emerged, as a 'systemic solution' to what Trevor and his colleagues saw as a systemic problem. Foundation programmes were formulated with the intention of dealing with the under-preparedness of students who had come from a dysfunctional (DET) school *system* and were now in an 'academically conservative' tertiary *system*. In Trevor's mind, foundation programmes served as introductory curricula that were closer to meeting the needs of black students than the first year of a conventional undergraduate degree. Importantly, this strategy required separating black students from (what became) the mainstream, in order to strengthen them and, ostensibly, to improve their chances of success overall.

Although it was a bold initiative by the ASP, a small and relatively powerless inter-faculty unit at the time, it is crucial to note that *the impact on the power structure* was relatively minor. Indeed, given the privileged status of research and the low status of undergraduate teaching, allowing a separate curriculum to be set up for underprepared black students might be considered a small sacrifice for the system to make in order to protect its autonomy. It also meant that the mainstream could continue as before: academics were largely able to continue teaching the same types of students in the same ways, research still occupied a privileged place and the rules of the game in terms of the accumulation of capital were not affected, at least initially. In other words, while foundation programmes were an attempt to intervene in the process of reproduction at undergraduate level, the social structure of higher education *in terms of power wielded by staff* remained largely unchallenged.

The process by which external determinants bring about certain changes to the structure of a field was explained through Bourdieu's notion of 'refraction'. But in emphasising knowledge for the sake of students, equity or the nation, it was noted that academic development comes up against the obstinate principle, so deeply ingrained in the structure of the field and summed up by the maxim 'knowledge for its own sake'. In the early days of the ASP, the 'only argument' was a political one – Trevor and his colleagues fought to occupy the 'political cum moral high ground'. However, this discourse was re-interpreted as a specifically academic issue and translated as a focus on improving the effectiveness of teaching and learning. The social equity agenda is then portrayed as a consequence of improved teaching and learning. In describing teaching and learning as the 'fundamental mission' of academic development, it is divested of its political character.

This analysis suggests that the potential for foundation programmes to transform higher education is limited. Indeed, if the term 'transformation' in the research question is understood as dramatic change to the *structure of the field*, then it is clear that foundation programmes are not appropriate vehicles for this task. In fact, it is quite unrealistic to expect foundation programmes to be 'integral elements' of higher education if the system is so heavily weighted in favour of research. Furthermore, the suggestion that foundation programmes are able to bring about such change ignores the tensions inherent in the system. However, in terms of *shifting* this structure and encouraging other types of transformation, for example, demographic changes at undergraduate level, then it is possible that foundation programmes hold some promise for change. These issues will be referred to with respect to the engineering faculty and the ASPECT programme.

It was suggested in the findings that the form that a foundation programme took *in the different faculties* at UCT depended on a number of features: the extent of faculty support, the disposition of mainstream staff, the staff that were tasked with the foundation work itself, and funding. It is interesting that industry played a vital role in the launching of ASPECT, something probably unequalled in the other faculties at UCT. In fact, ASPECT was so well off that it was nicknamed 'Fat Cat ASP' (according to Steven Williams) by those engaged in academic support in other faculties. This was clearly instrumental in terms of meeting the costs of running ASPECT and its legitimacy in the eyes of the mainstream.

Another important factor in the relative success of ASPECT was the whole-hearted support from faculty management. According to Trevor, this was not the case in other faculties. In fact, engineering not only supported the efforts of the ASP but when it saw what the ASP was trying to do, decided to take matters into its own hands, developing a programme that it felt suited its needs. Despite this, it retained a good relationship with the ASP (later the ADP). Although the ADP officially owned (and still owns) ASPECT posts, the staff within the foundation programme have always been managed jointly by the ADP and the Engineering Faculty.

It is clear that the alignment of purpose of industry, faculty (and university) management and the ASP enabled a disruption of the structure of the field and the 'carving out' of a space in the field of engineering education for the foundation programme. The metaphor 'carving out' implies permanent alteration to the field and the formation of a protected space from the pressures of the mainstream. Nevertheless, given the small size of the staff complement of ASPECT and the low prestige associated with teaching underprepared black students, once again it is clear that the impact on the rest of the field was relatively minor.

Despite the limited potential to contribute to transformation, there are three ways that ASPECT has shifted the field. The first was not specifically mentioned in *Findings and discussion* but is implied by the statistics in Chapter Five: ASPECT has shifted the demographics of the undergraduate student body. In the 23 years analysed, a third of black (African, coloured and Indian) students and 45% of black African students in the engineering faculty registered through ASPECT. In terms of graduation rates for the 15 cohorts that passed through the system between 1988 and 2003, just over a third (36%) of the black students that graduated passed through ASPECT, while 57% of black African students did so. Thus, the role of ASPECT in reducing the 'whiteness' of

the university (Lockett 2011 p. 8) through demographic change is an important consideration.

The findings presented in this study showed that ASPECT has contributed to shifting the structure of the field of engineering education in two ways: by challenging the structure of the time-economy of academics and by contending the rules of promotion and thus accumulation of academic capital. With regard to the first, the time-economies modelled by ASPECT staff were found to be quite different from those of academics in the mainstream. Indeed, ASPECT staff in general can be characterised as *loving* teaching, something that is fuelled by a social justice agenda and/or the simple enjoyment of helping educationally disadvantaged students. In some ways, the ASPECT space can be considered a microcosm of the higher education system envisioned in the White Paper (DoE 1997), one that is 'committed to redress and to improving the quality of learning and teaching' (Section 2.3.4).

However, the disposition of staff in the 'carved out' space of ASPECT directly contradicts the time-economy modelled in the mainstream where teaching is dominated by research. One place where a struggle over these prioritisations occurs is in undergraduate lecture rooms where mainstream lecturers are faced with students that have come through the ASPECT programme. For example, the research professor, Andrew Edmund, said that ASPECT 'lives' in the 'intensifying' tensions between teaching and research. It is important to note that in his eyes, ASPECT is not the cause of this tension but *contributes* to this tension, something that is driven by academic development generally within UCT and exacerbated by forces from government and ECSA, for example, bodies that exert external pressure on the field.

Despite a positive attitude towards teaching, Andrew resists demands to put more time into his teaching and, in his words, to become a 'remedial teacher'. As a researcher, he focuses his energies on what he loves and on what he feels is his obligation to UCT: to produce publications and supervise postgraduate students. In other words, Andrew's austere time-economy simply does not allow him to dedicate any more time than necessary to teaching. Andrew's disposition is taken as indicative of a tendency in the entire field.

In terms of changing the rules of promotion and thus the regulations governing the accumulation of academic capital, staff employed in ASPECT some years ago were found to be engaged in the 'battle around the recognition for contribution of teaching and associate professorship', in the words of Zach Fischer. Once again, this appears to be a struggle that staff in academic development at UCT in general (and not only

ASPECT staff) were involved in. It is significant that some of the staff interviewed suggested that this struggle was ongoing although there was a difference of opinion about the present state of affairs. Eric Donaldson appears to believe that the promotion rules have changed 'to a reasonable extent' towards favouring teaching, while Zach Fischer is of the opinion that UCT is in a 'harder place' around the recognition of teaching as opposed to research in promotion in the 'last few rounds'. Both of these comments indicate the resilience of the field to change terms of the accumulation of academic capital.

Although care must be taken in basing a conjecture on evidence from a single interview, the perspective of Dimpho Moroka is worth comment. As the only black African interviewed for this study, Dimpho spoke frankly about her perceptions of the racism within higher education in South Africa. Although she says that she was not so aware of such dynamics when she was an ASPECT student, now that she is a staff member she appears to have become dissatisfied with the empty rhetoric around transformation at UCT. As mentioned above, Dimpho keenly felt the marginalising effects of language and said that it was an impediment not being an English mother-tongue speaker. She also identified issues of race and gender as keeping her 'on the margins'. Dimpho was of the opinion that as long as educationally disadvantaged students were marginalised by the curriculum, ASPECT would continue to have a place within engineering at UCT. The transformation that Dimpho refers to (in a political sense) should not be confused with the transformation of the structure of the field, although the two are obviously related. While there have been some shifts in the structure of the field, the stubborn conservatism that Trevor encountered decades before is still apparent in the university field at UCT.

Before discussing the Stellenbosch case, it is important to note three qualities that make ASPECT a 'paradigmatic case' (Flyvbjerg 2001) for foundation programmes: firstly, when ASPECT was launched there was an alignment of purpose of industry, faculty management and the central academic support unit. This gave ASPECT legitimacy and sheltered the staff involved from opposing forces within the university. Secondly, the fact that ASPECT followed an extended curriculum model early on, makes it an ideal case from the point of view of current education policy (DoE 2006). In fact, it can be argued that the model of foundation programme written into policy was derived from UCT. That education policy experts such as Bunting (1994; 2002) and Scott (2001) are from UCT and the Minister of Education between 2004 and 2009, Naledi Pandor, worked for the ASP within at UCT is significant. Thirdly, ASPECT is the longest continuously running engineering foundation programme in the country – at

the time of writing, it had been running for 24 years. These qualities allow us to use ASPECT as a case study within UCT and a 'best case' in terms of its contribution to shifting the university field.

7.2.2 The EDP within Stellenbosch University

Having gauged the impact of ASPECT's contribution to transformation in the UCT context, this section explores the contribution of the engineering foundation programme to transformation in the Stellenbosch context. As with the UCT case, this section draws on Section 6.2 by retracing the contours of the argument regarding academic development as a field phenomenon.

It is important to note that academic development was launched at Stellenbosch nearly a decade after it began at UCT and faced opposition of a totally different order. In the first place, state pressure has resulted in a shift in focus from consulting to research, the latter activity traditionally taking up significant proportions of engineering academics' time at Stellenbosch. If the dynamics at UCT are any indication, a focus on research tends to work against academic development since it entrenches the autonomy of the university space.

But pressure from the state has also resulted in an intense struggle over language at Stellenbosch. This was described in terms of a 'battle of heteronomies' between the *taalstryders*, many of who are a part of the alumni, a community historically and culturally intertwined with Stellenbosch University, and the state. This struggle appears to have had a profound impact on academic development with the result that it has been *deflected* rather than refracted as in the UCT context. Rather than lobbying for the adoption of English as the medium of undergraduate instruction, a course of action that probably would have alienated academic development from the very community it was supposed to 'develop', academic development has been forced to work within the difficult space of trying to 'diversify' (a term frequently used at Stellenbosch) with Afrikaans as the predominant language of administration and undergraduate instruction. This has obvious implications regarding the potential of foundation programmes to contribute to transformation at Stellenbosch University.

The 'tremendous impact' (in the words of André Hartenburg) of Afrikaans on recruitment is relevant here. With so few black students, the reluctance to separate students on the basis of race is understandable. In fact, Leonard Naudé indicated that white students were purposefully put into foundation programme with the intention of

de-racialising these programmes. While Zelda Atkinson agreed with this, she and Katherine Neethling also admitted that it could result in having too many white students on the programme which could 'shift the focus' from its purpose as an introductory curriculum for educationally disadvantaged black students.

This de-politicisation of academic development at Stellenbosch University has important consequences for foundation programmes. Whilst they were developed at UCT as a 'systemic response' to an 'academically conservative' system, this was not the case at Stellenbosch where they were *reinserted* into a totally different context. Although Zelda confessed that she had at one stage been concerned about establishing more foundation programmes, she also felt that there were other ways of diversifying the student body than by separating black students into a 'second order' programme. In fact, she suggested that the paradigm upon which foundation programmes operated – separating to diversify – was flawed. While foundation programmes can be described as occupying a marginal position at Stellenbosch University, Katherine Neethling even went so far as to say that calling foundation programmes 'marginalised' was affording them too much significance.

Compared to UCT, there is little evidence of alignment of industry, faculty management and academic development within the engineering faculty at Stellenbosch at any stage. Although industry support was present in the early years of the programme, it was not on the scale or with the kind of purpose that impelled ASPECT initially. In terms of the approach of staff in the engineering faculty, Zelda Atkinson from academic development admitted that *educationally*, they do 'amazing things' and are 'quite serious about their thinking'. However, she also noted that engineering was the faculty that she felt most kept her division of academic development 'at arm's length'. This suggests that while both academic development and the engineering faculty are committed to diversifying there is a *struggle over the terms on which this is to occur*.

Without a space being 'carved out' for it in the field of engineering education as was the case with ASPECT, the foundation programme within engineering at Stellenbosch appears to have been appropriated by mainstream discourses about standards, student success and engineering training. The result was that the foundation programme has been caught between serving as a slow-stream support option for (predominantly white) mainstream students and an introductory curriculum for educationally disadvantaged black students, but without really fulfilling either goal. The comments of Sarel de Beer, the part-time EDP lecturer who was interviewed for this

study, reinforced these impressions. Sarel's comments about research, the need to teach skills to disadvantaged students and his exasperation that these students wanted to be taught in English are examples of such discourses.

In this regard, it is notable that the population group making up the largest proportion of students in the EDP in the period 1995–2009 was white students (46%), closely followed by coloured students (43%). Thus, although the proportion of coloured students coming into engineering through the foundation programme was greater than in the mainstream, the contribution of the foundation programme to transformation in terms of demographics is small. As far as black African students are concerned, this group made up only 10% of the EDP in the 15-year period studied. This is in stark contrast to ASPECT in which 88% were black African students (for the period 1988–2009).

This analysis also revealed that more than half of the 10% of black African students who registered for the EDP between 1995 and 2009 did so in 2009. The apparent rise in the popularity of engineering for black African students at Stellenbosch was linked to the introduction of a parallel English stream at first year level. André Hartenburg, a socio-linguist and a director of academic development at Stellenbosch, predicted a change in structure to the foundation programme in engineering, hinting that the faculty might adopt the ECP model. He suggested that since engineering would have greater numbers of black students, the pressure would be on the faculty to adopt this model and claim the funding that was available from the DoE in 2006.

It is significant that the faculty instead decided to adopt a bridging programme, the FYE. While one of the reasons may be to ensure that fewer white students register for the programme (since it is a bridging year and would presumably not be available to students already in the mainstream), this move also ignores the lessons learned at the previously white English-medium universities, most of which started with such adjunct support programmes in the 1980s. If we consider that even the academic development staff at Stellenbosch felt that the focus on race implicit in the ECP model was contrary to the 'more flexible...and de-racialised approach' that they were taking to transformation, it is not strange to suggest that engineering would be hesitant to 'buy into' the ECP model and its funding scheme.

In terms of the contribution of the EDP in engineering to transformation, there are three points that should be mentioned. Firstly, the EDP has hardly contributed to transformation in terms of demographics. Although the proportion of coloured students registering in the foundation programme is greater than in the mainstream, in absolute

terms, the numbers are small. The number of black African students who gained access through the foundation programme – as is the case in the mainstream – is also small. As Brink (2006) notes, and as this study has shown, it is the language issue that has an overwhelming effect on the recruitment of black African students. Nevertheless, if mentorship in the teaching and learning process, as identified by Leonard Naudé, can be harnessed for disadvantaged black students, this may result in Stellenbosch's making significant gains in the short term.

Secondly, in terms of shifting the structure of the university field, it was noted that academic development at Stellenbosch was largely deflected. While an increased focus on the scholarship of teaching and learning, for example, may be having an impact on the field, there was no evidence of this in this study. Indeed, there is no discernible influence on the time-economy of lecturers, challenge to the rules of the accumulation of capital or any other impact on the power structure as a result of the foundation programme. Given its extremely marginal status, this is not surprising.

Lastly, this analysis reveals that the circumstances surrounding engineering's decision not to adopt the ECP model in 2010, despite the incentive of extra funding, are complex. While the basic decision is at faculty level, the relationship of the faculty to institutional academic development structures (in this case distant), the negotiation of myriad government and university policies and the influence of external constituencies (in this case an apparently resolute cultural-historical group) are also part of the equation.

7.3 Potential that ECPs hold for the transformation of South African higher education

The engineering faculties within the case study institutions analysed in this thesis reacted very differently to the Department of Education's ECP initiative. In fact, it is not entirely accurate to say that UCT's engineering faculty 'reacted' since ASPECT was essentially an extended curriculum from the start. Because the individuals involved in academic development within UCT were instrumental in having the extended curriculum model written into government policy, the foundation programmes at UCT such as ASPECT were inherently aligned with the philosophy underpinning ECPs. In terms of curriculum, ASPECT needed to be slightly modified to meet the ECP criteria;

in terms of its operation, it continued functioning as it had before except post-2006 it benefitted from the government's ECP funding.

On the other hand, the engineering faculty at Stellenbosch did not adopt the ECP model but instead decided to implement a bridging year, the FYE. This points to a variance between the philosophy underpinning the ECP model in policy and the paradigm of 'diversification' within the engineering faculty there. Although it would have been possible for engineering to modify the EDP curriculum to qualify as an ECP (as the science faculty at Stellenbosch did), mainstream discourses about standards, skills and student success prevented the setting aside of a special space to deal with educationally disadvantaged black students. Such an approach must be understood in the context of the deflection of academic development and the efforts to de-racialise foundation programmes at Stellenbosch.

While the use of funding as a mechanism may make sense in terms of government policy, the Stellenbosch case demonstrates that other powerful factors impact on the decision of a faculty to adopt the ECP model or not. The survey of government policy with reference to foundation programmes in Chapter Four traced the thread of the argument for funding of foundation programmes. It noted that the argument to include academic development in the higher education funding framework appeared before the democratic transition, was secured in the White Paper (DoE 1997), reiterated in the National Plan (DoE 2001c) and realised in *Funding for Foundational Provision* (DoE 2006).

The work of Scott (2001) in bringing together the competing discourses of equity and development in his argument for public funding of academic development is important in this regard. But while Scott's reasoning makes sense in terms of policy, it is far removed from the issues facing academics working within higher education, an arena traditionally circumspect of state involvement. In other words, the logic of policy with regard to ECPs does not articulate well with the *logic of practice* of higher education. This speaks to the second research aim and reveals a substantial gap between the perspective of social agents in the university space and the policy rhetoric concerning foundation programmes.

Despite some contribution to changing demographics at UCT, the impact of ASPECT on transformation – in terms of shifting the structure of the field – was relatively minor. Although ASPECT is in some sense an enclave of the type of higher education practice envisioned by the White Paper (DoE 1997), this study has shown that the potential to impact the rest of the field is limited. It is therefore doubtful that the

adoption of the ECP model (or more likely the modification of an existing programme to fit the ECP criteria) by an institution would miraculously precipitate transformation. In fact, there is no reason why a government-funded ECP, in and of itself, will somehow overcome the powerful discourses that appear to constrain foundation programmes.

However, an ECP may be able to *contribute* to shifting the structure of the field under certain circumstances. Successful insertion into another context depends, firstly, on the position of the institution in the field of higher education, particularly in terms of the institution's alignment with the autonomous principle of the field. The UCT case demonstrates that even if there is a strong focus on research, it is possible for ECPs to be established. This suggests that at other types of institutions, such as the comprehensive universities or universities of technology, or at institutions that have a stronger focus on teaching and learning, ECPs stand a better chance of shifting the structure of the field. However, this must be understood in the context of other heteronomous influences such as those described below.

The successful adoption of the ECP model has to do, secondly, with the *status of academic development* in a particular institutional context. Where academic development is well established and where the strategy for academic development in terms of institutional policy is coherent, ECPs have a better chance of contributing to shifting the structure of the field. Perhaps the most important issue in this regard is commitment from the university towards funding permanent posts for staff to teach on foundation programmes (Boughey 2010). If foundation programme staff are seconded from the mainstream on a part-time basis or if they are employed in contract posts, the ECP intervention will be less well established and the impact on the field will be reduced.

Thirdly, the *disposition of leadership*, whether at institutional level, faculty level or within academic development structures, is important if ECPs are to contribute to shifting the structure of the field. For example, if institutional leadership is convinced that the ECP model is worth pursuing, this will obviously assist in terms of the creation of a favourable climate for the establishment of these programmes. The same applies at faculty level. At UCT, strong faculty leadership that was well disposed to academic development was instrumental in the launching of ASPECT. At Stellenbosch University, even though faculty leadership was reported as being committed to transformation, the engineering faculty seems to prefer to keep its distance from the academic development unit, endeavouring to develop its own response to the problem

of 'diversification'. The result was a foundation programme that was not able to contribute much to shifting the structure of the field.

The disposition of academic development leadership also impacts the potential of ECPs in terms of shifting the field. For example, if academic development management is convinced that ECPs are appropriate interventions, and its philosophy is in alignment with the ethos of the institution, this improves the chances of a well-established programme. However, if academic development managers are ambivalent about the ECP model and its application to the institutional context (Snyders and Plaatjes 2007), the impact of the ECP will be reduced.

The disposition of leadership in general appears to be particularly important in terms of the decision to *separate students on the basis of race*. This is a key part of the philosophy of the extended curriculum model as it was conceived at UCT. However, as South Africa completes its second decade since democratic transition and the correlation between race and disadvantage becomes increasingly blurred, taking such a decision is not an easy matter. However, if institutional leadership is persuaded that students should still be separated on the basis of race, then the chance of ECPs being established as a systemic intervention to address the residual disadvantage in the system is better (see Saunders 2011). However, as the argument that students can no longer be separated on the basis of race become more compelling (see Alexander 2011), there is less chance that students will be separated on the basis of race into ECPs. In many ways the ECP model hinges on this aspect.

Lastly, various external determinants, from the corporate world perhaps, a particular cultural-historical group or the state, may all influence the potential of the ECP in terms of its contribution to shifting the structure of the field. The intensity of the struggle over language appears to be particularly acute in the Stellenbosch case and can be thought of as a result of a 'battle of heteronomies' as described in *Findings and discussion*. While the intensity of this heteronomous pressure is not expected to be the case at other previously Afrikaans-medium institutions, it is likely that the issues of language will impact the field and the ECP in various ways.

It has already been mentioned that ASPECT fulfils the role of a paradigmatic case. On the other hand, the engineering faculty at Stellenbosch may be thought of as an 'unusual case' (Flyvbjerg 2001 p. 78). By this, Flyvbjerg means that its 'especially problematic' nature reveals important information about the subject (2001 p. 79). Opportunities for future work are therefore mapping other areas of the field of higher education to determine the impact of these various dimensions on the efficacy of

foundation programmes in general and ECPs in particular. It would be interesting, for example, to try to gauge the extent to which an ECP impacts the field of engineering education in the context of English and Afrikaans parallel streams. Another interesting area to explore would be the impact of foundation programmes on the field in the university of technology context where the drive to accumulate intellectual capital is diminished. Although it will certainly be a difficult context in which to research, the context of merged institutions is another possible area for future work. Finally, there are a multitude of disciplinary contexts in which these issues can be explored such as the health sciences, commerce and the humanities.

This Bourdieuan analysis of foundation programmes within the field of engineering education has shown that the ability of foundation programmes to transform the higher education sector in South Africa is limited. The potential of foundation programmes to impact the field is constrained by the power structure of higher education itself and the predominance of research. However, they are able to contribute to shifting the structure of the field, provided the institutional context is favourable. In terms of the impact of ECPs on the sector, it seems doubtful that the ECP model will suit the very different institutional contexts across the higher education sector in South Africa. Issues such as the status of academic development, the disposition of university leadership and other external determinants may all influence the degree to which an ECP is able to shift the structure of the field. Nevertheless, if they are part of a coherent academic development strategy, ECPs may indeed contribute to shifting the structure of the field towards a higher education sector that is more equitable.

Appendices

Appendix A: Interview schedule

Interview Schedule

Preamble:

- Thank the respondent for participating and refer to previous correspondence.
- The data collected in this interview will contribute towards a study of engineering foundation programmes in South African higher education.
- His/her participation is voluntarily.
- His/her identity will be protected as much as possible through the use of pseudonyms (of both persons and institutions) and the omission of other distinctive details.
- He/she is welcome to view the research at any stage
- Ask the respondent if the interview can be recorded (perhaps say something about not being very good at taking notes)

Interview Guidelines

1. Locate the respondent in the field according to his/her qualifications, publications, positions on boards etc. and in terms of his/her history/experience.
2. Probe the struggles that the respondent has faced at UCT / Stellenbosch over the years, especially with respect to academic development / foundation programmes.
3. Inquire into the respondent's version of the history of academic support/development at UCT / Stellenbosch in general and ASPECT / EDP in particular.
4. What is the purpose of ASPECT / EDP or what role does it fill? Perhaps explore whether there is a distinction between the respondent's view and the 'official' version.
5. Inquire into the respondent's view of the role of ASPECT / EDP currently.
6. Follow up on any struggles within the field that the respondent identifies, e.g. issues of contention around ASPECT / EDP in the faculty or foundation programmes in the university generally?
7. Explore the respondent's attitude towards government involvement in foundation programmes and (interference?) in the university in general.
8. Explore the respondent's attitude towards industry and the importance of the university's links, especially if this is mentioned in the history (#1)

APPENDIX

Research question:

Given the power structure of South African higher education and the social history of foundation programmes, what potential do they hold for transformation to the sector?

Research aims:

- a) To analyse the nature and functioning of engineering foundation programmes;
- b) To examine the difference between the perspective of social agents in the university space and policy rhetoric concerning engineering foundation programmes.

Appendix B: Example of an interview narrative

Xavier Edwards

- Biographical sketch

Xavier studied engineering at the University of Cape Town and 'followed on straight' to do a post-graduate degree in an area of engineering science. He began tutoring at the same time and realised 'pretty soon' that he enjoyed tutoring. In 1995 he was introduced to the ASPECT co-ordinator and began tutoring on ASPECT.

Xavier switched direction in his Masters but remained within a conventional engineering discipline. At about this time, his interest and involvement with ASPECT began to grow. From being a regular tutor he 'started running the tutoring programme in ASPECT and then started lecturing' and says it 'just grew from there'. When he lost interest in his Masters project, Xavier saw an opportunity open up within ASPECT. He himself suggested a full-time post be created, drew up the details for this position and, after the post was advertised and he applied, 'after much haggling' got the post. Since then, he says that he has never looked back and has recently (at the time of the interview) begun co-ordinating ASPECT. At the present time, Xavier's research work is ongoing and his current project is contributing towards his Masters degree.

- Reasons for working on ASPECT

It is clear from the above that Xavier is working on ASPECT because he enjoys it. This topic is explored more fully in this section, as well as why he specifically chose ASPECT rather than to tutor or teach in the mainstream. When he was asked what drove him, Xavier responded:

My love for teaching. Coming in in the morning and having students come and get help and being able to help them, that's what keeps me going. Going to the lecture and coming out and saying, 'That worked, this didn't work, tomorrow I've got to change this, I've got to sort that person out, I need to help with this.' That's what keeps me going. If I'm doing that for the rest of my life, I'll be happy as can be.

Xavier is clearly passionate about what he does and has developed a love for teaching that shows no sign of flagging. Not surprisingly, he speaks of his love for *teaching* in this excerpt rather than *lecturing*, the latter word having much 'old school' – Xavier's words – baggage attached to it and not aptly describing the kind of interactive work that he and his colleagues do. We also note Xavier's frequent use of the word 'help' which highlights the personal, social contact that engages him in his work. Xavier talks about students coming to him to get help, which happens in his office on a one-to-one basis and not only in the teaching/tutoring venue. In fact, the open door policy that ASPECT staff have means that students can come to them 'all day, every day' for assistance. This again emphasises the strong social dimension of ASPECT and Xavier specifically speaks about the community ethos within the programme: '[W]e build a community that everybody knows each other, we know all the students, we're looking after all the students.'

Xavier draws a parallel between his ASPECT work and sports coaching, an activity that he is involved with outside of academic life. It must be kept in mind that Xavier teaches Physics, the teaching of which suits a coaching approach where repeated problem-solving is used to develop certain mental skills. As can be seen in the excerpt above, there is a busy sense of analysing, strategising and planning in what appears

to be his everyday work. The idea of coaching fits well with tutoring – where Xavier first developed his interest in education – in that students work on problems to develop particular skills and the tutor is on hand watching and giving advice where necessary. In such an environment, training for a test or an exam is foremost in students' minds, which parallels sports coaching in terms of preparation for an upcoming match. Lastly, the parallel to coaching says much about the social dimension of Xavier's work. It implies that, although he does not have the same status as the students, he is on their side, is committed to helping them reach their full potential. In a sense, he is part of the team. Xavier explains the similarity like this:

...being a coach where you are analysing, looking and then trying to re-coach something then plan a practice or a skill that he's going to accomplish, that you want players to learn. It's a similar type of thing in education. You know there is an end goal and you want to achieve but along the way we need to equip somebody and help them and everybody is so different so you get to work with different people the whole time. I suppose I'm just hard-wired to want to do that.

Xavier's reason for choosing to work with ASPECT students are closely linked to his character that is 'hard-wired' for coaching. The challenge of getting the basics right, dealing with misconceptions, altering preconceptions and building up students' understanding of Physics from a fundamental level is what attracted Xavier to ASPECT:

I just enjoyed what was happening in the ASPECT class because it was a lot more fundamental work. You weren't just grappling with whether somebody could do a certain problem, it was deeper than that – why don't you understand the problem, what are the common things...the misconceptions, the preconceptions that you are not holding in your head and how can we deal with these – so, I suppose at the time it felt like more of a challenge. The type of student that you were working with there, really needed to get the fundamentals right...

Interestingly, Xavier is not motivated by a strong sense of political justice or desire for social change, something common to academic development staff who joined UCT in the early years. He says that he 'doesn't really understand what it means to be political' but believes in life values and fairness in everything we do. This seems unusual for someone working on a programme that is steeped in political history but perhaps indicates that staff coming into UCT now are from another generation. The point is that Xavier is not personally invested in any political agenda but loves his teaching and enjoys the challenge of his work and the social interaction on ASPECT. He does admit that he 'probably could be political without knowing it' but says that he 'is not intently' political.

The way that Xavier speaks about material or financial reward is similar to the way that he speaks about politics. He says that 'to have ambition for those types of things...to climb the ladder [and] to be seen as a professor tomorrow or the next day or whatever...hasn't really registered in my head, it's not an issue for whatever reason'. This can be tied up with Xavier's last statement in the first quotation of this section where he said about his teaching: 'If I'm doing that for the rest of my life, I'll be happy as can be.' While Xavier does admit that it's 'nice to have a pat on the back every now and then and I suppose when it comes down to making more money as a salary, there is nobody who is going to say no to that', he does not seem to be ambitious at all, whether for status, recognition or material or financial reward.

- *The workings of higher education*

With such a strong focus on teaching and, in Xavier's case, an apparent disregard for financial or material reward, the question arises as to whether there are any conflicts between how ASPECT does things and the operation of higher education in general at UCT. When he was asked how he thought the mainstream sees ASPECT, Xavier replied:

...it's a mystery sometimes. It's very difficult from my point of view to see how other people judge us but I think we are a slight anomaly because we don't report to any department or to the faculty...but our line manager is through CHED. So in a way we are not directly accountable to the EBE Faculty but...we respect it enough to be listened to and heard and trusted in what we do is in the right direction.

This relationship with the faculty gives ASPECT a freedom 'that regular departments might not have' and 'takes the constraints away from what we do'. Xavier says that for him personally, such an arrangement is great but he is not sure how other people see this. He goes on to say that, having the same title as staff in the mainstream – 'lecturer' – can create tensions since they can do certain things and 'get away with it' and they 'don't...have to do some other things' compared to mainstream lecturers. As we will see, not being directly accountable to the faculty in terms of what they do allows ASPECT the space to teach intensively during term time and 'get away with' – in Xavier's words – not doing much research.

Xavier's love for teaching then, fits in well with his job description as defined by CHED and allowed by an agreement with the EBE Faculty. Speaking for the whole of ASPECT now, he says:

First and foremost, term time we teach, so everything we do in term time is about the lecture we're going to give, the workshop we are going to design around that, the contact time with the students...our priority is the teaching side of it for the students and that's what we have been employed to do and that's what we take very seriously...

Although Xavier states that during term time, they 'don't set aside time for research output at all', this does not mean that ASPECT staff don't do any research work whatsoever. Firstly, during vacation or when they get study leave, they are engaged in research which is usually linked to their educational interest. Xavier, for example, was doing some work on teaching large classes at the time of the interview. This kind of work results in the usual research outputs such as conference papers, journal papers, dissertations and theses. Secondly, Xavier makes the point that they do generate research *inputs*, that is, research work that informs their teaching and keeps them 'up-to-date on what's going on' (presumably in terms of educational practice). While this type of work can be translated into *outputs* and written up outside of term time, Xavier says that there are no mechanisms to measure *inputs* through the university's Rate for Job (RFJ) system.

However, there is some flexibility in terms of the way the RFJ gets implemented for ASPECT. While Xavier confirms what Zach says about ASPECT staff not having special RFJ criteria, he also says that since their reviewer is someone from CHED who is in the 'education field' and who 'understand[s] what we are doing', this means that they are reviewed 'according to what our job is, not according to the literal meaning of the Rate for Job paper'. In other words, activities that might be seen as research *inputs* could be counted in the overall assessment of the RFJ in terms of 'what parts of it is very strict and what parts are lenient'.

When he was asked about his career, it is interesting that Xavier referred again to the Rate for Job system, saying that he was not performing at Senior Lecturer level in terms of his research outputs and knew that this meant he could not be promoted. So while there is some flexibility within the RFJ system for ASPECT staff in terms of what they do, the rules for promotion – obviously related to RFJ – appear to apply more literally. Xavier is in fact quite critical of the RFJ, says that it is ‘frustrating more than it’s helping’ and, more strongly, ‘the sooner they do away with it, the better’. Xavier suggests that the university should target their staff in terms of particular skills, for example, excellence in teaching and learning at the first or second year levels, and use these to empower students to be better at what they do in later years. He does add, somewhat provocatively, ‘whether it’s rewarded or valued, I suppose, is the interesting part’. Although he says you can be both a teacher and a researcher, Xavier believes that there is definitely a contrast between these vocations within the university and this needs to be recognised.

The points that Xavier raises about what higher education values and how it functions compared to ASPECT are significant. While this is potentially a source of conflict as Xavier has indicated, in some ways it also appears that the boundary between ASPECT and the mainstream is weakening in a number of ways. Firstly, Xavier says that staff are looking more carefully at students in second year and how to help them. Secondly, the phenomenon of struggling mainstream students transferring into ASPECT during the course of first year has grown substantially in recent years. Thirdly, Xavier says that they have recently ‘become a lot more influential’ through the use of education research in challenging the Maths and Physics departments to teach material suitable for engineering students rather than mathematicians or physicists.

- Future of ASPECT

The issue of the weakening boundary between ASPECT and the mainstream leads us to consider the future form of ASPECT. When Xavier was asked whether he thought ASPECT would one day disappear, he laughed and said, ‘Yes, it has to. If it doesn’t then nothing has been solved in this country.’ He explains what he means by this:

It has to have an end, a termination. But for me, it’s not a shrinking termination, it’s an expansion until it becomes the norm because it’s the first year experience that we’re dealing with here and what we’re doing, the type of students we’re getting more and more, what we’re doing is becoming more predominant than us being phased out...I would see us as becoming mainstream essentially but still following what we’ve been doing the whole time just expanding on that...but in the bigger scheme of things the equity/access thing is definitely going to become a lot more blurred as the application pool as inclined to university changes...

In other words, Xavier sees the type of work that ASPECT does – intensive, interactive teaching and learning – as becoming the norm as the demographics and preparedness of school-leavers continues to change, rather than being a support programme concentrating on first year level.

Appendix C: Ethics approval form

EBE Faculty: Assessment of Ethics in Research Projects

Any person planning to undertake research in the Faculty of Engineering and the Built Environment at the University of Cape Town is required to complete this form before collecting or analysing data. When completed it should be submitted to the supervisor (where applicable) and from there to the Head of Department. If any of the questions below have been answered YES, and the applicant is NOT a fourth year student, the Head should forward this form for approval by the Faculty EIR committee: submit to Ms Zulpha Geyer (Zulpha.Geyer@uct.ac.za; Chem Eng Building, Ph 021 650 4791). Students must include a copy of the completed form with the thesis when it is submitted for examination.

Name of Principal Researcher/Student: *Bruce Kloot*

Department: *Chemical Engineering*

If a Student: Degree: *PhD (Eng.)*

Supervisor: *Jenni Case, Delia Marshall*

If a Research Contract indicate source of funding/sponsorship:

Research Project Title: *A Critical Sociological Analysis of Engineering Foundation Programmes in South African Higher Education*

Overview of ethics issues in your research project:

Question 1: Is there a possibility that your research could cause harm to a third party (i.e. a person not involved in your project)?	YES	<input checked="" type="checkbox"/>
Question 2: Is your research making use of human subjects as sources of data? If your answer is YES, please complete Addendum 2.	YES	<input checked="" type="checkbox"/>
Question 3: Does your research involve the participation of or provision of services to communities? If your answer is YES, please complete Addendum 3.	YES	<input checked="" type="checkbox"/>
Question 4: If your research is sponsored, is there any potential for conflicts of interest? If your answer is YES, please complete Addendum 4.	YES	<input checked="" type="checkbox"/>

If you have answered YES to any of the above questions, please append a copy of your research proposal, as well as any interview schedules or questionnaires (Addendum 1) and please complete further addenda as appropriate.

I hereby undertake to carry out my research in such a way that

- there is no apparent legal objection to the nature or the method of research; and
- the research will not compromise staff or students or the other responsibilities of the University;
- the stated objective will be achieved, and the findings will have a high degree of validity;
- limitations and alternative interpretations will be considered;
- the findings could be subject to peer review and publicly available; and
- I will comply with the conventions of copyright and avoid any practice that would constitute plagiarism.

Signed by:

	Full name and signature	Date
Principal Researcher/Student:	Bruce Kloot <input type="text" value="Signed by candidate"/>	0 Feb 2008

This application is approved by:

Supervisor (if applicable):	<input type="text" value="Signed by candidate"/>	25/2/08
HOD (or delegated nominee): Final authority for all assessments with NO to all questions and for all undergraduate research.	<input type="text" value="Signed by candidate"/>	6/3/2008
Chair : Faculty EIR Committee For applicants other than undergraduate students who have answered YES to any of the above questions.	<input type="text" value="Signed by candidate"/>	4/3/08.

Appendix D: Post-interview email

Dear _____,

Although it was some time ago, allow me to thank you once again for participating as an interviewee in my PhD study entitled *A sociological analysis of engineering foundation programmes in the field of engineering education: two case studies*.

I indicated before the interview that I would use pseudonyms – for interviewees as well as the institution – but as I began to describe the social history of South Africa and the two institutions I am using as case studies, I realised that it would be quite obvious to the reader which institutions I was talking about. I am therefore going to be explicit that _____ is one of the case studies. Ethically, I felt that it was appropriate to inform you about this change.

The purpose of this email is to formally give you the chance to **indicate whether you have any ethical concerns**. Since I have just finished writing up my findings, I have attached a draft for your perusal before I submit the full thesis. You will notice that you appear under the pseudonym _____ and, although I have tried to protect your identity as much as possible, I'm sure that you will appreciate that full anonymity is always difficult to guarantee in a qualitative study like this.

Once again, please feel free to contact me if you have any concerns. Additional feedback will also be appreciated – you may want to point out factual inaccuracies, for example, or comment on my interpretation of the data.

Yours faithfully,
Bruce Kloot

Appendix E: Details of quantitative analysis in Chapter Five

E.1: University of Cape Town

Registration and graduation data for ASPECT and engineering mainstream students was obtained from three sources:

- The university has an Institutional Planning Department (IPD) which works from a central database and deals with requests;
- The faculty has a statistician who also takes requests for data;
- At a departmental level, the ASPECT secretary has access to student records and can provide useful statistical information.

While all of the above sources were used and there was a high degree of correlation between them – provided the terms of the request were understood – most of the data was obtained from the IPD which was judged to be the most accurate and consistent data set. There is one exception to this: the number of registrations in ASPECT's first year of operation, 1988, varies from 37 (Jawitz 1994) to the IPD data figure of 55. While it is thought that this discrepancy is due to a number of students failing Engineering ASP courses in 1987 and being allowed to register for ASPECT, this is not certain. However, two sources by Sass (1988b; 1989) put the number of registrations at 42 in 1988, so it was decided that this number be used.

Movement in and out of ASPECT: A complicating factor in this analysis is the significant flux in and out of ASPECT as students register late, transfer, drop out or are 'decanted' from the mainstream, the last being the ungracious term used to describe the transfer of struggling mainstream students into ASPECT during the year. This has become more evident in the last few years (since 2006) as a good number of mainstream students struggling with Mathematics have opted to transfer to ASPECT. In 2009, an inordinate number of students transferred from the mainstream and the class grew from 52 to 96 students – an 87% increase. This raises interesting questions about the purpose of ASPECT. Is its role to broaden access by taking in students who don't meet the mainstream entrance criteria? Or is its role shifting towards assisting black students who have met the entrance criteria for mainstream but find that they are not coping?

'First time' vs. first year students: In the quantitative analysis, the former term refers to students who have come straight from school (although possibly taking a 'gap' year),

while the latter includes students who are registering as repeats or are transferring from another faculty or tertiary institution. In any case, only a very small percentage of students registering for ASPECT repeated or transferred. According to the IPD data, roughly 97% of ASPECT first years came straight from school.

Students not classified as African, coloured, Indian or white: From the year 2000 at UCT, students began to self-classify their population groups. From this year, the designation 'unknown' begins to appear and African students are grouped into South African black students and International African students. Both of these groups are small and have been left out of the analysis. Less than 1% of students in the registration data i.e. Table 5.1 are classified as 'unknown'. In the graduation data (Table 5.2), only 3% of the total number of students were International African students.

Registrations between 1988 and 2003: Figure 5.4 in Chapter Five showed registrations in the mainstream and ASPECT from 1988 to 2009. But considering that the graduation data stops at the 2003 cohort, it is necessary to examine the registration data for 1988–2003. The appropriate graph and table are presented below:

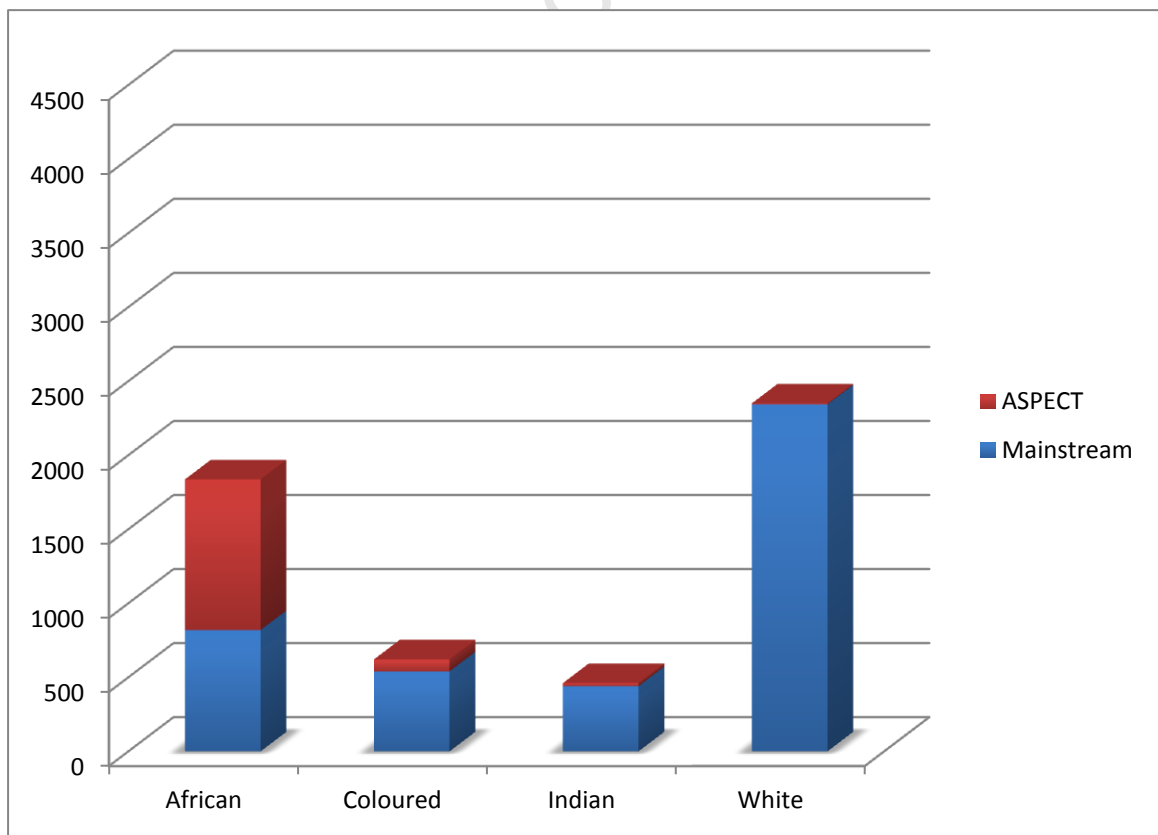


Figure E.1. First year registrations in the mainstream and ASPECT in the Engineering Faculty at UCT by population group (1988–2003).

In comparing this graph with Figure 5.4, we note that the proportion of African students that gained access to the Engineering Faculty through ASPECT between 1988 and 2003 is close to 55%, a 10% increase compared to the period 1988–2009. While the number of black African students registering between 1988 and 2009 was only slightly less than the number of white students, the difference is more marked in the period 1988–2003: 1837 black African students registered in this period as opposed to 2350 white students.

Table E.1. A comparison of mainstream and ASPECT registrations in the Engineering Faculty at UCT by population group (1988–2003)

<i>Programme</i>	<i>Population group</i>			
	<i>African</i>	<i>Coloured</i>	<i>Indian</i>	<i>White</i>
<i>Mainstream</i>	819	540	440	2343
<i>ASPECT</i>	1018	81	21	7
<i>% in ASPECT</i>	55%	13%	5%	0.3%
<i>Total</i>	1837	621	461	2350

Number of students registering: Although the data came from the same source, the number of students in the registration data differed slightly from the number of students who were recorded as registered in the graduation data. As a way of checking the integrity of the data, it is useful to express the differences between the totals as a percentage. These differences for the period 1988–2003 are given in the table below:

Table E.2. Absolute difference (%) between the numbers of students registering (1988–2003) compared to the numbers of students registering in the graduation data (Table 5.2)

<i>Population group</i>	<i>African</i>	<i>Coloured</i>	<i>Indian</i>	<i>White</i>	<i>Total</i>
<i>Absolute diff.</i>	5.0%	0.5%	2.3%	1.6%	2.2%

This ‘absolute difference’ is obtained by subtracting the smaller total from the larger and then dividing by the larger total. Although the number of African students in the registration data was 5% greater than in the graduation data, this is still an acceptable

difference, especially considering the flux in and out of ASPECT and the other factors mentioned above.

E.2: Stellenbosch University

Registration and graduation data for the foundation programmes and engineering mainstream students were obtained from two sources:

- The Division for Institutional Research and Planning (IRP) that works from a central database and deals with requests. This division provided most of the data for the present study.
- Personnel within the Centre for Teaching and Learning who had already done some sort of cohort analysis of EDP students.

Movement in and out of the EDP: The data from the IRP is gathered from a census taken on the first Tuesday in June from 1995–2009 and on 31st April in 2010. It is thus a snapshot and does not account for the movement in and out of the faculty. The cohort analysis from the Centre for Teaching and Learning had details of the students' movements and revealed that a number of students switched from the EDP into a mainstream programme during the course of their studies. As the discussion in Chapter Five explains, students were also able to transfer from mainstream into the EDP.

'First time' vs. first year students: Although this distinction was made with the UCT data, the statistics from the IRP at Stellenbosch refer to *first year* students. Nevertheless, the difference between these categories, as in the case of UCT, is expected to be small.

Students not classified as African, coloured, Indian or white: Only one student in the 1997 cohort is classified as 'unknown' in the Stellenbosch University data. This is a tiny percentage of the total students in the cohort analysis.

Students in the 'other' category: The category of 'other' in the graduation analysis for Stellenbosch University is similar to the UCT case but there is a slight difference. Students classified as 'excluded' from the Stellenbosch cohorts are those that 'left Stellenbosch University without a qualification' according to the comments from the IRP data. This means that students who left in 'good academic standing' would be classified as excluded rather than 'other', as was the case at UCT. However, it is not

expected that this should make much difference because these numbers are normally small. As in the UCT case, the 'other' category for the Stellenbosch data still includes students who graduated after more than six years in mainstream (and more than seven years in the EDP), students who are still registered in engineering, those who are still registered in another faculty and students who have graduated from another faculty.

Registrations between 1995 and 2003: Figure 5.12 in Chapter Five showed registrations in the mainstream and the EDP from 1995 to 2009. But, once again, considering that the graduation data stops at the 2003 cohort, it is necessary to bear in mind the registration data for 1995–2003 for this analysis. The appropriate graph and table are presented below:

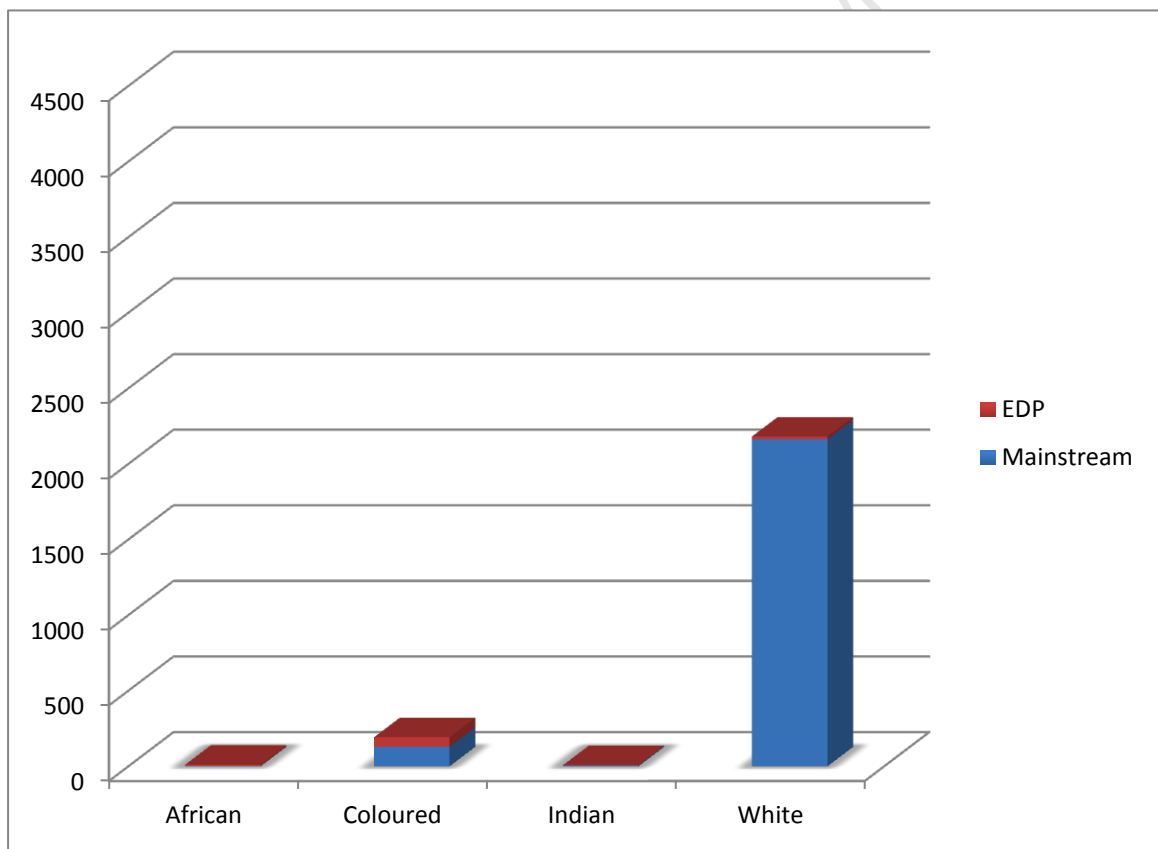


Figure E.2. First year registrations in the mainstream and EDP in the Engineering Faculty at Stellenbosch University by population group (1995–2003).

In comparing this graph with Figure 5.12, there are three things to note. Firstly, white students still make up the vast majority of the student population (roughly 90%) but do not outnumber coloured students in the EDP. At 18 students, this population group

makes up only about 20% of the EDP intake (see Table E.3 below). Secondly, the ratio of coloured to white students is fairly constant in these two data sets, as is the proportion of coloured students in the EDP (33% as opposed to 31%). Lastly, the number of African and Indian students is very small (10 and seven respectively) which shows that the proportional intake of these population groups is on the rise. For example, the number of African students taken into the Engineering Faculty between 2004 and 2009 is nearly four times the intake prior to 2003.

Table E.3. A comparison of mainstream and EDP registrations in the Engineering Faculty at Stellenbosch University by population group, (1995–2003).

<i>Programme</i>	<i>Population group</i>			
	<i>African</i>	<i>Coloured</i>	<i>Indian</i>	<i>White</i>
<i>Mainstream</i>	3	129	7	2163
<i>EDP</i>	7	63	0	18
<i>% in the EDP</i>	70%	33%	0%	1%
Total	10	192	7	2181

Number of students registering: The discrepancies between the number of students in the registration data compared to the number of students who were recorded as registered in the graduation data is greater than in the UCT case. The absolute differences are given in the table below:

Table E.4. Absolute difference (%) between the numbers of students registering (1988–2003) compared to the numbers of students registering in the graduation data (Table 5.4).

<i>Population group</i>	<i>African</i>	<i>Coloured</i>	<i>Indian</i>	<i>White</i>	Total
Absolute diff.	61.5%	30.4%	12.5%	6.4%	9.5%

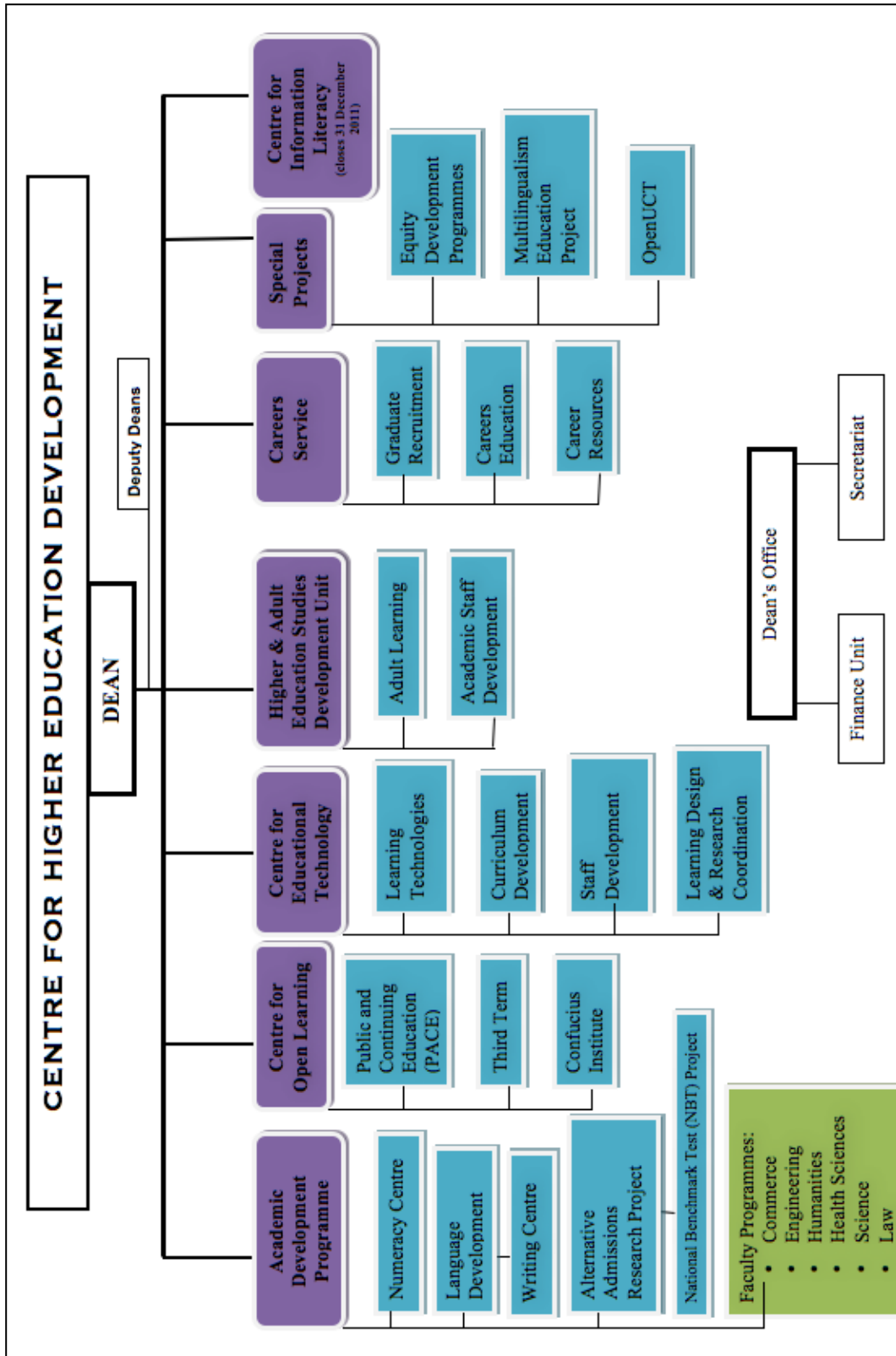
Although these percentage differences are large, it must be borne in mind that the number of African, coloured and Indian students is much smaller than in the UCT case so variation in numbers results in larger percentage difference. For example, the number of African students registering in the period 1995–2003 according to the registration data was 10 while the number of African students registered according to

the cohort analysis was 26. The absolute difference is therefore 61.5%. Even though this difference is large, compared to the total number of students, such a difference is insignificant. Nevertheless, a difference of roughly 10% between the totals indicates that these data are less reliable than the UCT data.

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Appendix F: Comparison of the organisational structure of academic development at UCT and Stellenbosch University

F.1. CHED Organogram



F.2. SAS Organogram



Appendix G: Details of the analysis of the language of publication of papers in accredited journals by Stellenbosch University academics

The Division for Research Development at Stellenbosch supplied the raw data for this analysis. After deleting duplicates from more than 16 000 entries, the titles of 5 336 articles published in accredited journals by Stellenbosch academics in the period 2006–2009 were examined to determine the language of publication. The table below shows a breakdown of the data by year. From this analysis, it appears that the percentage of articles being published in Afrikaans decreased from 4.77% to 3.58% in the four-year period.

Table G.1. Breakdown by year of the language of publication for articles published in accredited journals by Stellenbosch academics.

<i>Year</i>	<i>Total papers</i>	<i>In English</i>	<i>In Afrikaans</i>	<i>% in Afrikaans</i>	<i>Another language, bilingual or indeterminable</i>
2006	1301	1121	62	4.77%	18
2007	1226	1159	51	4.16%	16
2008	1329	1271	52	3.91%	6
2009	1480	1416	53	3.58%	11
TOTAL	5336	5067	218	4.09%	51

Note: The titles of some articles were in another language (Dutch, French or German), some had bilingual titles and some titles were scientific (e.g. names of chemical compounds) and so the language of publication could not be determined. The total number of articles for these three categories over the four-year period was just less than a percent.

The graph below shows that the percentage of articles published in Afrikaans over this period was 4% while the proportion of articles published in English was 95%.

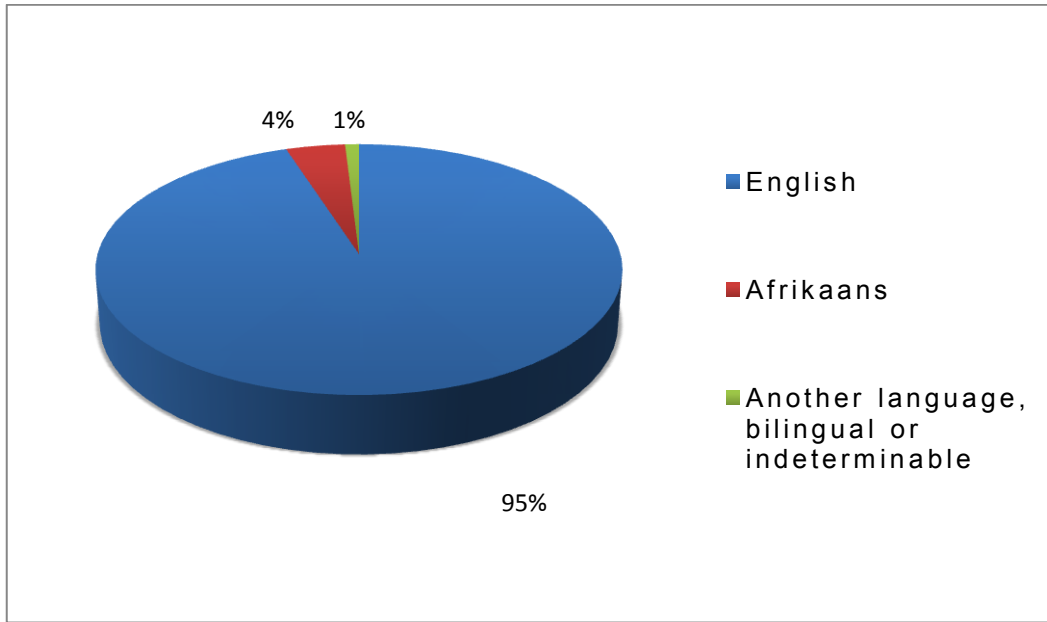


Figure G.1. Proportion of Afrikaans journal articles published by Stellenbosch academics, (2006– 2009).

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